An Integrated Theoretical Model of Information Systems Success/Technology Adoption for Systems Used by Employees in the 4 And 5-Star Full-Service Hotel Sector in the UK

E. GEORGIADIS

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EFSTATHIOS GEORGIADIS

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ABSTRACT

This study aspires to combine several components of extant theoretical frameworks of Information Systems (IS) evaluation and develop a new mechanism/model, the Integrated IS Success/Technology Adoption Model, which can be applied in the context of the 4 and 5-star UK hotel industry. It is hoped that this new model can reliably measure the IS Success and technology adoption of the technological innovations used by hotel employees. Current research tends to concentrate on general emerging IS trends such as Information Communication Technologies (ICTs), including mobile and virtual reality applications. Even though there is abundant research on Information Systems used by hotel customers, the numbers of available published material seem to diminish when it comes to IS evaluation from the viewpoint of hotel employees. To complicate matters even further, most hotel employee-related studies originate from the USA or Southeast Asia. Aiming to combat this distinct shortage in academic papers, the present thesis recognises the evident research gap and seeks to fill it by presenting a study that is pertinent to the realities of hotel employees working in 4 and 5-star full-service hotels in the UK. A major difference between a customer/guest use of IS and an employee use is that the former does not have to use a hotel's systems; however, this is not the same with employees, for whom daily system use is compulsory as part of their jobs. Therefore, different metrics apply for each subset.

The secondary research makes every effort to showcase a comprehensive account of IS evaluation approaches, starting from general strategies and frameworks to the breakdown of specialised IS success and technology adoption models and their dimensions. The primary research incorporates 28 (two sets of 14) interviews with hotel department managers in order to corroborate existing or identify new IS evaluation dimensions and subthemes. The interview analysis produces two previously unexploited by the literature themes that have a major impact on System Quality, one of the central dimensions of IS Success.

The key contribution of the current study is the Integrated IS Success/Technology Adoption Model, developed through corroborating the interview findings with the literature review outcomes. The Model is based on two prominent IS evaluation models, the IS Success Model (DeLone and McLean, 1992) and the Technology Acceptance Model (Davis, 1989). The originality of the Model springs from the fusion of these two frameworks, but also from the modifications added. For example, the proposed model features Social Norms, a dimension that permeates the Theory of Actioned Reason (Fishbein and Ajzen, 1975). Other additions include the use of IT training, senior management support, and facilitating conditions as external variables. Future research efforts could perhaps concentrate on testing and validating the proposed research model by use of quantitative methods in the form of a research questionnaire that would obtain the opinions of hotel line employees about the systems they work with on a daily basis.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

1.1. Introduction

The main ambition of the present research is to develop and propose an integrated theoretical model that measures the intention to use Information Systems (IS) of employees from 4 and 5-star full-service hotels in the UK. To accomplish this task, the dimensions and constructs of the integrated theoretical model have been determined, based on the relevant literature review and the viewpoints of UK 4 and 5-star hotel managers, obtained by means of interviews. Paving the way for the main body of the thesis, this introductory chapter articulates the background to the research and justifies the choice of topic while underlining its importance. Additionally, it sheds light on the study's research aims and outlines the structure of the thesis.

1.2. Research Background

The hotel industry has become increasingly reliant on information throughout the last 30 years (Morosan, 2018). Globalisation has brought with it advantages such as obtaining a great deal of information in less time, putting the onus on hotels to spend more time and resources on handling the increased information load (Laudon and Laudon, 2019). Information Systems

are built to tackle vast quantities of data in minimal time and have, therefore, become popular among hotels due to robust technological developments (Sasvari and Majoros, 2013). Almost 20 years ago, Frew (2000) foresaw that Information Technology would bring about a major revolution in the hospitality industry. In addition to the benefits it offers to guests, the hotel trade also relies extensively on IS to develop employees' productivity and efficiency, and as a consequence to improve customer satisfaction (Lam *et al.*, 2007).

The emergence of online IS has been synonymous with numerous transformations in the way in which hotels obtain, process, and provide information, as well as in their policies and strategies, particularly those concerned with IT investment. Generating, processing, and retrieving information in an effective and resourceful manner is crucial for hotels, as not many sectors use and communicate information on a regular basis in such quantities and frequency (Lam and McKercher, 2013). Since the end of the 20th century, hotels have moved towards a knowledge-based economy, where information and the ability to access it are vital in sustaining a competitive edge (Zaied, 2012). At the same time, an overabundance of hotel operators has created a strongly competitive market where each hotel has to be dynamic and use technological innovations in creative ways in order to survive (Buhalis and Leung, 2018). IS and other technological advances not only streamline hotel operations and simplify tasks for employees, they also decrease costs and significantly increase effectiveness through rapid communication and information distribution (Law, Buhalis and Cobanoglu, 2014). Hence, the overall significance and contribution of IS to the hotel operation cannot be

understated. Due to their importance, hotels strongly emphasise the need to constantly monitor the IS they have in place (Cha and Park, 2018).

Hotels are constantly endeavouring to comprehend and measure the impact of IS on daily operations, so that intelligent decisions can be made regarding crucial IT investments (Turner, 2017). A way of measuring the impact that IS can have on the day-to-day running of a business is the evaluation of their characteristics. Information Systems evaluation is part of a control process and can assist managers in terms of improved decision-making, investment, and formulation of future strategies (Combe, 2006). According to Bokhari (2005), the evaluation of a system is an inherently complex task. As with any professional form of appraisal, the assessment of Information Systems has to be conducted using scientific and systemic methodologies (Leem and Kim, 2004). Theories suggest that an evaluation should concentrate on understanding the IS and the subjectivity the user contributes to it (Stockdale and Borovicka, 2006).

However, even with the most sophisticated Information Systems and technologies in place, organisations cannot gain a competitive edge if they suffer from incompetent and unskilled personnel (Ho, Arendt, Zheng and Hanisch, 2016). Equally, it is logical to infer that a business cannot prosper if, despite having capable and highly skilled employees, it is hindered by the lack of efficient and up-to-date IS. Diaz and Koutra (2013) argue that technologies are truly useful only when they result in hotel employees becoming more

productive and better able to assist their customers. Thus, the extent to which personnel genuinely accept IT at work is of paramount importance to the success of a hotel's business (Huh *et al.*, 2009).

Evaluation of IS in the hospitality domain has been the subject of extensive research (for example, Law and Jogaratnam, 2005; Morosan and Jeong, 2008; Musante, Bojani and Zhang, 2009; Fuchs, Scholochov and Höpken, 2010; Kaya and Azaltun, 2012; Kim, Lee and Ham, 2013; Kim, Connolly and Bloom, 2014; Ali, 2016; Chan, Okumus and Chan, 2018; Morosan and DeFranco, 2019). On the other hand, IS evaluation from the perspective of hotel employees are not such vastly reviewed subjects, although several substantial studies do exist (for example, Kim *et al.*, 2008; Lam *et al*., 2007; Wang and Qualls, 2007; Kim, 2011; Leung and Law, 2013; Dhar, 2015; Vogiatzi, 2015; Bae, Kwon and Jai, 2016; Ko, Lei and Tsai, 2016; Tom Dieck, Jung, Kim and Moon, 2017; Shin, Perdue and Kang, 2019).

1.3. The Proposed Research Model

By employing and utilising some components of existing IS evaluation models, the integrated model to be put forward in this study is generally based on two established theoretical frameworks: the updated DeLone and McLean Information Systems Success Model (DeLone and McLean, 2004) and the Technology Acceptance Model (TAM) (Davis, 1989). The first of those concentrates on the attributes of IS and how they can influence the net benefits

received by the system users. However, in this study the system users are employees and the net benefits realised are associated with them. The second model (TAM) examines how technological innovations such as IS are perceived and consequently adopted by personnel using them, which is a topic directly related to this research. Hence, the theoretical model to be proposed by this study seeks to combine the most useful components of the two aforementioned frameworks in order to analyse both sides of the IS evaluation process: that of the system characteristics (object-based), and that of the end-user (behaviour-based) perceptions and intentions (Davis, 1989).

Despite the increasing use of IT in hotels, Chan, Okumus and Chan (2018) state that the volume of research needed for the application of the TAM in the hotel setting is at its infancy stage, with only several studies using the TAM and its extended versions to understand and explain the acceptance behaviour of IT/IS (for example, Kim *et al*., 2008; Lam *et al*., 2007; and Lee *et al*., 2006; Kaushik, Agrawal and Rahman, 2015; Ko, Lei and Tsai, 2016). Wang and Qualls (2007) call for more theoretical work in order to gain further insight into the technology adoption process by hospitality organisations. Kim *et al.* (2008) argue that the IT acceptance presented in research articles utilising TAM has principally focused on a voluntary environment, where the individual's situation has a great effect on the use of the system. However, they stress that, unlike analyses of a voluntary environment, there do not appear to be enough studies conducted on an environment where the use of Information Systems is mandatory, which is the case or hotel employees.

Similarly, a few studies have been carried out to look into the relationship between the exogenous characteristics and the TAM framework to elucidate the acceptance behaviour of technology in hospitality organisations (Lee *et al*., 2006; Lam *et al*., 2007; Tom Dieck *et al.*, 2017). Kim *et al.* (2008) emphasise that technology acceptance in hotels needs distinctive approaches in investigating technology adoption behaviour because of the complex process affecting both internal and external variables and their unique characteristics (Wang and Qualls, 2007). Bilgihan, Okumus, Nusair and Cobanoglu (2011) indicate that research is limited when it comes to technology adoption and managing change (resulting from technology adoption) in hotels. Recently, there have been research efforts to produce studies and develop theoretical models that explain IS adoption by employees within the hotel industry (Talukder, 2012; Theodosiou and Katsikea, 2012; Leung and Law, 2013; Salavati and Hashim, 2015; Sharma, 2015; Chan, Okumus and Chan, 2018; Lee, Lee and Kim, 2019; Shin, Perdue and Kang, 2019). However, these studies use empirical data from the United States, East Asia, Asia and Australia. As a result, there is a relative lack in papers utilising data that originates from other touristic zones (Vogiatzi, 2015). This lack of papers is distinctive in the case of 4 and 5-star UK hotels, with very few studies available (Lim, 2009, 2010; Spencer, Buhalis and Moital, 2012; Tom Dieck *et al.*, 2017).

Meanwhile, there appears to be a better understanding of IS Success within academia (Burton-Jones, McLean and Monod, 2015). Nonetheless, there is a shortage of comprehensive and integrated research material on the

independent variables that influence IS Success (Petter, DeLone and McLean, 2013). This situation has not changed since a decade ago: "*Despite considerable empirical research, results on the relationships among constructs related to Information Systems success, as well as the determinants of IS Success, are often inconsistent*" (Sabherwal *et al*., 2006:1849). Therefore, this lack of research on IS Success evaluation and technology adoption within the UK 4 and 5-star hotel scene was seen as a research gap in the literature and it is the purpose of this thesis to further explore this notion and attempt to fill that gap by presenting a study and an instrument that can encompass hotel employees' beliefs and attitudes toward the IS they use.

The abovementioned lack of research material on IS evaluation within the UK 4 and 5-star hotel industry dictated that further investigation was required. The literature is rich with studies that validate and extend the IS Success Model and the TAM. These studies have produced numerous constructs and measurements that act as antecedents to traditional dependent variables that explain IS Success, such as the object-based system use and user satisfaction. This also the case for the TAM variables, which are behaviour-based and include intention to use and actual use, amongst others. The research problem starts to emerge due to the realisation that there are only a few studies that bring together these two IS evaluation streams, namely IS Success and technology adoption (for example, Venkatesh, Morris, Davis and Davis, 2003; Wixom and Todd, 2005; Mardiana, Aprianingsih and

Tjakraatmadja, 2015). IS evaluation is a multifaceted task, and as such, can be conducted by the utilisation of measures or theoretical models that combine or integrate a range of constructs (Mardiana *et al.*, 2015). As the number of studies that develop theoretical models by integrating dimensions from within both IS Success and TAM are inadequate, it becomes evident that academia would benefit from more contributions to this pool of knowledge. However, developing an integrated model without applying it in a specific context is a vague practice that does not add value to a study due to the lack of specificity. The hotel industry is one of the most important segments of the accommodation sector, contributing the highest revenues to the UK economy in comparison to other accommodation services (Statista.com), and employing 3.2 million people (UK Hospitality.org). Information Systems are integral parts of the industry since without their presence modern hotels would not be able to operate. In order to specify the context of the research even further, the 4 and 5-star sector appeared more suitable, as due to larger budgets and higher IT investment, the number of IS used would be bigger than that of 1, 2 or 3-star hotels, which would enable the study to embrace a wider set of systems. The above facts, combined with the fact that papers that propose integrated IS Success and technology adoption models within the hotel industry are scarce, gave rise to the first research question of the study: which are the specific IS evaluation dimensions and constructs that can be utilised and combined in order to develop an integrated model that explains IS Success and technology adoption within the UK 4 and 5-star hotel industry?

A reasonable inquiry at this point would be to determine which ultimate variable (dependent variable) would measure the IS Success and technology adoption of the proposed model of this study. In order to proceed, first it needs to be noted that for the purposes of the present thesis, IS Success and technology adoption are expressed as IS effectiveness, because a system is effective if it is successful at all aspects of its operation, and if it is adopted easily by the hotel it belongs to. In addition, when selecting the dependent variable of a theoretical model, thought has to be given to the nature and context of the study. As indicated earlier in this section, the vast majority of IS evaluation studies within the hotel context is conducted with customers as the subject of research. Very few papers have used employees as the focus of the study. It has been documented that there are differences in the characteristics of system use between customers and employees, as the former use the systems by freewill, while the latter must use the system regardless of their inclination (Venkatesh *et al.*, 2003). Since this study seeks to develop a model within the hotel context with employees at the core of the research, it is logical to employ a variable that is suitable to environments where system use is mandatory. While system use is a prevalent variable that can be used to explain IS Success (DeLone and McLean, 1992), another measure, intention to use was preferred due to its power to explain attitude in a more convincing manner. Venkatesh (2000) maintains that within the mandatory system use setting, intention to use is a variable that can be used to great effect when a study needs to evaluate both object-based (IS Success) and behavioural (technology adoption) constructs. After settling on the choice of the dependent variable, the second research question of this study is: how can the users of

IS within hotels be involved in order for the proposed model of this thesis to be based on their requirements?

To be able to find solutions to the research problem and answer the two research questions posed, this study proposes the Integrated IS Success/Technology Adoption Model. The formation of the Model is based on the initial identification of suitable IS evaluation constructs through the relevant literature. Those constructs are subsequently filtered down through a corroboration process achieved by twice interviewing 14 industry experts (hotel departmental managers) on system use. After being verified by the interviewees as appropriate for the context of this study, the constructs are then categorised into dimensions, which in turn are synthesised into the Integrated IS Success/Technology Adoption Model. The latter is the study's main contribution to knowledge because the combination of dimensions it uses have never before been utilised by any study within the IS literature sphere.

With the above analyses in mind, the four aims that guide the current research have been developed.

1.4. Research Aims

1. To critically review Information Systems (IS) theory and evaluation approaches in the context of the 4 and 5-star hotel industry.

2. To analyse Information Systems (IS) evaluation frameworks, in particular those associated with employee IS usability.

3. To explore the dimensions and constructs used in evaluating the effectiveness of IS in 4 and 5-star hotels from the perspective of departmental managers.

4. To develop an integrated theoretical model for evaluating the intention to use IS by hotel employees.

1.5. Structure of the Thesis

The present study is divided into seven chapters. Succeeding the introduction, the two subsequent chapters present the literature review of this thesis. Chapter 2 revolves around IS theory and attempts to provide an in-depth account of the various approaches that render it possible to evaluate an Information System. The terms ‘IS Success’ and ‘technology adoption’ are clarified and put into context here, while their main dimensions are also discussed. Chapter 2 also puts forward the leading IS evaluation models, together with the antecedents that collectively form each model. The presentation of the literature is carried out in chronological order. This is done to enrich the thesis with more cohesiveness and to avoid presenting not only archaic or the very latest developments, but a comprehensive record of all IS evaluation approaches. Thus, the first part of the chapter starts with looking into Management Information Systems, the precursor of Information Systems. As time passes, the transition from MIS to IS takes place, with systems finding more practical applications in the hotel sector. Following that, the thesis considers IS evaluation approaches related to technology acceptance and adoption. Chapter 3 seeks to provide a critical assessment of the various approaches to IS evaluation within the hotel environment and emphasis is laid on systems used by hotel employees. Employee characteristics, employee productivity and IS performance, employee participation and involvement, are all discussed, alongside other user-related attributes and factors linked to IS adoption by hotel employees. The chapter closes with the introduction and analysis of DoI (Diffusion of Innovations) and the reasons behind its inclusion in the present study.

Chapter 4 explains the methodology of the study. It gives consideration to secondary research and seeks to justify the decision-making process behind the researcher's choice of primary data and its measurement. The research philosophy and the methodological approach that underpin the primary data collection process are clarified. The appropriate research strategy is also decided and justified in line with the study's aims. The choice behind the data collection mechanism is defended and the sample selection is explained.

Chapters 5 and 6 detail the findings and the analysis of the primary data. Chapter 5 presents a breakdown of the results of the interview process, paying particular attention to any emergent themes. Initially organised thematically, the interviewees' viewpoints are then presented. Chapter 6 offers a thorough and meticulous analysis of these viewpoints and ends with a discussion about how the results link with the literature review findings. The main goal of these two chapters is to identify the IS evaluation dimensions and measurements that are relevant to the purposes of this study and for the development of the Integrated IS Success/Technology Adoption Model.

The thesis closes with Chapter 7, where the study's main conclusions emerge. The contribution to knowledge is discussed here and the overall quality of the study is gauged in terms of its strengths and limitations. Finally, recommendations to the UK 4 and 5-star hotel industry are provided and considerations for future research are offered.

Chapter 2: Information Systems (IS) Evaluation

2.1. Introduction

The advances within the field of Information Systems (IS) and Information Technology (IT) have created an increasingly competitive environment obliging organisations to improve and expand traditional operational practices to survive. Within the hospitality industry and its extremely competitive business setting IT and IS have become essential sources of sustainable competitive advantage for companies, as the capability to harness technologies in order to enhance the efficiency of operations has become central to future success (Siguaw and Enz, 1999). According to Lam, Cho and Qu (2007), employing information technologies can result in having advantages in competition, decreasing costs, gaining time, increasing employees' productivity, and acquiring and sharing information. The successful adoption of IS, together with the formulation and implementation of appropriate strategies are the factors that determine whether an organisation can sustain competitive advantage (Švárová and Vrchota, 2014). Consequently, the use of such technologies has profound impacts on hotels, as a large quantity of information has to be processed and communicated among internal and external customers (Lam *et al.*, 2007). Akin to Tourism, the hotel industry can be regarded as having an information-intensive character, placing great emphasis on the provision of quality services to guests (Law and Jogaratnam, 2005). According to Leung and Law (2013) the role of

IT has evolved from supporting operations to assisting strategic decision making, which is crucial for hotels that operate within the demands of the current business environment (Mišanková and Kočišová, 2014). With the demand for accurate and detailed information growing amid guests, hotels have adopted computer-based IT facilities to improve operational efficiency, reduce costs, and enhance the quality of service among other reasons (Camison, 2000). Olsen and Connolly (2000) posit that appropriate use of Information Systems can place knowledge and information at the core of a hotel's competitive profile. However, research indicates that new IS would not be fully accepted if human factors such as the extent of employee willingness and ability or the level of managerial support are overlooked (Hasan, 2003). Other such factors include organisational processes, employees' resistance to change, strategies that are difficult to implement, gaps between strategy and organisational goals, and ignoring feedback (Lihalo, 2013).

This part of the thesis attempts to identify and assess the metrics used in the literature of the last three decades, pertaining to the evaluation and measurement of Information Systems. Initially, an overview is put forward in order to shed some light on a few complicated issues, such as for example, what constitutes IS evaluation. Next, an analysis of the term IS success/effectiveness is provided together with the challenges surrounding its definition and interpretation to place the remainder of the paper in context. A comprehensive account of the chronological development of IS evaluation approaches is also introduced, with special focus on examples from the Tourism industry, and the most influential IS evaluation models are presented.

Furthermore, the three quality dimensions (System, Information, and Service Quality) are also chronologically explored, followed by two other very important IS success constructs, User Satisfaction and System Use. This is done to produce a thorough account of the various approaches utilised in IS evaluation and the diverse measurements used.

2.2. Approaches to Information Systems (IS) Evaluation

It is no secret that companies are investing progressively more resources in IT applications (Molla and Licker, 2001; Vijayasarathy, 2004; Wu and Wang, 2006). Organisations making such investments generally expect a return on the money and time invested; nonetheless, realising the potential revenue of these activities would be nearly impossible without companies measuring the condition of their IS (Aladwani and Palvia, 2002). Apart from meticulous planning this also necessitates an incessant appraisal of the competence and success of their operating systems (DeLone and McLean, 2004). IS evaluation is part of a control process and can support managers in terms of enhanced decision-making, investment, and formulation of potential strategies (Camison, 2000). As with any professional specialised form of assessment, IS evaluation necessitates continual measurement and review of Information Systems employing scientific and systemic methodologies (Leem and Kim, 2004). In recent years, IS have become omnipresent and more homogenous, and as a result, IT adoption has developed into a rapid and easily managed

process, with companies at present being able to imitate or even surpass their rivals' IT competencies (Wang, 2010). Thus, IS are now operational commodities or even competitive necessities (Xue, Ray, Sambamurthy, 2012). These developments render the re-examination and continual evaluation of IS as necessary tasks for organisations in the current competitive climate (Chae, Koh and Prybutok, 2014).

Relevant theories advise that an evaluation should focus on fully comprehending the system (Stockdale and Borovicka, 2006), rather than merely put together judgments based on pass-or-fail criteria (Irani and Love, 2001). In other words, it would have been an ill-advised practice if an organisation was to base the entire IS evaluation process on pass-or-fail criteria, such as basically calculating the number of visits on its system or just asking employees whether they are happy with a particular new IS. Picarille (1993) believes that page views or visits fail to provide adequate insight into the ultimate success of a system. Even though somewhat simplistic, these earlier measures have been developed to include number of hits, sales leads created, and profits (Golden, Hughes and Gallagher, 2003), together with amount of inward bound queries and constructive feedback (Webb and Sayer, 1998). On the subject of system visits or hits, Sharkey, Scott and Acton (2010) argue that it is possible that a hit will develop into a query that may perhaps generate a sales lead, which can consecutively turn into profit. Although a hit in itself may perhaps not be adequate to result in revenue, its significance cannot be undermined, since without it there would have been no revenue accomplished in the first place (Sharkey, Scott and Acton, 2010). DeLone and

McLean (2003) advise that in general the success of a system has to be shaped in accordance to the number of hits, the characteristics of the systems' use, the traits of user navigation, and the quantity of transactions completed. Nevertheless, Palmer (2002) advises that page views or visits are not adequate enough as a solitary means of evaluation simply because they alone do not offer sufficient insight into the full operational processes, functions, and capabilities of an IS. Instead, he recommends that IS should be evaluated using methodological techniques and by use of metrics, which include measures that encapsulate both design features and system outcomes, and if derived from prior research modelling, can bring about a set of hypotheses central to the success or failure of the system (Palmer, 2002). However, the decisions that decree which metrics to select for each type of IS evaluation are difficult to ascertain and quantify due to the fact that the technologies involved contain high levels of intangibility and ambiguity (Oztaysi, 2014).

Furthermore, the role of the environment within which the system is used has been emphasised as vital in understanding IS evaluation (DeLone and McLean, 1992). For instance, when operating in an electronic environment, the use of a system needs to be more or less entirely centred on the goals of the organisation's management (Hasan and Tibbit, 2000). Seddon (1997) declares that use may be associated with success, providing that it has been set as an objective by stakeholders at the outset. Torkzadeh and Doll (1999) agree that the outcomes and determinants of IS evaluation depend on the context of adoption. As a general rule, Sharkey *et al.* (2010) note that in any online setting, determining the effectiveness of an IS has to originate from the

targets set by whoever manages that system. In a similar manner, the selection of IS evaluation metrics is dependent on the intention of the research or the environment in which the company operates (DeLone and McLean, 2003). Understanding these metrics as antecedents of technology acceptance and/or adoption is essential in setting and implementation of IT strategies (Wilsom and Logan, 2017).

2.2.1. General IS Evaluation Approaches

The underlying principle of this study derives from the theory that IS evaluation can be undertaken in terms of two distinct approaches: System Use/User Satisfaction (IS Success) and Technology/System Acceptance (Wixom and Todd, 2005). For the purposes of this research, a third method of assessing IS, that of integrated approaches is also considered. A large number of tools created to evaluate systems with respect to characteristics such as System Quality and Information Quality (Bailey and Pearson, 1983; Ives, Olson and Baroudi, 1983; Doll and Torkzadeh, 1988; Otto, Najwadi and Caron, 2000; Muylle, Moenert and Despontin, 2004; Dongqin and Yu, 2011; Cao, 2015; Mardiana *et al.*, 2015; Pacheco, 2017;) have employed independent measures of User Satisfaction to test the predictive validity of the measure (Iivari, 2005). Attributes of System Acceptance usually encompass measurement of perceived beliefs and attitudes in order to determine behaviours or intentions to use the IS (Davis, 1989; Wöber and Gretzel, 2000; Vijayasarathy, 2004; King and He, 2006, Kim, Lee and Law, 2008; Venkatesh, Morris, Davis and

Davis, 2003; Venkatesh, Thong and Xu, 2012, 2016). Integrated approaches imply a fusion of User Satisfaction and Technology Acceptance notions and metrics. IS evaluation is typically synonymous with measuring whether a system is successful or otherwise. However, determining the success (or failure) of a system is far from straightforward, as such efforts are frequently hindered by the great numbers of different independent (or input) variables, as well as the difficulty associated with defining and establishing a universally accepted output (or dependent) variable. The latter, also quoted as 'IS success' (DeLone and McLean, 1992), is often seen as the epicentre of the whole IS evaluation process, with the vast majority of relevant published material focusing on defining and/or measuring its distinct aspects.

It has already been mentioned that evaluation is not an easy task, and as such there are numerous suggestions on how to evaluate an IS. One of those follows a formal/rational view and classifies evaluation as a largely quantitative process that seeks to calculate related benefits on the basis of defined criteria (Walsham, 1993). The IS interface and the interaction between the users and systems act as bases for this type of assessment, which aims to determine if and how the system supports the actions performed in the operations of the business (Cronholm and Goldkuhl, 2003). Cronholm and Goldkuhl (2003) maintain that using criteria means to give attention to certain qualities that according to the perspective are important to evaluate. The criteria used are grounded in one or more perspectives or theories, including cognitive science and usability issues. Moreover, they govern the evaluator's attention and thereby the magnitude of knowledge attained. However, the criteria-based

approach is often used in relation to pre-ordinate designs and has a scientific 'feel' which supports the tendency to prioritise technical and quantitative data (Walsham, 1993).

Evaluation can also use interpretative approaches (for instance Remenyi and Sherwood-Smith, 1999), which look at IS as social systems that have Information Technology embedded in them (Goldkuhl and Lyytinen, 1982). Furthermore, there are formative and summative approaches that encapsulate different measures. Some approaches focus on harder economic measures, while others concentrate on softer, user-oriented dimensions (Cronholm and Goldkuhl, 2003). Walsham (1993) suggests that formative assessments usually provide systematic feedback to designers and implementers, while summative evaluation is concerned with identifying the value of programme outcomes from initially specified success parameters after implementation is finalised. In addition, there are goal-based and goal-free evaluations. The former measure the extent to which an IS has achieved unambiguous objectives, while the latter are of a more interpretative nature and seek to understand the character of what is being assessed and to generate motivation and commitment (Cronholm and Goldkuhl, 2003).

A further group of IS evaluation approaches assesses systems during the implementation/adoption stage. They contain 'intention-based' theories, the Diffusion of Innovations (DoI) perspective, and dependency and resource dependency measures. The purpose of 'intention-based' theories is to

establish the determinants of users' behavioural intentions to adopt new IS. Well-known ambassadors in this field include the Theory of Planned Behaviour (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989). Diffusion of Innovations (Rogers, 1962) aims to generate an understanding of how innovations, such as ideas, practices and objects are adopted, implemented, and diffused. Diffusion denotes the process whereby an innovation is communicated through certain channels among the members of a social system, group, or organisation over time (Agarwal and Prasad, 1997). Diffusion of Innovations indicates that the adoption of new IS in groups and organisations depends initially on the perceptions of early adopters regarding factors of compatibility, trialability, observability, and complexity (Rogers, 1983). As far as dependency and resource dependency approaches are concerned, two theories stand out, the Resource Dependency Theory and Absorptive Capacity. Originally conceptualised to examine dependency relations between organisations, the former rests on the presumption that organisations and their departments are keen to implement IS that assist them in reducing dependency on other units (Diez and McIntosh, 2009). Absorptive Capacity on the other hand advocates that there is a limit to the acquisition, assimilation, and exploitation of information in organisations due to insufficient resources, for example money, experience, personnel, computer facilities, training provision and communication channels (Diez and McIntosh, 2009). Thus, it can be concluded that the availability of resources in organisations is a key determinant of IS implementation (Diez and McIntosh, 2009). As already mentioned, the above approaches are considered during the implementation stage of an IS. Yet evaluation of IS, certainly in the context of this thesis, is an

implementation and post-implementation process that determines continued use by individuals and organisations, and involves assessing the usefulness of a system (Diez and McIntosh, 2009). As a result, mainly approaches that evaluate Information Systems during and after the implementation stage are explored and reflected on. This is evident by the detailed analysis of IS adoption (implementation) and success (post-implementation) and the corresponding approaches presented in this chapter. Even though the main focus may sometimes be seen as shifting towards determining IS success, this does not mean that adoption during the implementation stage is neglected: elements of the Technology Acceptance Model (TAM) (Davis, 1989) are often brought up and they are used in forming the main argument of this study. Moreover, several components of the TAM are utilised in developing the proposed model of this thesis. In fact, combining parts of Technology Acceptance and IS success paradigms can be seen as one of the main strengths of the proposed model, enhancing and making the research more complete. Hence, it is reasonable to suggest that this study uses integrated approaches to evaluate IS.

2.2.2. IS Evaluation and Success

Traditional Management Information Systems (MIS) research, which stands as a foundation for IS evaluation studies, emerged during the late 1970s and the early 1980s. Even though MIS research has produced many papers that endeavour to classify a range of independent variables, such as the degree of

user involvement or the degree of IS investment, it is the measurement of the dependent variable that has proven to be an elusive and arduous task (DeLone and McLean, 1992). This dependent or output variable, otherwise known as MIS effectiveness or IS success, is extremely important, because without a well-defined construct and with no suitable and accurate measure for it, IS research becomes purely speculative (DeLone and McLean, 1992). Moreover, the assessment of IS practice and the accompanying processes necessitates a metric that can measure IS success and results alongside which a range of strategies can be tested (DeLone and McLean, 1992). After all, with the increased use of IS within organisations, the evaluation of a system becomes crucial to the "*understanding of the value and efficacy of IS management actions and IS investments*" (DeLone and McLean, 2003:10). As the dependency on IT increases, so does the need to assess factors associated with IS success (Liu and Arnett, 2000; Standing, Guilfoyle, Lin and Love, 2006; Snead Jr., Magal, Christensen and Ndele-Amadi, 2014). Myers (1994) proposes that IS success is a subjective and open to interpretation concept that is generally achieved when all aspects of a system are deemed to be successful by stakeholders. Bharati and Berg (2003) describe it as an organisational-level measure that generally represents the outcome of the system. IS success can broadly be defined as the degree to which a system is able to meet the goals it was intended to (Farhoomand and Drury, 1996). IS success is also identified as "*a measure of the degree to which the person evaluating the system believes that the stakeholder (in whose interest the evaluation is being conducted) will be better off*" (Seddon, 1997:246). A successful system can be described as one that meets certain quality criteria

(cost-effectiveness, ease of use, adequacy of system's storage capacity, adequacy of system's processing speed, accessibility) and user requirements (Drury and Farhoomand, 1998). In addition, a successful system is one that meets a higher standard of quality and reduces work time (Raz and Goldberg, 2006), improves performance (Tallon, Kraemer, and Gurbaxani, 2000; Seddon, Graeser, and Willcocks, 2002; DeLone and McLean, 2003; Sojda, 2007), warrants user satisfaction (Bailey and Pearson, 1983; Cheney, 1984; Srite, Galvin, Ahuja and Karahanna, 2007), enhances organisational effectiveness and efficiency (Irani, 2002; Olugbode, Richards and Biss, 2007), or yields a steady flow of benefits for the user/organisation (Gable, Sedera and Chan, 2008).

From the late 1970s up until the late 1990s, and even with the vast quantity of empirical studies on IS, researchers at the time did not seem to agree on a cohesive meaning of the term IS success and thus the latter is generally an either misunderstood or misinterpreted notion (Garrity and Sanders, 1998). The problem with determining what IS success entails is composite, given that the success of such systems is a compound notion that can occur at different levels (technical, individual, group, organisational) and by means of a number of not necessarily complementary criteria (economic, financial, behavioural, perceptual) (Molla and Licker, 2001). Bokhari (2005) advocates that the assessment of an IS in relation to its success is an inherently complex responsibility due to a plethora of factors that may impinge on a system at some point through its development and implementation. While there are numerous published articles on the independent variables that affect IS

success, there is extremely limited research on the full variety of potential IS success measurements and the dimensions that can quantify the impact a system may have on organisations (Herbst, Urbach and vom Brocke, 2014). DeLone and McLean (2016) posit that the understanding of what a successful system entails has changed through the decades as the purpose and impact of IT has evolved. They maintain that due to the emergence of the information era, the measurement of IS success has become even more complex since the power dynamics of relationships between organisations and customers, between buyers and suppliers, and between citizens and governments, have all shifted.

The IS literature is rich in number of studies that propose distinct and diverse approaches, measures, scales, models, tools and techniques for evaluating computerised systems in terms of their success. A chronological account of these approaches/measures/modes follows. An early form of classification pertinent to the level that a system can be evaluated is represented by the Mathematical Theory of Communication (Shannon and Weaver, 1949). It delineates the success of communication systems into three facets: the technical level is seen as the accuracy and efficacy of the system, the semantic level denotes the ability of the information to convey the intended meaning, while the effectiveness level describes the impact that the information has on the recipient. Shannon and Weaver (1949) broadly define communication as the sum of the procedures by which one mind may have an effect on another. Providing a foundation for further development of communication theories and system evaluation frameworks, the Mathematical

Theory of Communication is typified by temporal context and scientific tradition, assumes that there exists a linear structure in communications, and considers communication as a measurable unit. Shannon and Weaver's work can be interpreted in two separate directions. The first stresses the engineering principles of transmission and perception, finding application in the electronic sciences. The other considers how people are able or unable to communicate accurately since they have diverse experiences and attitudes. This second route is more germane to the social sciences and is therefore pursued by most IS studies.

The model of the Mathematical Theory of Communication can be viewed, in Figure 2.1.

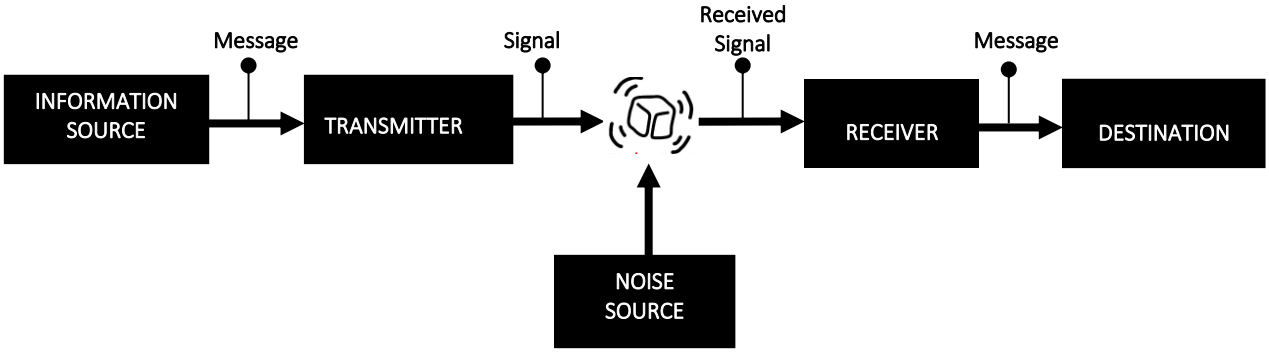

Figure 2.1: The Model of Mathematical Theory of Communication (Shannon and Weaver, 1949)

Applying Shannon and Weaver's three levels to an MIS context, Mason (1978) deduces that the effectiveness level has to take account of any influence on

users and states that an effectiveness/influence level should be governed by events such as receipt, evaluation, and application of information. Mason (1978) highlights the importance of the information dimension by describing it as more crucial than the production of goods and services. According to Mason (1978) the process of communication unfolds onto five stages: the production of information, the product itself, the receipt of information, the impact it has on the recipient and the impact it has on the system. Although basic in nature, this sequence represents an early form of metrics that would assist in determining the effectiveness or success of a system. IS success has also often been associated to higher relative value or net utility of a means of inquiry (Swanson, 1974) and to enhanced productivity (Bailey and Pearson, 1983). Van Lommel and De Brabander (1975) claim that IS success is a heterogeneous conception and for that reason it cannot be assessed using a single straightforward metric. Another paper identifies textual context and visual representation as key ingredients of the effectiveness and success of an IS (Benbasat, Dexter and Masulis, 1981). In a review of traditional Management Information Systems (MIS), Zmud (1979) identifies three elements, namely system usage, user satisfaction and user performance, that can be used as surrogates of measures of systems success. In a similar study, Ives and Olson (1984) define two categories of possible MIS evaluation variables, specifically system quality and system acceptance. The latter include metrics such as system usage and information satisfaction. Information satisfaction is a term that has been used sporadically in some early IS evaluation studies (for example Bailey and Pearson, 1983; Ives, Olson and Baroudi, 1983; Ives and Olson, 1984). It has now however been replaced by

the term Satisfaction or User Satisfaction in most contemporary IS research studies.

Other early approaches to IS success evaluation include Cost-Benefit analyses, System Use/Usage estimation and User Satisfaction assessments (King and Rodriguez, 1978; Bailey and Pearson, 1983; Ives and Olson, 1984; Srinivasan, 1985; Doll and Torkzadeh, 1988). Cost-Benefit analyses alone have been regarded as inadequate in reaching a comprehensive IS success evaluation because they fail to take overall strategic benefits on board (Bharati and Berg, 2003). Some studies (Fuerst and Cheney, 1982; Igbaria, 1990) reveal that IS success can be evaluated by looking at the System Use/Usage, which in turn can be gauged by monitoring the time spent on the system and the frequency of use. Another stream of research (Lucas, 1975; Swanson, 1987; Doll and Torkzadeh, 1991) draws on user attitude and beliefs to estimate the utilisation of IS. User attitudes, together with social norms and other behavioural characteristics, bring about intentions to use IS and eventually increase System Use/Usage (Hartwick and Barki, 1994). Similar to other one-dimensional measurements, System Use/Usage as a sole metric falls short of providing a complete and solid evaluation structure because it assumes that frequently used systems are consequentially successful systems (Dwivedi, Kapoor, Williams and Williams, 2013). According to Goodhue and Thompson (1995) aspects of technology command user attitudes about systems; such attitudes include usefulness (Davis, 1989) and User Satisfaction (Baroudi, Olson and Ives, 1986) amongst other. Kim (1989) composes a framework of relationships to give consistent and logical structure to the notion of User

Satisfaction, which has often been described as a key dimension of IS success. Subsequently, Liang and Law (2003), Lu, Deng and Wang (2007), Cyr (2008), and Lee, Moon, Kim and Yi (2015) use analogous methods to assess IS success by means of User Satisfaction metrics. User Satisfaction is a fundamental part of IS success evaluation and is analysed further at a later stage.

Alternative methods of determining IS success have also been identified, featuring forecasts of actual use (Adams, Nelson and Todd, 1992; Thompson, Higgins and Howell, 1994), programmed logs of actual use (Straub, Moez and Karahanna, 1995) and approximations of the rate of use (Igbaria, Guimaraes and Davis, 1995). Rai, Lang and Welker (2002:54) declare that "*if the conceptualisation of utilisation behaviour is grounded in disciplines pertaining to attitudes and behaviour, measures such as hours of use and frequency of use can be problematic*". Rai *et al.* (2002) maintain that in spite of the fact that the choice to use the system is influenced by attitudes and beliefs, discrepancies in frequency/hours of use can be an outcome of the size and magnitude of the task. Whyte and Bytheway (1996) find the interactivity of the system to be a general characteristic of procedural environments and a distinct attribute of successful IS. Garrity and Sanders (1998) develop a theory to approach IS success measurement on three levels: how a system encourages organisational performance (the organisational level), how it assists in the disciplined use of resources (the process level), and how it affects the users' satisfaction and perception of usefulness (the individual level).

It is evident that the role of IS has been the subject of numerous advancements and transformations. Likewise, academic investigation related to the measurement of IS success has moved forward (DeLone and McLean, 2016) over the last thirty years. This has stimulated a number of studies to look for factors that hinder or facilitate IS success (Turban and Gehrke, 2000; Gable *et al.*, 2008; Jafari, Ali, Sambasivan and Said, 2011; Petter, DeLone and McLean, 2012; 2013. Nevertheless, Molla and Licker (2001), Glass (2005), Burton-Jones and Straub (2006) indicate that there seems to be a shortage of IS success models to direct and inform studies in this area, as the existing findings are neither well-defined nor conclusive. In addition, theorists are still struggling to determine the most appropriate measures for IS success (Rai *et al.*, 2002; Abdinnour-Helm, Chapparo and Farmer 2005; Chae, Koh and Prybutok 2014). More recent research focuses on extending or revising current theories and frameworks of IS success, testing and validating relationships between the different IS measures, or using meta-analyses. Examples can be found in studies of online banking (Lai and Li, 2005; Montazemi and Qahri-Saremi, 2015), Internet shopping (Cheung and Lee, 2005; Ha and Stoel, 2009; Erkan and Evans, 2016), data warehousing (Kefi and Koppel, 2011; Abbasi, Sarker and Chiang, 2016), knowledge management (Wu and Wang, 2006; Conforti, de Leoni, La Rosa, van der Aalst and ter Hofstede, 2015), empirical e-commerce studies (Rai *et al.*, 2002; Sharkey *et al.*, 2010; Wang, Wang and Liu, 2016), University Campus portals (Torkzadeh, Koufteros and Doll, 2005; Masrek, 2007; Shaltoni; Khraim, Abuhamad and Amer, 2015), Tourism (Kaplanidou and Vogt, 2006; Stockdale and Borovicka, 2006; Hew, Lee, Leong, Hew and Ooi, 2016; Rizal, Yussof, Amin and Chen-Jung, 2018), e-

Government systems (Torres, Pina and Acerete, 2005; Hussein, Karim and Selamat, 2007; Wang and Liao, 2008; Srivastava, 2011; Rana, Dwivedi and Williams, 2013), e-learning (Chen, 2010; Mohammadi, 2015; De Leeuw, Westerman, Nelson, Ket and Scheele, 2016) and Hospitality (Kim *et al.*, 2008; Morosan and Jeong, 2008; Carrasco, Sánchez-Fernández, Muñoz-Leiva, Blasco and Herrera-Viedma (2017). However, Petter, DeLone and McLean (2008) as well as DeLone and McLean (2016) advise that IT impacts are largely of an indirect nature and subject to influences by human, environmental, and organisational forces, and hence determining the extent of IS success is still a complicated challenge.

2.2.3. IS Evaluation in Tourism

Information and its fast and efficient exchange have become integral parts of distribution and customer service in the Tourism industry because without information a consumer's motivation and ability to travel would have become severely limited. Moreover, Tourism has an interdependent, intangible, complex and fragmented nature within which Information Systems have evidently facilitated the process of information exchange in a rapid fashion. Due to this, they have formed a somewhat synergic relationship with this industry and thus became universal features and vital tools within it (O'Connor and Frew, 2002). In terms of research on this area, Murphy, Forrest, Wotring and Brymer (1996) assess hotel IS attributes at early stages of their development, by applying a counting method that monitors the number of visits

for each specific system. Their findings reveal that information accuracy, interactivity, and customer service are all correlated to the performance of an online system. Frew (1999) compiles a directory of IS success factors and uses it to appraise destination IS in a number of European countries, generating a score for each system. Scores are then counted, and results identify both information accuracy and completeness as crucial success factors. In another study of destination IS in Australia, Benckendorff and Black (2000) evaluate four key processes relevant to the development of systems, namely planning, system management, system design, and system content. They conclude that a large proportion of tourism organisations in Australia and other countries such as Russia and Turkey, are not effective in their use of IS for online marketing and e-commerce purposes. Based on benchmarking techniques, Doolin, Burgess and Cooper (2002) propose a theoretical framework, later used to assess the extent of IS development in regional tourism organisations in New Zealand. Their study features three individual stages that integrate three levels associated with organisational procedures: online marketing and promotion, supply of information and services, and processing of transactions. Chiang (2003) appraises the success of Singapore's hotel online marketing efforts in B2B (business-to-business) environments by using a structured questionnaire with nine criteria including information, e-commerce, services, promotions, and technology. Findings indicate positive relationships between most of the major constructs. Baloglu and Pekcan (2006) present an IS study that assesses system characteristics of four and five-star hotels in Turkey. The results suggest that there is a

positive relationship between the system's design features, the company's online marketing offerings, and the overall performance of the IS function.

An important mechanism, used predominantly in the finance and management sectors but also in Tourism, is the Balanced Scorecard (Kaplan and Norton, 1992, 1996). It represents a process that organisations employ to set financial and operational objectives and measure effectiveness, but it can also pertain to the evaluation of IS. The Balanced Scorecard brings performance measures together by examining an organisation's vision and strategy from four different perspectives: financial, customer, learning and growth, and internal business processes. These four distinct dimensions do not eradicate but rather complement the goals of other management approaches like strategic planning or Total Quality Management (Kaplan and Norton, 1992). Each of these four perspectives entails four parameters, namely goals, measures, targets, and initiatives. In an online environment, the Balanced Scorecard can be utilised to measure the contribution of IS towards achieving business goals. Martinsons, Davison and Tse (1999) propose a balanced IS scorecard that is comprised of four separate performance areas: business, user, internal process, and future accomplishment. Morrison, Taylor, Morrison and Morrison (1999) channel the Balanced Scorecard tool to the tourism environment to evaluate IS in sixteen Scottish hotels. Their framework takes account of several critical success factors anchored in four dimensions, namely marketing, technical, customer critical, and internal critical, with each IS receiving a total score that represents its overall performance. The approach is then adapted by several academic studies across different industries and

continents (Law, Qi and Buhalis, 2010). For instance, Feng, Morrison and Ismail (2003) look at the organisation of destination marketing IS in USA and China, while Choi and Morrison (2005) assess brick-and-mortar travel wholesaler IS in the USA. Both studies highlight the importance of the quality of information as one of the major determinants of success for online systems in tourism. Douglas and Mills (2004), and Kline, Morrison and John (2004) also make use of tailored Balanced Scorecard frameworks in their research. Unfortunately, these studies give little room for correct interpretation as they adopt automated instruments to measure technical characteristics, and thus their findings lack the quality and arbitrariness that comes with human input (Law *et al.*, 2010).

Another method of evaluating an IS is to employ frameworks that are based on consumers' perceptions. Jeong and Lambert (2001) empirically test a model that evaluates the quality of information of hospitality IS as derived from consumer experiences. Their work contains four antecedents of Information Quality, more specifically Perceived Usefulness, Perceived Ease of Use, perceived accessibility, and attitude. In an effort to assess the IS of North American ski resorts, Perdue (2001) produces a conceptual framework that encompasses overall IS quality, information content, as well as the aesthetic appeal of the system. In a different study in China, Lu, Lu and Zhang (2002) assess information content, efficiency, and ease of use of tourism IS and find all three aspects, and particularly information content, to be closely related to the success of a system. Using a benchmarking approach, Shchiglik and Barnes (2004) develop a theoretical model to assess airline IS from the point

of view of the consumer, and their results show that quality of information influences repeat visits and intention to rebook. Also adopting a benchmarking approach to assess hotel IS, Zafiropoulos and Vrana (2006) create a model that uses hierarchical cluster analyses to categorise particular system characteristics. Once again, information accuracy and content are at the forefront as the most significant attributes of IS success. Extending the literature on frameworks that are based on consumers' perspectives, Essawy (2006) evaluates IS in UK hotels using a protocol analysis method, by interviewing three groups of four people that focus on IS usability and further IS development and investment. In a parallel study, Stockdale and Borovicka (2006, 2007) devise a user-friendly hospitality specific IS evaluation instrument by carrying out a pilot study using restaurant IS. Once more, models derived from consumer perceptions may be viewed as being somewhat narrow in single-handedly encompassing the whole IS evaluation process. Their limitation stems from the fact that they only cover what customers or guests observe or believe about the system, such as information and service attributes, without taking into consideration system characteristics, which could have been incorporated if users' (employees) perceptions were also measured, or an integrated approach was used.

A trend that has emerged mainly during the last decade is the use of automated methods and numerical computations, or a combination of the two to evaluate IS success. For example, in an effort to assess hotel and regional tourism portals Wöber (2013) uses content mining and IS-use related mining techniques. He concludes that the major indicators of IS success for

destination websites include resource databases, search and protocol processing engines, together with management report engines. Shi (2006) uses content analysis by automated methods to measure the ease of access to Australian visitor information centres' websites consulting an IBM online tool. Chan and Law (2006) alongside Qi, Law and Buhalis (2008) take on board several diverse automated evaluation tools to assess Hong Kong hotel IS with respect to their quality. Likewise, Bauernfeind and Mitsche (2008) apply a data envelopment analysis to appraise the efficiency of tourism organisations' IS. Tourism content, interactivity and linguistic offerings are all identified as positively affecting IS efficiency. Additionally, Bevanda, Grzinic and Cervar (2008) employ data mining techniques in order to assess travel agents' IS, based on consumers' travel expectations and needs. Their research examines the visual appearance of the system, its ease of use, navigation, accessibility, interactivity, and personalisation. Findings from that study suggest that Information Quality components like interactivity and content personalisation are closely related to IS design quality factors and have a positive impact on overall system performance, as perceived by consumers (Cho and Park, 2001; Bevanda *et al.*, 2008).

All the aforementioned studies have used automated methods to evaluate an IS. A numerical computation method on the other hand, uses mathematical logic to calculate the levels of performance of an IS, which are then represented numerically, based on a number of criteria (Law *et al.*, 2010). For instance, Chung and Law (2003) develop a five-factor mechanism to facilitate the evaluation of IS performance in Hong Kong hotels. In their research, user

feedback is obtained, transformed into responses, which are subsequently classified into themes (factors); the magnitudes of each of these themes are then combined into a mathematical formula to compute the overall performance of the system. The results of the study show that IS success is strongly related to basic and secondary information, online promotion, technology, and services. In a similar way, Huang and Law (2003) apply arithmetic principles to evaluate IS in Chinese hotels by integrating the magnitudes of system characteristics and IS performance scores into a single formula. Amongst other factors, their study identifies convenience, communication, search engines and management links as important elements of overall IS performance. Appraising the performance of the IS function in Hong Kong hotels, Au Yeung and Law (2006) use a heuristic algorithm for the optimisation of statistical functions that encompass the perceived significance of various system features. Their findings reveal major differences between the IS of independent and chain hotels, and positive relationships between layout, information architecture, user interface, navigation and IS usability. Law (2007) produces a methodology that refers to diverse fuzzy mathematical models used in the assessment of hospitality IS. Meanwhile, Lu, Deng and Wang (2007) bring together content analyses and fuzzy synthetic evaluations to measure IS performance in Chinese travel networks. They deduce that content and design are two key attributes of a system that can affect user perceptions and satisfaction. System evaluation using automated methods or mathematical formulae tends to be generally accurate and methodical, but it has been criticised as lacking the human factor and the contribution and spontaneity it brings (Chiou, Lin and Perng, 2010). A multi-item instrument

however, using both automated methods and human opinions or responses would have perhaps been a more appropriate and complete measurement, having the capacity to accommodate a large section of IS characteristics. Moreover, the use of multi-item instruments allows for better measurement, having the propensity to increase reliability and decrease measurement error (Palmer, 2002).

Furthermore, there have been recent efforts to combine the two abovementioned approaches (automated methods and numerical computation), as well as amalgamations of other methods. For example, some studies combine user judgement and automated methods (Law *et al.*, 2010). Gupta, Jones and Coleman (2004) assess the IS operations of small Welsh hotels and hostels based on the hypothesis that suppliers use online software to test download speeds. Accessibility, information, design, and immediacy are all found to have strong relationships with system functionality and success. This approach is also applied by Scharl, Wöber, and Bauer (2003) in their analysis of European hotel websites. In a study looking at the marketing effectiveness of hotel IS, Han and Mills (2006) combine counting methods and numerical computations into a single statistical mechanism. Choi, Lehto and Morrison (2007) draw on data mining techniques and counting percentages to evaluate the performance of IS, combining their assessment with expert participation and feedback. Their findings indicate that narrative and visual information, together with design factors are the most influential sub-categories in the hotel IS performance matrix.

In more recent research relevant to the Tourism industry, Hanai and Oguchi (2008) assess the performance of online lodging systems in China using correspondence analysis. The outcome of the research suggests that there is evidence of a positive relationship linking Information Quality and the effectiveness of the system. Schmidt, Cantallops and Santos (2008) use content analysis and exploratory factor analysis to measure performance of IS in Spain and Brazil. Their study shows that IS characteristics such as navigability, privacy, security, and service promptness are all positively linked to system performance. In a study of US hotel and restaurant IS, Xiong, Cobanoglu, Cummings and DeMicco (2009) measure content and accessibility of the system by a combination of content analyses and frequency counting methods. Their findings imply that the overall accessibility of online IS operating in the US hospitality industry is inadequate. Hu (2009) measures hotel IS electronic Service Quality using a multiple-criteria decision-making model. His study reveals positive relationships between system availability, responsiveness, customisation, personalisation, trust and IS quality aspects. Musante, Bojani and Zhang (2009) use items from twenty-seven IS to create an instrument to evaluate the effectiveness of hotel IS. They conclude that the utilisation of hotel IS attributes is crucial in ascertaining the success or failure of the system. Kim, Farrish and Schrier (2013) pinpoint to security and functionality as the main factors that impact intention to use a system and, therefore, IS success. While studying hotel IS, Diaz and Kutra (2013) suggest that a system's success depends on several factors including informativeness, usability, credibility, involvement, and reciprocity. Kokkinou and Crange (2013)

recommend that hotels have to be cautious about and constantly monitor the design and implementation of new IS.

Two other trends that cannot be overlooked when discussing new developments in IS are associated with the emergence of mobile technologies and the influence of social media. Law, Buhalis and Cobanoglu (2014) declare that the adoption of mobile technologies like tablets, smartphones and other handheld devices is crucial when it comes to the successful use of systems. They maintain that the wireless connectivity of these technologies enables them to provide users with a constant source of information that can be accessed everywhere and at any time. Wang and Wang (2010) highlight system quality and information quality as key dimensions of adoption of mobile platforms within a hotel environment. Wang, Park and Fesenmaier (2012) also emphasise the importance of successful mobile devices adoption due to their capacity to meet users' needs for instant information and rapid problem-solving. As far as social media are concerned, Hays, Page and Buhalis (2012) advocate that they can be used as a valuable tool by hotels and other tourism organisations in their efforts to reach a global audience. IT users have been adopting social media applications for more than a decade and they expect the same degree of interactivity with the organisations they use for their transactions (Trainor, 2012). While analysing social networks as extensions of social media, Banyai and Havitz (2013) find that the former can be used in marketing strategy development in terms of determining the beliefs and expectations of tourists and other IS users. Lee, Xiong and Hu (2012) investigate the effects of technology adoption on events promotion and prove

that the effectiveness of marketing-related campaigns is closely related to the nature of comments/feedback on social media. Koo, Wati and Jung (2011) study how social communication technologies affect employees in terms of their task characteristics and their performance. Their findings reveal that both task characteristics and employee performance are positively related to social media usage. Moreover, Parveen, Jaafar and Ainin (2015) show that social media can enhance organisational performance by improving customer relations, cost reduction and information accessibility.

After reviewing a large number of IS evaluation frameworks established within the last decade, Chiou *et al.* (2010) isolate three general issues that need to be addressed. First, an evaluation framework must be process-oriented in order to recognise critical activities in each transactional phase. Second, a hybrid approach that takes into consideration the role of IS as a support factor in marketing, instead of a combined approach, indicates that IS factors should be embedded into marketing factors as facilitators of e-commerce. By doing so, the confusion in the classification of criteria can be eliminated (Chiou, Lin and Perng, 2011). Third, existing studies have proposed various frameworks with extensive factors and criteria in evaluating IS. Alas, none of these frameworks addresses the issue of the relationship between IS strategy and evaluation criteria. An agenda that takes strategy into consideration ensures that IS presence is consistent with its predefined goals and objectives (Chiou *et al.*, 2011; Navimipour and Zareie, 2015).

2.3. Models of IS Evaluation

This research now moves towards consulting the literature again in order to present the most prominent models of IS evaluation. This type of models has been developed from IS studies and are presented separately from the other IS approaches as they are more influential and methodical. Additionally, they more often than not incorporate multiple IS evaluation dimensions, which increases their extensiveness and applicability. Therefore, the models of IS evaluation are considered in greater detail and in terms of whether they follow User Satisfaction, System Acceptance, or Integrated paradigms.

2.3.1. User Satisfaction Approaches/Models

Previous models of IS success have exploited system use, user involvement, and user acceptance as dependent variables for the evaluation of an IS. Another dimension that has been used in this fashion is User Satisfaction, a theme widely recognised in both the traditional MIS literature and IS studies. Although during the 1980s various standardised theoretical models have been developed and tested to capture the meaning and measurement of User Satisfaction, there are three instruments that have been applied more than any other in this domain: the Computer User Satisfaction Instrument (CUS) (Bailey and Pearson, 1983), the User Information Satisfaction Instrument (Ives, Olson and Baroudi, 1983), and the End User Computer Satisfaction Instrument (Doll and Torkzadeh, 1988). The 1990s saw the emergence of the renowned DeLone and McLean IS Success Model (1992), which propelled the surfacing

of a vast amount of theoretical User Satisfaction models, a trend that continued in great numbers during the beginning of the new millennium.

Computer User Satisfaction Instrument (CUS) (Bailey and Pearson, 1983)

The Computer User Satisfaction Instrument (Bailey and Pearson, 1983) provides a platform for quantifying computer User Satisfaction. Reviewing the relevant literature of their time and using critical incident interview techniques, Bailey and Pearson (1983) identify 39 features that affect computer satisfaction. The authors adapt semantic differential scaling methods in order to generate a questionnaire for quantifying and measuring the different constructs of User Satisfaction. Finally, the instrument is put through an array of statistical tests to demonstrate its validity and reliability.

Bailey and Pearson (1983) detect that academic research on satisfaction around the 1970s and early 1980s had failed to produce a standard measure of User Satisfaction, and exogenous variables in these studies were poorly managed. For example, Swanson (1974) uses appreciation as a proxy measure for satisfaction and conducts an evaluation that contains 16 items including timeliness and adequacy. Debons, Ramage and Orien (1978) establish ten items that influence satisfaction, including accuracy, reliability, timeliness, assistance, adequacy, accommodation, communication, access, cost, and environment. Neumann and Segev (1980) invite users of reports to

respond to questions pertaining to their satisfaction with a specific report, via four factors: accuracy, content, frequency, and recency. Bailey and Pearson (1983) observe that this type of studies overlook important satisfaction ingredients and fail to enquire as to why a factor was or was not satisfactory. Consequently, there is a clear need for an approach to satisfaction "*which contains a complete and valid set of factors and an instrument which measures not only the user's reaction to each factor but why the respondent reacted as he did*" (Bailey and Pearson, 1983:531). Accordingly, in a given situation, User Satisfaction can be defined as "*the sum of one's feelings and attitudes toward a variety of factors affecting the situation*" (Bailey and Pearson, 1983:531).

Bailey and Pearson (1983) comment that taken as a whole, the CUS offers a relatively complete definition of Computer User Satisfaction, which would be confined if the list is to be arbitrarily shortened. Nonetheless, for particular applications, it is reasonable to remove irrelevant items and redefine some factors in situation-specific terms (Bailey and Pearson, 1983). The main contribution of Bailey and Pearson's research is that it offers an all-encompassing definition of User Satisfaction which is then converted into a valid measurement instrument. The authors call for further research in the form of further validation efforts, such as factor analyses, to reduce the number of items on the scale. In addition, they recommend that closely controlled studies are necessary to test the relationship between satisfaction and organisation performance. Finally, they identify the need to explore the use of the satisfaction measure as a tool for improving systems design (Bailey and Pearson, 1983).

Bailey and Pearson's (1983) CUS has been successfully put into practice by other research studies, mainly due to its flexibility and completeness. Baroudi *et al.* (1986) adopt the instrument and look at causal relationships between user involvement, system usage and information satisfaction. They deduce that during the development stage of an IS, user involvement augments system usage and User Satisfaction equally (Xiao and Dasgupta, 2002). Moreover, the CUS has also found application in hospital environments by Dupuits and Hasman (1995), who use the instrument to determine satisfaction levels of several hospitals IS users, such as doctors and nurses. Dupuits and Hasman (1995) conclude that as long as the definition of User Satisfaction remains within the frame set by Bailey and Pearson (1983), the CUS can prove to be a valuable mechanism for assessing satisfaction in various environments. More recently, Hsu, Chen and Weng (2009) examine critical factors that influence User Satisfaction and the behavioural intentions of users to adopt the system and find that they represent primary indicators for enterprise resource planning success. The findings suggest that there are positive relationships between user attitudes to adopt a system, behavioural intentions to use the system, and User Satisfaction. Lee, Moon, Kim and Yi (2015) indicate that loyalty, satisfaction and trust are all influenced by the system's perceived usability.

A representation of Bailey and Pearson's (1983) CUS is presented below, in Figure 2.2. Please note that EDP is an abbreviation for Electronic Data Processing.

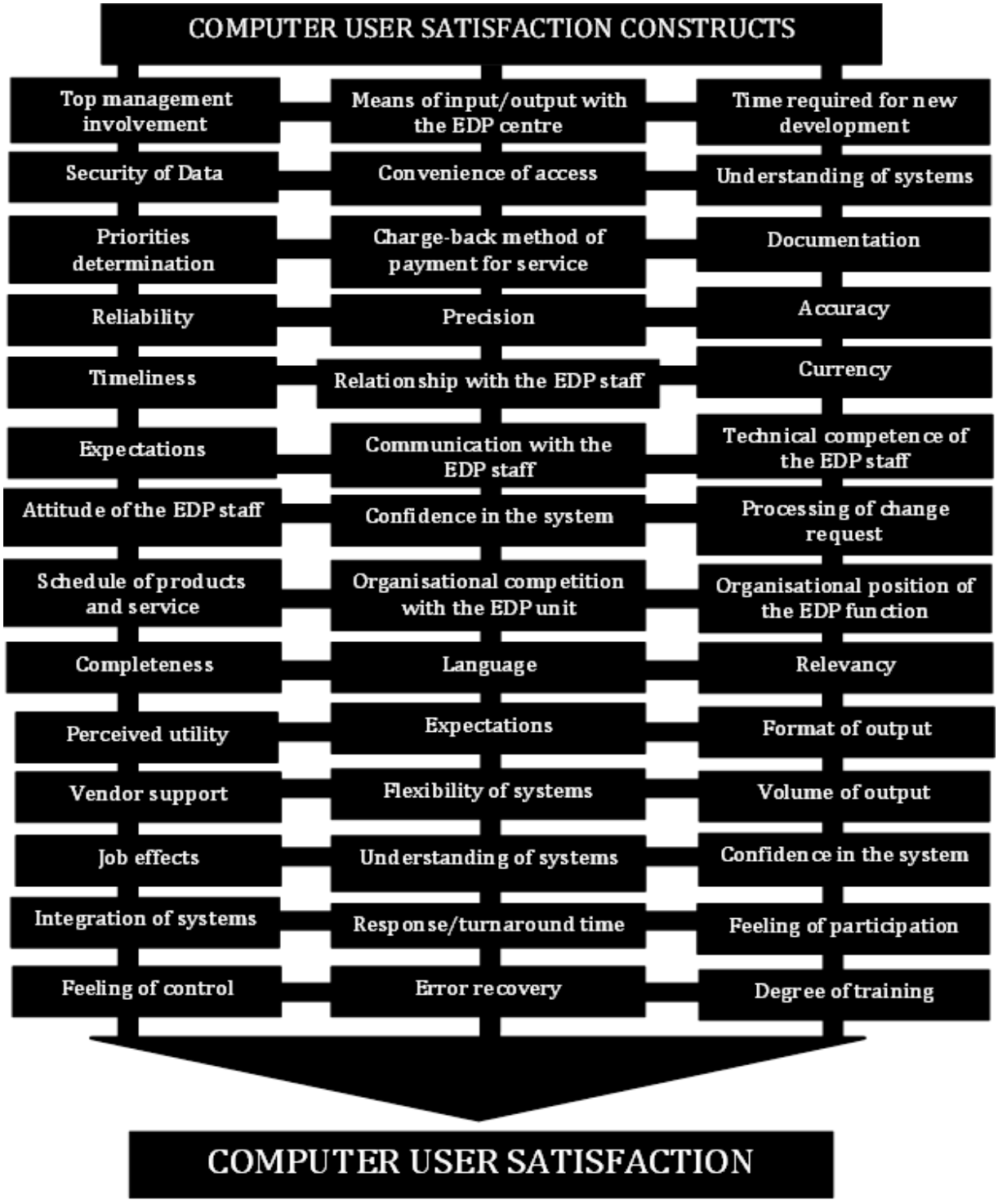

Figure 2.2: A representation of the Computer User Satisfaction Instrument (Bailey and Pearson, 1983)

User Information Satisfaction Instrument (UIS) (Ives, Olson and Baroudi, 1983)

Doll and Torkzadeh (1988) suggest that in an environment where use of the system is voluntary, system usage, alongside User Satisfaction, can also be a surrogate measure of system success. Ives *et al.* (1983) however, observe that IS usage may sometimes be not voluntary, such as in cases where usage is made compulsory by management (for example hotel employees). Involuntary situations may possibly require the use of perceptual measures of satisfaction, as they are more appropriate for this type of cases (Doll and Torkzadeh, 1988). Moreover, Baroudi *et al.* (1986) indicate that User Satisfaction leads to usage rather than the opposite relationship being true. Hence, Ives *et al.* (1983) point to User Satisfaction as the most suitable measure of IS success.

Despite its all-inclusive nature, the CUS instrument by Bailey and Pearson (1983) and the procedure of using it entails a significant amount of data to be entered and processed, as it consists of 39 components, each component containing several questions. Ives *et al.* (1983) state that errors or inconsistencies in measurement can be reflected in the instrument, when items are ambiguously phrased and the extensive length of the questionnaire taxes the respondents' concentration. To respond to this challenge, Ives *et al.* (1983) develop the User Information Satisfaction Instrument (UIS). The study by Ives *et al.* (1983) uses interviews with 32 production managers and

performs a factor analysis of the Bailey and Pearson (1983) instrument, ultimately providing a shorter semantic version of this instrument.

The fact that the UIS instrument asks the respondents to assess 13 components only is testament to its straightforwardness and usability, even in contemporary studies. The 13 factors comprise of two seven-point scales each, thus requiring each respondent to provide 26 entries in total. Ives *et al.* (1983) pinpoint knowledge and involvement, staff and service, information product, and vendor support, rather than satisfaction with a specific application, as the building blocks of User Satisfaction.

After evaluating the validity and reliability of the UIS instrument, Treacy (1985) deduces that albeit an important contribution, the UIS seems to be problematic, primarily in three areas. The latter include the view that the variables retrieved through the exploratory factor analysis have been categorised in imprecise and ambiguous terms. Additionally, a large proportion of the questions used have been poor operational transformations of their theoretical parameters and thus the instrument has been deemed as failing to accomplish discriminant validity (Treacy, 1985). Galletta and Lederer (1986) identify test-retest reliability problems with the Ives *et al.* (1983) model and warn that the interpretation of results has to be done very cautiously, mainly because of the heterogeneity of the items of the UIS. Seddon and Kiew (1996:93) argue that the factors that emerge from the UIS instrument measure the independent variables that Ives *et al.* (1983) "*thought were likely to cause*

Satisfaction, not User Satisfaction itself". Xiao and Dasgupta (2002) explain that the UIS places emphasis on computing tasks that are performed by the data-processing unit of an organisation. They add that the measuring scale in this case is semantic differential as opposed to a more fitting Likert scale and conclude that for these reasons the UIS is not as widely used as the EUCS (Xiao and Dasgupta, 2002).

Overall, however, Galletta and Lederer (1986) remark that at the time of its conception the UIS was probably the finest available User Information Satisfaction measure. These views are shared with other researchers at that point in time that use the instrument in order to test its validity and reliability or to adjust it to the subject of their study. Examples include Barti and Huff (1985), Mahmood and Becker (1985), as well as Raymond (1985). Doll and Torkzadeh (1988) acknowledge the applicability of the UIS, yet they question its pertinence to end-user computing research. They argue that the UIS is designed for the more traditional data-processing environment as it measures general User Satisfaction with data-processing personnel and services, information product, and user involvement/knowledge. They maintain that the UIS has not been validated for use in evaluating specific end-user applications and that it overlooks vital ease of use characteristics of the user-system interface (Doll and Torkzadeh, 1988). As a result, Doll and Torkzadeh (1988) devise the EUCS (End User Computer Satisfaction), which excludes two items from the Ives *et al.* (1983) scale, the staff/service dimension, and the user knowledge/involvement construct. In an empirical study, Seddon and Yip (1992) create a four-item instrument with the intention to measure User

Satisfaction directly. Their findings reveal that for users of computer-based accounting systems, dimensions such as Information Quality, usefulness, and user knowledge explain over 70% of the variance in their framework (Seddon and Yip, 1992). A decade later, Seddon and Yip (2002) perform an empirical appraisal of three major User Satisfaction models including the UIS, the EUCS, and a composite mechanism that contains questions which reflect aspects of general ledger systems in particular. The findings imply that when compared to the UIS by Ives *et al.* (1983), Doll and Torkzadeh's (1988) EUCS is the more constructive and functional measure of User Satisfaction.

Pather, Erwin and Remenyi (2003) point out that the emergence of e-commerce is responsible for traditional IS users shifting their locations out of the physical domain of the organisation. In view of that, they dispute the suitability of recognised User Satisfaction models used by traditional brick-and-mortar companies and propose an e-customer Satisfaction model pertinent to the South African online environment. Markovic and Wood (2004) address the subject of User Satisfaction by conducting a computer lab-based research study in a university environment. Data is collected from users and the results suggest that from all variables, satisfaction with hours and hardware/software performance has the largest bearing on User Satisfaction, followed closely by quality of supporting staff. Huang, Yang, Jin and Chiu (2004) insist that while traditional User Information Satisfaction attributes have been explored at length, new features such as convenience of purchasing, product prices in the system, and product deliveries need to be also integrated if an all-encompassing framework is to be conceived. They propose a

theoretical model for the accurate and reliable measurement of business-to-employee success and deduce that accuracy, convenience, interface, delivery, price, and security affect employee evaluations of satisfaction. Since that time, the vast majority of studies measuring User Satisfaction employ the EUCS instrument rather than the UIS, which is seen as outdated for the demands of the e-commerce age (Lee, Choi and Jo, 2009). This viewpoint is supported by the work of Yengin, Karahoca and Karahoca (2011) who in an attempt to adjust the IS Success Model (DeLone and McLean, 1992) to measure e-learning levels amongst online instructors, apply User Satisfaction metrics drawn from the EUCS rather than the UIS. The User Information Satisfaction (UIS) Instrument is shown below, in Figure 2.3.

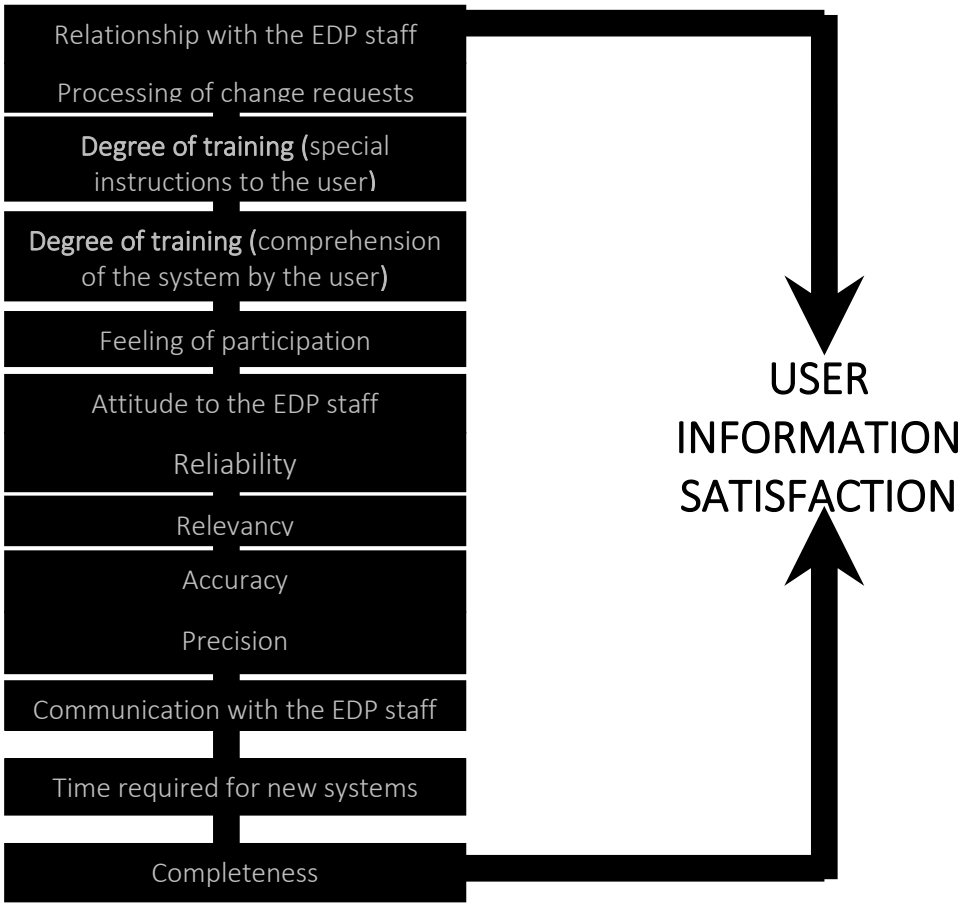

Figure 2.3: The User Information Satisfaction Instrument (Ives et al., 1983)

End User Computer Satisfaction Instrument (EUCS) (Doll and Torkzadeh, 1988)

The End User Computer Satisfaction (EUCS) Instrument (Doll and Torkzadeh, 1988) is one of the most recognised and universally applied mechanisms for measuring User Satisfaction. Since its inception it has been verified by numerous confirmatory analyses and validity tests. In a study that leads to the eventual formation of EUCS, Davis and Olson (1985) explain the changing role of the user by differentiating between primary and secondary user roles. The primary user makes decisions derived from the output of the system, while the secondary user interacts with the system's application software and is accountable for entering information or preparing productivity reports (Doll and Torkzadeh, 1988). Doll and Torkzadeh (1988) maintain that in end-user computing, the two roles are combined, with the person utilising the system output also being responsible for developing it. As a consequence, EUCS can be defined as "*the affective attitude towards a specific computer application by someone who interacts with the application directly…End User Satisfaction can be evaluated in terms of both the primary and secondary user roles*" (Doll and Torkzadeh, 1988:261).

Employing a survey with a sample of 618 end users, Doll and Torkzadeh's study draws a distinction between traditional and end user computing environments and records the emergence of a theoretical model that combines ease of use with information product constructs and assesses direct User

Satisfaction with a specific computer application. Doll and Torkzadeh (1988) develop a 12-item End User Computer Satisfaction Instrument by detecting and comparing traditional data processing environments and computer user environments. The resulting EUCS contains five dimensions, namely content, format, accuracy, ease of use, and timeliness. The EUCS is regarded as being a 'complete' framework because in their quest for identifying a comprehensive list of constructs, the authors review a broad range of previous academic material on User Satisfaction (Xiao and Dasgupta, 2002). Amongst other items, Doll and Torkzadeh (1988) introduce the construct of Ease of Use, which had not been evident in the literature until then.

Not long after Doll and Torkzadeh's (1988) initial exploratory study, two confirmatory analyses with diverse samples come to light in 1994 and 1997 respectively to confirm the validity of the original instrument (Doll, Xia and Torkzadeh, 1994; Doll and Xia, 1997). A test-retest of reliability is also conducted, indicating that the instrument is reliable over time (Torkzadeh and Doll, 1991). Moreover, the EUCS is universally accepted and adopted in different research spheres. Chin and McClure (1995) update the EUCS in order to assess clinical IS. McHaney and Cronan (2000) adopt it in order to assess computer simulation success. McHaney, Hightower and White (1999) use EUCS in decision support systems research. Chen, Soliman, Mao and Frolick (2000) apply the instrument to measure User Satisfaction within data warehouses. In more recent publications, Schaupp (2010) examines four variables that can potentially impact Website satisfaction and behavioural intentions to use, namely Information Quality, System Quality, Perceived

Usefulness, and Social Influence. After using structural equation modelling techniques to test the proposed model of Website success, results signify that the determinants of Website satisfaction and intention to reuse are both context-dependent and goal-specific (Schaupp, 2010). Furthermore, Yengin *et al.* (2011) identify factors related to instructors' satisfaction in e-learning systems in order to propose a basic model called "E-Learning Success Model for Instructors' Satisfactions" which is connected to social, intellectual, and technical interactions of instructors in the whole e-learning system. Additionally, Aggelidis and Chatzoglou (2012) test hospital IS in order to measure EUCS and their findings support it as a robust instrument that is a valid measure of computing satisfaction and a surrogate for system success.

Generally, the EUCS appears to be a sufficiently valid and reliable instrument that can be used across a variety of applications. It is short, easy to use, and suitable for both practical and academic purposes. Its component factors are distinct, enabling researchers to develop and test more precise research questions (Doll and Torkzadeh, 1988). Overall, the EUCS instrument can be employed to evaluate end user applications. In addition to an overall assessment, it can be utilised to compare End User Satisfaction with individual system components (content, format, accuracy, ease of use, or timeliness). Although there may be reasons to add further questions to evaluate unique features of certain end user applications, "*this basic set of 12 items are general in nature, and experience indicates that it can be used for all types of application…This provides a common framework for comparative analysis*"

(Doll and Torkzadeh, 1988:270). The EUCS Instrument can be viewed below, in Figure 2.4.

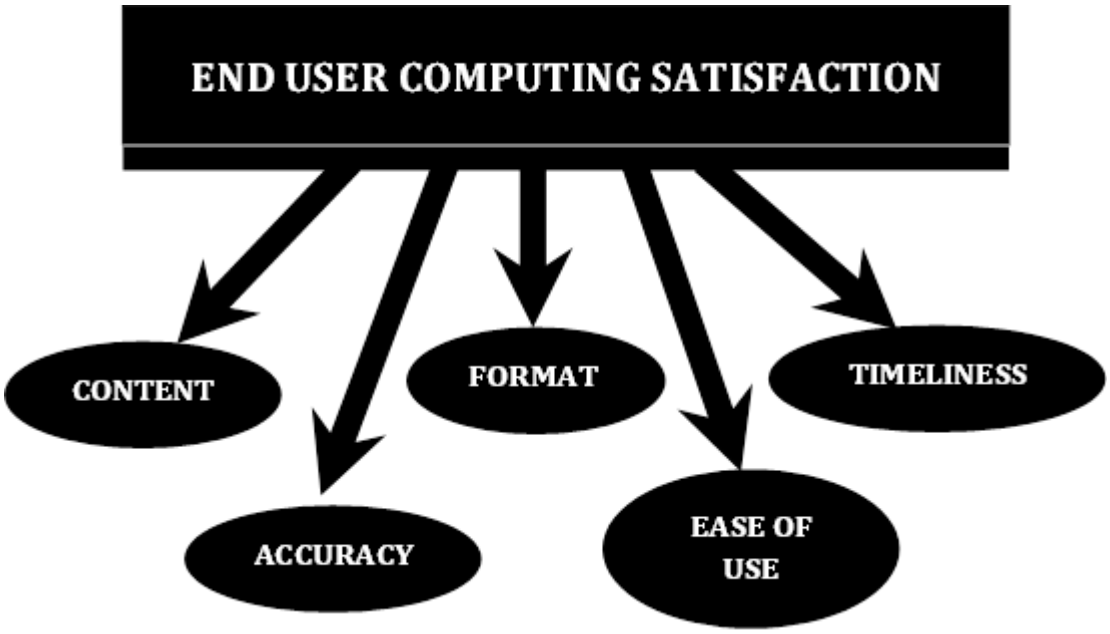

Figure 2.4: The End User Computer Satisfaction Instrument (Doll and Torkzadeh, 1988)

IS Success Model (DeLone and McLean, 1992, 2003, 2004)

Due to the fact that IS success is a convoluted concept which can be measured at a variety of levels, the attempts to measure IS success throughout the 1990s have been somewhat ambiguous and not accurately defined (Wu and Wang, 2006). Nevertheless, in 1992 DeLone and McLean make a major step forward. They publish a paper in which they draw some awareness and structure to the 'dependent variable'-IS success-in IS

research. After consulting a vast number of articles from the IS success literature, they propose a taxonomy and an interactive theoretical framework as means for conceptualising and functionalising IS success. The resulting DeLone and McLean IS Success Model (DeLone and McLean, 1992), as presented below in Figure 2.5, touches on theoretical IS studies conducted principally in the 1980s. Examples include work by Ahituv (1980), Martin (1982), Bailey and Pearson (1983), Raymond (1985), Baroudi *et al.* (1986), DeLone (1988), and Rivard and Kaiser (1989).

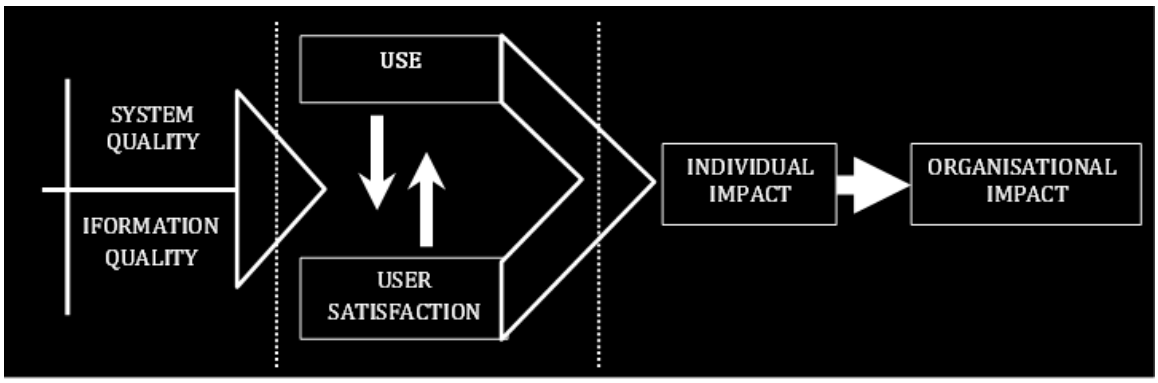

Figure 2.5: The IS Success Model (DeLone and McLean, 1992:87)

The model can be interpreted as follows: "*System Quality and Information Quality individually and jointly affect both Use and User Satisfaction. In addition, the amount of Use can influence the degree of User Satisfaction-positively or negatively-as well as the reverse being true. Use and User Satisfaction are direct antecedents of Individual Impact; and lastly this impact on individual performance should eventually have some Organisational Impact*" (DeLone and McLean, 1992:83). The authors point out that these six dimensions of success are interrelated rather than independent.

DeLone and McLean's model (1992) originates from the Mathematical Theory of Communication Shannon and Weaver, 1949) and the Communication Systems Approach (Mason, 1978). This evolution from communications studies to a detailed IS success model is represented below, in Figure 2.6.

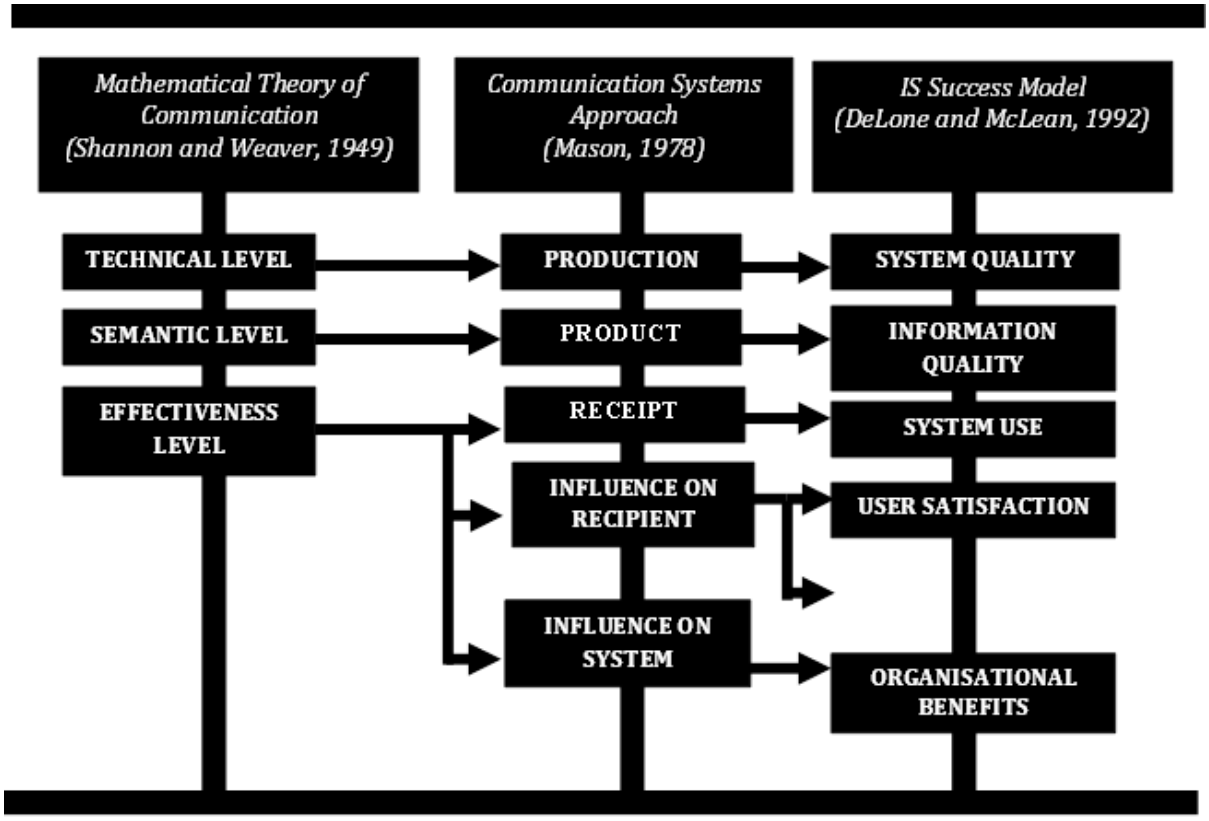

Figure 2.6: The Origins of the IS Success Model (DeLone and McLean, 1992)

The DeLone and McLean Model makes a number of vital contributions to the current understanding of IS success. First, it offers a springboard for categorising the accumulation of IS success measures used in the corresponding literature. Second, it puts forward a structure of temporal and causal interdependencies between the different dimensions of IS success (McGill, Hobbs and Klobas, 2003; Seddon, 1997). Third, it consolidates

previous research. Fourth, it breaks new ground in attempting to identify different stakeholder groups in the process. Fifth, it has been regarded as a pedestal for further empirical and theoretical research. Sixth, it has met universal acceptance within the IS community (Ballantine, Bonner, Levy, Martin, Munro and Powell, 1996; Seddon, 1997). Moreover, the IS success Model (DeLone and McLean, 1992) presents one of the most dominant paradigms in predicting and explaining System Use, User Satisfaction, and IS success (Halawi, McCarthy and Aronson, 2007; Guimaraes, Armstrong and Jones, 2009). Since 1992, numerous research papers have carried out empirical analyses of the multidimensional relationships among the measures of IS success (for example: Goodhue and Thompson, 1995; Ballantine *et al*., 1996; Etezadi-Amoli and Farhoomand, 1996; Jurison, 1996; Saarinen, 1996; Seddon and Kiew, 1996; Guimaraes and Igbaria, 1997; Igbaria and Tan, 1997; Li, 1997; Rai *et al.*, 2002; Wang, 2008; Wang and Liao, 2008; Chen, 2010; Quan, 2010; Sharkey *et al.*, 2010; Kefi and Kopel, 2011; Gao and Bai, 2014; Rana, Dwivedi, Williams and Weerakkody, 2015; Rizal, Yussof, Amin and Chen-Jung, 2018).

In 2003, DeLone and McLean propose an updated version of their IS success model and evaluate its effectiveness in light of the remarkable pace of change in IS practice, and in particular the appearance and subsequent immense growth of online applications. Based on earlier studies, the original IS success model is reorganised by adding Service Quality as a new dimension and by categorising all the 'impact' measures into a single impact dimension called Net Benefits (DeLone and McLean, 2003). Therefore, the updated model

(Figure 2.7, below) consists of six new interrelated dimensions: Information Quality, System Quality, Service Quality, Use/Intention to Use, User Satisfaction, and Net Benefits. It has to be noted that DeLone and McLean also reviewed their model in 2004 to incorporate e-commerce characteristics.

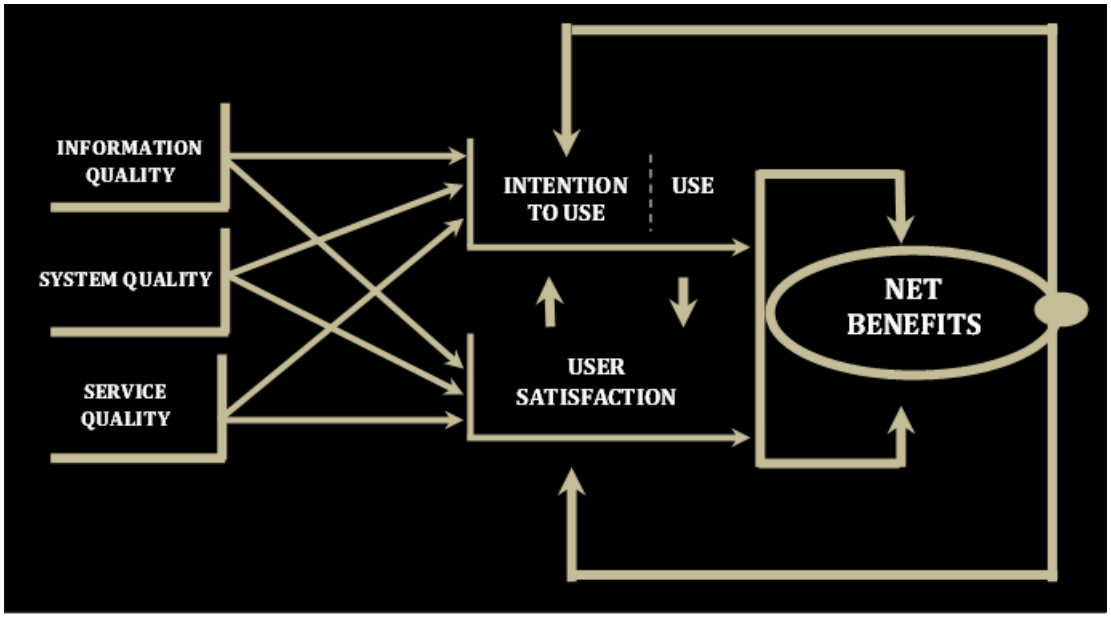

Figure 2.7: Updated Information Systems Success Model (DeLone and McLean, 2003:24)

Information Quality is usually represented by metrics such as accuracy, relevance, understandability, currency, completeness, dynamic content and content personalisation. Apart from DeLone and McLean, these measures have also been researched by Zwass (1996), Parsons *et al.* (1998), Barua *et al.* (2000), Tierney (2000), D'Ambra and Rice (2001), Molla and Licker (2001), Smith (2001), Aladwani and Palvia (2002), Barnes and Vigden (2002), Palmer (2002), Limayem *et al.* (2003), Mich *et al.* (2003), Albert *et al.* (2004),

Stockdale and Borovicka (2006), Wu and Wang (2006), Wang (2008), Freeze, Alshare, Lane and Wen (2010), Quan (2010).

System Quality antecedents include usability, response time, reliability, flexibility, attractiveness, and security, as identified in studies by Peppers and Rogers (1997), Spiller and Lohse (1998), Tiwana (1998), Liu and Arnett (2000), Ünal (2000), Molla and Licker (2001), Aladwani and Palvia (2002), Limayem *et al.* (2003), Stockdale and Borovicka (2006, 2007), Wu and Wang (2006), Wang (2008), Freeze *et al.* (2010), Quan (2010).

Service Quality covers elements such as responsiveness, sense of empathy, follow-up services and effectiveness of online support capabilities, with research emanating from Parasuraman, Zeithaml and Berry (1985; 1988; 1993), Pitt *et al.* (1995), Werthner and Klein (1999), Liu and Arnett (2000), Young and Benamati (2000), Smith (2001), Wang (2008), Quan (2010).

Intention to Use/System Use takes into account IS characteristics that are regarded as central to success, such as receiving orders/reservations, accepting payment, responding to customer service requests (Young and Benamati, 2000) and number of system visits as well as length of stay (D'Ambra and Rice, 2001). It has to be noted that the latter two of these measures are only applicable in an environment where the use of an IS is voluntary and cannot be utilised in a setting where IS Use is compulsory, as is

the case with hotel employees. DeLone and McLean (2003) insist that Use and Intention to Use are alternatives in the IS success model, and that Intention to Use may be a more reasonable variable in the context of mandatory usage. The case of a voluntary versus a mandatory IS Use environment has been a widely discussed topic in IS literature. This issue is however analysed further in the subsequent chapter of this thesis.

The next dimension of the DeLone and McLean model, User Satisfaction, denotes the entire user experience, including information retrieval, operation, and overall performance of an IS (DeLone and McLean, 2003). Additional studies in this field come from Cox and Dale (2001), Singh (2002), and Alomaim, Tunca and Zairi (2003). DeLone and McLean's model puts forward the theory that Use/Intention to Use affects User Satisfaction and both, interdependently, provide Net Benefits. The latter ascribe the ultimate impact of an IS to a variety of stakeholders, such as users, customers, suppliers, organisations, markets, industries, and society as a whole. Net Benefits have also been described as the sum of all past and expected future benefits, less all past and expected future costs, ascribed to the use of an IT application (Thomas, 2006). Factors closely linked to Net Benefits include enhanced customer knowledge (Loftus, 1997) and improved customer experience (Hoffman and Novak, 1996). It has to be noted that researchers have recommended a number of IS impact and benefits measures, such as individual impacts (DeLone and McLean, 1992; Torkzadeh and Doll, 1999), work group impacts (Myers, Kappelman and Prybutok, 1997), organisational impacts (DeLone and McLean, 1992; Mahmood and Mann, 1993), inter-

organisational impacts (Clemons and Row, 1993), consumer impacts (Dodds, Monroe and Grewal, 1991; Brynjolfsson, 1996), and societal impacts (Seddon, 1997). Even though the above studies choose to differentiate and separate impact measurements, DeLone and McLean (2003) move in the opposite direction and bracket together all of the impacts/benefits constructs into a single Net benefits dimension, in an attempt to steer clear of complicating the model with more IS success (Wang *et al.*, 2008). DeLone and McLean (2003) favour the term 'Net Benefits' because the preceding term 'Impacts' may be comprehended as being positive or negative, thus leading to potential confusion as to whether the results are good or bad. Also, the inclusion of the word 'Net' in Net Benefits is significant as no outcome is entirely positive, without any negative consequences.

There have been many IS success studies and models that extend or modify DeLone and McLean's theory depending on the nature of the investigation. Some use the DeLone and McLean model untouched, in its original state, some substitute one or two components with their own, some add dimensions, and some transform the model altogether to suit the purpose of their research. A lot of those alterations are used by researchers in their efforts to empirically test the multidimensional relationships of the IS success model. For example, Seddon and Kiew (1996) conduct a survey of 104 users of a university financial control system and discover significant relationships between System Quality, User Satisfaction and Individual Impact, between Information Quality, User Satisfaction and Individual Impact and between User Satisfaction and Individual Impact. Rai *et al.* (2002) operate a goodness-of-fit test on the entire

DeLone and McLean model. Their findings originate from a survey of 274 respondents of a university student IS. Their analysis suggests that some goodness-to-fit indicators are significant, but others are not. However, all of the path coefficients amongst success dimensions of the DeLone and McLean model are discovered to be significant.

Likewise, McGill *et al.* (2003) empirically test an adaptation of DeLone and McLean's model in the user-developed application domain and the results suggest that the tested instrument is only partially supported by the data. Of the nine hypothesised relationships tested, four are found to be significant and the rest are not significant. The model offers strong support for the relationships between perceived System Quality and User Satisfaction, perceived Information Quality and User Satisfaction, User Satisfaction and Use/Intention to Use, and User Satisfaction and Individual Impact. The research by McGill *et al.* (2003) indicates that user perceptions of IS success have a central position in the user-developed application arena. On the other hand, there is no evidence of a relationship between user developers' perceptions of System Quality and independent experts' assessments. At the same time, measured as organisational performance in a business simulation, user ratings of Individual Impact are found to be not influencing Organisational Impact (McGill *et al.*, 2003). McGill *et al.* (2003) purport that further research is necessary to comprehend the relationship linking user perceptions of IS success and objective measures of success, and to provide a relevant comprehensive model appropriate to end-user development.

Moreover, Quan (2010) uses structural equation modelling to analyse data collected from banks' customers in China. The study by Quan (2010) adds e-Service (electronic service) Quality scales to the DeLone and McLean model to measure customer perceived e-Service Quality of online banking applications and its relationship with customer loyalty. Quan's findings indicate that the e-Service parameters-efficiency, system availability, fulfilment and privacy-are all suitable surrogates for measuring Service Quality. Furthermore, Information Quality, System Quality and e-Service all have a positive impact on perceived value and User Satisfaction and, as a result, on customer loyalty. A different paper uses an electronic company as example in order to enhance its supply chain management by applying concepts such as business intelligence tools (Wang, Fan and Chuang, 2011). The study involves intensive interviews with its respondents under the framework of DeLone and McLean's model, and uses Formal Concept Analysis, a mathematical approach used for conceptual data analysis and knowledge processing, to analyse the results. The findings validate the appropriateness of the Information System Success Model, as well as another variable, system improvement. Another paper adopting DeLone and McLean's classification comes from Tsai and Wu (2011) who apply DeLone and McLean's model to appraise the success of health related IS and to validate their proposed model. The authors conduct a survey of 1076 users of five teaching hospitals' IS, and the evaluation integrates the three web quality dimensions (Information Quality, System Quality, and Service Quality) with online trust. According to the statistical analysis, the proposed model fits very well with the samples. Findings also reveal that Information Quality, System Quality and Service Quality all have a significantly

positive impact on System Use and User Satisfaction. Additionally, this study also verifies that trust is a vital metric of IS outcomes. Trust, alongside the three Quality dimensions, equally affects System Use and User Satisfaction significantly and positively. Chen, Jubilado, Capistrano and Yen (2015) propose a model that update the IS Success Model by examining users' propensities to use e-governmental online services in the Philippines. Their study shows that trust is a significant element of IS success and that Information Quality is the most important of the quality dimensions. Rana *et al.* (2015) examine the success of e-government systems in India by applying an integrated version of DeLone and McLean's Model. They add constructs including Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Behavioural Intention. Their findings provide positive significant relationships between all of the constructs. Rizal *et al.* (2018) extend DeLone and McLean's Model to develop a theoretical framework of electronic word of mouth (eWOM) for the lodging industry in Malaysia. The outcome of their research indicates that Information Quality and Service Quality are precursors of eWOM intention and hence, IS success. System Quality, on the other hand, is not a driver of eWOM. Eom and Ashill (2018) create an e-learning Success Model, based on DeLone and McLean's work. Their research focus is on students attending US universities and their findings suggest that their model satisfactorily predicts the interdependency between the selected constructs.

In 2016, the creators of the prototype IS Success Model revisit their original ideas and adapt their theory in line with the recent evolution and growth in IT. Their research identifies the critical success factors that drive IS success and

sheds light on the complex nature of IS success measurements that have emerged during the last two decades (DeLone and McLean, 2016).

As mentioned earlier in this chapter, the vast majority of theories or models associated with the evaluation of IS in terms of their success are founded on two paradigms (Wixom and Todd, 2005). These paradigms suggest that IS success can be measured in terms of either System Use/User Satisfaction - as established by DeLone and McLean (1992) - or IS acceptance, as pioneered by Davis (1989). However, according to Wang (2008) the nomological structure of the updated DeLone and McLean model (2003) is fairly inconsistent with the IS acceptance and marketing literature. For instance, it is no secret that the existing IS success models have been the subject of extensive debate on the meaning and application of the concepts of 'IS Use' and 'Perceived Usefulness' (Seddon, 1997; Rai *et al.*, 2002). IS Use or System Use is a dimension of the DeLone and McLean (1992, 2003) model and approach, while Perceived Usefulness is part of the IS acceptance approach, introduced by Davis (1989). Consequently, continuous research is required in order to develop and test a reliable and all-inclusive model of IS success (Wang, 2008; Petter and McLean, 2009; DeLone and McLean, 2016).

User-perceived Web Quality Model (Aladwani and Palvia, 2002)

Aladwani and Palvia (2002) detect that a large proportion of the instruments which measure the dimensions of Information and System Quality have been developed in the context of outdated mainframe and computer-based technologies. They maintain that with the 'explosion' of the Internet phenomenon it is vital to produce innovative IS success evaluation models and scales that are directly intended for new web-based interfaces and applications. Until the beginning of the 21st century, research on the three Quality dimensions in online environments seems to pay little attention to construct identification and measurement development. Even though limited academic studies do exist, they more often than not merely cover the meaning of attributes of the Quality dimensions (Aladwani and Palvia, 2002).

Moreover, Aladwani and Palvia (2002) are accurate in recognising that up to that point, IS research, albeit useful, is fragmented and concentrates only on subsets of the Quality dimensions. For instance, Bell and Tang (1998) refer to eight factors, while Rose, Khoo and Straub (1999) list six factors that can be used as surrogate measures for Web Quality. A further study by Misic and Johnson (1999) is more wide-ranging, alas it fails to notice a number of critical factors such as online security, availability, clarity, and accuracy amongst other. Likewise, Wan (2000) separates all Quality characteristics into four categories: information, friendliness, responsiveness, and reliability, but falls short of providing a comprehensive mechanism for the measurement of

Quality attributes. This is also the case with Liu and Arnett's (2000) study, which lists eleven items, grouped under two Quality dimensions, more specifically Information Quality and System Quality. Regrettably, similar to previous studies, Liu and Arnett (2000) overlook a number of central Web Quality dimensions. Additionally, Aladwani and Palvia (2002) observe that researchers at the time (for example, Olsina, Godoy, Lafuente, and Rossi, 1999; Liu and Arnett, 2000) propose Web Quality constituents and scales that are relevant to Web designers rather than to Web users.

As a result, the authors develop a model that encapsulates key features of Website Quality from the user's perspective (Aladwani and Palvia, 2002), by conducting a two-phased investigation that involves designing questionnaires for three different sets of respondents. The 25-item instrument consists of four dimensions, namely specific content, content quality, appearance, and technical adequacy, which measure User-perceived Web Quality. The latter is defined as "*the users' evaluation of a website's features meeting users' needs and reflecting overall excellence of the website*" (Aladwani and Palvia, 2002:469). The authors initially identify 55 variables that can measure Website Quality from the user's perspective. This number is then reduced to 30, after two IS experts eliminate repetitive and technical/non-user-oriented items. Subsequently, the items are brought down to 25, following repeated factor analyses and eliminating items that loaded on more than one factor. To enhance the validity of the User-perceived Web Quality metric and its four subdivisions, Aladwani and Palvia (2002) additionally examine the relationship between the construct scale ratings and users' overall quality rating for a

popular web site. The findings of Aladwani and Palvia's (2002) research suggest that the four subdivisions of User-perceived Web Quality correlate significantly with each other and with the overall index of User-perceived Web Quality. The highest correlation recorded amongst the parameters comprising the four subdivisions is between technical adequacy and content quality. At the same time, the lowest correlation is that between technical adequacy and appearance of a website. Furthermore, the four subdivisions of Web Quality show significant relationships with users' overall quality rating for the system.

According to Aladwani and Palvia (2002), no multi-item scale was available to measure Web Quality from the users' perspective around the time of their model's inception. Thus, the contribution of their research is associated with the creation of such a scale (multi-item) that can further boost the ability of the management to realise the full potential of the Internet. The instrument and proposed scale can be beneficial to academics and practitioners involved in designing, implementing, and managing Information Systems (Aladwani and Palvia, 2002). Employing a number of extensive testing and validation techniques, Aladwani and Palvia (2002) have managed to improve the internal validity of their theory, and by using three groups of samples they have expanded the external validity and applicability of the instrument to a wider population. As far as practical applications are concerned, Aladwani and Palvia (2002) advise that only a validated instrument provides an essential tool for assessing the quality of an online system. Given that the Internet is host to millions of sites varying widely in terms of quality, the scales might be utilised to evaluate the quality of any given website. This could be performed at the

overall quality level employing the 25-item instrument or at a specific quality subdivision level, for example using a sub-scale of one of the four subdivisions of User-perceived Web Quality (Aladwani and Palvia, 2002). Recent adaptations of the User-perceived Web Quality Model include the work of Al Qeisi (2015), who uses it to investigate gender differences in online banking appraisals, and the study by Liao (2015), who, when looking at web quality from an age perspective, finds that users with low usage experience require greater web quality than experienced users. One of the authors of the original model, Adel Aladwani, applies the archetype theory to a knowledge setting; more specifically, academic digital libraries in Kuwait; his findings reveal significant relationships between the web qualities of the libraries' portals and knowledge-sharing success. The Aladwani and Palvia (2002) model is presented below, in Figure 2.8.

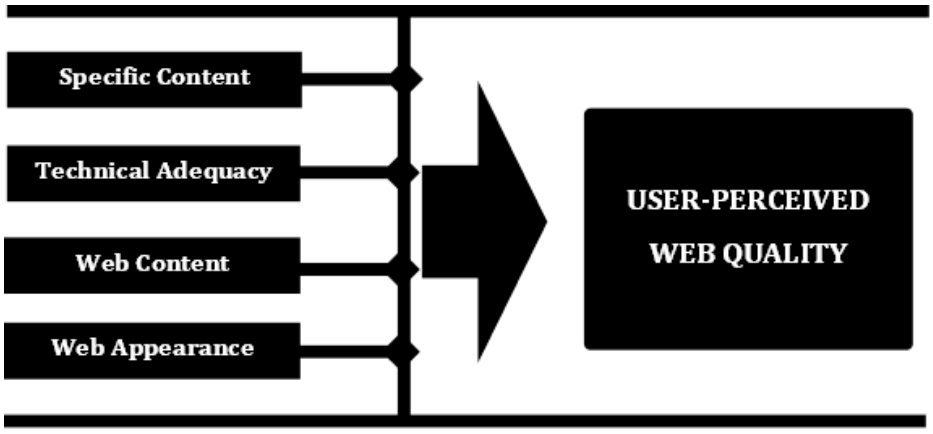

Figure 2.8: The Aladwani and Palvia model of User-perceived Web Quality (2002)

2.3.2. Technology Acceptance Approaches/Models

Technology acceptance has been recognised as a major factor affecting the successful implementation of a system (Thomas, 2006). The notions developed to explain organisational and individual acceptance of a new technology such as IS can be described as intention-based theories, otherwise known as technology acceptance theories. The aim of this type of theories has been to establish the determinants of users' behavioural intentions to adopt new IS (Diez and McIntosh, 2009).

Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975)

Derived from social psychology, the Theory of Reasoned Action is one of the most fundamental and influential theories of human behaviour. The TRA implies that salient beliefs about one's attitude concerning a particular behaviour need to be elicited in order to be relevant to the specific behaviour being studied (Benbasat and Barki, 2007). According to the TRA, behaviour is best predicted by a stated intention to behave in a specific way at a subsequent point in time (Oliver and Bearden, 1985). This intention, in turn, is affected by attitudes and subjective norms (Kim *et al.*, 2008). More specifically, Fishbein and Ajzen (1975) reveal that an individual's intention to perform a specific act or behavioural intention with respect to a given stimulus object is a function based on two antecedents, namely this person's attitude toward the behaviour and his/her subjective norm. Attitude denotes a personal

predisposition toward a set behaviour (Oliver and Bearden, 1985). Triandis (1971:2) defines attitude as "*an idea, charged with affect, which predisposes a class of actions to a particular class of social situation*". Ajzen and Fishbein (1973) argue that individuals hold attitudes because they perceive that desired or undesired outcomes are linked to a focal behaviour. Subjective norm on the other hand, as another determinant of attitude, is the perception of general social pressures to perform or not to perform a particular act (Ajzen and Fishbein, 1973). Subjective norm is also described as an internalised perception that individuals or groups important to the decision-maker prefer that he/she engages (or not engages) in a particular behaviour (Oliver and Bearden, 1985). Ajzen and Fishbein (1977) posit that subjective norm is rooted both in the perceived preferences of the individual, and in his/her desire to comply with these preferences. While on one side, attitude is largely influenced by beliefs and evaluations, it has been proven that subjective norms are shaped by norm beliefs and the motivation to comply (Fishbein and Ajzen, 1975).

Researchers have, however, questioned the simplicity of the TRA's structure. This issue of model simplicity revolves around the degree to which there are crossover linkages between cognitive and normative structure (Oliver and Bearden, 1985). Ryan (1982) questions the independence of beliefs concerning attribute levels that relate to the desires of others. His findings show that attitude and subjective norm are correlated, that attitudinal structure is correlated with subjective norm, and that normative structure is correlated with attitude. Ryan (1982) maintains that it is possible that cognitive

information can have subsequent effects on normative perceptions, and that normative information will affect cognition, since information targeted towards one set of beliefs may affect other types of beliefs through inference or secondary processing. The latter can be better understood by looking into an individual's strongly held cognitive belief system (about exercising for example), which may foster an inference that these perceptions are normal and widely endorsed, and that others in the environment would not only agree with these beliefs, but would express them in a prescriptive fashion (Oliver and Bearden, 1985). Therefore, the main limitation of the TRA is that it can bring about the associated risk of confounding between attitudes and norms, since attitudes can often be reframed as norms and vice versa. Another limitation of this theory is that it assumes that when someone forms an intention to act, they will be free to act without restriction. In practice nonetheless, constraints such as narrow ability, time, environmental or organisational boundaries, and unconscious habits will probably reduce the freedom to act (Ryan, 1982). A final weakness of the TRA lies in the fact that it was designed to predict volitional behaviours and alas its explanatory scope excludes a broad series of behaviours such as those that are of a spontaneous, impulsive, habitual, mindless, or simply scripted nature (Bentler and Speckart, 1979). These types of behaviours are rejected by the TRA as their performance might not be voluntary and engagement in them might not involve a conscious decision on the part of the actor (Hale, Householder and Greene, 2003).

The Theory of Reasoned Action was essentially brought into being as a consequence of researchers' dissatisfaction with traditional attitude-behaviour

studies, much of which identified weak correlations between attitude measures and performance of volitional behaviours (Hale *et al.*, 2003). Sheppard, Hartwick and Warshaw (1988) regard the TRA as a model of strong predictive utility, even when used to examine situations and activities that do not fall within the boundary conditions originally specified for it. Accordingly, the TRA has been utilised in diverse fields, from consumer behaviour to health education and from seat belt use to limiting sun exposure and dieting. The TRA is presented below, in Figure 2.9.

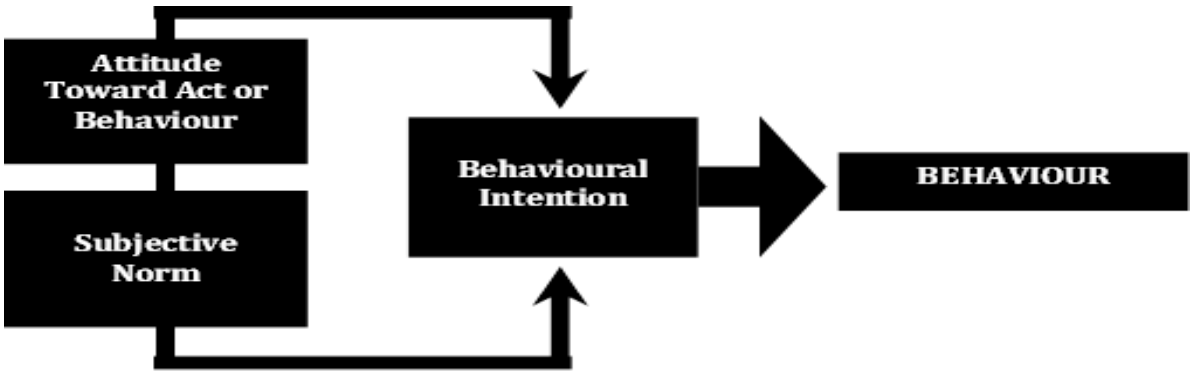

Figure 2.9: Theory of Reasoned Action (Fishbein and Ajzen, 1975)

Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991)

The Theory of Planned Behaviour (TPB) was first proposed by Ajzen in 1985, who fully developed the theory in 1991. It is based on the Theory of Reasoned Action, and overall, it presents a comprehensive yet parsimonious psychological theory that identifies a causal structure for explaining a wide range of human behaviour (Ajzen, 1991). The Theory of Planned Behaviour defines relationships between beliefs, attitudes, norms, perceived behavioural control, intentions, and behaviour. More specifically, the TPB indicates that

individuals' behaviour, when for instance starting to use a new IS, is directed by intention, which is in turn driven by attitudes (the extent to which a system user has a favourable or unfavourable evaluation of a behaviour), subjective norms (the perceived social pressure to perform or not to perform a behaviour) and perceived behavioural control (Diez and McIntosh, 2009). Therefore, the TPB is fundamentally based on the Theory of Reasoned Action, but with the added element of perceived behavioural control. The latter is a dimension that explains the non-volitional use of a system and can be defined as an individual's perception of the ease or difficulty of performing a particular behaviour (Eagly and Chaiken, 1993).

Ajzen (1985) views this control that people have over their behaviour as lying on a continuum, starting from behaviours that are performed with ease and moving to those requiring considerable effort or resources. Even though Ajzen (1991) advises that the relationship between behaviour and behavioural control should actually be between behaviour and actual behavioural control instead of perceived behavioural control, the difficulty associated with evaluating actual control has led to the use of perceived control as a proxy measure (Diez and McIntosh, 2009). As already mentioned, the rationale behind the addition of perceived behavioural control is that it permits the prediction of behaviours that are not under complete volitional control (Armitage and Conner, 2001). The Theory of Reasoned Action can satisfactorily predict behaviours that are fairly straightforward (under volitional control), in circumstances that involve constraints on action. The inclusion of perceived behavioural control provides information about the likely constraints

on action, as perceived by the actor, and is held to explain why intentions do not always predict behaviour (Armitage and Conner, 1999). Ajzen (1991) maintains that the scale of the relationship between perceived behavioural control and intention is dependent upon the type of behaviour and the nature of the situation, while Bandura (1992) suggests that individuals are more inclined to engage in behaviours that are perceived to be achievable. Yet, the implementation of an intention into action is, at least to a certain degree, determined by personal and environmental barriers (Armitage and Conner, 1999). Hence, according to Ajzen (1991:185) "*the addition of perceived behavioural control should become increasingly useful as volitional control over behaviour decreases*". Consequently, in situations where the level of volitional control is low, perceived behavioural control should not only facilitate the implementation of behavioural intentions into action, but also predict behaviour directly (Armitage and Conner, 2001). Armitage and Conner (2001) conclude that under such situations (where the behaviour is not under complete volitional control), the greater the perceived behavioural control, the stronger the relationship between intention and behaviour becomes.

Overall, the TPB has received considerable attention from academic circles and a large number of studies have been based on it, or have used its paradigm (for example, Van den Putte, 1991; Godin, 1993; Sparks, 1994; Blue, 1995; Conner and Sparks, 1996; and more recently, Ajzen, 2002; Ajzen, Brown and Carvajal, 2004; Pavlou and Fygenson, 2006; Hagger and Chatzisarantis, 2009; Manning, 2009; Rivis, Sheeran and Armitage, 2009; Anker, Feeley and Kim, 2010; Rise, Sheeran and Hukkelberg, 2010; Ajzen,

Joyce, Sheikh, and Cote, 2011; Benk, Çakmak and Budak, 2011; Hardeman, Kinmonth, Michie and Sutton, 2011; Chen and Tung, 2014; Han, 2015; Verma and Chandra, 2018).

Nevertheless, a large proportion of these studies may suffer from the fact that their main focus has been a different or relevant topic, but not the TPB. For example, although Van den Putte (1991) discovers significant relationships between intention, behaviour, and perceived behavioural control, these findings have limited scope as their main focus is the TRA. Other studies consider only direct antecedents of intention and behaviour and are derived from limited data sets (Armitage and Conner, 2001). For instance, Godin and Kok (1996) find strong relationships between intention, behaviour, and perceived behavioural control, but regrettably their efforts are hindered as they only examine health-related behaviours, and their research originates from corresponding relevant data. Different studies seem to favour the TPB over the TRA and find it more practical and far-reaching (Hausenblas, Carron and Mack, 1997), but this supposition is based exclusively on the degree of correlations between intention, behaviour, and perceived behavioural control (Armitage and Conner, 2001). More recent research efforts on the TPB have surfaced in the form of meta-analyses that attempt to test the relationships between its different constructs. Evidence from such meta-analytic reviews suggests that the TPB is a useful model for predicting a wide range of behaviours and intentions in a series of diverse environments such as the healthcare sector, leisure, Internet shopping and banking. Although this might be the case, additional research is needed to overcome some of the

methodological complications of previous studies and to focus on current TPB issues. The TPB is shown below, in Figure 2.10.

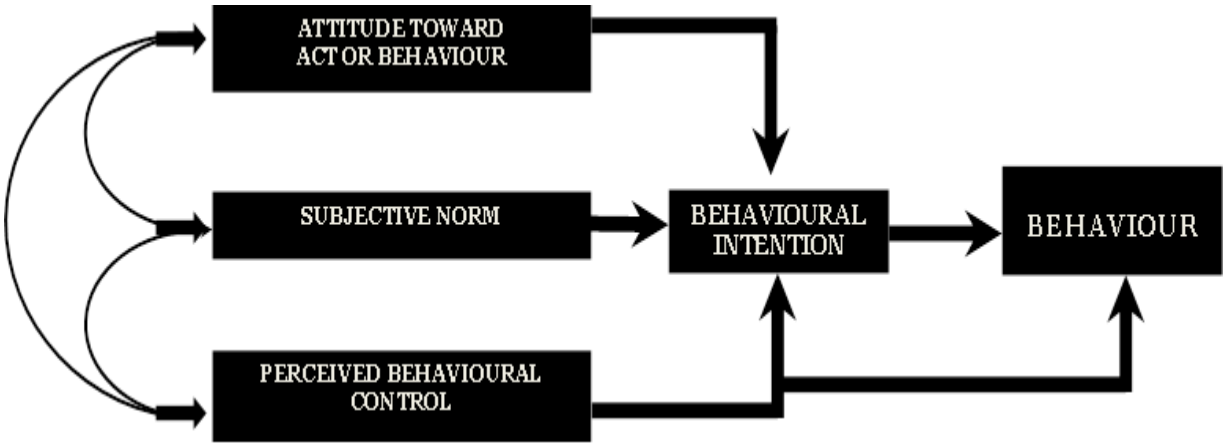

Figure 2.10: Theory of Planned Behaviour (Ajzen, 1985, 1991)

Technology Acceptance Model (TAM) (Davis, 1989)

The most prominent intention-based concept is the Technology Acceptance Model (TAM) (Davis, 1989), based on the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975). While the latter has been utilised to predict a broad range of behaviours, Davis (1989) applied it to individual acceptance of technology and found that the occurring variance was largely consistent with studies that had employed TRA in the context of other behaviours.

The Technology Acceptance Model in effect updates the TRA by replacing its belief determinants in order to predict IS adoption. It presumes that there is a relationship between the attitudes of users (their inclination towards adopting

IS) and Perceived Ease of Use (PEOU), as well as between the attitudes of users and Perceived Usefulness (PU) (often described as perceived relative improvement in users' job performance) (Davis, 1989; Al-Gahtani and King, 1999). Davis (1989:320) defines Perceived Ease of Use as "*the degree to which a person believes that use of a particular system would be free of effort*". Conversely, Perceived Usefulness denotes "*the degree to which a person believes that use of a particular system would enhance his or her job performance*". Davis (1989) argues that Perceived Ease of Use and Perceived Usefulness can capture all the associated beliefs in Information Technology usage contexts. In an effort to clarify the relationships between the different TAM constructs, Kim *et al.* (2008) explain that technology acceptance or indeed use is determined by behavioural intention. Behavioural intention, however, is influenced by attitude towards use, as well as the direct or indirect effects of Perceived Ease of Use and Perceived Usefulness. Both Perceived Ease of Use and Perceived Usefulness equally affect attitude towards use, whilst Perceived Ease of Use has a direct impact on Perceived Usefulness.

A large volume of papers on the subject of technology acceptance reveal that Perceived Ease of Use directly affects Perceived Usefulness and attitude towards use (Chen *et al.*, 2002; Ahn, Ryu and Han, 2004; Bruner and Kumar, 2005; Lai and Li, 2005; Alharbi and Drew, 2014). According to Davis (1989) through Perceived Usefulness, Perceived Ease of Use indirectly influences attitude towards use and acceptance intention, which clearly shows that Perceived Ease of Use is the antecedent of Perceived Usefulness. Furthermore, Perceived Ease of Use does not directly affect acceptance or

actual using, but the TAM infers that there exists an indirect relationship through the medium of technology acceptance behaviour (Davis, 1989). Moreover, research shows that there is evidence to suggest that Perceived Usefulness has a positive effect on attitude towards use and actual use (for example Adams *et al.*, 1992; Agarwal and Prasad, 1999; Shin, 2004; Hess, McNab and Basoglu, 2014). In a study on IS usage and the World Wide Web, Lederer, Maupin, Senza, and Zhuang (2000) discover that Perceived Ease of Use and Perceived Usefulness have positive influences on attitude towards web use. While testing a framework that assesses lodgings websites' Information Quality, Jeong and Lambert (2001) find evidence that Perceived Usefulness can have a direct impact on actual use of information. Additional studies on TAM also show evidence of strong empirical support for a positive relationship between attitude towards use and actual use (Mathieson, 1991; Adams *et al.*, 1992). Also, the attitude towards the use of a specific system has a direct effect on the intention to use that system in the future (Davis, 1989; Venkatesh and Davis, 2000; Venkatesh, Speier and Morris, 2002) as well as the actual use of related systems (Bajaj and Nidumolu, 1998).

Due to the fact that the TAM is one of the most referred to models of technology acceptance, the literature features numerous extensions and modifications based on it. For instance, Venkatesh and Davis (2000) put forward TAM2, which extends the original TAM by including subjective norm as an additional antecedent of intention in occasions that mandatory settings occur. Compared to its predecessor, TAM2 provides more detailed explanations about why users may find particular systems to be useful.

Findings from this study indicate that TAM2 can perform well in both voluntary and mandatory settings, with the exception that subjective norm has no effect on voluntary environments, but it becomes significant in mandatory environments (Venkatesh and Davis, 2000). Augmenting the principles of TAM, Venkatesh, Morris, Davis and Davis (2003) propose the Unified Theory of Acceptance and Use of Technology, which except identifying a significant relationship between Perceived Ease of Use and Perceived Usefulness, also asserts the importance of two more factors, namely social influence and facilitating conditions. Shih (2004) develops an extended TAM for Internet use, and in contrast to Davis (1989) finds that Perceived Ease of Use influences user attitudes toward Internet use more than Perceived Usefulness. Vijayasarathy (2004) develops and tests an augmented TAM in the context of consumer intentions to use online shopping applications. In addition to Perceived Ease of Use and Perceived Usefulness, the author also includes compatibility, privacy, security, self-efficacy, and normative beliefs. Results show that compatibility, Perceived Ease of Use, Perceived Usefulness, and security are significant predictors of attitude towards on-line shopping, but privacy is not. Also, intention to use online shopping is strongly affected by attitude toward online shopping, normative beliefs, and self-efficacy (Vijayasarathy, 2004).

Looking at technology acceptance from an organisational perspective, Venkatesh and Bala (2008) propose TAM3. Apart from insights into how and why employees adopt and use IS, TAM3 also sheds light on how managers make informed decisions about interventions that can lead to greater

acceptance and effective utilisation of the system (Venkatesh and Bala, 2008). Kim *et al.*, (2008) investigate the relationship between users' acceptance of hotel front office systems and two new parameters, information system quality and perceived value, by adopting an extended TAM. Empirical findings suggest the significance of all but two new variables. Accordingly, Kim *et al.*, (2008) use information system quality and perceived value as external variables in order to enhance the capabilities of the TAM. Moreover, Teo (2010) uses the TAM as a research framework in which findings contribute to technology acceptance research by demonstrating the suitability of the TAM to explain the intention to use technology among educational users. Employing structural equation modelling techniques for data analysis, a good fit is found for both the measurement and structural models (Teo, 2010). Also, Chai, Wang and Lu (2011) use the TAM to analyse Ease of Use of a mobile communication centre and conclude that there are positive relationships amongst all the constructs. Rauniar, Rawski, Yang and Johnson (2014) apply the TAM principles in order to comprehend the future deployment of social media and their usage. Their results demonstrate that some variables, such as social networking site capability and trustworthiness, need to be added to the TAM in order to predict user engagement in a social media context. Park, Baek, Ohm and Chang (2014) apply the TAM in a mobile social network games setting; they conclude that new dimensions, such as perceived mobility and perceived control, are essential antecedents of Intention to Use among online players. Rigopoulou, Chaniotakis and Kehagias (2017) use the TAM to predict smartphone adoption of young consumers in Greece. Their findings reveal several positive relationships between the traditional constructs

(Perceived Usefulness and Perceived Ease of Use) and also with new metrics, including perceived compatibility, perceived behavioural control, social influence and social values. Brandon-Jones and Kauppi (2018) use the tenets of the TAM to examine technology adoption among employees using e-procurement systems in the Netherlands. Apart from confirming the core TAM relationships (Perceived Usefulness and Perceived Ease of Use) within an e-procurement environment, their study finds that dimensions such as system processing and usability have an impact on the employees' e-procurement acceptance.

In addition, the original model has been extended with constructs such as playfulness (Chung and Tan, 2004), cost (Wu and Wang, 2005), and enjoyment and trust (Yu, Ha, Choi and Rho, 2005). Alternative structural models of the TAM instrument have also been tested by Adams *et al.* (1992), Szajna (1996), Hendrickson and Collins (1996), and Igbaria, Zinatelli, Cragg, and Cavaye (1997). The findings of the latter two studies support a full causal model, which has been applied in a tourism management-related study by Wöber and Gretzel (2000). Recent years have seen several notable extensions and modifications to the original TAM. Park and Kim (2014) investigate user perceptions towards mobile cloud computing services and extend the TAM to include the added dimensions of perceived mobility, connectedness, security, and quality of system and service. Persico, Manca and Pozzi (2014) reinvent a three-dimensional version of the TAM in an e-learning setting that incorporates all the stages of the adoption process (design, implementation, and evaluation) as well as all the users (students and

teachers). Abdullah and Ward (2016) extend the TAM by adding external variables (self-efficacy, experience, enjoyment) and behavioural intention to use (including subjective norm) as new dimensions. Their work results in the GETAMEL, a widely used extended version of the TAM that has been applied extensively in several e-learning studies.

In the TAM, through Perceived Ease of Use and Perceived Usefulness, external variables like personal features (computer self-efficacy, innovativeness, and past adoption behaviour), system features (design and functionality), and organisational features (top management support and training) can have an impact on attitude and behaviour (Kim *et al.*, 2008). Therefore, Davis, Bagozzi and Warshaw (1989) advise that the external variables of a TAM can influence the beliefs associated with Perceived Ease of Use and Perceived Usefulness. In this fashion, much research has verified the external variables of a TAM (for example, Venkatesh and Davis, 2000; Hong, Thong, Wong and Tam, 2002; Hu, Clark and Ma, 2003; Amoako-Gyampah and Salam, 2004; Shang, Chen and Shen, 2005; Burton-Jones and Hubona, 2006; Kim *et al.*, 2008; Cheung and Vogel, 2013; Alharbi and Drew, 2014). These studies found external variables (personal, system, and organisational features, prior system experience and job relevance) to be determining factors in forecasting technology acceptance (Kim *et al.*, 2008).

The Technology Acceptance Model is universally accepted as one of the most significant and frequently utilised theories in the study of Information Systems

(Chen, Gillenson and Sherrell, 2002; Hong, Thong, Wong and Tam, 2002; Lee, Kozar and Larsen, 2003; Bruner and Kumar, 2005; Lee, Kim and Lee, 2006; Kim *et al.*, 2008; Cheung and Vogel, 2013; Abdullah and Ward, 2016; Brandon-Jones and Kauppi, 2018; Wamba, 2018). On the whole, it largely simplifies the TRA, in addition to making it more efficient to conduct IT adoption research and facilitating the aggregation of results across settings (Benbasat and Barki, 2007). The TAM makes conceivable the possibility to generate general knowledge about the determinants of IS Use and is an exemplar of a common approach to researching IS without differentiating IS types or organisations (Diez and McIntosh, 2009). The knowledge generated has a propensity for offering insight into organisational and socio-technical factors, which can be seen as critical for IS success (Winter, Brown and Checkland, 1995; Reeve and Petch, 1999; Lin and Chen, 2012).

The original TAM is presented below, in Figure 2.11.

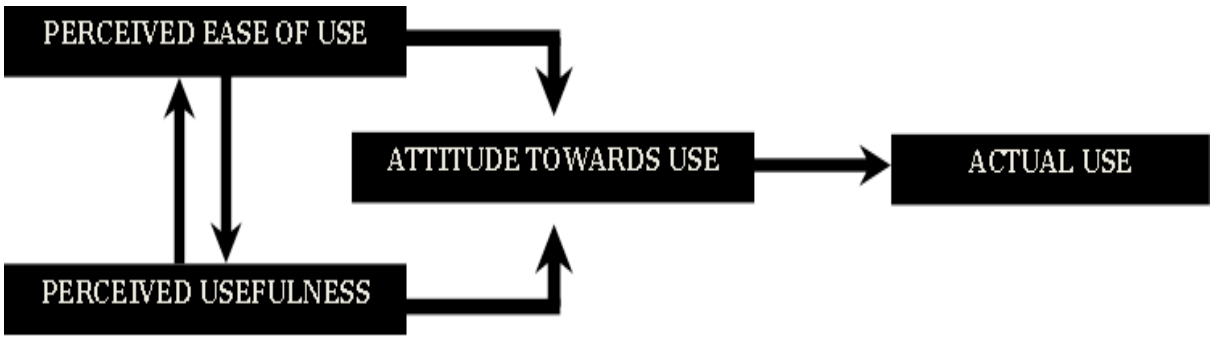

Figure 2.11: Technology Acceptance Model (Davis, 1989)

Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis, 2003)

It is evident from the analysis thus far that IT acceptance research has generated a substantial number of approaches and models, each with its own unique acceptance constructs. In fact, investigating user acceptance of new technologies is often seen as one of the most widespread and mature themes in modern IS literature (Hu, Chau, Sheng and Tam, 1999; Diez and McIntosh, 2009; Venkatesh, Thong and Xu, 2016). The resulting models originate from diverse fields including Information Systems, psychology, sociology, and other social sciences, and collectively explain over 40 per cent of the variance in individual intention to use technology (Venkatesh and Davis, 2000; Maruping, Bala, Venkatesh and Brown, 2017). Therefore, researchers are inevitably confronted with a choice amid an array of models, where they must decide on and opt for constructs across the models or select a favoured approach to base their study on, ignoring the contributions from alternative frameworks (Venkatesh, Morris, Davis and Davis, 2003). For this reason, Venkatesh *et al.* (2003) call for a review and synthesis of the relevant literature in order to advance towards a unified view of user acceptance.

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.*, 2003) acknowledges the contributions of preceding technology acceptance models, but at the same time also employs intention and/or usage as the key dependent variable. The main aim of the UTAUT is

to explain user intentions to use an IS and to subsequently understand usage as a dependent variable. The UTAUT consolidates and integrates eight of the most prominent models of technology acceptance in order to provide a unified theory on user acceptance of IS. These eight models include the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Technology Acceptance Model (Davis, 1989), the Motivational Model (Davis *et al.*, 1992), the Theory of Planned Behaviour (Ajzen, 1985, 1991), a model combining the Technology Acceptance Model with the Theory of Planned Behaviour (Taylor and Todd, 1995), the Model of PC Utilisation (Thompson, Higgins and Howell, 1991), the Innovation Diffusion Theory (Rogers, 1962), and the Social Cognitive Theory (Bandura, 1986). After these models are reviewed, Venkatesh *et al.* (2003) develop the UTAUT, which consists of ten constructs, with four determinants and four moderators having an effect on behavioural intention and use behaviour. More specifically, the theory holds that four major constructs act as direct determinants of behavioural intention and use behaviour. Supplementary factors such as gender, age, experience, and voluntariness of use operate as moderators and their role involves mediating the impact of the four major constructs. These four constructs include performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is described as the degree to which an individual believes that using the system will help him/her to attain gains in job performance (Thomas, 2006). In that respect, performance expectancy is not dissimilar to Perceived Usefulness- a dimension identified and used by the Technology Acceptance Model. Thompson (2006) explains that the second key construct of the UTAUT, effort expectancy, refers to the degree of ease associated with the

use of a system. Again, this dimension seems to be almost identical to perceived ease of use, an antecedent that originates from the TAM. The third key construct, namely social influence, signifies the extent to which an individual perceives that important others believe he or she should use a new application, while the fourth, facilitating conditions, represents the degree to which an individual believes that an organisation and technical infrastructure exist to support use of a system (Thomas, 2006). These last two constructs can once again be viewed as having a close resemblance to dimensions employed by preceding models. For example, social influence appears to be reminiscent of subjective norm, which refers to an individual's perception of whether most people who are important to him/her think that a predetermined behaviour should be performed (Fishbein and Ajzen, 1975). Furthermore, facilitating conditions have been directly adopted from the Model of PC Utilisation (Thompson *et al.*, 1991) where they represent factors in the environment that observers agree make an action easy to perform. Thompson *et al.* (1991) maintain that in an IS context, one way of providing facilitating conditions can be by means of support for IS users. As far as relationships between the different constructs are concerned, the UTAUT asserts that performance expectancy, effort expectancy, and social influence affect behavioural intention to use an IS; in succession, facilitating conditions and behavioural intention have an effect on use behaviour, while as mentioned above, all major constructs are moderated by age, gender, experience, and voluntariness of use.

Overall, the UTAUT advances individual acceptance research by unifying the theoretical notions common in the literature. It explains up to 70 per cent of the variance on intention and all eight models used as its foundation explain individual acceptance, with variance in intention explained ranging from 17 to 42 per cent (Venkatesh *et al.*, 2003). Moreover, Venkatesh *et al.* (2003) report that in mandatory settings, constructs related to social influence are significant, whereas in voluntary settings they are not significant. Also, the determinants of intention vary over time, with some determinants going from significant to non-significant with increasing experience (Venkatesh *et al.*, 2003).

Even though the TAM remains the most widely consulted acceptance framework today, the UTAUT does not fall far behind when it comes to influence - a fact manifested by the quantity of studies applying the theory or extending it. For example, Koivimäki, Ristola and Kesti (2008) apply the UTAUT to determine the perceptions of 243 respondents toward mobile services and technology and find that the time spent using mobile devices does not affect user perceptions, however familiarity and user skills do. Eckhardt, Laumer and Weitzel (2009) use the UTAUT to measure social influence of workplace groups on intention to adopt technology and discover that the influence of workplace groups has an effect on IT adoption in particular. Verhoeven, Heerwegh and De Wit (2010) examine computer use frequency and find the UTAUT to be a useful and reliable mechanism in explaining varying frequencies of computer use and differences in IT skills. Curtis, Edwards, Fraser, Gudelsky, Holmquist, Thornton and Sweetser (2010)

apply the UTAUT to measure social media adoption in non-profit organisations. Their findings reveal that organisations with public relations departments are more likely to adopt social media technologies and utilise them to achieve organisational goals.

Lin and Anol (2008) extend the UTAUT, adding the construct of social support on network IT usage. Their study suggests that social influence has a positive impact on online social support. Sykes, Venkatesh and Gosain (2009) propose a model of acceptance with peer support based on the UTAUT. Their study is centred on individual adoption and social network research in organisations and they conclude that reviewing social network constructs can assist in comprehending new IS use. In their study of acceptance of mobile learning, Wang, Wu and Wang (2009) expand the UTAUT incorporating two additional constructs, namely perceived playfulness and self-management of learning. Their findings show that the two added constructs are significant in determining behavioural intention to use mobile learning. Wang and Wang (2010) also rearrange the UTAUT to assess gender differences in mobile Internet acceptance. Selecting behavioural intention as the dependent variable they augment the UTAUT by adding perceived playfulness, perceived value, and palm-sized computer self-efficacy. Their results indicate that perceived value plays a key role in predicting intention and that palm-sized computer self-efficacy has a significant influence on mobile Internet acceptance. Perceived playfulness on the other hand, does not appear to affect intention significantly. Venkatesh, Thong and Xu (2012) propose UTAUT 2, which explains 74% of the variance in behavioural intention to use a

technology and incorporates new constructs such as hedonic motivation, price value and habit. Maillet, Mathieu and Sicotte (2015) adapt and theoretically test an extended version of the UTAUT in order to explain the acceptance and use of electronic patient records in Canadian hospitals. Their results accentuate the significance of effort expectancy and performance expectancy as constructs. Maruping *et al.* (2017) develop a model based on the UTAUT that posits two determinants of behavioural expectations, namely social influence and facilitating conditions, and four moderators of the relationship between behavioural expectations and these determinants, namely gender, age, experience and voluntariness. Their theory concludes that the cognitions underlying the formation of behavioural intention and behavioural expectations differ significantly.

The UTAUT has not been without its critics. Bagozzi (2007) for example acknowledges that the theory is helpful, but also accuses it of bringing the study of technology adoption into chaos. Furthermore, Bagozzi (2007) criticises the UTAUT for being too extensive, as it has 41 independent variables for predicting intentions and at least eight for predicting behaviour. Van Raaij and Schepers (2008) find the UTAUT to be problematic and less parsimonious than the TAM because some of its results are possible only when moderating key relationships with up to four variables. Brown, Dennis and Venkatesh (2010) argue that one of the limitations of the UTAUT is the lack of information or background on the antecedents/factors that influence the constructs on which the model is based. In general, however, the UTAUT is

an accurate and widely used model for explaining intention to use an IS and subsequent usage behaviour. The UTAUT can be seen below, in Figure 2.12.

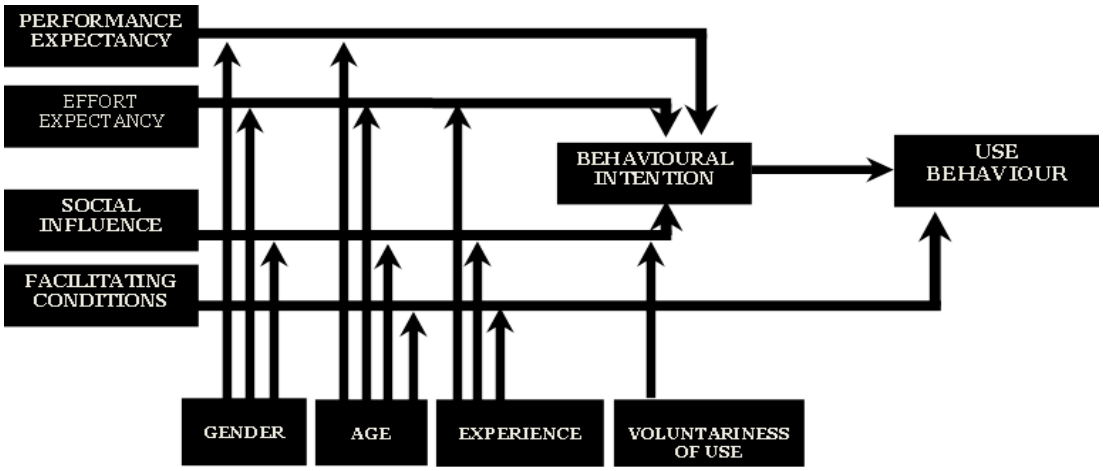

Figure 2.12: Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis and Davis, 2003)

2.3.3. Integrated Approaches/Models

Integrated approaches have surfaced as research efforts to consolidate extant models have led academics to pursue all-embracing frameworks to explain both Technology Acceptance and User Satisfaction. Therefore, Integrated models typically combine two or more IS paradigms or theories. Even though the most common combination is that between Technology Acceptance and User Satisfaction constructs, there are other in existence, such as for example incorporating web strategy characteristics into Technology Acceptance notions or creating hybrid structures that integrate IS and marketing criteria.

Integrated Model of User Satisfaction and Technology Acceptance (Wixom and Todd, 2005)

It has already been mentioned that, as a general tendency, researchers have elected to focus their efforts on the TAM and the relationships between its components. However, Wixom and Todd (2005) attempt a much harder task, to use the TAM to study other factors and to theorise the effect of system characteristics on TAM constructs (Benbasat and Barki, 2007). Wixom and Todd (2005) notice that perceptions of IS success have been considered within two primary research streams, the User Satisfaction and the Technology Acceptance literature. Wixom and Todd (2005) argue that the two approaches have been developed in parallel, without ever being reconciled or integrated. This provides an opportunity to combine two streams of research and to develop the distinctive strengths of each.

In view of that, the purpose of Wixom and Todd's paper is to merge the two research flows so that collectively they can offer more detailed knowledge of the manner in which system features ultimately influence IT usage. Their study proposes an "*integrated research model that distinguishes beliefs and attitudes about the system (object-based beliefs and attitudes) from beliefs and attitudes about using the system (behavioural beliefs and attitudes) to build the theoretical logic that links the User Satisfaction and Technology Acceptance literature*" (Wixom and Todd, 2005:85). More specifically, the model itemises a set of attributes that influence System and Information Quality, illustrates how they sequentially affect object-based beliefs and

attitudes with the system and the information it produces, and subsequently shows how these attitudes towards the system can shape the behavioural beliefs of Usefulness, Ease of Use, and ultimately System Usage (Wixom and Todd, 2005).

The Integrated Model of User Satisfaction and Technology Acceptance looks at information characteristics, such as completeness, accuracy, format, and currency, and how they influence Information Quality (Wixom and Todd, 2005). It then examines how Information Quality affects Information Satisfaction, and how Information Satisfaction has a bearing on Usefulness. In parallel, the model shows how system characteristics, such as reliability, flexibility, integration, accessibility, and timeliness have an effect on System Quality, how System Quality shapes System Satisfaction, and how System Satisfaction has an impact on Ease of Use. After exploring these relationships, the model then moves to show how Ease of Use influences Usefulness and how both affect Attitude. Finally, Wixom and Todd (2005) present how Usefulness and Attitude have an effect on Intention. The model is subsequently tested using a sample of 465 respondents from seven different organisations who complete a survey relevant to their use of data warehousing software. Overall, the results are largely consistent with the hypotheses set by the authors and demonstrate the potential to integrate concepts pertinent to User Satisfaction and Technology Acceptance into a single unified model.

The main contribution of the Integrated Model of User Satisfaction and Technology Acceptance is that it offers a conceptual understanding of the disparities between object-based beliefs and attitudes and behavioural beliefs and attitudes toward use, which for the most part have been investigated independently. In addition, the model helps build the bridge from system characteristics' design and implementation decisions to the prediction of usage (Wixom and Todd, 2005). In due course, this can enhance the prognostic value of User Satisfaction and increase the practical utility of Technology Acceptance. Ultimately, by theoretically integrating the two very important IS research streams, the model communicates a way for perception based IS research to examine the role of the IS artefact more unequivocally (Wixom and Todd, 2005).

Benbasat and Barki (2007) express their concern at the dominance the TAM has achieved, claiming that it has caused a high degree of enforcement, conformity, and lack of innovation that have not served the IS research community well. As a result, Benbasat and Barki (2007) recommend that researchers need to revisit the core principles of the Theory of Planned Behaviour and redirect their attention towards considering different antecedents linked to IS design and different consequences, such as adaptation and learning behaviours. The challenge then for the IS research community is to deliver a methodical approach that can fully detect and assess such factors in order to define exactly what influences adoption and acceptance in different IT use contexts (Benbasat and Barki, 2007). According

to the above authors, the research by Wixom and Todd (2005) has achieved a helpful step toward identifying such factors.

Several researchers have used the Integrated Model of User Satisfaction and Technology Acceptance in their studies. Thomas (2006) proposes a comprehensive IS success assessment model which is then tested for the entire set of IS applications used by employees of a municipal government organisation. The model by Thomas (2006) builds upon three existing and established models by DeLone and McLean (2003), Venkatesh *et al.* (2003), and Wixom and Todd (2005). Masrek (2007) revises the Updated DeLone and McLean IS Success Model (2003) to determine the success of university student portals but uses three items from Wixom and Todd's model to measure User Satisfaction. Vaghefi and Lapointe (2010) use Wixom and Todd's model to measure User Satisfaction and propose a process model for habit formation in IS post-adoption. Except User Satisfaction their model also includes reinforcement, frequency, extent of use, and stability in context. Moreover, Santos, Takaoka and De Souza (2010) propose a theoretical model that includes external variables which influence the relationship between perceived Information Quality and individual impact. In an effort to confirm that Information Quality impacts individual work, Santos *et al.* (2010) use elements from Wixom and Todd's work, including Usefulness, Ease of Use, and User Satisfaction. Koh, Prybutok, Ryan and Wu (2010) adapt Wixom and Todd's model to explain a conceptual gap between system characteristics (specifically, Information Quality) and System Use, which DeLone and McLean's (1992, 2003) milestone models of IS success have not addressed

in full. Botzenhardt, Li and Maedche (2016) use Wixom and Todd's theory to propose a theoretical model that incorporates design characteristics with User Satisfaction and behavioural intention in a mobile data services environment. After an empirical test of the model, the authors conclude that the design characteristics have a positive relationship with User Satisfaction. Madlberger (2014) follows the theoretical approach by Wixom and Todd to develop a framework that identifies antecedents of consumers' intentions to book trips using online travel agent portals. Important antecedents include User Satisfaction, Information Quality, Perceived Usefulness and Perceived Ease of Use. The Integrated Model of User Satisfaction and Technology Acceptance is presented below, in Figure 2.13.

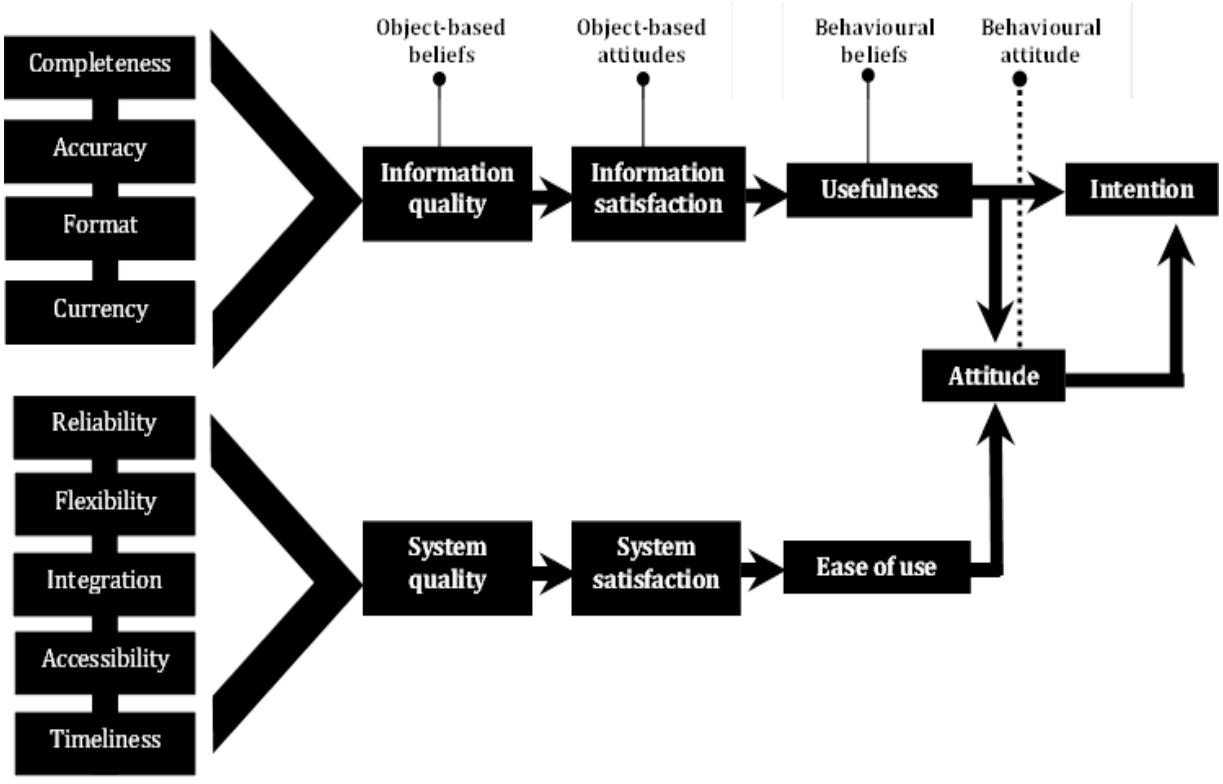

Figure 2.13: The Integrated Model of User Satisfaction and Technology Acceptance (Wixom and Todd, 2005)

2.4. The Quality Dimensions in IS Evaluation

A lot of researchers refer to quality as a vital component of IS success (Jeong and Lambert, 2001; Cheung and Lee, 2005; Law and Cheung, 2006). Nielsen (1999) asserts that quality is a pervasive set of attributes, while Aladwani and Palvia (2002) believe quality to be a miscellaneous concept whose nature and measurement is multidimensional. Jiang, Jun and Yang (2016) maintain that the quality dimensions are the key determinants of user-perceived value. Quality dimensions are hard to define and are influenced by culture, participators, and even time (Zhang and Von Dran, 2002). When the understanding of how users comprehend IS quality comes into question, holistic methods are necessary to echo the subjectivity the user generates (Stockdale and Borovicka, 2007). In an online environment the concept of IS quality consists of many criteria, including a quality of service perspective, a user perspective, a content perspective or indeed a usability perspective (Dominic, Jati and Kannabiran, 2010). On the subject of key factors of success in an IS, the quality of a system can be comprehended using three dimensions of System, Information, and Service Quality (DeLone and McLean, 1992; Pitt, Watson and Kavan, 1995; Eldon, 1997). These dimensions are analysed at this point, together with System Use and User Satisfaction-two important determinants of IS success- as they are evident in the vast majority of research studies on IS evaluation and their comprehension is central to understanding the relationships between the different IS evaluation metrics.

2.4.1. IS and System Quality

System Quality, also referred to as the 'technical driver', denotes the condition of the information processing system (Negasha, Ryan and Igbaria, 2003), and in essence rates how quickly and effectively a system processes and communicates information (Cheung and Lee, 2005). DeLone and McLean (2016) describe it as the desirable characteristics of an information system. It can also denote the interaction between the IS and the user, exemplified by everyday tasks including accessing the system, searching for information within the system, and downloading among other (Jiang and Benbasat, 2003). In a study of IS evaluation in Tourism and Hospitality, Morrison, Taylor and Douglas (2004) comment that holistic IS evaluations should consider technical features like System Quality, since poor technical functioning could undermine high-quality system content.

Research published on IS evaluation has established numerous measures of System Quality. One of the first research attempts at determining System Quality attributes identifies system characteristics, including content, combination of details, external factors, response time, and accuracy (Emery, 1971). A subsequent study of traditional MIS reveals that System Quality measures, such as reliability, response time, and ease of using the system can all be applied in IS evaluation (Swanson, 1974). During the 1980s scholars recognise performance indicators including resource and/or investment utilisation (Kriebel and Raviv, 1980), and effectiveness of hardware utilisation (Alloway, 1980) as decisive factors for the success of any data processing

system. Hamilton and Chervany (1981) suggest that System Quality can be a useful predictor of IS success, and as such it should be appraised by means of accuracy, completeness, data currency, reliability, and flexibility. Works at the time point toward simplicity of use (Belardo, Karwan and Wallace, 1982), ease of access (Bailey and Pearson, 1983), and reliability (Srinivasan, 1985) as antecedents of System Quality.

Other analyses take account of the realisation of user expectations (Barti and Huff, 1985), IS sophistication (Lehman, 1986), and flexibility of the system (Mahmood, 1987). At around the same time, the concepts of response and response time are introduced as determinants of System Quality and IS success. The researchers mostly associated with response are Belardo, *et al.* (1982), Conklin, Gotterer and Rickman (1982), Bailey and Pearson (1983), and Srinivasan (1985). Doll and Torkzadeh (1988) also highlight accuracy and e ase of using the system as surrogate measures for System Quality. These criteria, even though originating from the MIS literature, are equally applicable to e-commerce systems or Information Systems (Molla and Licker, 2001).

In an effort to re-specify the constructs that influence IS success, Seddon (1997) suggests that System Quality encompasses the uniformity of the user interface, the ease of use, whether or not there are 'bugs' in the system, and the quality of the documentation and of the programme code. Peppers and Rogers (1997) advocate that System Quality is an independent variable that influences IS success via the system's capabilities, including its flexibility,

adaptability, and functionality. Rivard, Poirier, Raymond and Bergeron (1997) develop and test a 40-item instrument that measures System Quality factors containing portability, user-friendliness, understandability, effectiveness, maintainability, economy, and verifiability. In a review of e-commerce systems, Bell and Tang (1998) point towards System Quality as being a decisive feature shaping the success of a system and link it directly to system design traits. Keevil (1998) describes System Quality, including the ease of retrieving information from the system, as an important IS success criterion. In a similar study, Spiller and Lohse (1998) consider usability and ease of use- both System Quality constructs- as significant determinants of IS success. Tiwana (1998) puts forward the concept of accessibility as a critical factor of a system's success. Meanwhile, Reisenwitz and Cutler (1998) single out 'versionability', whereas Parsons, Zeisser and Waitman (1998) distinguish transaction capabilities, and Achrol and Kotler (1999) environmental scanning as constructs of System Quality.

Other material (Turban and Gherke, 2000; Han and Noh, 1999) offers further parameters such as 24-hour availability, architecture of the system, page loading speed, and accessibility as part of the System Quality of an IS. Liu and Arnett (2000) and Ünal (2000) identify availability, dependability, and attractiveness, while Molla and Licker (2001) depict privacy and security. Smith (2001) classifies accessibility and communication as vital System Quality components, while Mich, Franch and Gaio (2003) highlight functionality and security. Palmer (2002) indicates that interactivity and customisation are two important ingredients of System Quality and

antecedents of IS success. Expanding basic usability approaches, Nielsen (1999) proposes four fundamental principles specific to the online environment, namely navigation, response time, credibility, and content. Navigation, alongside system security, functionality, and design are also factors that can be used as determinants of System Quality (Ahn *et al.*, 2004). Bharati and Chaudhury (2006) establish a significant relationship between System Quality and decision-making satisfaction in an e-commerce environment. A different study weighs System Quality against impact of System Use at operational, tactical, and strategic levels, and finds the relationship between the two to be significant (Bradley, Pridmore and Byrd, 2006). However, Forsgren, Clay, Durcikova and Wang (2016) argue that despite the existing theoretical definitions, researchers have treated System Quality as a relatively simplistic construct. They maintain that emerging studies should evaluate whether new developments or new best practices have surfaced in the field of IS and whether evolving methodologies or modelling techniques have been consulted.

After this period, research on System Quality (and the other Quality dimensions) has centred towards validating the existing IS success models, re-examining the possible relationships between the different measures, and determining their reliability. Such issues are addressed subsequently, at the stage where the two models that influence this study are presented and assessed. However, prior to that it is important to consider the other two quality dimensions (Information Quality and Service Quality) as well as User Satisfaction and System Use, which both directly affect IS success.

2.4.2. IS and Information Quality

Information Quality, also referred to as content, is regarded as the most essential element of any quality evaluation (Turban and Gehrke, 2000) and is considered to be directly linked to IS success (Liu and Arnett, 2000). As opposed to measuring the quality of the system performance (System Quality), researchers have also opted to concentrate on the quality of the information that the system produces, also described as the desirable characteristics of a system's outputs (DeLone and McLean, 2016). In order to measure the success of a group of IS reports, Gallagher (1974) launches a semantic differential mechanism that comprises of usefulness, informativeness, and relevance amongst other. In an early study of Information Quality, Swanson (1974) develops information characteristics, such as uniqueness, clarity, and readability measures, to quantify MIS appreciation amid users. In an empirical study, Zmud (1979) presents report format as a metric of Information Quality. Ahituv (1980) devises a multi-aspect utility measure of Information Quality containing accuracy, timeliness, relevance, aggregation, and formatting. During the same year, a different approach (Larcker and Lessig, 1980) underlines perceived importance and usability of information as components of Information Quality. In a project on office automation IS, Olson and Lucas (1982) also support the view that accuracy and report appearance are important determinants of IS success.

Moreover, King and Epstein (1983) bring together a number of information characteristics, such as sufficiency, understandability, freedom from bias,

quantitativeness, and comparability to generate a composite Information Quality evaluation mechanism. In addition, Iivari and Koskela (1987) introduce alternative Information Quality features, such as recentness and credibility, convenience, as well as adaptability and interpretability. Due to the fact that Information Quality is an intensely subjective concept that is governed by the user's perspective, it also sometimes appears as a dimension of User Satisfaction (Bailey and Pearson, 1983). As a direct consequence of the above, Information Quality is acknowledged as a precursor of IS success by User Satisfaction (Bailey and Pearson, 1983; Baroudi and Orlikowski, 1988), User Information Satisfaction (Iivari, 1987), and Service Quality (Parasuraman, Zeithaml and Berry, 1985, 1988) studies. At the same time, supplementary measures of Information Quality are brought to light in a paper by Miller and Doyle (1987), who find that in the financial services sector, information accuracy, completeness, relevance, and timeliness can competently measure the success of a computer-based system. Timeliness is also the subject of research by Mahmood (1987). In another review of end-user computing satisfaction (User Satisfaction), Doll and Torkzadeh (1988) discover that information content, accuracy, and format strongly influence IS success.

The emergence of the 1990s saw Information Quality become increasingly more popular as a forerunner of User Satisfaction and thus IS success. For example, in creating a causal model of end-user application effectiveness, Amoroso and Cheney (1991) notice that Information Quality is perhaps the most vital construct of User Satisfaction. Analyses by Magal (1991) and

Kettinger and Lee (1994) underline the contribution of the Information and Service dimensions to IS success. In a paper that seeks to assess the relative importance of factors that shape usefulness, Kraemer, Danzinger, Dunkle and King (1993) stress that increased Information Quality, and in particular accessibility and reliance on experts, will lead to increased usefulness, and in turn, IS success. In a survey of the motivational view of IS success, Fraser and Salter (1995) put together a generic scale of Information Quality. Zwass (1996) defines information completeness as determining whether or not an IS has been able to cover all information needs and suggests that it affects IS success. Later on, Javenpaa and Todd (1997) consider the relevance and completeness of information of an IS and describe both factors as integral to the success of any system. Seddon (1997) agrees that Information Quality is a good predictor of IS success, but simultaneously claims that it is not a measure that can be applied to all systems, as not all IS applications involve the production of information for decision-making.

Entering the 21st century IS research revolves around efforts to examine the interrelationships between the independent variables and IS success. This entails the theoretical and empirical testing of existing frameworks, and therefore there is very little development of new Information Quality measures. One of those, content personalisation symbolises the extent of individuality as perceived by users, and is the subject of research by Barua, Whinston and Yin (2000). Looking at the success of e-commerce systems, Molla and Licker (2001) depict accuracy, relevance, and understandability of information as success factors. D'Ambra and Rice (2001) investigate the role of currency, in

other words whether or not the information offered is up to date and conclude that a successful system is one that stays current and is regularly updated. Currency and dynamic content have also been catalogued as features of Information Quality by several other studies (Parsons *et al.*, 1998; Tierney, 2000; Smith, 2001; Aladwani and Palvia, 2002; Barnes and Vigden, 2002; Madu and Madu, 2002; Limayem, Vogel and Hillier, 2003; Mich *et al.*, 2003; Albert, Goes and Gupta, 2004). Teo and Choo (2001) establish competitive intelligence, while Palmer (2002) introduces the notion of variety of information as metrics of IS success. Jiang and Benbasat (2003) advise that both vividness and interactivity of information have an impact on the success of an IS. Gable *et al.* (2008) acknowledge understandability and conciseness as significant Information Quality constructs, while more contemporary studies highlight scope for mobile data services (Lee, Shin and Lee, 2009), richness for virtual communities (Zheng, Zhao and Stylianou, 2013), and integrity of information (Chen, Liu, Lai, Chang and Lee, 2017).

Other academics have created their own scales using the literature that is relevant to the type of IS under study (Coombs, Doherty and Loan-Clarke, 2001; Gable, Sedera and Chan, 2003). In a study of the London Ambulance Despatch System, Fitzgerald and Russo (2005) ascertain a positive relationship between Information Quality and System Use, and hence IS success. Furthermore, Kositanurit, Ngwenyama and Osei-Bryson (2006) observe a significant relationship between Information Quality and performance among users of IS. In addition, a study of knowledge management systems reveals that Information Quality is significantly related

to Intention to Use and IS success (Halawi, McCarthy and Aronson, 2007). Yi, Yoon, Davis and Lee (2013) propose a model of web-based health information that theorises perceived risk and Information Quality as the key antecedents of Perceived Trust. After testing the model, they conclude that Information Quality, amongst other constructs, plays a vital role in shaping individuals' decisions to trust online health information. Alenezi, Tarhini and Sharma (2015) synthesise a conceptual model that examines the nature of the connections between Information Quality and IS Success of e-government initiatives in Kuwait. Their findings reveal strong relationships between Information Quality and strategic benefits and highlight that improvements in the former can lead to a better organisational image. Finally, Kim, Lee, Shin and Yang (2017) propose a heuristic-systematic model that establishes the importance of Information Quality in the formation of users' destination image by means of social media.

2.4.3. IS and Service Quality

Early efforts to define and measure the quality of the service an IS provides are evident predominantly in the marketing literature, as Service Quality is the most widely explored area of services marketing (Fisk, Brown and Bitner, 1993). Service Quality has become a central topic on the research agenda on account of its apparent relationship to costs (Crosby, 1979). By applying a critical success factors perspective on the ever-changing role of the IS and marketing departments, Rockart (1982) discovers that the quality of the IS service, as perceived by its users, is a fundamental indicator of IS success.

Grönroos (1982) introduces three components of Service Quality, involving technical, functional, and reputational quality. According to services marketing researchers (Grönroos, 1982; Parasuraman *et al.*, 1985) the most suitable definition is one that describes Service Quality in terms of the extent to which a service meets the expectations of users (Parasuraman *et al.*, 1985). This view is also supported by earlier research from Sasser, Olsen and Wychoff (1978), Lehtinen and Lehtinen (1982), and Lewis and Booms (1983) who all promote the view that Service Quality is the discrepancy between the users' perceptions and expectations. Rushinek and Rushinek (1986) realise that fulfilled user expectations have a strong impact on overall satisfaction, and consequently IS success. Given that Service Quality can be a sign of the overall quality of the IS service, it is therefore analogous to the departmental personnel responsible for the IS (Baroudi and Orlikowski, 1988).

Theorists have put forward a range of approaches and measures of Service Quality (Grönroos, 1982; Lovelock, 1983). Nevertheless, the most broadly used and accepted methods are those proposed by Parasuraman *et al.* (1988). The end result of their study is SERVQUAL, a highly praised 45-item instrument in marketing research, designed to assess users' expectations and perceptions of service. SERVQUAL identifies five Service Quality dimensions, namely tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman *et al.*, 1988). Tangibles include the physical evidence of the service, such as facilities and employees. Reliability implies that the service is performed right the first time and entails consistency of performance and dependability. Responsiveness denotes the willingness or readiness of

employees to provide prompt service. Assurance is usually associated with the knowledge, politeness, respect, consideration, courtesy and friendliness of contact personnel and their ability to inspire trust, honesty and confidence. Empathy covers the provision of caring and individualised attention to IS users (Parasuraman *et al.*, 1988).

Evidence shows that there is support for the argument postulated by Parasuraman *et al*. (1985, 1988) in the IS literature. In a study on satisfaction with MIS, Conrath and Mignen (1990) acknowledge that the second most important component of User Satisfaction and IS success, behind general quality of service, is the match between user's expectations and actual IS service. Zeithaml, Parasuraman and Berry (1990) agree that the gap between user expectations and perceptions can be measured and identify additional determinants of expected Service Quality, such as personal needs, past experiences, word-of-mouth communications, and communications by the service provider to the user. In a study of information centres, Magal (1991) includes Service Quality as one of the parameters that influence IS success, while Kettinger and Lee (1994) accentuate the importance of the service dimension to IS, by combining metrics of User Satisfaction with SERVQUAL elements.

Nonetheless, the SERVQUAL instrument (Parasuraman *et al.*, 1988) has not been without its criticisms. The latter arise as a result of some conceptual issues. At the theoretical level for instance, the perception-minus-expectation

measure of Service Quality has been received with some disapproval, as it does not reflect the cognitive process very well (Van Dyke *et al.*, 1997). Moreover, this observation is supported by earlier literature (Babakus and Boller, 1992; Cronin and Taylor, 1992; Parasuraman *et al.*, 1993) which verifies that perceptions-only scores are theoretically and empirically superior to the perceptions-minus-expectations scores in terms of reliability, convergent validity, and predictive validity. Another often discussed conceptual drawback of SERVQUAL is related to the appropriateness of a single instrument for evaluating Service Quality across different industries. A study in the retail sector deduces that employing a single measure of Service Quality across different industries is not viable (Dabholkar, Thorpe and Rentz, 1996). Instead, substantial customisation is necessary to accommodate disparities in service settings (Van Dyke, Kappelman and Prybutok, 1997). Other problems with SERVQUAL, particularly of an operational nature, have also been identified by Buttle (1996) including the notion that the term expectation involves numerous meanings and interpretations, and that users sometimes apply standards other than expectations to evaluate Service Quality. In addition, Buttle (1996) remarks that the item composition is limited and that the reversed polarity of items in the SERVQUAL scale causes respondent error.

In the meantime, there have been works that extend and/or adjust the SERVQUAL model. A survey for the hotel industry (Saleh and Ryan, 1992) reveals conviviality, tangibles, reassurance, and empathy as Service Quality antecedents. Richard and Allaway (1993) test an expanded SERVQUAL

which incorporates both process and outcome components to determine which characteristics of Service Quality have the greatest impact on choice. Pitt *et al.* (1995) form a model of IS success with Service Quality included as one of the dimensions that affects System Use and User Satisfaction, both predictors of IS success. Other determinants of Service Quality take account of the skill, experience, and capabilities of the support staff (Yoon and Guimaraes, 1995). Consequently, research focuses on measuring Service Quality in online environments. The first formal definition of Website Service Quality (or e-SQ) emanates from Zeithaml, Parasuraman and Malhorta (2000) who delineate e-SQ as the extent to which an online system facilitates efficient and effective shopping, purchasing, and delivery of products and services (Zeithaml *et al.*, 2000). In an IS environment, e-SQ can be defined as an overall user assessment and judgement of e-service delivery (Santos, 2003). The process of quantifying e-SQ result in the final E-S-QUAL scale, consisting of 22 items on four dimensions, including efficiency, fulfilment, system availability, and privacy (Zeithaml *et al.*, 2000, Parasuraman, Zeithaml and Malhotra, 2005).

Evidently, the measures related to e-SQ do not differ a great deal from the traditional Service Quality metrics established by SERVQUAL. In a comprehensive survey of webmasters of Fortune 1000 companies, Liu and Arnett (2000) find that Service Quality components such as quick response, assurance, empathy, and follow-up services can affect the success of an IS. Furthermore, using confirmatory factor analysis, Jiang, Klein and Carr (2002) reveal that SERVQUAL is indeed a satisfactory Service Quality instrument for

measuring IS success. Gefen (2002) concludes that the five original Service Quality dimensions collapse to three within an online environment: tangibles, a combined dimension of responsiveness, reliability, and assurance, plus empathy. In an e-commerce study, Wang and Tang (2003) also suggest that Service Quality is a multidimensional construct that incorporates reliability, responsiveness, assurance and empathy. A similar analysis by Ahn *et al.* (2004) reports on Service Quality features such as responsiveness, reliability, empathy, confidence, follow-up service and competence. Other attempts to extend, test, and validate the SERVQUAL instrument have produced results such as WEBQUAL (Lociacono, Watson and Goodhue, 2000) and 'dot com Q' (Wolfinbarger and Gilly, 2002), as well as HedPERF (Abdullah, 2006), e-GovQual (Papadomichelaki and Mentzas (2012), and HOTSPERF (Tefera and Govender, 2016) amongst other. A case study by Leclerq (2007) finds that the quality of support services has an effect on User Satisfaction and IS Success. Likewise, in a knowledge management report, Halawi *et al.* (2007) verify a significant relationship between Service Quality (measured by SERVQUAL) and User Satisfaction. Recent research studies also confirm strong links between Service Quality and User Satisfaction and/or Intention to Reuse (Rauch, Collins, Nale and Barr, 2015; Chaturvedi, 2017; Hyun and Perdue, 2017; Kumar and Zikri, 2018; Ukpabi, Olaleye, Mogaji and Karjaluoto, 2018). After presenting IS evaluation and measurement in relation to the Quality dimensions (System Quality, Information Quality, and Service Quality) this thesis now moves to assess the dimensions of User Satisfaction and System Use, which influence the impacts associated with using an IS, and thus IS success.

2.5. User Satisfaction and System Use

2.5.1. IS and User Satisfaction

The idea of User Satisfaction has been mentioned in the literature since the late 1960s (DeLone and McLean, 1992). McKinsey and Company (1968) measure the extent of satisfaction among chief executives in order to determine the overall MIS success. In a study of MIS project success, Powers and Dickson (1973) invite managers to reply how well their MIS needs are met and to rate their general satisfaction with the system. Swanson (1974) devises a 16-item scale to assess IS appreciation and satisfaction levels, while Lucas (1978, 1981) appraises sales representatives' satisfaction with a new computer system using a laboratory environment. Ives *et al.* (1983) recognise employees and service, information product, vendor support, as well as knowledge and involvement as aspects of User Satisfaction. King and Epstein (1983) ascribe IS value based on management satisfaction ratings, whereas Bailey and Pearson (1983) produce the User Satisfaction Instrument (UIS). Earlier versions of this system can be found in works by Kriebel (1979) and Ives *et al.* (1983). The UIS, alongside the End-User Computing Satisfaction instrument (Doll and Torkzadeh, 1988) and the End-User Computing Support instrument (Doll, Xia and Torkzadeh, 1994), remain the most commonly applied User Satisfaction evaluation tools to date (Petter *et al.*, 2008). According to Bailey and Pearson (1983:531) "*satisfaction in a given situation is the sum of one's feelings and attitudes toward a variety of factors affecting the situation*". Ives *et al.* (1983:785) define User Satisfaction as "*the extent to*

which users believe the information system available to them meets their information requirements". Doll and Torkzadeh (1988, 1989) envisage User Satisfaction to be directly influenced by System Quality and Information Quality. At the same time, Kim (1989) explains User Satisfaction in terms of Information Quality, system effectiveness and user attitude, whilst Seddon and Yip (1992) develop a semantic differential scale for measuring overall IS Satisfaction.

In marketing research, Satisfaction denotes consumers' post-purchase evaluations and responses to the overall product or service experience (Oliver, 1992). The service management literature suggests that satisfaction is the outcome of customer perception of value received (Fornell, Johnson, Anderson, Cha and Bryant, 1996; Hallowell, 1996). In the IS literature, researchers call for further studies to generate a reliable measurement of User Satisfaction (McGill, Hobbs and Klobas, 2000). Moreover, the generally accepted User Satisfaction instruments, such as the UIS and the EUCS, consist of items related to the quality dimensions of IS evaluation, and thus fail to measure overall User Satisfaction with the system (Petter *et al.*, 2008). As a consequence, some scholars (Rai *et al.*, 2002) choose to exclude the various quality dimensions from these instruments and decide to apply a single item to assess overall satisfaction with an IS. Other academics (Coombs *et al.*, 2001) have developed attitudinal scales that are compatible with the character of User Satisfaction.

As far as User Satisfaction metrics are concerned, Szymanski and Hise (2000) put forward a model for assessing the influences on Satisfaction in an electronic environment and suggest that convenience, product offerings, and financial security are all contributors. Molla and Licker (2001:7) define e-commerce satisfaction as "*the reaction or feeling of a customer in relation to his/her experience with all aspects of an e-commerce system*" and propose that in an IS environment the term customer satisfaction should be replaced by User Satisfaction. Surrogate but effective metrics of User Satisfaction in e-commerce include e-loyalty (Reichheld and Schefter, 2000), and trust (Olson and Olson, 2000; McKnight and Chervany, 2002; Pavlou, 2003; Yu *et al.*, 2005). DeLone and McLean (2004:37) recommend that "*researchers need to adopt and adapt user information satisfaction and end-user support satisfaction instruments as appropriate for specific e-commerce research*".

Other material reveals that there is evidence to suggest that User Satisfaction is a valid antecedent of System Use and IS success. Wixom and Todd (2005) identify a strong relationship between User Satisfaction and Intention to Use when both dimensions are mediated by Technology Acceptance paradigms. A relationship between decision-making satisfaction and overall User Satisfaction is also established in a report of e-commerce IS (Bharati and Chaudhury, 2006), yet the nature of the relationship is not comprehensively explained. In a study of knowledge management systems success, Halawi *et al.* (2007) confirm a significant relationship between Intention to Use and User Satisfaction, but again the individual metrics are not clearly defined. In an electronic learning context, Chiu, Chiu and Chang (2007) discover a significant

relationship between System Use and User Satisfaction. Nonetheless, the authors do not attempt to offer any practical applications through which this relationship can be tested. At the same time, Hsieh and Wang (2007) notice a significant, positive relationship between User Satisfaction and extent of use among users of complex IS. A similar review evaluating the relationship between User Satisfaction and organisational performance of Enterprise Resource Planning (ERP) systems produces analogous results (Law and Ngai, 2007). It has to be noted however, that although all the aforementioned approaches establish links between User Satisfaction and a number of independent variables, they seem to be insufficiently developed to determine and involve the overall impact of the User Satisfaction dimension. As a result, such frameworks do not appear to be very applicable in a wide range of industries but seem rather limited and relevant only to their specific industries. Petter *et al.* (2008) argue that even though there is adequate research material on the relationship between User Satisfaction and System Use, only a small number of papers examine the reverse relationship. Moreover, there have been efforts in the more contemporary literature to differentiate between Service Quality and User Satisfaction as the two terms had been used interchangeably by practitioners in the past (Kiran, 2010). Although the two dimensions have several similarities, User Satisfaction is generally perceived as a broader concept, while the focal point of Service Quality is the aspects of the service provided to the user (Zeithaml *et al.* 2006).

2.5.2. IS and System Use

It can be argued that System Use, together with User Satisfaction, are the dimensions most strongly associated with IS success (Bokhari, 2005; DeLone and McLean, 2004, 2003). Early conceptual MIS articles (Schultz and Slevin, 1975; Hamilton and Chervany, 1981) have acknowledged System Use as an effective MIS success measure. In an empirical research on MIS, Zmud (1979) choose System Use as a MIS success measure. According to Lucas (1978) actual use, as a measure of IS success, only seems reasonable for voluntary or discretionary users rather that for compulsory use. In line with this notion, Maish (1979) selects voluntary use of computer terminals as a metric of IS success, while Kim and Lee (1986) assess voluntariness of Use as a factor of system effectiveness.

Seddon (1997) points out that in the past academics who have employed IS Use as a barometer of IS success were implicitly assuming a positive, frequently linear relationship between the time spent using a system and the benefits that it provides. Consequently, Seddon (1997) maintains that IS Use is a variable that can act as a surrogate for the 'benefits from use' dimension. One of the first interpretations of IS Use being linked to IS success emanates from Lucas (1975) who observes that unused systems can be classified as failures. It follows then that "*since the opposite of failure is success, it is often assumed that heavily-used systems are successes*" (Seddon, 1997:242). Yet, this implication might be simplistic and not necessarily true (Szajna, 1993). This notion is supported by Seddon (1997) himself who argues that the critical

factor for the measurement of IS success in not necessary System Use, but the Net Benefits that spring from use. Hence, it is logical to presume that the systems described above by Lucas (1975) can be regarded as unsuccessful because they offer no benefits to the user.

In IS research, System Use (or Usage) may be defined as “either the amount of effort expended interacting with an information system or, less frequently, as the number of reports or other information products generated by the information system per unit time” (Trice and Treacy, 1988:33). Davis (1989) finds System Use to be significantly correlated with Perceived Usefulness, and Mahmood, Burn, Gemoets and Jacquez (2000) confirm that Perceived Usefulness positively influences User Satisfaction. Such research draws attention to the significance of System Use and User Satisfaction in evaluating a system in terms of its success (Bokhari, 2005).

As far as metrics are concerned, Davis, Bagozzi and Warshaw (1992) indicate that System Use can be measured by attributes such as the extent to which users have enjoyed using an IS and whether the latter was dependable, functional, and generally competent or professional. Other streams of research (Yoon and Guimaraes, 1995; Hendrickson and Collins, 1996) underline two widespread measures of System Use- time spent in terms of hours and frequency of use. System Use has also been assessed in various traditional ways, including estimates of actual use (Adams *et al.*, 1992; Thompson *et al.*, 1994), estimates of frequency of use (Davis, 1989; Hartwick

and Barki, 1994; Igbaria *et al.*, 1995), computerised logs of actual use (Straub *et al.*, 1995), and dependence on the system (Goodhue and Thompson, 1995). However, some of these traditional measures, for instance frequency of use, may perhaps not represent the optimum manner to approach IS Use. In view of that, Doll and Torkzadeh (1988) warn that more use does not necessary signify a better system and propose an instrument to measure use derived from its effects, rather than by frequency or duration. While raising some issues with regard to how IS success models are formulated, Seddon (1997) suggests that System Use needs to be replaced with Usefulness, as the latter may be more appropriate as an indicator of IS success that may lead to User Satisfaction. DeLone and McLean (2003) however, disagree and maintain that in many cases evident in previous research System Use has been utilised as a suitable measure of IS success. DeLone and McLean (2004) insist that the above misconception owes its existence to the lack of a comprehensive definition of System Use. System Use may incorporate attributes of IS that are considered as determinants of success, such as information search, receiving and processing orders, accepting payment, responding to customer service requests, purchase orders, payments to suppliers (Young and Benamati, 2000) and number of website visits as well as length of stay (D'Ambra and Rice, 2001). DeLone and McLean (2002) recommend that instruments should not just measure time spent on using the system, but also consider factors such as the nature, quality, and appropriateness of System Use.

A key issue that arises when looking at the role of System Use in evaluating IS success is whether the user has been using that system voluntarily or

unavoidably. DeLone and McLean (2002) accept as true that no System Use is totally mandatory. Occurrences when the management requires employees to use the system may take place quite often, but continued usage and adoption of the system itself may be voluntary based on management judgment at higher levels of decision-making (Bokhari, 2005). To address these types of problems, Burton-Jones and Straub (2006) reconsider the System Usage construct through incorporating the structure and nature of System Use. Other opinions put emphasis on the need to explore Use from a multi-level point of view across individual and organisational levels to enable an enhanced comprehension of this concept (Burton-Jones and Gallivan, 2007). Measuring the success of a system should be based on an assessment of how IS are used in terms of intensity and quality of use (Mtebe, 2015).

Overall, this chapter has attempted to present and critically evaluate the various approaches to IS evaluation. Initially, a historical account of the development of IS evaluation is provided, together with several approaches, followed by a detailed analysis of the most influential IS evaluation models. Subsequently, three broad dimensions of IS evaluation, all associated to Quality, are considered, followed by two other universally used IS evaluation constructs, namely User Satisfaction and System Use. The next chapter seeks to analyse the employee dimension in studies of IS evaluation, how this becomes relevant to the purposes of this study, and the rationale behind the proposed theoretical model of this thesis.

Chapter 3: Evaluation of Information Systems (IS) Used by Hotel Employees

3.1. Introduction

It is inconceivable to think that in the current state of the hospitality industry any hotel can operate without the utilisation of some sort of electronic or online system. The Internet, voicemail, email, online automated room reservation systems, computerised accounting and financial reporting systems, computerised food and beverage ordering, teleconferencing, mobile phones, interactive guides for guests, graphic reporting, remote control for all room functions, online check-in tools, face IDs, and electronic credit card authorisation terminals are all examples of ITs used in hotels (Lam *et al.*, 2007; Bilgihan, Smith, Ricci and Bujisic, 2016). ITs convergence effectively integrates the entire range of software, hardware, groupware, net-ware, and human-wear and blurs the boundaries between equipment and software (Werthner and Klein, 1999). As a result, IS have evolved from being simply interrelated components working together to collect, process, store and distribute information to support decision-making, coordination, control, analysis, and visualisation in an organisation. IS now are dynamic, interoperable mechanisms of collecting, processing, and disseminating intelligence within organisations and in their extensive environment (Laudon and Laudon, 2016). Organisations implement technologies to assist consumers' decision making, while at the same time conventional face-to-face

strategies are augmented to include technology-enabled service interactions (Wang, So and Sparks, 2017).

During the past few years, IS specifically used by hotel employees have too evolved from low-end intranets to highly integrated real-time systems. These types of systems enable the front-end integration of information, communication, applications, and business processes. As the software market offers various technological platforms mostly customised to each organisation's specific requirements, each organisation usually employs a unique IS implementation process (Urbach, Smolnik and Riempp, 2010). From all technologies and applications available in the hospitality industry, hotel Information Systems (HIS) are the most typical tool used in larger scale hotels. HIS are divided into four categories of front office system, back office system, restaurant and banquet management system, and guest-related interface (Ham, Kim and Jeong, 2005; Kim *et al.*, 2008). Ham *et al.* (2005) find that front and back office systems together with restaurant and banquet management systems positively affect a hotel's functioning, while guest-related interfaces have no bearing on business operations. Nevertheless, a subsequent non-empirical study demonstrates that hotel managers perceive guest-related applications to be productive (Karadag and Dumanoglu, 2009). Another somewhat controversial finding promotes the view that front-end application functionalities are relatively insignificant in their contribution to a hotel's overall performance (Salwani, Marthandan, Norzaidi and Chong, 2009). Despite this outcome, most researchers agree that the hotel front office system (HFOS) is the most important hotel Information System, operating 24 hours a day, seven

days a week, 365 days a year, and used by service employees at the point of contact with the guest (Law and Jogaratnam, 2005; Kim, Lee and Law, 2008; Murphy, 2007; Sanders, 2011). Other academics support this view by maintaining that property management systems (PMS), another term for HFOS, have a significant impact on hotel operations and performance (Collins and Cobanoglu, 2008; Berezina, Bilgihan, Cobanoglu and Okumus, 2011; Pucciani and Murphy, 2011; Kimes, 2016). PMS can be defined as "*a set of application programmes that directly relate to a hotel's front office and back office activities, such as revenue management, reservation management, room and rate assignment, check in and out management, guest accounting, folio management, account settlement and room status management*" (Kasavana and Cahill, 2003:4). Apart from the functions mentioned in its definition, a PMS is also critical to a hotel's efficient operation because it collects significant amounts of data that may be used to enhance tactical and strategic decision making (Pucciani and Murphy, 2011). Furthermore, a PMS is the central data infrastructure of a hotel, handling the administration of its guests, their profiles and bookings, together with their stay and revenues they generated (Pucciani and Murphy, 2011; Kimes, 2016). Research shows that today almost all hotels own a PMS (Kokaz and Murphy, 2009; Dzhandzhugazova, Kosheleva, Bondarenko, Nikolskaya and Gareev, 2017).

HFOS are used by employees regardless of their personal desires. Since hotel employees operate in a mandatory and not voluntary environment, their opinions or perceptions of HFOS are very helpful in determining the value and effectiveness a system adds to the operations of a hotel. It is logical to

presume that the more benefits (for example, increased efficiency or improved productivity) that can be foreseen from the use of HFOS, the more likely hotels are to adopt the technology. Provided that the hotel industry can be presented with these benefits on an uninterrupted basis, the extensive use of technology would appear to be an inevitable conclusion (Siguaw, Enz and Namasivayam, 2000; Law, Leung, Au and Lee, 2013). It has to be noted that this thesis covers not only HFOS, but rather the whole range of HIS that are available in the hospitality industry. Albeit the most important IS that hotels have in their possession, HFOS often described as the nerve of the hotel operation (Bardi, 2011), would not be adequate on their own to support the diverse range of services a hotel needs to provide. It is also important to mention that from this point forward the thesis avoids using the term ‘HIS’ and instead uses ‘hotel IS’ or ‘IS used in hotels’ as these terms are more common in the literature.

With the above notions in mind, this chapter attempts to critically analyse the diverse approaches and frameworks utilised in evaluating IS used specifically by hotel employees. To achieve this, several different dimensions and constructs that have been consulted while developing or applying these IS evaluation approaches are presented and assessed. Examples from the relevant literature are put forward, from both early studies and the latest developments that have made pivotal contributions to the field, together with any problems or challenges encountered. Moreover, since hotel IS use by employees is not voluntary (unlike Internet banking and online shopping for instance), emphasis has been given on providing cases derived from environments where IS use is mandatory. In mandatory environments, normal

IS routine usage may fluctuate in accordance with the hotel employees' evaluations of that given system. It is for this reason that emphasis is given to assessments of systems used by hotel employees. In general, after chapter 2 has presented a broad range of IS evaluation approaches used in a range of industries and principally in hospitality, chapter 3 concentrates on Information Systems and applications used exclusively by hotel employees and the corresponding evaluation approaches evident in the literature. This progression starting from wide-ranging IS evaluation approaches across different industries to the hospitality industry and in succession to evaluation approaches of systems used solely by hotel employees is prepared to provide a more holistic depiction of what assessing IS entails. At the same time, the thesis advances from reviewing general concepts of IS evaluation to the more specific methods utilised when systems used by hotel employees are introduced- a notion which is at the very core of this research. Thus, as a whole, both literature review chapters act as platforms for presenting the subsequent chapters, which reveal the design model of this research, and how this study was conducted, which methods were used and why, its results, alongside the corresponding conclusions and recommendations.

3.2. Evaluation Approaches of IS used by Hotel Employees

The manner in which employees communicate, share knowledge, deal with information, as well as carry out business has changed considerably with the emergence of IS technologies. The hotel industry relies extensively on such technologies to broaden employees' productivity and efficiency and as a consequence to improve customer satisfaction, since IS have been perceived to offer notable advantages in competition (Ham *et al.*, 2005; Ip, Leung and Law, 2011). Paraskevas and Buhalis (2003) suggest that successful IS could also enhance work processes and hotel profitability, while Law and Jogaratnam (2005) indicate that effective IS reduce costs and improve the quality of service provided. Byrd and Turner (2001) find that there is a positive relationship between IS investment and organisational productivity and performance. Nonetheless, according to Myers (2003) IS are frequently used without a full comprehension of their applicability, effectiveness, or efficacy. Although IT investments are quite significant in most large-scale hotels in order to cope with globalisation, competition, and rising guest expectations, these investments cannot always guarantee suitable returns (Melian-Gonzalez and Bulchand-Gidumal, 2016). IT managers in hotels often lack the tools they need to determine whether they are carrying out the right activities (Gottschalk, 2001). As a result, IT managers may often fail to realise whether they are meeting the needs of their customers or if the technology tools they use are in fact suitable for achieving the hotels' targets. Consequently, there is a possibility that hotels become conscious to the fact that they are spending

huge amounts of money on technologies that are not being used (Myers, 2003; Tavitiyaman, Qiu Zhang and Qu, 2012). For the above reasons it has become particularly important for both managers and researchers to understand thoroughly how employees' personal evaluation of hotel IS can affect their normal routine usage (Huh, Kim and Law, 2009). This type of employee evaluations of the systems on which they work, especially in tandem with the potential organisational benefits derived, is an area not deeply exploited by academic cycles. According to Cohen and Olsen (2013) there is limited empirical evidence present in the current literature about how IS can be used to improve customer service offerings and about how they contribute to the overall performance of hotels. In general, technology adoption by hotel employees is a multifarious process with unique characteristics, thus calling for distinctive approaches in examining adoption behaviour, organisation technology climate, and technology characteristics (Wang and Qualls, 2007; Ko, Lei and Tsai, 2016).

Literature on Management Information Systems encourages the development of a general model for determining IT adoption by hotel employees (Igbaria, Zinatelli, Cragg and Cavaye, 1997; Scharl, Wöber and Bauer, 2004). For example, while conducting research on marketing management support systems, Wierenga, Van Bruggen and Staelin (1999) find the match between the decision processes to be supported (demand side) and the functionality of the management system utilised (supply side) to be the primary driver for the potential adoption of a system. Another research effort stemming from the management sciences (Eierman, Friedman and Adams, 1995) uses a

comprehensive literature review from recognised journals to identify the most significant variables conceived for evaluating IT adoption in decision support systems. Their analysis brings together three broad categories of constructs: user characteristics and perceptions, which include personal characteristics of users, cognitive styles of users, and system usage, system development and organisational issues, which contain organisational context, change management, along with business processes redesign, and also technical issues, which are concerned with aspects such as data access and the technical configuration of software systems. The study suggests that only half of the possible relationships amongst constructs had actually been tested (predominantly user characteristics together with system development and organisational issues, with technical attributes not being adequately significant) and that divergent results may be the product of interactions with other constructs, necessitating richer research frameworks to fully comprehend these far from straightforward relationships (Scharl, Wöber and Bauer, 2004). A more contemporary study that weighs decision support systems against enterprise resource planning systems (Ittiphaisitpan, 2011) discards the technical issues altogether on the grounds that they are not major areas of concern in determining the success of development, implementation, adoption, and use of such systems. This view is also supported by earlier research by Setzekorn, Sugumaran and Patnayakuni (2002), Wu and Wang (2006), and Ramayah and Lo (2007).

On the subject of adoption, it is no surprise that albeit beneficial, Information Systems or Information Technologies in general, are not likely to be accepted

if barriers of human factors are neglected (Hasan, 2003). Such barriers holding back the successful implementation and adoption of IS can surface in the form of employees' willingness to accept the new system, their ability to use it, and the managerial support available. Thompson and Richardson (1996) argue that IS are designed, developed, and implemented with hardly any or no attention at all either to the needs of employees or to the impact that such technologies might have on an organisation's personnel. Lam *et al.* (2007) insist that even though there is ample research material relating to the impact of IS on human behaviour in the manufacturing and service industries, few studies have been conducted in the hotel environment. As far as IT investment is concerned, Davenport and Hagemann-Snabe (2011) maintain that while the hotel industry may be labour-intensive in character, hotel managers are willing to increase the amount invested in technology in order to enhance their business thrust on employee productivity. Yet, hotel managers' positive or sometimes over-optimistic perceptions of IT adoption can be seen to create pressure on operational employees to make use of IT (Lam *et al.*, 2007) in many instances without appropriate training. With the above points in mind, the role of the hotel manager can also be viewed through the tenets of the Theory of Reasoned Action (Fishbein and Ajzen, 1975). According to the latter, a person's behavioural intention to perform a specific act can be explained by looking into that individual's attitude toward the behaviour, along with his/her subjective norm. As a determinant of attitude, subjective norm is commonly accepted as the perception of general social pressures to perform a specific act, and is in turn triggered by normative beliefs (Fishbein and Ajzen, 1975; Moore and Benbasat, 1996; Benbasat and Barki, 2007; Huh *et al.*, 2009; Jeng

and Tzeng, 2012). Because of that, it is more probable for employees to perform an act if they perceive the existence of greater social pressure from salient or key referents to perform that act (Fishbein and Ajzen, 1975; Nor, Pearson and Ahmad, 2010). In the hotel setting, social pressure on employees is likely to come from supervisors, heads of department, the director of operations, or the general manager. In other words, it is the managers' perspectives that usually influence adoption and application of technologies. Nonetheless, all hotel staff, from hourly paid employees to senior executives realise the significance of IT in replacing obsolete paper systems, supporting customer services, and increasing operational effectiveness (Law and Jogaratnam, 2005). Other barriers have also been identified in the literature. Muilenburg and Berge (2001) detect lack of technical expertise and support services, while Heung (2003) finds lack of knowledge, participation, and well-trained staff. Stewart, Mohamed and Marosszeky (2004) discover deficiencies in IT experimentation and leadership, fear of change, and low technology literacy of employees. Moreover, Ebrahim and Irani (2005) recognise shortage of IT skills and security and privacy concerns, whereas Nanji, Cina, Patel, Churchill, Gandhi and Poon (2009) pinpoint communication issues and negative perceptions about technology. More recently, Johnson (2010) singles out risk perception, knowledge deficits, trust, company size and organisational readiness as moderating factors that govern the adoption and usage of systems. Furthermore, Seger (2011) highlights the significance of barriers including an organisational structure that does not cater for the short turn-around of new technologies' demand and ideological generational divides among an organisation's stakeholders, while Elzawi and Wade (2012) find that

effective IT and IS adoption is hindered by a lack of understanding individual needs and an insufficiency in fully including users in planning and implementation processes. Moreover, Agwu and Murray (2015) maintain that another barrier is the lack of understanding of the potential benefits of the technology that is to be adopted. A route that organisations sometimes follow in order to overcome barriers to adoption is focusing on employee IS productivity (Jääskeläinen, 2011).

3.2.1. Evaluation Approaches of IS Productivity

One of the most basic approaches in assessing employee IS involves evaluating a system in terms of its productivity, a measurement relevant to both employees and the systems they use. Widely regarded as a key success factor for organisations (Jääskeläinen, 2011), productivity can be defined as the ratio of what is produced (output) over what is required to produce (input) within a specified time limit (Johns and Wheeler, 1991; Nasiripour, Kazemi and Izadi, 2012). Examples of productivity studies include the work of Reid and Sandler (1992), which examines the adoption level and benefits of technology applications in the lodging industry. Their results suggest that IT adoption may vary across hotels and according to employee characteristics. A similar productivity-based review by Van Hoof, Collins, Combrink and Verbeeten (1995) looking into technology needs and perceptions of hotel managers, finds

that almost 93 per cent of the respondents agree that IT applications improve employee productivity and enhance the effectiveness of the operation. More than a decade later, Patton (2007) states that the employee productivity of a company is affected more by its IS capabilities than by its hard assets. David, Grabski and Kasavana (1996) analyse hotel employees' perceptions of IT effectiveness and productivity. Their findings show that hotel staff is firm in its beliefs that IT assists in improving the quality of business operations, particularly in the front office context. The same, however, cannot be said about back office systems, as in most cases they show little productivity enhancement (David *et al.*, 1996). Nonetheless, the vast majority of IS literature papers are in agreement over the invaluable contribution of IT applications to employee productivity and performance. This is exemplified in a report by Lee, Barker and Kandampully (2003) which corroborates that technology can affect the ability of hotels to support employees, enhance service quality and employee performance, improve efficiencies, gain competitive advantage, and increase profitability. A more recent IT study (Kuo, Ho, Lin and Lai, 2010) that focuses on work redesign and employee empowerment finds positive relationships between work redesign and IT attitude (including job satisfaction and commitment), and increased productivity. Another review on the relationship between empowerment and IT productivity corroborates that empowering employees can increase their job satisfaction levels in addition to boosting the efficiency and productivity of front office operations (Kim, 2011). Zhao (2009) concurs that if an organisation wishes to increase its employee productivity it has to provide members of staff with the necessary tools that will allow them to make decisions using their own

common sense. Melian-Gonzalez and Bulchand-Gidumal (2016) suggest that employee productivity can be increased by reducing staff costs and through higher output while containing service levels. Such tactics release employees from unnecessary tasks that can be completed through the use of IT. The options that IT can provide to reduce staff costs include kiosks, online check in, and mobile check in (Kim, Kim, Park and Jee, 2012).

However, it has been posited that although the concept of productivity is being utilised for many years, it is often simplified, misinterpreted or misapplied (Linna, Pekkola, Ukko and Melkas, 2010). For instance, there are some researchers that have found controversial or inconclusive results on productivity of employees using IT applications (for example, Dasgupta, Sarkis and Talluri, 1999; Melville, Kraemer and Gurbaxani, 2004; Benitez-Amado, Llorens-Montes and Perez-Arostegui, 2010; Arslan and Ozturan, 2011; Hajli, Sims, and Ibragimov, 2015; van Ark, 2016). Called the 'IT productivity paradox', this often-contradictory relationship between investment in IT and gains in employee productivity has been commonly attributed to a lack of user acceptance of IT innovations (Agarwal and Prasad, 1997). Macdonald, Anderson and Kimbel (2000) define this concept as the perceived discrepancy between IT investment and IT performance, in other words between input and output. Leonard-Barton and Deschamps (1988) observe that even though IT has promised organisational gains in efficiency and employee performance, the predicted substantial increases in productivity have been slow to arrive, hence the term 'IT productivity paradox'. A commonly acknowledged explanation of this relationship is the dictum that systems that are not used

provide little value (Agarwal and Prasad, 1997). Other studies indicate that the complexity of the relationship between IT investment and employee performance develops because of theoretical problems, methodological errors, and differences in analytical approaches, management practices and industry segments (Bharadwaj, Bharadwaj and Konsynski, 1999; Turedi and Zhu, 2012). Turedi and Zhu (2012) also suggest that another reason for this phenomenon may lie in the fact that it takes time for organisations to implement complementary organisational and process changes that make use of new technologies, while Schwarz, Kalika, Kefi and Schwarz (2010) explain that it takes several years before the productivity potential is fully realised due to the lengthy learning and adjustment period of introducing new ITs in companies. Hajli *et al.* (2015) offer additional clarification by noting that one of the key reasons behind the 'productivity paradox' is often the mismeasurement of service sector productivity and the qualitative contribution of IT. Yet, Agarwal and Prasad (1997) warn that having the technology available is simply not enough, as it must also be accepted and used appropriately by employees in order for anticipated productivity gains to be realised. The dichotomy involving technology availability and use is also highlighted by Fichman and Kemerer (1993), who make a distinction between how a company adopts a technology versus how it assimilates it. Albeit centred on an managerial level of analysis, the research by Fichman and Kemerer (1993) is not dissimilar to academic efforts that focus at an individual level and on the determinants of technology acceptance and utilisation among employees (Davis, 1989; Davis, Bagozzi and Warshaw, 1989; Mathieson, 1991, Moore and Benbasat, 1991; Venkatesh and Davis, 2000; Yi and Huang, 2001; Venkatesh *et al.*, 2003;

Venkatesh and Balla, 2008; Huh, Kim and Law, 2009; Kim and Kankanhalli, 2009; Talukder, 2011; Jeng and Tzeng, 2012; San Martin and Herrero, 2012; Sun, 2012; Theodosiou and Katsikea, 2012; Oliveira, Thomas, Baptista and Campos, 2016; Kim, Hebeler, Yoon and Davis, 2018). Studies on organisational environment also touch on the notion that in some cases anticipated organisational rewards such as enhanced employee performance or productivity are not followed by the corresponding increases in productivity. For instance, although it has been suggested that a high level of IT investment usually has a positive impact on an organisation (Wang, Shu and Tang, 2008), it may also generate increased demands and stress in the workplace by creating expectations of greater productivity, and technological 'complications' stemming from the lack of employee IT training (Day, Scott and Kelloway, 2010; van Ark, 2016).

Many employees see IT applications as one of many ways to connect a hotel with prospective guests. In this fashion, IT adopted by employees can be instrumental in helping them learn more about their guests, their preferences, behaviours, and reservation trends so that services can be customised through innovativeness and superior information sharing (Connolly, 1999; Morosan, 2012). Kim, Lee and Law (2008) suggest that a system needs to offer an easy-to-understand language and technology, as well as a variety of information to the user and that all departments must be able to constantly share and update that information. Additionally, IS need to be flexible to changes, facilitate information sharing, and provide a safe and swift transaction time so that hotel frontline employees may increase the time spent

on customer service (Kim *et al.*, 2008; Morosan, 2012). Kim *et al.* (2008) stress that employees need to realise that the benefits (increased efficiency, improved productivity, and reduced time-to-complete a task) of using hotel front office systems lead to better job performance, which in turn can improve customer satisfaction and operational efficiency. Thus, when frontline employees use a system and believe that through its use, the efficiency, productivity, and outcome of their work would be improved, their motivation is expected to increase, and they are more likely to recognise the value of the front office system to their job. As a consequence, all competitive hotels are virtually guaranteed to make use of any new technology that offers considerable advancement in employee performance and productivity (Collins, Cobanoglu and Malik, 2003). In fact, many hospitality industry executives agree that IT plays a critical role in hotel operations, some even stating that "*there is no denying or avoiding it, automation has become the arbiter of success in the industry…without it, failure is just a matter of time*" (Hensdill, 1998:51). At the beginning of the new millennium, large hotels manage to be actively involved in technology adoption and discover ways to encourage their guests to use new applications (Law and Jogaratnam, 2005). Despite a slower tempo of technology adoption in comparison to other industries, hospitality has become open to ground-breaking technologies (for example virtual meeting systems or touch screen door locks) as their benefits are increasingly noticeable, particularly in relation to operational efficiency (Kim, 2009). More recently, the proliferation of smartphone ownership and use of mobile phones for booking and checking in/out purposes has persuaded

hotels to develop mobile strategies and utilise mobile applications (apps) (Chen, Murphy and Knecht, 2016).

It also worth noting that a number of researchers prefer to concentrate on assessments of IS that focus on employee competency rather than productivity. Griffiths and King (1985) define competency as the generic knowledge, skill, or attitude of a person, related to effective behaviour as demonstrated through performance. Along these lines, IT competency can be described as the extent to which an organisation is knowledgeable about IT and utilises IS to manage information internally (Tippins and Sohi, 2003). Mithas, Ramsubbu and Sambamurthy (2011) add that IT competency is a broad term that refers to the efficient use of technologies in order to fulfil the information needs of a firm. It has been argued that IT competencies can allow companies to gain competitive advantage (Dehning and Stratopoulos, 2003; Bani-Hani and Alhawary, 2009) and improve business performance (Santhanam and Hartono, 2003; Lokshin, Van Gils and Bauer, 2009; Liang, You and Liu, 2010; Chen and Wu, 2011). According to a study by Fernandes, Alturas and Laureano (2016), hotel managers usually have greater IT competency than employees. Therefore, if the former enforce improvements in IT operations and IT knowledge, their hotels will be able to differentiate themselves and create a competitive edge within the market. However, Ray, Muhamma and Barney (2005) argue that employee competency and other specific process metrics are not suitable for use as the first level of measure when the research is related to organisations across different industries. This viewpoint is shared by Prasad, Heales and Green (2010) who argue that

specific process metrics like competencies are relevant only when considering separate, individual industries, whereas when focusing on cross-industry studies, common productivity measures are more appropriate. Productivity, of course, is also closely connected to employee performance.

3.2.2. Employee IS Performance and Quality of Service

A further IS assessment area that is influenced by the impact of a system on employee performance is the overall quality of the service provided. One approach to fully comprehend how IS can affect the quality of service involves measuring the perceptions of Information Systems practitioners of their own work by means of information and service quality dimensions (Bharati and Berg, 2003; Byrd and Byrd, 2012). Hotel employees are uniquely positioned to monitor increases or decreases in those areas due to their involvement with the implementation and daily operation of IT applications (Ham *et al.*, 2005). DeLone and McLean (1992, 2003) suggest that employee impact is established by the effect that information has on the behaviour of any given recipient. According to Tayntor (1994) and Varis and Littunen (2010) better use of information, both internally and externally, is positively associated with enhanced performance, more innovative company offerings and profitability. An earlier study (Emery, 1974) states that information has no intrinsic value, as any value can only be found through the influence information may have on physical events, and such influence is naturally exerted through human decision makers. Bharati and Berg (2003) notice that there have been many

variables exploited by different research efforts to quantify or measure employee IS performance and quality of service. For example, in a study featuring an experimental at the time framework for investigating the influence of Management Information Systems on decision-making behaviour, Chervany, Dickson and Cozar (1972) find that decision effectiveness is one of the most important parameters of employee MIS performance. Several reviews point to speed of task completion (DeBrander and Thiers, 1984) or efficiency of task completion (Sanders and Courtney, 1985) as indicators of employee IS performance and quality of service. Other academic papers have employed similar metrics such as decision confidence (Goslar, Green and Hughes, 1986) and time-to-decision (Hughes, 1987), as well as employee IS characteristics including the feeling employees have toward IS (Bailey and Pearson, 1983) together with training or experience they have had on the system (Bharati and Berg, 2003). A further research study that investigates the acceptance of hotel front office systems from the perspective of frontline employees uses information system quality and perceived value as external variables (Kim *et al.*, 2008). Information system quality contains system quality, information quality and service quality. From all the information system quality constructs, service quality is found to have the greatest impact on perceived ease of use for hotel front office systems, with all possible relationships being positively significant and only the correlation between ease of use and information quality being positive but not significant (Kim *et al.*, 2008). This can be justified by the fact that in a given system, information might be accurate and efficient, but this does not necessary mean that it is also easy to use. Furthermore, information quality has the greatest effect on perceived

usefulness, again with all feasible relationships being positively significant, except service quality, which has a positive but not significant correlation. This can be explained by the assumption that if service quality, such as systematic support, is offered in a hotel environment, users may perceive the use of the front office system as easy but may not automatically perceive it as being useful (Kim *et al.*, 2008). Kim *et al.* (2008) admit that even though their results show information system quality to affect users' beliefs in hotel front office IS, it is crucial to acknowledge the existence of other factors that may also have some bearing on user beliefs. Examples include computer use experience (Yang, 2005), computer self-efficacy (Ong and Lai, 2006), job relevance (Hu *et al.*, 2003), and innovativeness (Lu, Yao and Yu, 2005). However, research on employee IS performance and its antecedents has evolved and has introduced aspects such as storage, encoding and retrieval of information and knowledge as factors that influence the manner in which employees perform in relation to IS and the quality of service they offer (Choi, Lee and Yoo, 2010).

According to Heart, Pliskin, Schechtman and Reichel (2001) the hospitality industry begins to take the first steps towards adopting operational IS by as early as the 1960s and 1970s. The arrival of IS in hotels is manifested through the installation of the first room management application at the New York Hilton in 1963 (Sayles, 1963) and a property management system at the Waikiki Sheraton in 1970 (Heart *at al.*, 2001). Academic articles reflecting on the need to assess employee IS performance and the overall contribution of the IS function to the organisation start to surface in the late 1970s (for example, Emery, 1974; King and Rodriguez, 1978, Rolefson, 1978, Zmud,

1979). Early research appears to concentrate on economic considerations and is responsible for introducing the idea that in order to develop a clear picture of what employee IS assessment entails, multiple measures are necessary (Ahituv, 1980; Bender, 1986). While initial attempts revolve around measures of system availability and performance, McLean (1973) is one of the first academics to call for a shift in measurement focus from efficiency to effectiveness. Such a move would demand IT professionals to measure and engage in organisational objectives in addition to pursuing their internal departmental goals (Myers, Kappelman and Prybutok, 1997). McLean (1973) advocates that efficiency and effectiveness are distinct notions and thus require different measures. This notion is supported by Martz (2008) in a study of organisational effectiveness. An efficient system is not necessarily an effective one, since efficiency concentrates on internal requirements and effectiveness involves an external focus (Myers, Kappelman and Prybutok, 1997). For instance, a system efficiency measurement may be the number of tasks completed per unit of time while effectiveness can be assessed by means of the impact of the information provided in helping employees do their jobs (Martz, 2008). According to one of the gurus of management, Peter Drucker, efficiency is frequently described as being concerned with doing things right, while effectiveness is all about doing the right things (Drucker, 1967; McLean, 1973; Drucker, 1993). Yet, organisations in the modern competitive environment not only have to distinguish between effectiveness and efficiency, but also to attempt to marry the efficiency advantages gained through the prudent management of capabilities and resources with increasing effectiveness in order to keep costs under control (Mason and Mouzas, 2012).

In a study that identifies the antecedents of hotel efficiency and effectiveness, Tajeddini (2015) distinguishes between financial orientation, a strategic management approach that revolves around improving a hotel's financial performance, and entrepreneurial orientation, which is based on goals and performance measures that are long-run and strategy-driven as opposed to financially driven. Tajeddini (2015) concludes that the relationships between the two orientations depend largely on certain dynamic environment conditions including temporal, technical and market uncertainties. A further study that examines how managerial effectiveness and efficiency contribute towards a hotel's profitability identifies hotel size, exposure to crisis events and levels of managers' education as factors that have an effect on financial performance (Ben Aissa and Goaied, 2016). However, reflecting on efficiency and effectiveness issues in the workplace is not adequate to deal with the complications that IS adoption presents. Other issues such as employee characteristics have to be also taken into account.

3.2.3. Employee Characteristics and IS Adoption

Employee characteristics and individual differences have been studied in the human-computer interaction field since the 1970s. Comprehending individual differences can assist academics and practitioners to acquire insight to, and possibly predict employee performances (Cegarra and Hoc, 2006). One of the earliest and most comprehensive studies to touch on the relationship between employees and IS looks into how individual employee characteristics impact

the success that organisations experience in relation to the development and adoption of Management Information Systems (Zmud, 1979). The study clearly demonstrates that individual employee characteristics/individual differences exert a major influence in determining MIS adoption and success. By synthesising the findings of empirical research at the time, Zmud (1979) determines that the individual employee differences most relevant to MIS acceptance and success can be grouped into three categories: cognitive style, personality, and demographic/situational variables. Cognitive style can be defined as a high-order heuristic that employees employ when they approach, frame, and solve problems (Brigham, De Castro and Shepherd, 2007). Research indicates that learners or employees with different cognitive styles present diverse properties in their learning approach (Chou, 2001; Chen and Macredie, 2004). Cognitive styles symbolise distinctive modes of functioning expressed by individuals in their perceptual and thinking behaviour. Even though such behaviours depend on task elements, consistent individual employee differences can be detected as many individuals show signs of pervasive tendencies towards a particular cognitive behaviour (Brigham *et al*, 2007). Cognitive styles encapsulate structural aspects of perception and notions of whether an individual is limited by external referents or can take advantage of internal referents during structuring cognitions (Zmud, 1979). The predisposition to rely mainly on external or internal references plays a vital role in the learning progression and restructuring of information (Chen, 2010). The generation of ideas and the flexibility to cope with uncertainty are also integral parts of the cognition process (Bryson, 2011). A further key function of cognitive style is to differentiate between use of abstract models or

systematic processes in cognition and approaches that are rooted in experience, common sense, and the practicalities of a situation (Huysman, 1970; Nielsen, 1992; Lee, 2007). Styles of cognition can also be associated with other dimensions including decision making, learning, personality, and awareness (Leonard, Beauvais and Scholl, 2005). Moreover, cognitive styles are at the heart of many strategic planning practices within hotels (George, Desmidt, Cools and Prinzie (2018).

Personality, first identified by Zmud (1979) as a category of employee differences, denotes the affective and cognitive structures sustained by individuals to facilitate their adjustments to events, people, and situations encountered in life (Morrison, 1994). The personality variables most strongly affecting IS adoption are locus of control (Zmud, 1979; Craig, Franklin and Andrews, 1984; Woodrow, 1990, Ajzen, 2002; Chak and Leung, 2004; Maltby, Day and Macaskill, 2007; Schultz and Schultz, 2009), dogmatism (Zmud, 1979; Carlozzi, Bull, Eells and Hurlburt, 1995; White, 2006; Tucker, 2010; Persson, 2012), ambiguity tolerance (Zmud, 1979; Vandenbosch and Huff, 1997; Owen and Sweeney, 2002; Lane and Klenke, 2004; Kajs and McCollum, 2009; Katsaros and Nicolaidis, 2012), extroversion (Zmud, 1979; Argyle and Lu, 1990; Hills and Argyle, 2000; Nithya and Julius, 2007; Fulmer, Gelfand, Kruglanski, Kim-Prieto, Diener, and Pierro, 2010), introversion (Brown and Hendrick, 1971; Zmud, 1979; Thrash Elliot and Schultheiss, 2007; Preston, 2008; Mitchell, Lebow, Uribe, Grathouse and Shoger, 2011), need for achievement (Fineman, 1975; Zmud, 1979; Hansemark, 2003; Furtner and Rauthmann, 2011; Chen, Su and Wu, 2012), evaluative defensiveness (Zmud,

1979; Dillon and Morris, 1996; Trope and Pomerantz, 1998; Nussbaum and Dweck, 2008; Lisjak, Lee and Gardner, 2012; Raymond, Uwizeyemungu, Bergeron and Gauvin, 2012), anxiety level (Zmud, 1979; Heinssen, Glass and Knight, 1987; Compeau, Higgins and Huff, 1999; Durndell and Haag, 2002; Saadé and Kira, 2007; Korobilli, Togia and Malliari, 2010; Celik and Yesilyurt, 2012; Shah, Hassan and Embi, 2012), openness to experience, agreeableness, conscientiousness (John and Srivastava, 1999; Rauschnabel, Brem and Ivens, 2015), and risk-taking propensity (Zmud, 1979; Agarwal and Prasad, 1998; Das and Joshi, 2007; Scannell, Calantone and Melnyk, 2012). The demographic/situational category (Zmud, 1979; Atkin, Jeffres and Neuendorf, 1998; Morris and Venkatesh, 2000; Porter and Donthu, 2006; Seyal and Rahim, 2011; Venkatesh *et al.*, 2012) on the other hand, contains an extensive range of personal traits that are thought to impact MIS usage and adoption including, sex, age, education, experience, organisational level, and professional orientation.

Apart from individual employee differences, research also identifies other factors that may have an impact on MIS adoption and success, including cognitive behaviour. The essence of cognitive behaviour, cognition, represents "*activities involved in attempts by individuals to resolve inconsistencies between an internalised conceptualisation of the environment and what is perceived to be actually transpiring the environment*" (Zmud, 1979:968). The MIS literature has produced three separate research areas on the subject of cognition. The first, information processing theory revolves around analysing the types of memory structures exploited in cognition and

the manner in which data is perceived, processed, and retrieved in terms of these structures (Rumelhart, 1977). Conceived by Galbraith (1973), the organisational information processing theory acknowledges that companies have the capacity to be methodical in order to deliver performance effectiveness and often operate successfully despite different organisational structures. Years later, Zhou (2011) empirically tests the information processing theory using business environment uncertainty as the dependant variable and finds that the latter has a significant positive influence on information quality among other factors. Srinivasan and Swink (2015) find the information processing theory to be an important mediator in the relationship between organisational activities and operational performance. The second research strand of cognition, artificial intelligence, is focused on replicating how problematic situations are presented and resolved in human cognition (Newel and Simon, 1972) and uses the principles that support high-level cognitive processing to construct computerised systems with the same breadth of abilities as a human brain (Langley, Laird and Rogers, 2009). Despite the fact that artificial intelligence systems have already been adopted in the hotel industry by means of online/mobile check in, self-check in kiosks, facial recognition guestroom entry and information points amongst other, the state of current research is still in its infancy stage and further efforts are necessary to understand the full effect of these technologies and whether they will be fully accepted by hotel guests and employees (Ivanov and Webster, 2017). The third, behavioural decision theory describes the means by which beliefs and values are integrated into the decision-making process (Slovic, Fischhoff and Lichtenstein, 1971), and how, from a psychological perspective,

decision makers make value judgements (Morton and Fasolo, 2009; Alexander, Walker and Naim, 2014). It is clear that the above research areas are pertinent to IS adoption because they can reveal aspects such as human limitations in cognition, which can be converted to critical elements to be supported by a computer-based system. Reviews in the fields of differential and experimental psychology have established how individual employee differences in perceptual and cognitive conditions influence performance during interaction with computerised systems (Dillon and Watson, 1996; Ling and Savendy, 2009; Wang and Noe, 2010; Triki, Nicholls, Wegener, Bay and Cook, 2012). Yet, despite the fact that an understanding of individual employee characteristics can predict performance, successful IS adoption is still not guaranteed unless staff are involved and participate in the organisation's operations including the IS development stage.

3.2.4. User Participation and User Involvement

In order to develop a concrete understanding of IS used by employees the concepts of user participation and user involvement need to also be explained. It appears that user perceptions about whether a system is successful or not can be better comprehended when psychological engagement with the system is considered (Kappelman and McLean, 1992). The same authors note that any IS evaluation efforts would be invalidated if either the behavioural or the psychological side of user engagement is disregarded. In fact, they define user participation as the observable behaviour of system users in the IS

development process, while user involvement denotes the need-based mental or psychological state of system users (Kappelman and McLean, 1992). Hence, user participation is relevant to users and their contribution in development and implementation activities, whereas user involvement recognises users' attitudes towards the development process and the system itself. Both user participation and involvement are closely linked to the distinctive activities of IS development because it would be hard to imagine that any activities pertinent to the design, development or implementation of a system could be carried out in a justified manner without any user input (Iivari, Isomäki and Pekkola, 2009). Barki and Hartwick (1989) refer to user participation as development-related activities and behaviours of users and their representatives during the development process; they describe user involvement as the subjective psychological state that reflects the level of importance and personal relevance of IS to users. Moreover, it can also be argued that user participation is one of the most significant antecedents, or causes, of user involvement, conditional on several factors that are posited to affect the strength of the relationship (Barki and Hartwick, 1994). A further approach purports that the extant views of user involvement do not "*accommodate the nature of systems that support ubiquity of information services*" (Henfridsson and Lindgren, 2010:120). Based on this perspective Henfridsson and Lindgren (2010) define user involvement as the informative, consultative, and participative contact with users throughout the different phases of a system development process. According to Sun (2013), this is particularly important as users have a far deeper understanding of the system compared to developers, and hence, their involvement during the

development process can lead to simpler methodologies when designing and validating the system's software functionality.

In IS research, user participation has been more dominant compared to user involvement, and there have been several types and degrees of the former recorded. For instance, Mumford (1979) proposes three types of user participation, namely consultative, representative, and consensual. In contrast, Ives and Olson (1984) contend that there are many types in existence, from no participation at all, to symbolic participation, participation by doing, and participation by weak or strong control. Greenbaum (1993) reveals that user participation may be approached from a number of diverse routes or perspectives, such as pragmatic-where user participation is a means to specific ends, theoretical-where participation provides an instrument for sharing 'world views', and political- whereby users are enabled to have some bearing on their working lives. Butler and Fitzgerald (1997) point out that there can be various degrees of user participation, from strong to weak, formal to informal, and direct to indirect. Additionally, user participation can be conceptualised into four distinct dimensions, namely users' hands-on performance of activities, responsibility, relations with IS, and communication with IS personnel and senior management (Barki and Hartwick, 1994). He and King (2008) declare that the behaviours that users perform during the development process of a system include user hands-on activities, user reviews, and user responsibilities. Tarafdar, Tu and Ragu-Nathan (2010) advocate that involved users have an enhanced appreciation of the larger context in which IS are developed and implemented as well as the associated

strategic and operational imperatives. They maintain that during system development, a high level of involvement creates central roles for users that entail contributing to planning, approving system requirements, giving feedback on prototypes, and undertaking training and post-implementation support activities (Tarafdar *et al.*, 2010). Brhel, Meth, Maedche and Werder (2015) insist that users should actively participate during the whole process of IS development, including post-implementation, in order to collect feedback and input. Another synthesis of the user participation literature brings to light three fundamental paradigms that clarify how participation affects system success (Markus and Mao, 2004). The first of those, the buy-in theory of participation implies that the effort users invest during their participation and the influence they have on system development makes them perceive the system as more significant and germane (Markus and Mao, 2004). In succession, this psychological state of amplified involvement is thought to affect employees' attitudes and their usage of the system (Hartwick and Barki, 2001). The second paradigm, system quality theory, suggests that when users participate in system development, system developers become better informed about business needs, which can result in higher quality and more successful systems, especially when development projects are vast and convoluted (Markus and Mao, 2004). The importance of the cognitive effects of participation as an instrument for enhancing system quality is inherent in system quality theory (Spears and Barki, 2010). The third and final concept that explains how participation influences system success is the emergent interactions theory, which hypothesises that when users participate in system development, they develop a relationship with IS professionals and the

character of this relationship shapes system success (Spears and Barki, 2010). A good relationship is expected to lead to success not only in terms of higher quality systems and improved consideration for business needs, but also through enhanced relational and affective outcomes such as for example higher levels of user and designer satisfaction (Markus and Mao, 2004). Hsu, Chan, Liu and Chen (2008) promote the view that the relationship between users and IS professionals is turning into a complicated issue through the passage of time as systems and application areas become more advanced and increasingly complex. Tesch, Sobol, Klein and Jiang (2009) suggest that IS professionals and users have to work together in unison to integrate their technical and application domain knowledge if IS development success is to be achieved. Acknowledging evolving system environments including IS development projects, Wang, Chang, Jiang and Klein (2011) advise that the core concepts of IS participation theory and the relationships among them need to be reconceptualised in order to establish how change agents may employ participation practices to increase the chance of success in such diverse IS development contexts. Such practices may include fast prototyping, individual inquiry, formal tests, and heuristic evaluations (Salvador, Nakasone and Pow-Sang, 2014).

Historically, user participation and involvement in IS development and their influence on the success of implemented systems have been a central research topic for at least the last thirty years (for example, Swanson, 1974; Ives and Olson, 1984; Baroudi, Ives and Olson, 1986; Barki and Hartwick, 1994). Ives and Olson (1984) indicate that within the MIS literature it is almost

an axiom that user involvement is a necessary condition for successful development of IS. Leonard-Barton (1995) clarifies that the confusion over the benefits of user participation and user involvement has mainly been the product of countless studies treating these subjects simplistically. McKeen, Guimaraes and Whetherbe (1994) observe that in the past, research on user participation and involvement has been conducted on the principle of illustrating a connection between such concepts and success in systems development. However, handling user participation/involvement as second-order constructs and exploring their direct impact on final outcomes is exceedingly parsimonious and can lead to inconclusive results (Hsu, Lin, Zheng and Hung, 2012). Another issue with early studies is that in system development contexts, user participation outcomes have largely been attributed to affective outcomes such as satisfaction or psychological attachment (Spears and Barki, 2010), with only a few scholars arguing that the greatest outcome of user participation may be of a cognitive nature such as information exchange and knowledge transfer (Latham, Winters and Locke, 1994; Locke, Alavi and Wagner, 1997; Lewis, Agarwal and Sambamurthy, 2003; Rouibah, Hamdy and Al-Enezi, 2009; Tesch *et al.*, 2009). Butler and Fitzgerald (1997) reveal that a similar difficulty with past research efforts stems from the fact that user participation and user involvement have been used interchangeably in the IS literature. Kappelman and McLean (1992) find that at fairly robust levels of significance, empirical evidence suggests that user participation has a positive and statistically significant relationship with user involvement, while user involvement additionally plays a mediating role in the relationship between user participation and user satisfaction. Kappelman and

McLean (1992) also insist that the paradigm which implies that user participation causes user involvement has been repeatedly tested and never disconfirmed. Indeed, since then empirical tests and studies have confirmed that as a rule in IS development, user participation can trigger user involvement and that both affect user satisfaction, even after regulating factors such as project size, development time schedule, and performance (Subramanyam, Weisstein and Krishnan, 2010; Hsu *et al.*, 2012; Bano and Zowghi, 2015). Apart from user involvement and participation, there are other user-related characteristics such as attitude towards IS use, employee training and prior experience with IS that can aid in the facilitation of IS adoption.

3.2.5. User-related Attributes

In a study that explores the relationship between users and systems and its contribution to IS success, Guimaraes and Igbaria (1997) indicate that user-related attributes such as user experience with IS, user attitude towards IS, user training on IS, and user engagement in the development of a specific IS can have a vital role in the eventual success of a system. User experience with IS has been defined as the duration or level of a person's prior use of computers and IS in general (Guimaraes and Igbaria, 1997). It encompasses all aspects of the user's interaction with the system: the internal state of the individual (predispositions, needs, expectations, motivation), the characteristics of the system (purpose, complexity, functionality, usability), and the context within which the interaction occurs (organisational/social setting,

voluntariness of use) (Hassenzahl and Tractinsky, 2006). User experience with IS has also been defined as the value derived from interactions between a system and all stakeholders in the context of use (Sward and MacArthur, 2007), or in other words, the result of interaction between three elements, namely user, system, and context (Llalemand, Gronier and Koenig, 2015). User training in IS can be described as the extent to which an individual has been trained on IS through college courses, in-house training, and self-study (Igbaria, Guimaraes and Davis, 1995). Choi, Kim and Kim (2007) argue that the benefits of IS training go beyond simply learning how to use a system, stating that effective training is valuable as it can facilitate a positive attitude towards the system and amplify user acceptance. Koh, Gunasekaran and Cooper (2009) note that while training is a necessary prerequisite for the successful implementation and operation of IS, there exist other significant parameters, namely ability, know-how, behaviour, and attitude of users. User attitude towards IS denotes a user's affection and liking for IS and for using them (Venkatesh *et al.*, 2003). Zhu, Lin and Hsu (2012) define attitude as the level of user preference for a system, while He, Qiao and Wei (2009) argue that contrary to user satisfaction, an experience specific-factor, user attitude towards a system is a relatively more enduring factor transcending all prior experiences. The external foci associated with developing training programmes, creating support groups, and enabling employee participation are likely to have appositive impact on user attitudes towards IS (Maruping and Magni, 2015). User engagement in the development of a specific IS encompasses all the assignments, tasks, and behaviours that users perform during the IS development timeframe, or alternatively the user's psychological

state of involvement in the development of that system (Sabherwal, Jeyaraj and Chowa, 2006). The latter, user engagement in IS development, appears in the form of user participation and user involvement and has already been referred to in the previous section of this thesis.

In a study that looks at the manner in which IS success constructs are affected by contextual and user-related antecedents, Sabherwal *et al.* (2006) identify the existence of potential interrelationships between these user-related attributes and amid their contextual counterparts. Their findings reveal that from a possible eleven proposed relationships linking these two distinct categories, ten are supported. More specifically, three of the four relationships among user-related metrics, the link between the two aspects of the context, and every one of five hypothesised ways in which context can influence user-related constructs, are all supported (Sabherwal *et al.*, 2006). For instance, user experience is posited to affect user training, since users that have gained more experience with IS would have encountered greater opportunities to receive training on IS and would have merited a higher need to receive such training. In succession, user training can facilitate user involvement, as IS development teams would look for greater engagement from users if they had received IS training in the past. Moreover, trained users may themselves be more motivated to take part in system development projects (Guimaraes, Staples and McKeen, 2003; Choi *et al.*, 2007). Simultaneously, user attitude is also thought to influence user involvement, since a less favourable attitude towards IS might lead to users not contributing to the development project and not feeling psychologically involved (Hartwick and Barki, 1994; Spears and

Barki, 2010). It has already been established that the higher the levels of involvement among users, the better their chances of successful IS adoption. At the other end, contextual attributes such as management support (senior executives' unequivocal support for IS) and facilitating conditions (infrastructure, guidance, formal training, help desks, information centres, technical support teams) are thought to be connected because when management is decidedly supportive of IS, greater resources are likely to be allocated to system procurement, development, and maintenance, thus improving the necessary facilitating conditions (Sabherwal *et al.*, 2006). The latter portray the objective factors in the environment that have an impact on an individual's likelihood of using IS; thus, the greater the support present within the environment, the greater the individual's propensity to use the system (Maruping *et al.*, 2017). In situations where management is appreciative of IS, senior executives tend to be more favourable towards IS-related projects and they encourage employee empowerment in decision-making on the subject of IS (Thong, Yap and Raman, 1996; Wixom and Watson, 2001; Bueno and Salmeron, 2008; Kuo and Lee, 2011). Consequently, managerial support can enhance the rate of technology adoption and bring about an increased keenness by employees to not only engage in IS-related projects, but to also improve their attitude towards IS, in addition to gaining experience and learning about IS (Sabherwal *et al.*, 2006; Tesch *et al.*, 2009; Sun and Bhattacherjee, 2011; Cheung, Lee and Lee, 2013). It is found that the intensity of technology adoption is higher in organisations that promote the acquisition of IS and the distribution of knowledge about technological developments through the top tiers of their

managerial hierarchy (Cegarra-Navarro, Jimenez and Martinez-Conesa, 2007). Conversely, Guimaraes and Igbaria (1997) regard lack of management support to be a critical barrier to IS use. If an organisation lacks the necessary resources and senior managerial support, systems users are likely to form negative attitudes towards the systems and the probability of them using those systems will decrease (Maruping *et al.*, 2017). Tarafdar and Vaidya (2006) indicate that senior managers shape IS use in their organisations by virtue of their formal authority and imply that an absence of authority, leadership and therefore influence could have a catastrophic effect on employees' system use and technology adoption. Kuo and Lee (2011) specify that high-ranking managers play an important role in a company's IS use and technology adoption as their leadership style can be a key factor in influencing implementation success or failure. Meanwhile, facilitating conditions provide employees with a platform to enhance their attitude towards, experience with, and training in, Information Systems. Research has shown that facilitating conditions have a direct effect on system use and consequently IS adoption (Taylor and Todd, 1995; Staples and Seddon, 2004; Aggelidis and Chatzoglou, 2009; Park and Lee, 2011; Alrawashdeh, Muhairat and Alqatawnah, 2012; Maruping *et al.*, 2017). Venkatesh *et al.* (2003) argue that facilitating conditions do not affect a person's intention to use a system, but they are a significant predictor of the actual use, beyond that explained by behavioural intention. Venkatesh, Maruping and Brown (2006) affirm that the presence of facilitating conditions can foster system use and IS adoption whereas their lack can hinder those areas. Sun and Bhattacherjee (2011) maintain that adequate levels of facilitating conditions can enhance users'

perceptions of control and thereby increase system use. Equally, they admit that low levels of facilitating conditions reduce the perceived behavioural control of users, hence burdening system use and rate of adoption (Sun and Bhattacherjee, 2011). Nonetheless, a system is not only affected by facilitating conditions and other user-related attributes. Successful IS adoption is also dependant on how well the system can support the organisation's business processes and sustain a climate of support between employees.

3.2.6. Process Quality and Collaboration Quality

A contemporary study on IS used by employees looks at employee portals success by extending the DeLone and Mclean (1992) IS success model where employee characteristics are not fully covered (Urbach, Smolnik and Riempp, 2010). Urbach *et al.* (2010) use all the dimensions covered by DeLone and McLean (1992) such as system, information, and service quality, use, user satisfaction, individual and organisational impacts, with the addition of two new constructs, namely process quality and collaboration quality. Employee portals, just like any other IS used by employees are not only utilised for the exchange of information, but to also support business processes electronically (Martini, Corsob and Pellegrini, 2009). In view of that, it can be deduced that IS success is not only determined by the established success factors, but also by the quality with which the system supports an organisation's business processes (Millet, Schmitt and Botta-Genoulaz, 2009). This new dimension, also known as process quality, captures the quality of a system's support of

organisational business processes such as approvals, applications for leave, meeting room reservations, procurement requests, purchase orders, time registration, travel expense reports, memos, and invoice releases (Urbach *et al.*, 2010). A business process denotes a complete, dynamic set of activities or logically related tasks that must be performed in order for an organisation to deliver value or to fulfil other strategic goals (Trkman, 2010). Empirical research provides evidence of a positive relationship between process quality, process management and business success (Skerlavaj, Stemberger, Skrinjar and Dimovski, 2007). Additionally, process quality is also found to have a positive effect on system usefulness and user satisfaction (Chen, Chen and Capistrano, 2013). The quality of process support can be measured in terms of reliability, efficiency, and accuracy among other criteria (Martini *et al.*, 2009). Even though it could be claimed that process quality is already included in system quality, Urbach *et al*. (2010) argue that the two dimensions are distinct, as process quality not only depends on the employee system's ability to sustain business processes, but also on the system's level of customisation to those processes. It is clear that an employee IS that demonstrates a high level of system quality, does not necessarily support business processes adequately and efficiently, and vice versa.

Another important dimension that complements process quality is the ability of the IS to support collaboration between employees, also referred to as collaboration quality. Smolnik, Kremer and Kolbe (2005) state that employee IS are utilised to enable staff to collaborate, improve communication, and expand knowledge-sharing as well as social networking. Urbach *et al.* (2010)

define collaboration quality as the quality of an employee system's support of collaboration between its users and posit that this dimension influences the success of IS used by employees. Collaboration quality assesses the extent to which the utilisation of IS enhances communication between users and departments or improves the effectiveness and efficiency of information sharing (Benbya, Passiante and Belbaly, 2004). In an attempt to quantify collaboration quality, Kahrimanis, Chounta and Avouris (2012) identify six possible collaborative dimensions: knowledge exchange, structuring the problem-solving process, cooperative orientation, collaboration flow, sustaining mutual understanding, and argumentation. Using a multidimensional scaling approach, they conclude that all collaborative dimensions can be used as indicators of success in any system that promotes collaborative learning and collaboration quality, with knowledge exchange and collaboration flow in particular taking the highest positive values. The results from the study by Urbach *et al.* (2010) support most of the hypothesised relationships involving the two added dimensions- process and collaboration quality. The paths from collaboration quality to use and user satisfaction, as well as from process quality to user satisfaction are all supported. The only path that is not significant is the one from process quality to use. A different study in the B2B e-commerce environment confirms all the above-mentioned relationship paths, including from both process quality and collaboration quality to usefulness and user satisfaction, with the exception of the paths from system quality to usefulness and information quality to user satisfaction, which are found to be insignificant (Chen, Chen and Capistrano, 2013). These results also indicate that collaboration quality is the only quality dimension that

significantly influences both use and user satisfaction. Therefore, since it is proven (DeLone and McLean, 1992) that use and user satisfaction influence individual and organisational impacts, the quality of the employee system's collaborative features appears to be an important success factor, as offering additional collaborative features or improving existing ones may directly increase individual and organisational impacts gained from using employee IS.

3.2.7. Other Factors affecting IS Adoption by Employees

An important study on the topic of evaluating IS adoption by employees comes from Talukder (2011), who develops a model of innovation adoption by individual employees. The concept of innovations and the manner through which they are accepted or diffused by employees is a very important facet of technology acceptance and is analysed in more detail in the following section of this thesis. In order to achieve wide application of the model and a comprehensive approach, Talukder (2011) posits that three separate categories of factors (together with demographic attributes) influence employee attitude toward innovation and hence, individual adoption of the innovation. The three categories include individual factors (behavioural beliefs), social influence (normative beliefs), and organisational factors (external aspects). The findings from Talukder's study show that from the five individual factors examined (perceived usefulness, personal innovativeness, prior experience, image, enjoyment with innovation), two, namely perceived

usefulness and personal innovativeness, have a significant impact on employees' attitudes towards adopting an innovation. The three remaining individual factors have moderate to relatively high correlation with adoption. From the three organisational factors (training, managerial support, incentives), training and managerial support appear to significantly affect attitudes towards adoption. However, the two social factors (peers, social network) are found to be not significant, a result that supports the findings of the Technology Acceptance Model (Davis, 1989), but not the Theory of Reasoned Action (Fishbein and Ajzen, 1975), as the latter uses subjective norms. The outcomes of Talukder's research are inconsistent with other papers that identify a positive relationship between social factors and acceptance of innovative technology (for example, Yuan, Fulk, Shumate, Monge, Bryant and Matsaganis, 2005; Venkatesh and Bala, 2008; Sykes, Venkatesh and Gosain, 2009; Maruping *et al.*, 2017). Nevertheless, several other studies corroborate Talukder's results (for example, Davis *et al.*, 1989; Lewis *et al.*, 2003; King and He, 2006; Talukder and Quazi, 2011; Kim, Chun and Lee, 2014). Talukder's model is presented below, in Figure 3.1.

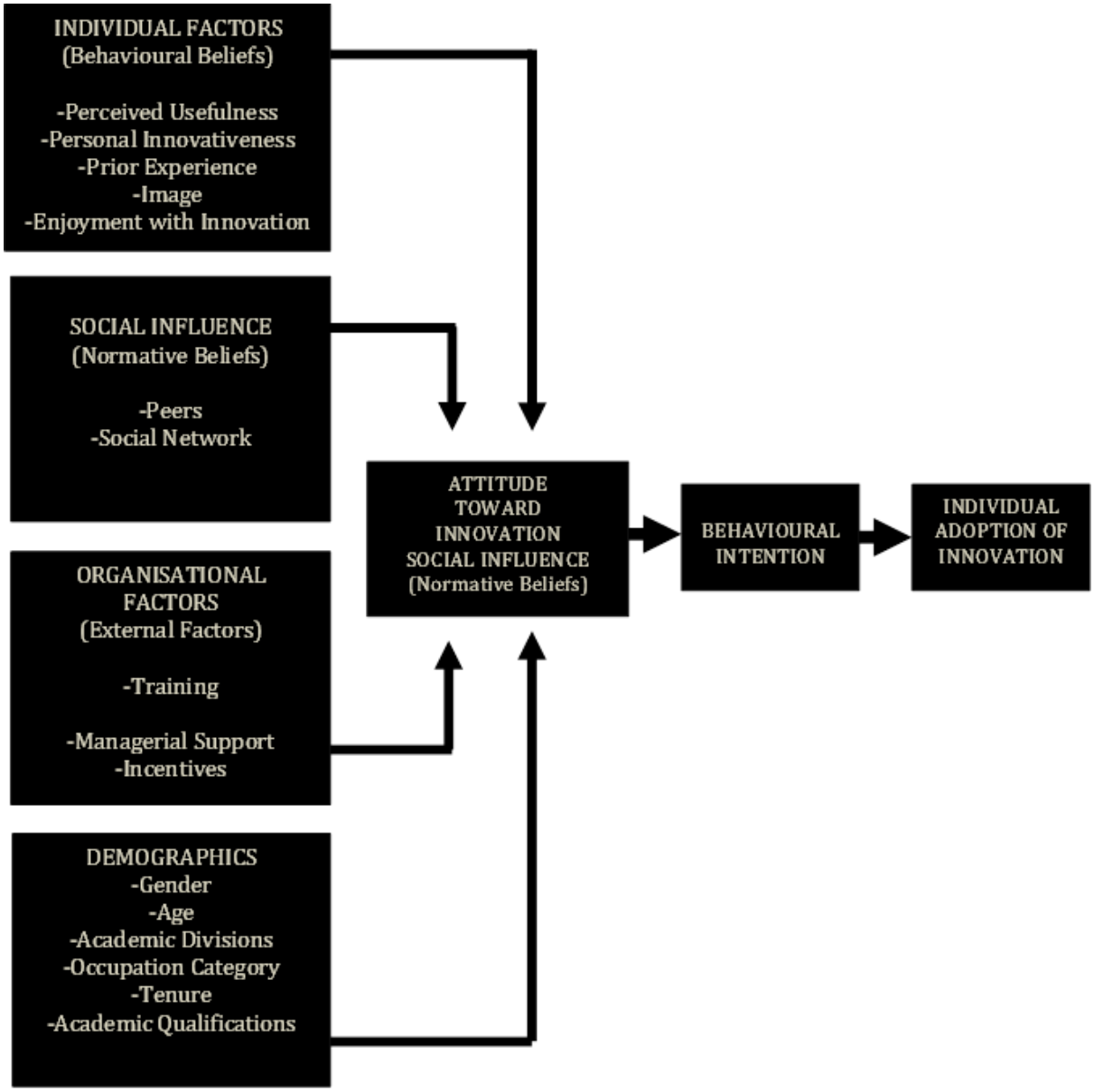

Figure 3.1: The Enhanced Research Model of Innovation Adoption (Talukder, 2011)

Individual, social, and organisational factors appear very frequently in the IS literature and thus require further analysis in order to establish precisely what their role is in technology adoption by employees. Individual factors consist of several variables including perceived usefulness, personal innovativeness,

prior experience, image, and enjoyment with innovation. Perceived usefulness is a well-acknowledged variable, often described as the degree to which individuals believe that using a particular innovation would improve their job performance (Davis, 1989). Alongside perceived ease of use, perceived usefulness is one of the main components of the Technology Acceptance Model and is used to explain individual technology acceptance (Davis, 1989). It has been proved that perceived ease of use has an effect on perceived usefulness and together they affect user satisfaction and consequently system use (Chiu, Hsu, Sun, Lin and Sun, 2005; Roca, Chiu and Martinez, 2008; Joo, Lim and Kim, 2011; Kaba and Toure, 2014). Scholars have pushed for a further theoretical development to enrich the construct of perceived usefulness (Bagozzi, 2007; Benbasat and Barki, 2007). Responding to this call of expanding its conceptualisation, Yeh and Teng (2012) formulate perceived usefulness beyond job performance improvement, renaming it perceived extended usefulness and adding dimensions such as fulfilment, perceived efficiency, perceived effectiveness, and system performance to enhance its original denotation.

Personal innovativeness influences employees to adopt innovations and refers to an individual's willingness to use an innovation or a new technology (Agarwal and Prasad, 1998). It has also been defined as "*the tendency of a person to accept an innovation within a product class, independent of the communicated experience of others*" (Frambach and Schillewaert, 2002:171). Bhattacherjee, Limayem and Cheung (2012) advise that individuals who are highly innovative and enjoy experimenting with new technologies may be open

to switching to a new product or service if they see it as better than the one they currently use. Thus, personal innovativeness is expected to reinforce the positive effect of the advantage of new ITs and offset the negative effect of using prior systems (Bhattacherjee *et al.*, 2012). In an attempt to provide an advanced understanding of key factors that influence technology adoption, Fagan, Kilmon and Pandey (2012) test a modified Technology Acceptance Model that incorporates personal innovativeness. Their findings reveal that perceived ease of use, perceived usefulness and personal innovativeness individually influence each other and collectively affect user intention to adopt a particular technology. A different study confirms that while general innovativeness is a weak predictor of technology adoption, the two become strongly related when general innovativeness turns into to domain-specific (as is the case with personal innovativeness) (Parasuraman and Colby, 2015).

Prior experience denotes individuals' previous use of the same or similar innovation and can be manifested through the extent of experience employees have received from previous work, training courses, and any other ways with similar innovations (Talukder, 2011). Researchers have used parallel terms to describe prior experience. For example, Frambach and Schillewaert (2002) use 'product experience' when discussing an employee's experience with the product being implemented, whereas Farr and Ford (1990) use the term 'previous relevant job experience'. Moreover, Igbaria, Guimaraes and Davis (1995) employ 'user computer experience measures', while Igbaria, Parasuraman and Baroudi (1996) apply the term 'skills'. According to Aral, Brynjolfsson and Van Alstyne (2012), individuals are more capable to

comprehend knowledge in domains with which they have prior experience because they learn by linking new information with what they already know. Karsh and Holden (2007) and Yucel, Cebi, Hoege and Ozok (2012) posit that among factors including self-efficacy, compatibility, skills, and prior experience, it is actually the latter that has the strongest relationship with perceived usefulness and therefore system use. A study by Martinez-Torres, Diaz-Fernandez, Toral and Barrero (2015) provides evidence that the link between perceived usefulness and system use is more solid amid experienced users than inexperienced users.

Another variable under the individual factors' category is image, often seen as the perception that an individual has of oneself, or the degree to which the use of an innovation enhances one's image within the organisation (Talukder and Quazi, 2011). Image has been used sporadically in academic studies, mainly as a variable that affects attitude to adoption. Examples include Moore and Benbasat (1996), Al-Gahtani and King (1999), Venkatesh and Davis (2000), Lee (2004), Yi, Jackson, Park and Probst (2006) and Meng, Kim and Hwang (2015). Image is a highly perceptual issue of individuals (Laukkanen and Kiviniemi, 2010) and appears as a construct added by Moore and Benbasat (1991) to the original Diffusion of Innovations (Rogers, 1962, 1983) to compensate for the occurrence of inconclusive results in earlier studies, mainly due to the lack of a concrete theoretical foundation. Image also makes its presence as a component in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.*, 2003), described in Chapter 2 of this thesis.

A further variable relevant to individual factors, enjoyment with innovation, refers to the degree to which the activity of using an innovation is perceived as enjoyable and satisfying to the individual employee (Talukder and Quazi, 2011). Franke and Schreier (2010) find that enjoyment has a direct impact on perceived value and consequently on technology adoption and suggest that enjoyment stands for much more than just the absence of effort, describing it as an important motivator for individuals to use innovations. Leyton, Pino and Ochoa (2015) describe enjoyment as the extent to which the use of a system is perceived to be enjoyable in its own right, regardless of any performance consequences or measurements. In the IS adoption literature enjoyment with innovation has been used interchangeably with alternative terms such as perceived fun/enjoyment (Igbaria *et al.*, 1996), enjoyment (Al-Gahtani and King, 1999), and perceived enjoyment (Van der Heijden, 2004). Tseng, Kuo and Lo (2011) indicate that enjoyment of innovation is one of the supplementary constructs added by new research efforts to earlier studies to address how certain forms of technology affect user's decisions to use new innovations. The relationship between enjoyment with innovation and intention to use a new system or technology is justified among several studies which show that individuals are more willing to adopt an IS if they perceive it to be more enjoyable (Ha, Yoon and Choi, 2007; Hong, Thong and Moon, 2008; Tseng, Kuo and Lo, 2011; Venkatesh *et al.* 2016).

An additional group of factors affecting technology adoption by employees is the social factors, also called social influence, derived from the social environment, and incorporating social norms aspects. It is important to point

out that normative factors are not included in the Technology Acceptance Model (TAM) (Davis, 1989); however, they are evident in the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the precursor of the TAM. The reason behind this exclusion is that social norms have been deemed to be empirically non-significant (Davis *et al.*, 1989) and probably less relevant in the IT acceptance context (Bhattacherjee and Sanford, 2006). There are research efforts (Hsu and Lu, 2004) that promote the inclusion of social norms as valid factors for expanding the TAM, while another school of thought purports that social norms and subjective norm in particular could be appropriate extensions to the TAM, however this would depend on the service context the extension would be applied to (Kaushik, Agrawal and Rahman, 2015). Venkatesh and Davis (2000) find that social norms only have a significant impact on technology acceptance under mandatory settings, which is the environment within which hotel employees utilise IS in the workplace. Nonetheless, Yi *et al.* (2006) maintain that subjective norms, as presented in the TRA, remain in the forefront of IT acceptance as one of the sole antecedents of behavioural intention regardless of the setting. After empirically testing the relationships among several constructs such as adoption timing, social influence and other control variables, Kim and Park (2011) posit that in general, adoption can be represented as a function of social norms and other factors including the quantity and quality of social influence. Rivis, Sheeran and Armitage (2009) use a meta-analysis to determine the predictive validity of social norms in technology adoption and discover that behaviours with a moral dimension lead to strong relationships between social norms and intention to use new technologies. It has already been mentioned that

individuals' subjective norms are formed according to the functions of their normative beliefs and their motivation to comply with these expectations. Therefore, individuals are more likely to perform an act if they perceive the existence of greater social pressure from salient referents to perform that act (Fishbein and Ajzen, 1975; Ajzen, 2002). Studies by Westaby (2005), Lam *et al.* (2007), Yang, Moon and Rowley (2009), Montazemi and Qahri-Saremi (2015, and Hsiao, Chang and Tang (2016) find significant relationships between social factors and intention to adopt innovations. Peansupap and Walker (2005) reveal that social factors are often more significant than economic remunerations in propelling individuals to adopt new technologies in organisations. Frambach and Schillewaert (2002:172) advise that organisational members "*will exhibit more positive attitudes if people in their social environment also use focal innovation*". Social influence has often been expressed in terms of two variables- peers and social network, both thought to directly affect individual attitude towards adoption (Talukder, 2012). According to the same author, peers influence on an employee represents the control, motivation, and encouragement by colleagues in adopting a new technology. Peers influence has also been described as the degree to which co-workers shape an individual's behaviour (Frambach and Schillewaert, 2002). Apart from co-workers, peers have also been defined as the persons that are in the immediate social context of similar rank or characteristics to an individual (Tartari, Perkmann and Salter, 2014). Campion and Gadd (2010) maintain that individuals pursue changes endorsed by peers, regulators, and professional societies through mimetic, coercive, and normative mechanisms. Social network on the other hand measures the extent to which employees are

influenced by members of a social network or within a similar discipline, or employees in other organisations outside of their own working environment (Sledgianowski and Kulviwat, 2009). The term has been coined by Venkatesh and Brown (2001), while other researchers use alternative names such as 'network externalities' (Frambach and Schillewaert, 2002; Lin and Lu, 2011), 'professional peers' (Lewis *et al.*, 2003), and 'friends and family influence' (Brown and Venkatesh, 2005). Empirical research points to the fact that external influences play a significant role in technology adoption (Khoumbati, Themistocleous and Irani, 2006). Lu *et al.* (2005) find that there is a relationship between social influence and intention to adopt innovative technology, while Sykes *et al.* (2009) discover associations between social network and employees' use of technology. In a study assessing the impact of social influence on mobile technologies adoption, Kim *et al.* (2014) find that smartphone adoption is highly influenced by social influence factors, to the extent that these factors can be viewed to be as important as technological characteristics.

A particularly important class of factors also affecting employee IT adoption are the organisational factors, identified by scholars including Igbaria *et al.* (1997) who apply the term 'intra-organisational factors', Lewis *et al.* (2003) who use 'institutional factors', and Yusof, Stergioulas and Zugic (2007) who base their study on 'organisational measures'. Organisational factors have often been developed and utilised in models as external attributes. Ajzen and Fishbein (1980) highlight the importance of organisational factors as external features in understanding behavioural phenomena, while Frambach and

Schillewaert (2002) argue that such factors influence attitude and usage, as well as having an effect on individuals' awareness of the functioning and application of innovations and their fit with the job. The phenomenon of the globalisation of IS has made it imperative for researchers to understand that technology adoption and implementation are not just solutions but also processes that involve several different factors, such as social, cultural, behavioural, individual, and organisational, and that all these factors need to be considered simultaneously in order to grasp the complete picture of technology adoption (Tarhini, Hone and Liu, 2015). A key variable incorporated in organisational factors is training, and more specifically IT training, indicating the extent to which training is provided to employees, a characteristic that can contribute to increasing their knowledge and expertise in using IT innovations (Al-Gahtani and King, 1999; Themistocleous, 2004; Hashim, 2007). Okumus, Bilgihan, Ozturk and Zhao (2017) identify the lack of IT training as one of the major barriers to IT implementation in hotels. Employee training in IT will not be assessed further as it has already been analysed earlier in this section. Another organisational factor also evaluated earlier is managerial support, which includes senior management encouragement and allocation of adequate resources. Managerial support, alongside leadership style, structure, organisational culture, and internal processes have been recognised as organisation-related characteristics that may influence individual employee technology adoption (Kimberly and Cook, 2008). A somewhat different study in the healthcare sector (Lansisalmi, Kivimaki and Aalto, 2006) purports that shared and clear objectives, task orientation, reflective team practices, correct timing, active internal marketing,

motivation, lack of stress, and adequate resources are all factors in the organisation that seem to be positively related to the adoption of innovations. A further metric involved in quantifying organisational factors is incentives-material or other benefits that an organisation may offer to employees who adopt innovation (Talukder, 2011, 2012). Cheng, Lai and Wu (2010) maintain that companies must have incentive mechanisms in place, based on organisational performance in order to increase job satisfaction levels of employees. Chan, Okumus and Chan (2018) refer to incentives as a tool that hotels can use in order to overcome those barriers associated with technology adoption. Alshawi, Missi and Irani (2011) refer to organisational factors as the aspects that relate directly or indirectly to structural, operational, human, and managerial sides of a business entity. They identify additional organisational factors that affect IS adoption such as financial resources, technical skills, government support, internal barriers, organisation size and objectives, competitive pressure, the company's strategic focus, IT infrastructure, employee participation and perceived benefits (Alshawi *et al.*, 2011). Further factors that have an impact on IS adoption include organisational ability, willingness to accept change, flexibility, and cultural compatibility (Mbiadjo Fandio and Djeumene, 2015).

As already discussed, there are many distinct approaches that can be applied in order to measure adoption or acceptance of new technologies by hotel employees. Concepts as the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), or the Unified Theory of Acceptance and Use of Technology (UTAUT) (all

analysed in Chapter 2 of this thesis), are ‘intention-based’ theories used to explain individual implementation of an IS. However, there is a school of thought that promotes an alternative method- diffusion of innovations- which can be particularly useful in explaining not only individual, but also organisational implementation and adoption. Otherwise known as innovation diffusion, it has been a fundamental building block of IS implementation literature. In fact, some scholars who define implementation as the process where individuals or organisations deploy IS in their work claim that all implementation efforts involve three essential stages, namely acquisition, diffusion, and assimilation of IS (Diez and McIntosh, 2009).

3.3. Diffusion of Innovations (DoI)

3.3.1. Introduction- Rationale

Prior to proceeding with an analysis of the diffusion of innovations theory, it is crucial to explain the rationale behind its inclusion in this study. Well-established models in the technology adoption arena such as the Theory of Reasoned Action- TRA (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour- TPB (Ajzen, 1985), and the Technology Acceptance Model- TAM (Davis, 1989) seek to explain possible relationships between user perceptions, attitudes, and eventual system use. The socio-psychological paradigm on which these models are based dictates that the interaction between a subject (user) and an object (information system) is to be used as the unit of analysis or independent variable, whereas the behavioural intention directed to such an interaction is to be used as the dependent variable (Venkatesh *et al.*, 2003). The aforementioned models are regarded as cognitive models and attempt to predict IT use, based on perceptions and beliefs (attitudes and behaviours) about the instrumental nature of technology (Cheng and Cho, 2011). Attitudes are generally formed through various psychological processes that require relevant attitude objects (Meade and Islam, 2006). Individuals infer attitudes from reflecting on their behaviour, therefore behaviour sets in motion attitude formation through the perceptions of oneself in his/her behaviour regarding a specific object (Sun, 2012). Through the interaction with an IS, a user's self-perceptions depend on how well his/her information-related efforts are facilitated by the system's user interface, system output, and communication rules (Lopes, 2016). These self-perceptions are a sign of the user's first-hand

experiences with a system that result in the formation of user attitude towards it (Sun, 2012). Conversely, user evaluative perceptions of a system such as perceived ease of use and perceived usefulness are ingredients of user attitude rather than its antecedents (Nor *et al.*, 2010; Sun, 2012).

Following the same concept and patterns of inference as TRA, TPB and TAM, diffusion of innovations- DoI (Rogers, 1962) also endeavours to explain the relationship between user perceptions, attitudes, and eventual system use (Agarwal and Prasad, 1997; Rogers, 2003). DoI has several similarities with the technology adoption models (TRA, TPB, and TAM), but there are also disparities. Since there is a resemblance linking the two approaches, the differences between them can be seen as factors that complement each other. For instance, the TPB features social variables, the TAM presents attitudinal variables, while DoI brings in motivational variables. Therefore, a review of the literature on IS evaluation would not be complete without the inclusion of the motivational parameters that DoI contributes. There are examples within the literature of researchers that have attempted to combine elements from TRA, TBP, TAM and DoI (Venkatesh *et al.*, 2003; Wixom and Todd, 2005; Cho, 2006; Yi *et al.*, 2006; Lam *et al.*, 2007; Chang and Tung, 2008; Huh *et al.*, 2009; Cheng and Cho, 2011; Venkatesh, Thong and Xu, 2012).

The main similarity between the technology adoption models and DoI is that the latter is also a cognitive model which depicts how individuals develop certain attitudes towards a technological innovation that subsequently

dominate adoption behaviour (Rogers, 2003). If the innovation is perceived as being more beneficial than the existing system, easy to apply, and compatible with user's expectations and existing systems, then positive attitudes will arise (Fuchs, Scholochov and Hopken, 2010). As a result, it is very probable that the decision will be made in favour of the new IS. These types of new systems represent innovations for the target audience of potential adopters whose perceptions about using such systems are thought to have a major effect on user acceptance. Morris and Ogan (1996) as well as Kim and Park (2011) insist that in modern societies Information Systems with their capability to combine aspects of mass media and interpersonal channels, represent formidable tools of diffusion. In another study that looks into users' intention of using cloud computing, Shiau and Chau (2016) find that TAM and TPB have stronger explanatory powers (when compared to other theories such as TRA or DoI) when observing users' behavioural intention toward using cloud computing. They do, however, also conclude that both the behavioural models and the DoI are essential elements of a unified approach towards understanding all aspects of technology adoption.

Another similarity is that the TAM and DoI share some key constructs (the DoI constructs are presented later on in this section). For example, perceived usefulness in TAM has been found to be comparable to the relative advantage construct in DoI, while perceived ease of use in TAM has an identical connotation to the complexity construct in DoI (Moore and Benbasat, 1991), even though initially they may be perceived to have opposite meanings and reverse direction (Carter and Belanger, 2005). In reality however, both

perceived ease of use and complexity imply that the less complex a system is to use, the more likely individuals are to accept it. Furthermore, compatibility and observability, both DoI constructs, can be viewed as external variables, which directly affect the dimensions in TAM (Lee, Hsieh and Hsu, 2011). Lee *et al.* (2011) maintain that a clear comprehension of the determinants of behaviour is vital because all other outcomes such as satisfaction and impact are predicated upon use of the system. Thus, in this context, the technology acceptance models posit that system success is equivalent to individual use of innovation. This is also the case for DoI, which contains many hypothesised predictors of usage, including individual beliefs or perceptions about innovation characteristics (Dahan, 2011). DoI offers a more comprehensive set of innovation characteristics, which adds considerably to the prediction of adoption intention (Carter and Belanger, 2005). Hence, the inclusion of DoI is vital if a complete and all-embracing study of IS adoption is to be presented.

As far as differences between the adoption models and DoI are concerned, it seems that acceptance behaviour is at the forefront of the agenda once again. Although acceptance behaviour is the outcome that technology acceptance models and DoI research attempt to explain, the manner through which this notion has been conceptualised is not consistent: while models like the TAM or TRA use intentions as a dependent variable, presuming that they are predictors of future usage behaviour, DoI theorises that many different outcomes are of interest in technology adoption, including initial decision to use the system and the continuous or sustained use of the innovation (Agarwal and Prasad, 1997; Cheng and Cho, 2011). More specifically, according to DoI

research, users gather and synthesise information regarding new technologies, and such information processing leads to the formation of perceptions about innovations, and subsequently to various types of system use including initial and continuous sustained use, without which the full benefits of using a new system may never be realised (Agarwal and Prasad, 1997). Another difference between technology adoption models and diffusion of innovations attributes lies in the fact that the former deal with the behavioural aspects of adopting individuals, revolving around affective belief constructs- more specifically attitudes. More simply, technology adoption models suggest that attitude is an influence-induced response produced by users' beliefs about the characteristics of a system. Hence, it can be concluded that since technology adoption models look into the behavioural side of individual, they operate on a micro level of analysis (Fuchs *et al.*, 2010). On the contrary, DoI is regarded as functioning on the macro level of analysis as it not only examines the motivational perspective and adoption behaviour of individuals but also the spreading of new technologies within industries (Zhu, Kraemer and Xu, 2006). More specifically, technology adoption models employ individuals' behavioural intention to use a system as the dependent variable, while DoI uses implementation success or adoption of technology as the dependent variables, although not only on an individual but also under the group, organisation, and industry levels (Khan and Woosley, 2011).

It is for the above reasons that DoI has been included in this thesis. It is believed that the sole use of the prevalent technology adoption frameworks may not be adequate for an all-encompassing study of contemporary IS user

behaviour, as such frameworks may not cover all possible psychological traits of an individual. Thus, the addition of the DoI elements into the review of the pertinent literature for this study is thought to bring more depth to the research as it can provide a more insightful portrayal of all perspectives involved in IS adoption by employees. A thorough assessment of technology adoption models complemented by a methodical analysis of how innovations are diffused is hoped to result in a comprehensive representation of the different evaluation approaches of IS used by employees. The next section presents this analysis.

3.3.2. Analysis of DoI

DoI first emerges in 1962 when Everett Rogers, a rural sociology professor, publishes a book called 'Diffusion of Innovations' after synthesising research from over 500 diffusion studies. The theory purports that the spread of any new ideas is affected by four key tenets: the innovation, communication channels, time, and social system. Innovation is defined as the idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 2003). As a general rule, the main principle of DoI is rooted in the notion that diffusion is a process by which an innovation is communicated through certain channels over time, among the members of a social system (Rogers, 1962). In other words, if the innovation is adopted, it is then 'distributed' by means of a range of communication channels. During that stage, the idea is rarely assessed from a scientific point of view, but rather

through subjective perceptions of the innovation (Meade and Islam, 2006). Moreover, the whole process of diffusion takes place over time and is shaped by social systems, which not only determine diffusion, but also norms on diffusion, roles of opinion leaders and change agents, and the consequences of innovation (San Martin and Herrero, 2012). DoI provides an organised series of concepts that can be utilised to explain receptivity to IS and operationalised to accelerate the rate of adoption of these IS (Dearing and Cox, 2018).

The diffusion of an innovation can be seen as a type of decision-making and as such it occurs through five steps including knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1962; 1983). During the knowledge stage individuals are initially exposed to innovations without possessing any information about them. In the persuasion stage individuals are interested in innovations and actively seek information about them. In the decision stage individuals grasp the change occurring and weigh the advantages against the disadvantages of using a particular innovation. It is at this phase that employees decide whether to adopt or reject the innovation and due to its individualistic character the most difficult to acquire information about (Rogers, 1962). During the implementation stage individuals utilise innovations to a varying scale depending on the situation, may search further information about them, and more or less establish the usefulness of the innovation. Ultimately, throughout the confirmation stage individuals finalise their decisions to continue/avoid using the innovation, with potential for full utilisation (Rogers, 1983).

Perhaps one of the most important moments of the diffusion process is the individual's decision to adopt or reject an innovation. Adoption normally starts with identifying and recognising that a need (for instance, the need for a new system) exists and moves to exploring solutions that can address the need (Wisdom, Chor, Hoagwood and Horwitz, 2014). This type of decision-making has a determining influence on individuals' final acceptance or rejection of a new technology (Jeon, Shin, Choi, Rho and Kim, 2011). Rogers (1983) posits that such decisions are usually governed by a number of characteristics that are intrinsic to innovations. The first characteristic, relative advantage determines the extent of improvement of an innovation over its predecessor. Grol, Bosch, Hulscher, Eccles and Wensing (2007) define relative advantage as the situation of being better than existing and alternative working methods. Research consistently finds that perceived relative advantages positively affect individuals' intentions to use the system (Lau and Woods, 2008). Organisations intentionally showcase the relative advantages of innovations on a regular basis in order to encourage diffusion (Scott and McGuire, 2017). Yet, there are very few studies that explore the relationships among relative advantage and TAM constructs such as perceived ease of use, and perceived usefulness (for example, Venkatesh *et al.*, 2003; Cheng and Cho, 2011; Lee *et al.*, 2011). The second characteristic is related to the level of compatibility that an innovation must have in order to be assimilated into a person's life. Grol *et al.* (2007) put forward that compatibility describes how consistent an innovation is with existing norms and values. An alternative definition posits that compatibility describes how well the innovation fits with established means of achieving the same objective (Dearing and Cox, 2018). Agarwal and Prasad

(1999) highlight a positive relationship between users' prior compatible experiences and technology acceptance. Their findings indicate that the extent of prior experience with IT is positively related to an ease of use belief about the technological innovation. In a paper that investigates IT acceptance and diffusion by individual professionals, Chau and Hu (2001) find the effect of compatibility to be significant only with respect to perceived usefulness. Two years later nonetheless, Hardgrave, Davis and Riemenschneider (2003) report that compatibility has an impact on perceived ease of use and intention to use, in addition to perceived usefulness. This view is supported by Chang and Tung (2008) who establish that compatibility has a significant positive and direct effect on perceived usefulness, perceived ease of use, and behavioural intention. The third characteristic describes an innovation's complexity or the extent to which an innovation is perceived as being difficult to use, with easy to use innovations being more likely to be adopted (Franceschinis, Thiene, Scarpa, Rose, Moretto and Cavalli, 2017). Hardgrave *et al.* (2003) uncover a negative relationship between complexity and perceived usefulness, while in a similar manner, empirical research has also shown that the more complex a system is perceived to be, the lower the users' intention to use it (Liao, Palvia and Chen, 2006). Greenhalgh, Glenn, MacFarlane, Bate and Kyriakidou (2004) suggest that simpler to use innovations are more easily adopted and the lesser the response barrier an innovation has, the easier its assimilation will be. However, Lee *et al.* (2011) discover that complexity can also have a significant positive effect on perceived usefulness and maintain that in cases where IS are perceived as being highly sophisticated, employees may have a tendency to believe that such systems are also more useful. The next

characteristic, trialability refers to how easily an innovation may be experimented with at the time of its adoption, with users who find it difficult to use and test an innovation being less likely to adopt it. Grol *et al.* (2007) see trialability as the degree to which innovations can be implemented, terminated or reversed in case of a failure, while Dearing and Cox (2018) define it as the level to which the adoption decision is revocable or can be controlled in stages. Motohashi, Lee, Sawng and Kim (2012) use trialability, among other constructs, to empirically test and prove that it has a positive influence on perceived ease of use and perceived usefulness of IPTV, a converged application that combines media content with telecom services in Korea. Their metrics of trialability include limited period of use, capabilities to use the service functions, and ability to use the service when needed (Motohashi *et al.*, 2012). The final characteristic, observability represents the extent to which an innovation is visible to others, with more visible innovations being viewed as driving communication among an individual's peers and personal networks, and consequently increasing the number of positive or negative reactions. In a study of new system and policy adoption in political science, Makse and Volden (2010) find that observability is responsible for a 31% increase in the odds of system or policy adoption. Legare, Ratte, Gravel and Graham (2008) observe that overall, the higher the visibility of the benefits that an innovation can offer to its users, the faster its level of adoption. Kapoor, Dwivedi, Williams and Lal (2011) undertake a systematic review of the available DoI literature and conclude that from the abovementioned innovation characteristics, complexity is the most commonly published with 834 articles citing it. Following is compatibility with 653 records and relative advantage with 536 records. The

least published attributes are observability with 346 records and trialability with 317 records. After a metadata review of different theories and constructs of innovation adoption and diffusion, Wisdom *et al.* (2014) conclude that observability has no association with adoption.

In order to standardise the usage of adopter groups in diffusion research, Rogers (1962) proposes five categories of adopters. An adopter category can be defined as a classification of members of a social system on the basis of innovativeness. Accordingly, innovators are the first individuals to adopt an innovation, sometimes even adopting technologies that may ultimately fail. Early adopters on the other hand, are more discreet in adoption choices compared to innovators and have the highest degree of opinion leadership among the other adopter categories. The following category, early majority, refers to individuals who hardly ever hold positions of opinion leadership within a social system and who adopt innovations after varying degrees of time. The next cluster is the late majority of individuals, who adopt an innovation with a high degree of scepticism and after the average member of the society. The final group, laggards are the last to adopt an innovation. They show no opinion leadership and have an aversion to change agents.

It is important to mention that DoI embodies the whole of the process of innovation diffusion and not just one stage such as adoption or implementation, which correspond to areas of interest concerning models like the TAM or TRA. Adoption for instance, denotes only the initial acceptance of

an object (Lu, Yao and Yu, 2005), while implementation is merely a stage in the diffusion process. Wisdom *et al.* (2014) argue that the diffusion literature concentrates solidly on the adoption and implementation stages of the process, with little attention paid to the exploration (pre-implementation) and sustainability (post-implementation) stages. As a continuous progression, DoI can be represented by a normal distribution curve, divided into segments, each segment representing the five categories of adopters and each category assigned a specified percentage of the whole diffusion process. It can be easily observed by looking at the curve that only a small proportion of individuals (2.5 per cent) tend to adopt the innovation early, while the early and late majority segments are responsible for almost 70 per cent of the adoption process. It is also interesting that those adopting innovations last represent about one sixth of all individuals.

The Diffusion of Innovations curve, as adopted from Rogers (1962) is presented in Figure 3.2, showing period-by-period adoptions. DoI can additionally be illustrated as displaying cumulative adoption, in which case the diffusion curve takes an S-shape appearance. The shape of the curve rises slowly at first as initially there are few adopters and accelerates to a maximum value until the point of inflection is reached (Karmeshu, Raman and Nedungadi, 2012). It is that rise in the rate of adoption that creates the S-shape of the diffusion curve (Rogers and Singhal, 1996). The diffusion of innovations curve displaying cumulative adoption is displayed in Figure 3.3. Both Figures 3.2 and 3.3 can be seen below.

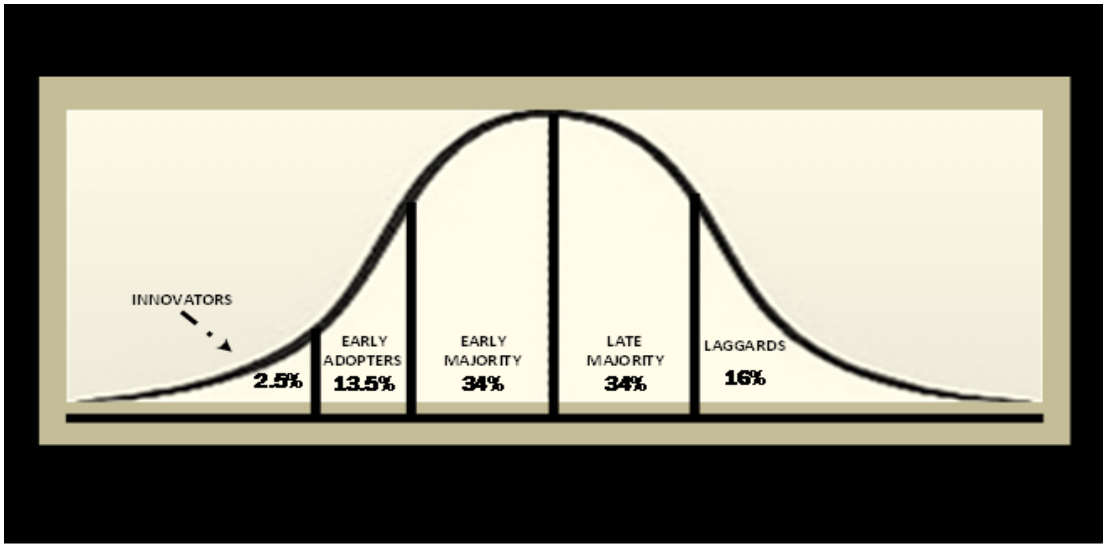

Figure 3.2: The Diffusion of Innovation period-by-period adoption Curve (Rogers, 1962)

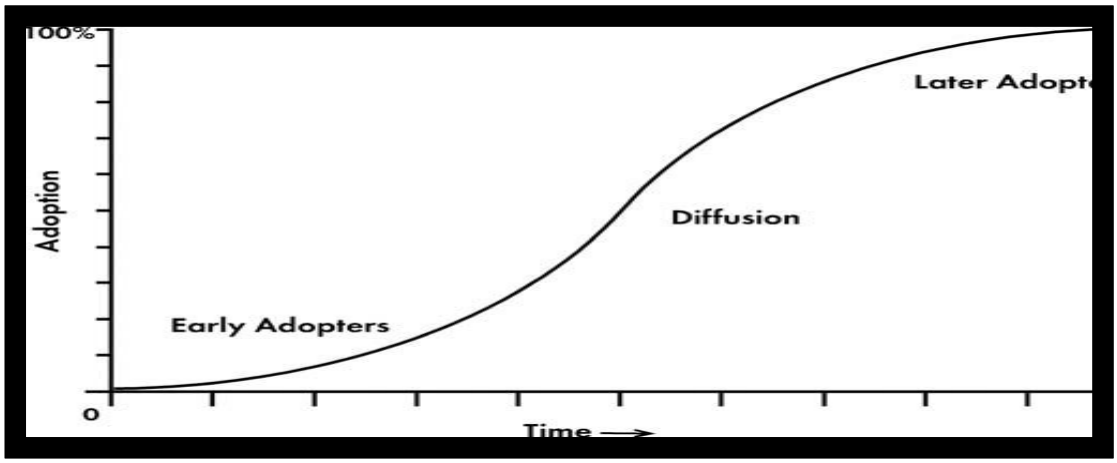

Figure 3.3: The Diffusion of Innovation Cumulative Adoption Curve (Rogers, 1962)

3.3.3. Practical Applications of DoI in Organisations

Diffusion of innovations can be applied to explain not only individual but also organisational implementation and adoption. Naturally, technological innovations such as IS are adopted by organisations via two types of decisions. Collective innovation decisions occur when innovations are adopted by a consensus among the members of an organisation. On the contrary, authority innovation decisions are made when adoption of an innovation lies with only a very few individuals in high positions of power within the organisation (Rogers, 2003). A common characteristic among authority innovation decisions is that they are not optional and can only exist within an organisation or a hierarchical group. The vast majority of choices on the subject of technology adoption within a hotel setting are made by this type of decision as they are usually the foci of directors or general managers. An authoritative decision to adopt an innovation can indicate basic adoption only, as it cannot guarantee that employees at the lower levels of the hierarchy will fully accept new technologies unless they are considered worthwhile (Morabito, 2010). Gledson and Greenwood (2017) also identify a third category of decisions, namely contingent decisions, referring to sequential combinations of the above decision types. As a general rule, the full innovation diffusion process in an organisation consists of phases that are, to a certain extent, comparable to the decision processes undertaken by individuals (Rogers, 2003).

Siguaw, Enz and Namasivayam (2000) notice that there exists a wide variation in the adoption of technology by organisations and suggest that an understanding of the IT implementation process is beneficial in order to fully comprehend the reasons behind this variation. King, Gurbaxani, Kraemer, McFarlan, Raman and Yap (1994) identify organisational actions that can stimulate IT adoption and diffusion of innovations including knowledge building, knowledge deployment, mobilisation, subsidies, standards-setting, and innovation directives. Early diffusion models (Rogers, 1962; Bass, 1969) were originally designed to predict adoption of goods at the consumer/user level, whereas organisational adoption of innovations is more complex and uncertain (McDade, Oliva and Thomas, 2010). Alänge and Steiber (2011) warn that the elusive nature of organisational innovations commands that issues such as how to handle the temporal aspect of new technologies, and the approach through which to determine when an innovation should be regarded as adopted, must not be overlooked. Dückers, Wagner, Vos and Groenewegen (2011) theorise that system changes such as the introduction of new technologies affect context factors including organisational culture, policies and procedures, past experience, organisational resources, and organisational structure. Bhatti, Olsen and Pedersen (2011) suggest that innovation diffusion at an organisational level is determined by the skill of the organisation's employees, norms, networks, and the facilitating role of legislative and administrative professionals. Zhang and Vorobeychik (2017) maintain that innovation diffusion researchers have paid much attention to the significance of social relationships and social influence within an organisation,

with extensive studies on social network structure, group norms and opinion leadership.

All things considered, it is without doubt that unless employees get involved, full adoption will never be attained. Frambach and Schillewaert (2002) indicate that innovations which are incorporated in the work processes of an organisation will be of little value if employees do not adopt them. Employees need to actually use an innovation if they are to realise its intended benefits (Talukder and Quazi, 2011). An innovation traverses through a set of phases before it is implemented by individuals. Employees develop the ability to make decisions, implement strategies, formulate attitudes, and attest to whether innovations should be practiced (Nor *et al.*, 2010). For example, in spite of an organisation deciding to adopt a new technology, the actual usage depends on how well employees adopt and implement the innovation (Venkatesh and Morris, 2010). Thus, the process by which employees adopt innovations is extremely important because if failure to accept occurs among staff, the desired benefits cannot be realised, and the organisation may ultimately abandon the innovation (Talukder, 2012). It has been observed that individuals, by nature, resist change unless the direct benefits of the change can be proven (Ajzen, 1991). At the same time, old technologies are being replaced by new innovations that offer efficiency, more speed, and powerful tools for users. Their adoption can be successful only if employees accept and effectively use them and that would be highly unlikely without the organisation itself understanding the adoption process (Lee, Kim, Rhee and Trimi, 2006). Even so, diffusion of innovations is not only about the successful adoption of

a new product or idea. As already mentioned, the path to diffusion embraces several stages apart from the decision to adopt or reject a new technology, such as persuasion, implementation, and confirmation. Moreover, DoI does not assume that an innovation needs to be necessarily adopted, since a new product, for example a new hotel IS may be rejected rather than adopted, yet the ideas surrounding its diffusion are still present. In other words, an innovation does not automatically have to be adopted, since rejection is also a result in itself. This notion, which is presented below, fuels one of the main streams of disapproval towards diffusion of innovations research.

3.3.4. Criticisms of DoI

As with all Information Systems evaluation models and theories, DoI is not without its critics. The main source of disapproval is linked to the fact that the communication process involved in DoI is a one-way flow of information, where the person sending the message has a goal to convince the receiver, with little or no dialogue present (Veneris, 1990). Moreover, the individual implementing the change controls the direction and outcome of the campaign, which limits the participatory element of this approach (Wejnert, 2002). Diffusion studies have also been the subject of criticism due to the lack of a universally accepted measurement for the construct of innovativeness, with most conceptualisations tending to depend on the researcher's own goals and thus treating innovativeness as a context-specific construct rather than as a personality characteristic (Atkin, Hunt and Lin, 2015). From a business and

marketing point of view, early critics (Downs and Mohr, 1976) contend that DoI needs to be organised around characteristics of both the innovations and the organisations adopting them. They dismiss the idea that the categories of adopters are static and argue that everyone can be an innovator if innovations are matched with organisations targeted for adoption (Downs and Mohr, 1976). Other critics portrait the adoption process itself as regressive and volatile, while diffusion theory presents it as being linear and unwavering (Ekdale, Singer, Tully and Harmsen, 2015). From an infrastructure perspective, Brown (1981) suggests that implementation of projects using DoI require a monetary focus and personnel resources available only to a small number of people that are traditionally considered to be innovators. After periodically summarising the literature, Rogers (1995) himself compiles the criticisms of diffusion research into four broad sets that include pro-innovation bias, individual-blame bias, issues of equality and recall problem. Pro-innovation bias "*is the implication that an innovation should be diffused and adopted by all members of a social system, that it should be diffused more rapidly, and that the innovation should neither be re-invented nor rejected*" (Rogers, 2003:106). However, Holton (2012), referring to the success of innovations such as Facebook and Twitter, argues that it is necessary to approach the diffusion of an innovation with a sense of neutrality where adoption or rejection are not labelled as positive or negative, but rather seen as outcomes. Individual-blame bias tends to hold individuals responsible for certain elements of diffusion (Rogers, 2003). In this context, Holton (2012) maintains that even though basing diffusion on an individual may work in some situations, when considering new technologies, research must not disregard

the multiple relationships between nodes that play a significant role in adoption or rejection. As far as issues of equality are concerned, it has been found that diffusion may widen the gap between higher and lower status segments of a group, thus creating an undesired inequality effect due to unawareness of how the socioeconomic benefits of innovation are distributed within a system (Rogers, 2003). A more general criticism of DoI is that critical analysis of the theory did not commence until three decades after its inception and by then DoI research had already been dogmatically accepted. This consequence is problematic given that intellectual criticism is crucial to advancing academic knowledge (Ratts and Wood, 2011). As a result, several diffusion studies may overlook the multidimensional process via which innovations are altered or rejected (Micó, Masip and Domingo, 2013). Yet perhaps the largest problem with DoI is rooted in its origins. Lundblad (2003) advocates that during its early form, DoI focused on how individuals, rather than organisations, adopt or reject new ideas. Despite this, contemporary application of the theory has been primarily explored to comprehend how innovations are diffused within an organisation (Ratts and Wood, 2011). Regardless of its limitations, it is evident in the literature that the benefits of diffusion of innovations far outweigh its disadvantages. This is manifested by the numerous theoretical models based on its principles and the large number of modifications or extensions that the original theory has undergone. Key examples of these models and their alterations/extensions are presented in the following subsection.

3.3.5. Theoretical Models based on DoI

Kapoor *et al.* (2011) calculate that there are 2073 published records that cite DoI theory. Traditionally, the main body of research on diffusion seems to focus on amending existing theoretical models by incorporating greater flexibility to the primary frameworks (Meade and Islam, 2006). For example, Robinson and Lakhani (1975) introduce the use of marketing variables in the formation of parameters of diffusion models. Norton and Bass (1987) start a trend of generalising and expanding models to take into account the diffusion of successive generations of technology, while Gatignon, Eliashaberg and Robertson (1989) call for researchers to take a broader view and consider innovations at different stages of diffusion in different countries. Moore and Benbasat (1991) adapt the characteristics of innovations offered by Rogers (1962) and redefine a set of constructs that can be used to explain individual technology adoption. They keep four of Rogers' characteristics, namely relative advantage, compatibility, complexity, and trialability, adding another two constructs-voluntariness and image. The outcome of this study is a 38-item instrument consisting of eight unique scales. Later, the same authors find support for the predictive validity of these innovation attributes (Moore and Benbasat, 1996). In a paper on the diffusion of imaging technology in US banks and insurance companies, Libertore and Bream (1997) find that early adoption is related to the size of the organisation, with larger companies adopting technology earlier. Taylor and Todd (1995) use three DoI characteristics, namely relative advantage, ease of use, and compatibility, to create a model that can predict attitude towards using a computer resource centre. Their results indicate that these factors explain 76 per cent of the

variance in attitude, and in terms of hypothesised paths, only perceived usefulness is found to significantly affect attitude. Parthasarathy and Bhattacherjee (1998) make use of DoI to investigate post-adoption behaviour among users of online services. They use constructs such as communication influence, utilisation level, relative advantage, ease of use, compatibility, and network externalities. Their study shows that all the above factors are predictors of post-adoption behaviour, apart from utilisation and ease of use. Karahanna, Straub and Chervany (1999) produce a study across diverse subjects, which tests and compares the impact of innovation characteristics on both adoption and usage behaviour. Their findings reveal differences in the antecedents of adoption versus usage behaviour. In the case of adoption, the significant factors appear to be relative advantage, ease of use, trialability, results demonstrability, and visibility. On the contrary, for usage, only relative advantage and image seem to be significant. Plouffe, Hulland and Vandenbosch (2001) weigh DoI against the TAM in a study about adoption intentions of smartcard readers among retailers. Results show that relative advantage, compatibility, visibility, image, and trialability significantly affect the intention to adopt the technology. Plouffe *et al.* (2001) conclude that DoI and TAM explain 45 and 36 per cent respectively of the variance in intention to adopt. A different study on the diffusion of 25 ITs compares diffusion behaviours and finds very low coefficients of innovation (internal influence), directly implying that imitation (external influence) is the main driver for adoption in all cases (Teng, Grover and Guttler, 2002). In another research effort on intentions of online users to utilise virtual applications, Chen, Gillenson and Sherrell (2002) modify the TAM by adding a diffusion construct,

more specifically, compatibility. Their results indicate that the compatibility between a user's beliefs/values/needs and the utilisation of a virtual application positively influences attitudes towards using these applications. Additional research on adoption of online trading (Lau, 2002) reveals that perceived ease of use, as well as DoI characteristics including complexity, relative advantage, compatibility, and observability are significantly correlated with attitude towards using the system. A further study on Internet banking diffusion identifies positive relationships between DoI attributes, in particular complexity and compatibility, and intentions of users to adopt Internet banking applications (Gerrard and Cunningham, 2003). Eventually, DoI characteristics are also employed in the conception of the Unified Theory of Acceptance of and Use of Technology (Venkatesh *et al.*, 2003), analysed in detail in Chapter 2 of this thesis. It is found that relative advantage, trialability, visibility, image, compatibility, and voluntariness together explain 54 and 47 per cent of the variance in intention to adopt IS in voluntary and mandatory environments, respectively (Venkatesh *et al.*, 2003). Meade and Islam (2006) advise that most diffusion of innovations models give emphasis to explaining past, instead of forecasting future behaviours. They note that even though there is a plethora of ideas and viable theoretical frameworks on diffusion, there are still opportunities for enhancing extant models by integrating multinational and multigenerational aspects.

A more contemporary study looks at diffusion of innovations and combines it with elements from the TAM (Lee *et al.*, 2011). More precisely, it identifies and assesses the factors influencing business employees' behavioural intentions

to use e-learning systems by proposing an IS evaluation model that incorporates TAM and DoI components. The results of the study are consistent with other findings (Wu and Wang, 2005; Chang and Tung, 2008) which suggest that relative advantage and compatibility have significant positive effects on perceived usefulness (Lee *et al.*, 2011). This can be justified by presuming that prior to using a system, employees may want to evaluate whether it would be relevant to their job or meet their job needs. If they perceive that the system is relevant to, or could meet their job needs, they will be more than likely to consider it to be useful (Fagan *et al.*, 2012). As far as other DoI factors are concerned, contrary to previous studies which come across negative relationships (Hardgrave *et al.*, 2003; Lin, 2006), Lee *et al.* (2011) find that complexity has a significant positive effect on perceived usefulness, in other words when IS are perceived as being of higher complexity, employees tend to believe that they are also more useful. This can be explained, as employees may face great difficulty in operating the systems but at the same time also believe that such systems can assist them in improving their job performances. On the other end of the spectrum, employees who regard a system to be exceptionally simple to operate or easy to understand, may not necessarily consider it as a tool that can promote their job performance (Chang and Tung, 2008). A further DoI factor, trialability has a significant negative effect on perceived usefulness in the sense that the higher the trialability, the lower perceived usefulness would be. This is contrasting the findings by Yang (2005) who reports that high trialability is synonymous to high levels of perceived usefulness. Observability on the other hand, has no significant effect on perceived usefulness as IS users may

observe individuals' use of systems and have an impression of how to operate them, but that does not necessarily entail that they perceive the systems as useful in facilitating their job performances. The results by Lee *et al.* (2011) also strongly support the hypothesis that the DoI factors affect perceived ease of use. For instance, complexity is found to have a significant negative effect, while both relative advantage and trialability have significant positive impacts. More specifically, if employees believe that a system can enhance their job performances, they tend to perceive it as being easy to use (Fagan *et al.*, 2012). In addition, if employees have more opportunities to try and test systems, there is more probability that they will view these systems as being easier to use. Two DoI constructs that have no significant effect on perceived ease of use are compatibility and observability, while all five innovation constructs (relative advantage, compatibility, complexity, observability, trialability) have significant impacts on employees' intentions to use IS (Lee *et al.*, 2011). Nonetheless, the abovementioned study is limited in that it fails, to some extent, in recognising that user perceptions may change with time. The model proposed by Lee *et al.* (2011) can be viewed below, in Figure 3.4.

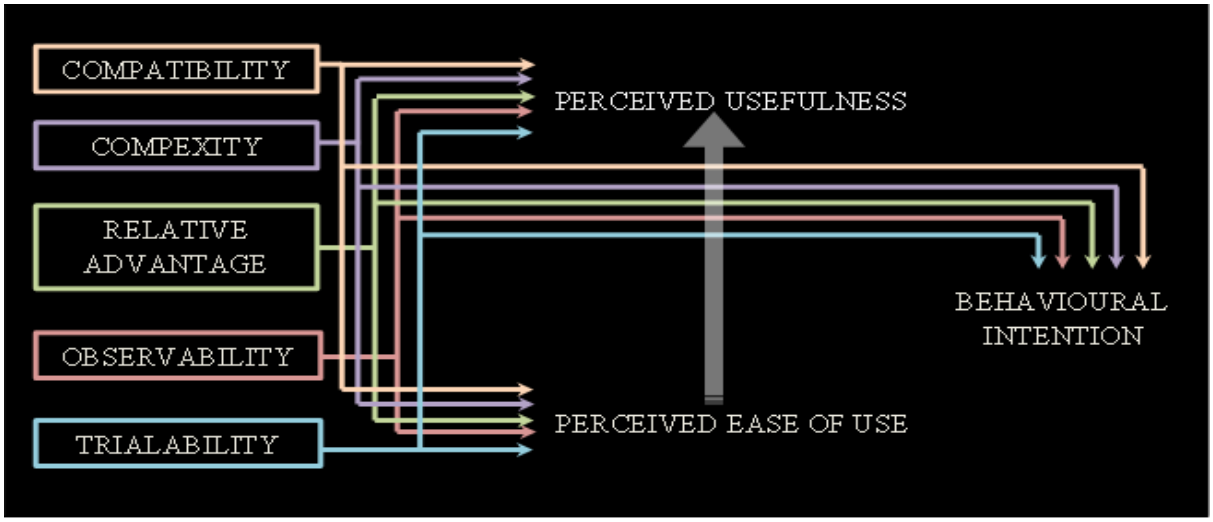

Figure 3.4: Model combining TAM & DoI elements (Lee, Hsieh and Hsu, 2011)

Another study proposes a theoretical model that combines elements from the TAM, the TPB and DoI to evaluate the attitude, behavioural intentions, and usage of IS by employees in Hong Kong (Cheng and Cho, 2011). More specifically, Cheng and Cho (2011) include perceived usefulness and perceived ease of use (TAM constructs), subjective norms and perceived behavioural control (TPB constructs), and compatibility, trialability and observability (DoI constructs). The findings of this study demonstrate that personal attitude is found to have a stronger impact on usage compared to subjective norms. Moreover, the TAM characteristics (perceived usefulness and perceived ease of use) as well as the DoI attributes (compatibility, trialability and observability) emerge as the significant factors affecting employees' attitude towards adoption (Cheng and Cho, 2011). In a different paper that investigates diffusion of innovations in a non-voluntary (or prompted) setting, Kim and Park (2011) assess the effect of social influence on users' innovation adoption. Apart from the innovation characteristics, their work models adoption as a function of social norms, number of prompters, and prior knowledge. Contrary to most DoI studies, Kim and Park (2011) find that among innovation characteristics, only relative advantage of the innovation significantly accelerates the duration of adoption, while the other constructs do not. This can be explained by looking into the context of the research. In a prompted or non-voluntary environment, notions such as observability or trialability may not be very pertinent as the employees diffusing the innovation do not have a choice during the adoption process, since the selection of the technology to be introduced is made by somebody else, usually senior management. Thus, according to Kim and Park (2011) the outcome of the

prompting behaviour (adoption) may vary depending on the social influence of the prompters (senior management). In a study that attempts to identify critical success factors for individual willingness to use new IS, Conrad, Michalisin and Karau (2012) fuse together key concepts from TAM and DoI. They use relative advantage, complexity and trialability as predictors of an individual's willingness to use the new system. The authors also use three different measures (or dependent variables) including willingness to use, anticipated rate of adoption, and overall evaluation of technology. It is found that all three factors are supported by the willingness to use and the overall evaluation of technology measures. Additionally, relative advantage and trialability are supported by the anticipated rate of adoption measure, with only complexity not being supported (Conrad *et al.*, 2012). In an effort to explain the reasons behind users' switching from one IT product or service to another, Bhattacherjee *et al.* (2012) propose a model that synthesises theories of IT acceptance, user satisfaction and DoI. They conclude that switching between ITs is driven by user dissatisfaction with an incumbent product or service, as well as the availability of a potentially superior offering. Their measures of predicting IT switching intention and behaviour include satisfaction with prior IT, habit, personal innovativeness, and relative advantage. Their findings reveal that perceptions of the relative advantage of using a new IT are positively related to potential users' intention to switch to the new technology (Bhattacherjee *et al.*, 2012). Wisdom *et al.* (2014) review 20 theoretical models pertinent to theories of innovation adoption incorporating organisational individual, client and innovation characteristics within the contexts of socio-political and external influence. Their review represents a synthesis of the

mechanisms that are associated with adoption and the results indicate that an enhanced standardisation of the measurement of constructs associated with innovation adoption theories would improve the application of these theories.

Diffusion of innovations studies concerning the hotel industry are not a very widespread phenomenon. Key examples that incorporate the diffusion of new technologies in the hotel environment have already been mentioned. Although not using DoI constructs directly, these studies are relevant to the diffusion and adoption of new ideas or technologies that can benefit hotel operations. One of those is the study by Lam *et al.* (2007) who use perceived IT beliefs, attitude, self-efficacy, and subjective norms as predictors of behavioural intention to adopt hotel ITs. A second example is the research by Kim *et al.* (2008) who extend the TAM by adding perceived value to enhance the model and to increase acceptance of hotel IS. Another is the work of Huh *et al.* (2009) who compare theoretical intention-based models to explain acceptance behaviour of IS in upscale hotels. Their major contribution is that innovation characteristics such as employees' perceptions of usefulness of a system (expressed as perceived ease of use in TAM and complexity in DoI) can provide a more efficient method than the TAM-related constructs for evaluating employees' attitudes towards use of IS. A further study is that by Morosan (2012) who extends the TAM by adding perceived innovativeness as an antecedent of perceived ease of use to explain intentions to use biometric systems in hotels.

Despite these research efforts, basic academic approaches that make use of DoI in a hotel setting consist mostly of a gathered record of adopted new technologies together with certain descriptions of the innovations and related innovation activities (Krizaj, Brodnik and Bukovec, 2012). A large majority of studies seems to concentrate on effects, objectives, sources, obstacles, and technological bases of innovations or their diffusion characteristics (Krizaj *et al.*, 2012). A large number of published papers might make a contribution to the understanding of the DoI phenomenon, but often they do not contribute to the theory itself (Chang and Hughes, 2012). Looking at the tourism industry, Hjalager (2010) indicates that there are not many real innovators and observes that there is evidence of a common occurrence of imitators and adapters who, for the most part, develop incremental innovations out of previous adoptions and knowledge. Camison and Monfort-Mir (2012) emphasise that tourism innovations still occur but are not always noticed by the official instruments that are focused on other sectors and scales. Therefore, there exists the possibility of more innovations being detected in the industry, but due to tourism's multidisciplinary and highly structured nature, they might be overlooked (Camison and Monfort-Mir, 2012). At the same time, the prominent role of new communication channels such as the Internet and social networks calls for a fundamental revision of the classical diffusion models (Colapinto, Sartori and Tolotti, 2012). The envisaged changes include the addition of a multilevel diffusion mechanism recalling the original diffusion stages, and behavioural motives such as imitation or peers' pressure that will drive the emotional decision process (Colapinto *et al.*, 2012). DoI research would also benefit from a series of detailed analyses using systematic reviews and meta-

analyses approaches for confirming the appropriateness of utilising diffusion characteristics in future research (Kapoor *et al.*, 2011). Moreover, while the importance of innovation has been recognised by academia, there exists a general consensus that its development within tourism is at its infancy stage (Gomezelj, 2016). The number of published papers on DoI in tourism is less than 200 and, therefore, an influx of qualitative and inductive studies, followed by empirical verifications of the theoretically proposed models would bring about new ideas and directions in research of this topic (Gomezelj, 2016).

This section has presented the theoretical notions and examples of the practical applications associated with the diffusion of innovations theory. First, a justification for using DoI in this thesis is provided, followed by an analysis of its characteristics, different categories of individuals that diffuse innovations, and stages through which the process unfolds. Then, the application of DoI at an organisational level is assessed, detecting that its principles are similar to the decision principles undertaken by individuals. Next, the criticisms that pertain to diffusion research are introduced with evidence from the literature suggesting that the advantages stemming from these theories clearly overshadow their weaknesses. The final part of this section puts forward the theoretical models that have been formulated by studies using diffusion of innovation constructs. Care has been taken to provide a chronological development of such models in an attempt to clarify how research has progressed on this subject over the years. This section is concluded by presenting the current situation on DoI within the hotel and more generally, the tourism sectors, as well as some implications for future research on the area.

3.4. Summary of Chapter 3

The main focus of this chapter has been to evaluate the Information Systems used by hotel employees. The chapter is divided into two main parts. The first part gives details of the research approaches used in the literature to evaluate IS specifically used by employees. As in the previous chapter, emphasis has been given to presenting the chronological progression of these approaches in order for the whole thesis to be more comprehensive and to not only raise issues regarding just early or very current developments. Thus, the first part of the chapter starts with looking into Management Information Systems, the precursor of Information Systems, and the evaluation approaches relevant to this field. As the transition from MIS to IS takes place, with systems finding more practical applications in not only management but also other industries, academic research seems to produce more published papers on the subject. Accordingly, the thesis proceeds to analyse and assess IS evaluation approaches related to technology acceptance and adoption. While the preceding chapter considered these approaches from the point of view of employees, this chapter focuses exclusively on hotel personnel. Concepts such as employee characteristics, employee productivity and IS performance, employee participation and involvement, as well as other user-related attributes and factors linked to IS adoption by hotel staff are all examined. The main finding from this review of the literature is that in their entirety, these factors play a very important role in explaining the tenets of technology adoption. For example, a hotel may acquire a new IS but without the input by employees that system can never be used successfully. Employees are

presented with a system and if they perceive that it is easy to use and will help them do their jobs more efficiently, they are more likely to adopt it. However, the level of adoption also depends on issues such the employees' prior IT knowledge, their IT training, performance, job relevance, self-efficacy, innovativeness, and the manner in which they process and treat information. Furthermore, the level of adoption may also be hindered by barriers such as insufficient IT investment or lack of managerial support and factors like peers' influence and financial incentives.

The second part of this chapter is dedicated to explaining and evaluating diffusion of innovations (DoI), a well-known theory with varied origins that span multiple disciplines. The theory explains the manner, the reasons, and the rate through which new ideas and technological innovations spread through certain channels over time among members of a social system. The main reason for its inclusion in this thesis is that it shares some common ground with already established technology acceptance models including the Technology Acceptance Model TAM), the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB). More specifically, some of the constructs from these models are also present in the DoI: perceived ease of use takes the form of complexity, while perceived usefulness is in essence what is called in diffusion theory 'relative advantage'. All these constructs are used to predict behavioural intention and consequently, behaviour. It is important to understand what shapes behaviour because the latter is a sign of system use and without using the system there can be no adoption, thus the whole process of IS evaluation becomes pointless. A second reason for using the DoI in this

thesis is that it complements the paradigms set by the technology acceptance models. In particular, while the TAM includes attitudinal variables (perceived usefulness, perceived ease of use, attitude towards use) and both TRA and TPB feature social variables (subjective/social norms), the DoI contributes with motivational variables (observability, trialability). Hence, with the addition of the DoI elements the quality of the attempt to review the literature on evaluation of IS used by hotel employees is enhanced by becoming more systematic and comprehensive. Therefore, after presenting a complete literature review of the different IS evaluation approaches, the thesis is now ready to proceed in analysing and justifying the selection of the themes used for the proposed model of this research.

3.5. Main Themes of the Literature Review

While the literature review chapters have analysed and assessed the plethora of approaches, metrics and theoretical models associated with IS evaluation, it is crucial to establish the key themes that will be further expanded as the foci of this study in the sections that follow. These themes will then be filtered through the primary research in order to produce the main dimensions underpinning the proposed IS evaluation model.

The first point that has emerged from the literature review is that there are three broad approaches at the core of IS evaluation: System Use/User Satisfaction (IS Success), Technology/System Acceptance, and integrated approaches, which incorporate features/elements from the former two. It has also been established that the evaluation of any Information System is a demanding and complicated task. This is mainly due to the fact that there is no real consensus between research efforts when it comes to the use of a single, universally accepted output or variable that can be used to measure IS evaluation in its totality. While early publications have utilised System Use and User Satisfaction, it is later discovered that both are one-dimensional and not fully comprehensive variables on which to base IS evaluation on. The reason behind this is that they simply cannot be applied uniformly to the diverse variety of scenarios and environments relating to IS evaluation. Moreover, different stages of a system's life cycle, such as the development stage, the implementation and post-implementation stages, and even the replacement stage, are linked to distinct objectives and outcomes. Consequently, the foci

of IS evaluation will also vary at different stages (different measures for development, implementation, and post-implementation), which makes the need for appropriate IS evaluation methods even more significant.

DeLone and McLean (1992, 2003) determine that the term 'IS Success' is of a more inclusive nature as it can be harnessed to embrace a wider range of conditions and settings under which system evaluation can be considered. It is because of this that their subsequent 'IS Success' Model has become one of the most widely published and used theoretical frameworks in the IS literature. One of its most significant contributions is that it offers a systematic categorisation of the prevailing IS evaluation measurements of the time and places them within a structure that explains the interdependencies between them. It also introduces what is possibly the most dominant and universally accepted standard for predicting System Use and User Satisfaction through the medium of IS Success. After fusing together numerous studies in the field of IS evaluation, DeLone and McLean (1992, 2003) conclude that IS Success is dependent on six dimensions, namely System Quality, Information Quality, Service Quality, Intention to Use/Use, User Satisfaction, and Net Benefits, with each of the above featuring sub-dimensions/measurements.

Despite the fact that DeLone and McLean defend their theory and model as salient and all-encompassing, in reality it is somewhat restricted in the sense that it does not take account of the different attitudes/behaviours that users may have towards using a system (Seddon, 1997). Although one of the

dimensions in their model, IS Use, has been designed to ascertain the users' behaviours towards system use, it does not necessarily portray the entire spectrum of behaviours, attitudes, reactions, perceptions, beliefs, peer pressure, and subjective norms that a user can demonstrate (Iivari, 2005). The above traits are at the core of technology acceptance research and the associated theoretical models. Another weakness of the IS Success Model is that behavioural intentions are also affected by two particularly important dimensions, Perceived Usefulness and Perceived Ease of Use, which are not present in DeLone and McLean's Model, but are instead an integral part of technology acceptance research.

The most prominent theoretical model in this category, the Technology Acceptance Model (TAM) (Davis, 1989), is an intention-based framework that predicts individual acceptance of technology (Actual Use) by means of measuring the users' Attitude Towards Use. The latter is influenced by two dimensions, namely a system's Perceived Ease of Use and Perceived Usefulness, which are also broken down into sub-dimensions. The TAM hypothesises that there are interrelationships between the attitudes of the users and Perceived Ease of Use and Perceived Usefulness that can capture all the associated beliefs involved in the diverse environments of IT usage (Davis, 1989). However, critics have dismissed this claim by arguing that the TAM can only explain only 40% of the overall IS Use (Legris, Ingham and Collerette, 2003; Holden and Karsh, 2010). This is further substantiated by the existence of significant variations between the TAM interrelationships across

different studies, disciplines, and samples, consequently making a systematic synthesis of all Technology Acceptance/Adoption dimensions a necessity (Scherer, Siddiq and Tondeur, 2019). Another factor to consider is that the Technology Acceptance/Adoption approaches to IS evaluation lack the Quality constructs of the IS Success Model (System, Information, and Service Quality) and the intrinsic motivations of system users that are evident in Diffusion of Innovations (discussed further down). The Quality constructs represent a fuller embodiment of what the technical, informational, and service characteristics of a complete IS truly are, while the intrinsic motivations are useful tools when trying to evaluate contexts where the use of IS denotes not only task achievement but also the fulfilment of employees' emotional needs. Furthermore, TAM is somewhat restricted when it comes to acknowledging the impact of cultural and social aspects on technology acceptance (Bagozzi, 2007). Employees routinely rely on, or are affected by, their peers when making decisions that are related to work. This phenomenon, subjective norm, while crucial in IS evaluation within an organisational environment, is evident in the Theory or Reasoned Action (Fishbein and Ajzen, 1975), but not in the TAM.

With the above TAM limitations in mind, and without overlooking the constraints of the IS Success Model, it was decided that this thesis has to employ an integrated approach in order to capture the full breadth of system evaluation based on the perceptions of hotel employees. Meta-analysis studies of the DeLone and McLean IS Success Model (Petter and McLean,

2009; Mardiana, Aprianingsih and Tjakraatmadja, 2015) reveal that some relationships between the model's constructs are not significant, which brings into question the model's predicting power and its construct validity. This weakness of the IS Success model combined with its inability to predict the full spectrum of behavioural intentions accurately and completely renders it insufficient for the purposes of this study. TAM, on the other hand, while being a good predictor of behavioural intentions, is not adequate to solely predict technology adoption (as it lacks fundamental elements, such as information and system quality), and the model, as previously mentioned, can only predict 40% of overall IS Use. Furthermore, the TAM is primarily designed for general and for the most part, volitional use of IS. This study focuses on hotel employees, for whom the use of a system is mandatory. The use of IS in such circumstances is designated to supporting employees in order to increase/improve work performance and they have to use the system regardless of their acceptance of it. The above reasons indicate that exclusive use of only the TAM would not suit the requirements of this study as one of its aspirations is to present a comprehensive mechanism for evaluating hotel IS.

Taking into account the above notions, it has been decided that the best avenue in order to achieve applicability and completeness would be for this study to combine dimensions of the IS Success Model and TAM. As a result, this thesis shares the views of Taylor and Todd (1995), Venkatesh *et al*. (2003), and Wixom and Todd (2005) who advocate that combined or integrated theoretical models can overcome the respective flaws of the IS

Success Model and TAM, the two most widely used instruments for evaluating IS. Doing this increases the probability that the resulting model will be based on stronger underlying philosophical theories (Mardiana *et al.*, 2015). Another reason for selecting the IS Success Model and TAM is that they are robust frameworks that have been consulted, extended, and validated abundantly. Moreover, both have been utilised as platforms for building new theories. In any circumstances, researchers have to be cautious in order to choose the dimensions and constructs that best fit with their particular area of study (Goodhue and Thompson, 1995; D'Ambra and Rice, 2001; Howard and Rose, 2019). A further important consideration is parsimony. An integrated model has to be based on a theory that is simple and involves as few assumptions as possible (Wacker, 1998). Therefore, it is essential to determine which specific dimensions and constructs from the IS Success Model and TAM are the best antecedents for predicting the dependent variable that a research study sets out to assess. In the case of this thesis, the study area is the evaluation of systems used by employees working in the hotel industry and the reasoning for selecting the appropriate dimensions and constructs is explained below. The literature offers an overabundance of IS evaluation dimensions, variables, and measurements. Table 3.1 below, presents the main IS evaluation dimensions and their measurements in chronological order, separated under three distinct headings, namely IS Success, Technology Acceptance, and Integrated Approaches.

MAIN IS EVALUATION DIMENSIONS & MEASUREMENTS

IS Success	Technology Acceptance	Integrated Approaches
Technical Level, Semantic Level, Effectiveness Level (Shannon and Weaver, 1949)	Diffusion of Innovations (Innovation, Communication Channels, Time, Social System, Relative Advantage, Compatibility, Complexity, Trialability, Observability (Rogers, 1962)	Information Satisfaction, System Satisfaction, Usefulness, Ease of Use, Attitude, Intention (Wixom and Todd, 1995)
System Content, Combination of Details, External Factors, Response Time (Emery, 1971)	Attitude (Triandis, 1971)	Frequency of Use, Extent of Use, Stability in Context (Vaghefi and Lapointe, 2010)
General Satisfaction with System, Level of MIS Needs Met (Powers and Dickson, 1973)	Decision Effectiveness (Chervany, Dickson and Cozar, 1972)	Individual Impact (Santos, Takaoka and De Souza, 2010)
Information Usefulness, Informativeness, Relevance (Gallagher, 1974)	Organisational Information Processing (Galbraith, 1973)	System characteristics, Information Value, Usage (Koh, Prybutok, Ryan and Wu, 2010)
Relative Value of Inquiry, Timeliness, System Adequacy, Reliability, Information Clarity, Readability (Swanson, 1974)	User Beliefs (Lucas, 1975)	Design Characteristics, Behavioural Intention in a Mobile Data Services Environment (Botzenhardt, Li and Maedche, 2016)
Production of Information, Receipt of Information (Mason, 1978)	Attitude Toward Act/Behaviour, Subjective Norm, Behavioural Intention, Behaviour (Fishbein and Aizen, 1975)	
Cost-Benefit Analysis (King and Rodriguez, 1978)	Cognitive Information, Normative Perceptions (Ryan, 1982)	
Information Accuracy, Reliability, System Assistance, Communication, (Debons, Ramage and Orien, 1978)	Speed of Task Completion (DeBrander and Thiers, 1984)	
System Usage, User Satisfaction, User Performance, Report Format, Cognitive Style, Personality, Demographic Variables (Zmud, 1979)	Efficiency of Task Completion (Sanders and Courtney, 1985)	

Consultative Participation, Representative Participation, Consensual Participation (Mumford, 1979)	Perceived Behavioural Control (Ajzen, 1985)	
Voluntary Use of Computer Terminals (Maish, 1979)	Realisation of User Expectations (Barti and Huff, 1985)	
Information Accuracy, Timeliness, Aggregation, Formatting (Ahituv, 1980)	Employee Competency, Knowledge, Employee Skills (Griffiths and King, 1985)	
Effectiveness of Hardware Utilisation (Alloway, 1980)	Decision Confidence (Goslar, Green and Hughes, 1986)	
Perceived Importance of Information, Usability (Larcker and Lessig, 1980)	Accuracy, Ease of Use, Effortlessness (Doll and Torkzadeh, 1988)	
System Accuracy, Content, Frequency, Recency (Neumann and Segev, 1980)	'IT Paradox', IT Performance (Leonard-Barton and Deschamps, 1988)	
System Completeness, Flexibility (Hamilton and Chervany, 1981)	Perceived Ease of Use, Perceived Usefulness, Attitude Towards Use, Actual Use (Davis, 1989)	
Textual Context, Visual Representation (Benbasat, Dexter and Masulis, 1981)	System Effectiveness, User Attitude (Kim, 1989)	
System Simplicity of Use, Response Time (Belardo, Karwan and Wallace, 1982)	Image, Voluntariness (Moore and Benbasat, 1991)	
System Use (Fuerst and Cheney, 1982)	Enjoyability, Dependability, Functionality (Davis, Bagozzi and Warshaw, 1992)	
Technical, Functional, Reputational Quality (Grönroos, 1982)	Knowledge Deployment, Mobilisation, Subsidies, Standards-Setting, Innovation Directives (King, Gurbaxani, Kraemer, McFarlan, Raman and Yap (1994)	
Report Appearance (Olson and Lucas, 1982)	User Characteristics, User Perceptions, System Development, Organisational Issues, Change Management, Business Process Redesign, Technical Issues (Eierman, Friedman and Adams, 1995)	
Information Currency, Security, Top Management Involvement, Confidence, Flexibility, Format of Output, Vendor Support (Bailey and Pearson, 1983)	User Computer Experience Measures, Perceived Enjoyment (Igbaria, Guimaraes and Davis, 1995)	
Processing of Requests, Training, Participation, Information Completeness, Communication, Vendor Support (Ives, Olson and Baroudi, 1983)	Facilitating Conditions, Compatibility, Influences (Taylor and Todd, 1995)	
Information Sufficiency, Quantitativeness, Comparability, Bias-Free (King and Epstein, 1983)	IT applications, Employee Productivity (Van Hoof, Collins, Combrink and Verbeeten, 1995)	
System Quality, System Acceptance (Ives and Olson, 1984)	Pro-Innovation Bias, Individual-Blame Bias, Equality, Recall Problems (Rogers, 1995)	
Voluntariness of Use, System Effectiveness (Kim and Lee, 1986)	Needs of Employees (Thompson and Richardson, 1996)	

IS Sophistication (Lehman, 1986)	Employee Empowerment, Senior Executives' Support (Thong, Yap and Raman, 1996)	
Information Recentness, Credibility, Adaptability, Interpretability (Iivari and Koskela, 1987)	Communication Influence, Utilisation Level, Network Externalities (Pathasarathy and Bhattacherjee, 1998)	
Information Timeliness (Mahmood, 1987)	Decision Processes, Functionality of Management System (Wierenga, Van Bruggen and Staelin, 1999)	
Quality of IT Department (Baroudi and Orlikowski, 1988)	Social Norm in Mandatory IS Use Settings (Venkatesh and Davis, 2000)	
Information Content, Format, Timeliness, Accuracy, Ease of Use (Doll and Torkzadeh, 1988)	Social Networks (Venkatesh and Brown, 2001)	
SERVQUAL (Tangibles, Reliability, Responsiveness, Assurance, Empathy) (Parasuraman, Zeithaml and Berry, 1988)	Lack of Technical Expertise, Lack of Support Services (Muilenburg and Berge, 2001)	
User Participation, User Involvement (Barki and Hartwick, 1989)	Product Experience, Peers Influence, Network Externalities (Frambach and Schillewaert, 2002)	
Past Experiences, Word-of-Mouth Communications, Quality of Service Provider (Zeithaml, Parasuraman and Berry, 1990)	Barriers of Human Factors (Hasan, 2003)	
Forecasts of Use (Adams, Nelson and Todd, 1992)	Lack of Knowledge, Lack of Participation, Lack of Training (Heung, 2003)	
System Quality (Usability, Response Time, Reliability, Flexibility, Security), Information Quality (Accuracy, Relevance, Completeness, Understandability, Currency, Dynamic Content, Personalisation), Use (Length of Stay, Accepting Payments, Number of System Visits), User Satisfaction (Information Retrieval, Overall Performance), Individual Impact, Organisational Impact (DeLone and McLean, 1992)	Performance Expectancy, Effort Expectancy, Gender, Age, Experience, Voluntariness of Use, Facilitating Conditions, Social Influence (Venkatesh, Morris, Davis and Davis, 2003)	
Psychological Engagement with IS (Kappelman and McLean, 1992)	Perceptions of IS Users, IS Experience (Bharati and Berg, 2003)	
Balanced Scorecard (Kaplan and Norton, 1992)	Job Relevance (Hu, Clark and Ma, 2003)	
Estimates of Frequency of Use (Hartwick and Barki, 1994)	Collective Innovation Decisions, Authority Innovation Decisions (Rogers, 2003)	
Information Exchange, Knowledge Transfer (Latham, Winters and Locke, 1994)	Effectiveness and Efficiency of Information Sharing (Benbya, Passiante and Belbaly, 2004)	
Programmed Logs of Actual System Use (Straub, Moez and Karahanna, 1995)	Playfulness (Chung and Tan, 2004)	

Approximations of the Rate of Use (Igbaria, Guimaraes and Davis, 1995)	Deficiencies in IT Experimentation, Lack of Leadership, Fear of Change (Stewart, Mohamed and Marosszeky, 2004)	
Dependence on the System (Goodhue and Thompson, 1995)	Compatibility, Self-Efficacy, Normative Beliefs (Vijayasarathy, 2004)	
Skill of the IS Support Staff, Experience of the IS Support Staff (Yoon and Guimaraes, 1995)	Shortage of IT Skills, Privacy Concerns (Ebrahim and Irani, 2005)	
Interactivity of the System (Whyte and Bytheway, 1996)	Knowledge Sharing, Social Networking (Smolnik, Kremer and Kolbe, 2005)	
Number of System Visits, Counting method (Murphy, Forrest, Wotring and Brymer, 1996)	Enjoyment, Trust (Yu, Ha, Choi and Rho, 2005)	
User Experience with IS, User Training on IS, User Engagement in IS Development (Guimaraes and Igbaria, 1997)	Computer Self-Efficacy (Ong and Lai, 2006)	
Uniformity of User Interface, Quality of Documentation, System Usefulness (Seddon, 1997)	IS Training, Management Support, Facilitating Conditions (Sabherwal, Jeyaraj and Chowa, 2006)	
System Adaptability, Functionality (Peppers and Rogers, 1997)	Senior Management Authority, Senior Management Influence, Leadership (Tarafdar and Vaidya, 2006)	
System Portability, User-Friendliness, Understandability, Maintainability, Verifiability (Rivard, Poirier, Raymond and Bergeron, 1997)	Pressure on Employees to Use IT (Lam, Cho and Qu, 2007)	
Organisational Level, Process Level, Individual Level (Garrity and Sanders, 1998)	Online Social Support (Lin and Anol, 2008)	
System Usability, Ease of Use (Spiller and Lohse, 1998)	Perceived Value, Computer Self-Efficacy, Innovativeness, Past Adoption Behaviour, Top Management Support (Kim, Lee and Law, 2008)	
System Accessibility (Tiwana, 1998)	Peer Support, Social Networks (Sykes, Venkatesh and Gosain, 2009)	
System Versionability (Reisenwitz and Cutler, 1998)	Communication Issues, Perceptions about Technology (Nanji, Cina, Patel, Churchill, Gandhi and Poon, 2009)	
System Transaction Capabilities (Parsons, Zeisser and Waitman, 1998)	Perceived Playfulness, Self-Management of Learning (Wang, Wu and Wang, 2009)	
Environmental Scanning (Achrol and Kotler, 1999)	Information Storage, Information Encoding, Information Retrieval (Choi, Lee and Yoo, 2010)	
Information Accuracy, Completeness (Frew, 1999)	Employee Incentive Schemes (Cheng, Lai and Wu, 2010)	
System Navigation, Credibility, Content (Nielsen, 1999)	Risk Perception, Company Size, Organisational Readiness (Johnson, 2010)	

24- Hour System Availability, Stability, System Architecture, Page Loading Speed (Turban and Gherke, 2000)	IT Attitude, Commitment, Employee Productivity (Kuo, Ho, Lin and Lai, 2010)	
Content Personalisation (Barua, Whinston and Yin, 2000)	Perceived Value, Palm-sized Computer Self-Efficacy (Wang and Wang, 2010)	
System Availability, Dependability, Attractiveness (Liu and Arnett, 2000)	Employee Empowerment, Job Satisfaction (Kim, 2011)	
System Planning, Management, Design, Content (Benckendorff and Black, 2000)	IT Investment, Work Redesign, Employee Productivity (Davenport and Hagemann-Snabe, 2011)	
e-Loyalty (Reichheld and Schefter, 2000)	Individual Factors, Personal Innovativeness, Image, Enjoyment with Innovation, Social Influence, Organisational Factors, Attitude Towards Innovation, Individual Adoption of Innovation (Talukder, 2011)	
Trust (Olson and Olson, 2000)	Ideological Divides among Stakeholders (Seger, 2011)	
Convenience, Product Offerings (Szymanski and Hise (2000)	Organisational Factors, Government Support, Internal Barriers, Competitive Pressure, Strategic Focus (Alshawi, Missi and Irani, 2011)	
E-S-QUAL (Service Efficiency, Fulfilment, System Availability, Privacy (Zeithaml, Parasuraman and Malhorta, 2000)	Individual Employee Needs, Users' Inclusion in Planning and Implementation Processes (Elzawi and Wade, 2012)	
Interactivity, Content Personalisation (Cho and Park, 2001)	Innovativeness, Superior Information Sharing, Quick Transaction Time (Morosan, 2012)	
Up to Date Information, Dynamic Content (Tierney, 2000)	Willingness to Use, Anticipated Rate of Adoption, Overall Evaluation of Technology (Conrad, Michalisin and Karau, 2012)	
Processing Orders, Accepting Payment, Responding to Customer Requests, Purchase Orders, Payments to Suppliers (Young and Benamati, 2000)	Knowledge Exchange, Structure of Problem-Solving Process, Cooperative Orientation, Collaboration Flow, Argumentation (Kahrimanis, Chounta and Avouris, 2012)	
Information Currency, Updated Content, Number of Website Visits, Length of Stay (D'Ambra and Rice, 2001)	Hedonistic Motivation, Price Value, Habit (Venkatesh, Thong and Xu, 2012)	
Privacy, Security, Understandability of Information (Molla and Licker, 2001)	Mobile Technologies Adoption, Social Influence Factors (Kim, Chun and Lee, 2014)	
Quick Response, Assurance, Sense of Empathy, Follow-Up Services (Liu and Arnett, 2001)	Social Networking Site Capability, Trustworthiness (Rauniar, Rawski, Yang and Johnson, 2014)	
System Accessibility, Communication (Smith, 2001)	Prior System Experience, Job Relevance (Alhabri and Drew, 2014)	
Competitive Intelligence (Teo and Choo, 2001)	Perceived Connectedness (Park and Kim, 2014)	

Specific Content, Technical Adequacy, Web Content, Web Appearance (Aladwani and Palvia, 2002)	Organisational Ability, Cultural Compatibility (Mbiadjo Fandio and Djeumene, 2015)	
System Interactivity, Customisation, Variety of Information (Palmer, 2002)	Perceived Mobility, Perceived Control (Park, Baek, Ohm and Chang, 2014)	
Basic and Secondary Information, Online Promotion (Chung and Law, 2003)	Service Sector Productivity, Qualitative Contribution of IT (Hajli, Sims and Ibragimov, 2015)	
e-Commerce Services, Promotions (Chiang, 2003)	Mobile Technology Strategies, Mobile Phone Applications (Chen, Murphy and Knecht, 2016)	
Service Quality (Responsiveness, Empathy, Follow-up Services), Intention to Use, Net Benefits (Enhanced Customer Knowledge, Improved Customer Experience) (DeLone and McLean, 2003)	Lack of Employee IT Training (Van Ark, 2016)	
Information Vividness, Interactivity (Jiang and Benbasat, 2003)	Behavioural Intention to Use (Abdullah and Ward, 2016)	
System Functionality, Transaction Security (Mich, Franch and Gaio, 2003)	Contingent Innovation Decisions (Gledson and Greenwood, 2017)	
Trust within Online Environments (Pavlou, 2003)	Perceived Compatibility, Perceived Behavioural Control, Social Values (Rigopoulou, Chaniotakis and Kehagias, 2017)	
System Functionality, Design, Confidence, Competence (Ahn, Ryu and Han, 2004)	Social Network Structure, Group Norms, Opinion Leadership (Zhang and Vorobeychik, 2017)	
System Accessibility, Immediacy, Functionality (Gupta, Jones and Coleman, 2004)	System Processing, Usability, e-Procurement Acceptance (Brandon-Jones and Kauppi, 2018)	
Management Reports, Protocol Processing Engines, Resource Databases (Shi, 2006)		
Information Architecture, User Interface, IS Usability (Au Yeung and Law, 2006)		
Narrative, Visual Information (Choi, Lehto and Morrison, 2007)		
Information Conciseness (Gable, Sedera and Chan, 2008)		
Navigability, Service Promptness (Schmidt, Cantallops and Santos, 2008)		
Potential for Mobile Data Services (Lee, Shin and Lee, 2009)		
e-Service, System Availability, Fulfilment, Efficiency (Quan, 2010)		
Process Quality, Collaboration Quality (Urbach, Smolnik and Riempp, 2010)		
System Improvement (Wang, Fan and Chuang, 2011)		

System Security and Functionality (Kim, Farrish and Schrier, 2013)		
Informativeness, Credibility, Involvement, Reciprocity (Diaz and Kutra, 2013)		
Richness for Virtual Communities (Zheng, Zhao and Stylianou, 2013)		
Intensity of IS Use, Quality of IS Use (Mtebe, 2015)		
Integrity of Information (Chen, Liu, Lai, Chang and Lee, 2017)		
Quality of Social Media Information (Kim, Lee, Shin and Yang, 2017)		

Table 3.1: The Main IS Evaluation Dimensions and their Measurements

A large number of these dimensions have been assimilated into more contemporary theories and some have been replaced altogether by different dimensions as Information Systems evolve through the passage of time, with newer technologies coming to light. Seminal theories and theoretical models, such as the IS Success Model, the TAM, the UTAUT (and their subsequent versions), the TRA and TBA, and DOI, have accomplished to summarise the IS evaluation measurements of their time into structured, applicable, and parsimonious frameworks. Since their emergence, the vast majority of IS evaluation research efforts is centred on these models and the accompanying theories. It is an extremely laborious, and sometimes near impossible task for a researcher to discover a brand new IS evaluation measurement, as the enormous quantities of published material have rendered this research topic almost saturated.

While Figure 2.18 organises all the IS evaluation dimensions and their measures that are available in the literature, it is important to condense their number into those that are applicable to the purposes of the present research. Early measurements such as, for example, technical level, semantic level, and effectiveness level (Shannon and Weaver, 1949), or perceived importance of information (Larcker and Lessig, 1980) can be assimilated into the System Quality and Information Quality dimensions. Other antecedents, including readability (Swanson, 1974), or production of information (Mason, 1978) have become antiquated as all modern systems produce information that is clearly legible. Moreover, some constructs such as cost-benefit analysis (King and Rodriguez, 1978), or balanced scorecard (Kaplan and Norton, 1992) do not apply in the context of this thesis as the latter does not make efforts to analyse costs or any financial data. Finally, the system use-related constructs will not be included within this thesis, as the proposed model seeks to measure intention to use/reuse, and not system use. As a result of the above, Table 3.2 presents the IS evaluation dimensions that are relevant to this thesis.

System Quality

- Usability, Reliability
- Reponse Time, Speed
- Accessibility, Flexibility
- Security
- Design
- Interactivity, Adaptability

Information Quality

- Accuracy, Understandability
- Relevance
- Currency
- Completeness
- Personalised Content, Dynamic Content

Service Quality

- Responsiveness
- Online Support Capabilities
- Follow-up Services
- Feeling of Empathy
- System Support Service Centres

Perceived Usefulness

- Effective Task Accomplishment
- Efficient Task Accomplishment
- Quick Task Accomplishment
- System Improves Job Performance

Perceived Ease of Use

- Easy to Use System
- User-Friendly, Effortless
- Specific to Tasks
- Interaction with IS Easy to Understand
- Information is Easy to Find

Perceived Benefits

- IS Helps Acquire New Knowledge
- IS Helps Acquire Experience

Perceived Trust

- IS is Trustworthy
- IS Handles Personal Information Securely
- IS Processes Transactions Expertly

User Satisfaction

- Good Information Retrieval Process
- IS Enables Loyalty to be Established
- Overall Performance of IS
- General Experience of Using IS

Subjective Norm

- Behaviour to use IS Affected by Beliefs of Peers

External Factors

- IT Training
- Facilitating Conditions
- Top Management Support

Intention to Use/Reuse

- IS Performance on Similar Levels as other Hotels
- Positive Feedback on the Online Capabilities of IS
- Recommendation
- Intention to Reuse IS

Table 3.2: IS Evaluation Dimensions/Measurements Relevant to this Study

It is also vital for researchers to deliver clearly defined measurements in their studies. According to Straub and Burton-Jones (2007), Technology Acceptance theories and models lack a clear definition of the constructs (input) and the dependent variable (output) involved. Seddon (1997) criticises the IS Success Model of being ambiguous, as one of its dimensions, IS Use, has three distinct meanings. The current research, however, uses components of both the IS Success model and the TAM. Therefore, it is crucial that all dimensions are clearly defined. Figures 2.20 and 2.21, below, offer a summary of all the definitions of mainstream variables associated with the IS Success Model (Table 3.3) and TAM (Table 3.4).

System Quality	The condition of the information processing system	IS Success Model (1992)
Information Quality	The condition of the information that a system produces	IS Success Model (1992)
Service Quality	The overall condition of the services associated with a system and the extent to which these services meet the expectations of users	IS Success Model (2003)
Intention to Use/System Use	A User's readiness to carry out a specific future behaviour	IS Success Model (2003)
User Satisfaction	The extent to which users believe the IS available to them meets their information requirements	IS Success Model (1992)
Net Benefits	The ultimate impact of an IS to a number of stakeholders such as users, customers, suppliers, organisations, markets, industries, and society as a whole	IS Success Model (2003)
Senior Management Support	Senior executives' unequivocal support for IS Use and investment	Guimaraes and Igbaria (1997)
IT Training	The process by which individuals gain the necessary skills to operate IS effectively	Igbaria, Guimaraes and Davis (1995)

Trust	A confident willingness to depend on a trustee because of that trustee's positive perceived characteristics	Gefen (2002)
e-Loyalty	A deeply held intension to reuse a preferred IS in the future despite of the presence of factors or circumstance that may include switching behaviour	Reichheld and Schefter (2000)
Process Quality	The quality with which the system supports an organisation's business processes	Urbach, Smolnik and Riempp Model (2009)
Collaboration Quality	The ability of the IS to support collaboration between employees	Urbach, Smolnik and Riempp Model (2009)
User Participation	The observable behaviour of system users in the IS development process	Barki and Hartwick Analysis (1994)
User Involvement	The need-based mental or psychological state of system users	Barki and Hartwick Analysis (1994)
Voluntariness of Use	The degree to which use of the innovation is perceived as being voluntary, or of free will	Moore and Benbasat (1991)

Table 3.3: Definitions of variables in IS Success Model and related models

Behaviour	The actions of individuals in relation to themselves or their environment	TRA/TPB
Use (USE)	The amount of effort expended interacting with an Information System (IS). The number of information products generated by the IS per unit of time	TAM, TAM2, UTAUT
Behavioural intention (BI)	The subjective probability that an individual will perform a behaviour	TAM, TAM2, UTAUT, TRA/TPB

Attitude (ATT)	An idea, charged with affect, which predisposes a class of actions to a particular class of social situation	TAM, TRA/TPB
Perceived ease of use (PEOU)	The degree to which a person believes that use of a particular IS would be free of effort	TAM, TAM2
Perceived usefulness (PU)	The degree to which a person believes that use of a particular IS would enhance his/her job performance	TAM, TAM2
Subjective norm (SN)	The perception of general social pressures to perform or not to perform a particular act or to engage or otherwise in a particular behaviour	TAM2, TRA/TPB
Perceived Behavioural Control (PBC)	An individual's perception of the ease or difficulty of performing a particular behaviour, or of factors that impede or facilitate the behaviour (facilitating conditions)	TPB
Perceived Benefits	The perception of the positive consequences that are caused by the use of a specific IS	Fearon and Philp (1998)
Perceived Risk	The individual's subjective expectation of suffering a loss in pursuit of a desired outcome (Warkentin et al., 2002).	Warkentin, Gefen, Pavlou and Rose (2002)
Effort expectancy	The degree of ease associated with the use of the system	UTAUT
Performance expectancy	The degree to which an individual believes that using the system will help him or her to attain gains in job performance	UTAUT
Social influence	The degree to which an individual perceives that important others believe he or she should use the new system	UTAUT
Facilitating conditions	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system	UTAUT
Image, job relevance, output quality, results demonstrability	Real or perceived characteristics of IS that influence its PU	UTAUT
Behavioural beliefs, normative beliefs, control beliefs	An individual's perceptions about specific positive/negative outcomes of performing a particular behaviour, specific groups or people who encourage/discourage the behaviour, and specific factors or circumstances that make behaviour easier/more difficult	TRA/TPB

Figure Table 3.4: Definitions of variables in TAM and related models

The figures above synopsise and inform the research into a set of themes that will be utilised in the ensuing chapters by means of primary research with the intention of determining the dimensions and measurements that will constitute the proposed theoretical model of this study. This will be achieved by a process of filtering the abovementioned generated themes through the findings of the primary research. It is then hoped that this will result in a comprehensive and yet relatively parsimonious theoretical model that will combine object-based characteristics (from IS Success Model and relevant theories) and behavioural beliefs (from TAM literature). The model will include several paths describing the relationships between its dimensions and evidence supporting these relationships will be obtained from the relevant literature. It is important to note that this research presents the two leading IS evaluation approaches (IS Success and Technology Acceptance) not as competing against each other, but rather, as complementary research streams that incorporate a system's quality characteristics with the system users' beliefs and attitudes in order to ultimately identify the outcomes that explain intention to use and intention to reuse.

Based on the current findings of the literature, a framework can be put forward that brings together all the relevant IS evaluation dimensions that will be the building blocks of the Integrated IS Success/Technology Adoption Model proposed by this study. The position of each dimension and the constructs that each dimension contains will be determined by the outcomes of the primary research. Moreover, the relationships between the dimensions will be represented by arrows in the final Integrated IS Success/Technology Model.

These relationships will not be tested by this thesis, but rather theorised by the literature. The framework that is the precursor to the Integrated IS Success/Technology Adoption Model can be viewed in Figure 3.5.

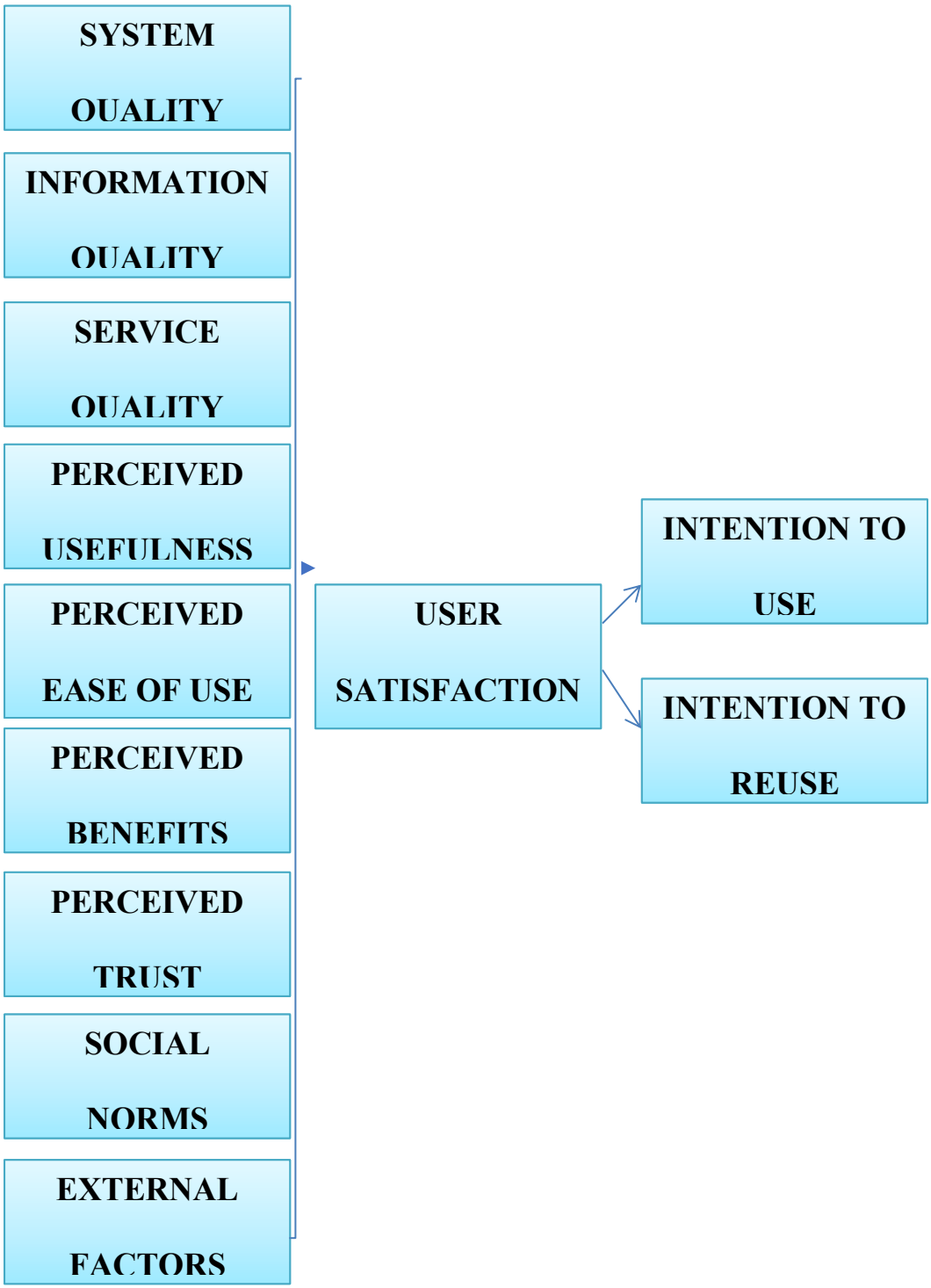

Figure 3.5: Framework of IS Evaluation Dimensions Found by the Literature Review

Evaluation is an integral part of any Information System. This literature review is an attempt to not only present the whole spectrum of IS evaluation approaches but to also revisit these approaches by means of a critical reconsideration of their merits and shortcomings. This, it is hoped, will raise some points that ought to be taken into account in IS evaluation, and provide the building blocks to this thesis' theoretical model.

It has been established that the two main research streams that form the foundations of IS evaluation are IS Success and technology adoption (or acceptance). Both are very mature areas in terms of published studies, with research evolving over time by conceptualising novel considerations that explain how a system can be successful and/or adopted. Driven by rapidly changing technology scenarios, the development of these considerations has resulted in the emergence of several theories and models, sometimes borrowed from other disciplines (Sharma and Mishra, 2014). Nonetheless, these models are not without weaknesses.

The literature has shown that the two most recognised theoretical models in IS evaluation are the IS Success Model (DeLone and McLean, 1992, 2003, 2004) and the Technology Acceptance Model (TAM) (Davis, 1989). This thesis' proposed model, the Integrated IS Success/Technology Adoption Model, is a fusion of the TAM and IS Success Model, with some additions (Perceived Trust, Perceived Benefits, Social Norms, External Factors). However, even these additions, albeit adopted from other models/theories, are

indirectly linked with the TAM. It is important to determine where each of the different dimensions of the Integrated IS Success/Technology Adoption Model stem from, in order to better understand its origins and to demonstrate its connection to the IS Success Model and the TAM. Characteristically, the first three dimensions of the Model (System Quality, Information Quality, Service Quality) all come from the IS Success Model directly. The next three dimensions are adopted from the TAM both directly and indirectly: Perceived Ease of Use and Perceived Usefulness derive directly from the TAM, while Perceived Trust is an indirect by-product, inspired by technology adoption research. More specifically, Perceived Trust in IS research is originally established by Pavlou (2003). His study is based on acceptance of e-commerce and integrates Perceived Trust and risk into the TAM. User Satisfaction and Perceived Benefits, the next two dimensions, are both directly associated with the IS Success Model, although DeLone and McLean refer to Perceived Benefits as Net Benefits (DeLone and McLean, 2003). The next dimension, Social Norms, emanates from TAM-related research, the Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991), as well as the second version of the TAM, called TAM2 (Venkatesh and Davies, 2000). The final and perhaps most important dimension of the Model, its dependent variable, Intention to Use/Reuse has its roots directly in IS Success research, appearing as the penultimate dimension in the updated IS Success Model (DeLone and McLean, 2003). Finally, the External Variables (Managerial Support, IT Training, Facilitating Conditions) that function as mediators of the Integrated IS Success/Technology Adoption Model are also products of IS Success and TAM research. Managerial support and IT Training come into view in a study

by Guimaraes and Igbaria (1997) on the success of client/server systems, using User Satisfaction and System Use as dependent variables and, hence, based to a great extent on the IS Success Model. Facilitating Conditions are first identified by Taylor and Todd (1995) as a significant antecedent of system usage in a study that compares the TAM with two versions of the TPB to determine which is the most effective predictor of IT usage.

Despite the fact that one of the strengths of the Integrated IS Success/Technology Adoption Model is that it uses an integrated approach to combine constructs from the TAM and IS Success Model, both of these models have been criticised in academic circles for various reasons. These criticisms provide insights into potential inadequacies but may also act as safeguards in the sense that they can help distinguish between each model's strengths and weaknesses. It is logical for a researcher that seeks to use integrated approaches to do so by combining the best elements of each model/theory. However, first and foremost, he/she must choose according to the context of the study and in line with its research questions. In this manner, the criticisms below are used both constructively and cautiously in order to assist with the selection of the constructs for this thesis' model. Constructively because the fact that a model/theory has been criticised should not take away from its contribution to academia, and cautiously because it does not mean that every single argument a critic puts forward should necessarily be agreed with.

The IS Success Model is based on the hypothesis that IS Success follow a fairly straightforward path: system, information, and service characteristics affect the level of use of a system (Intention to Use or System Use) and also how much system users are satisfied with using the system (User Satisfaction), which in turn shape the benefits, both positive and negative, a system can offer. As system, information, and service characteristics can vary according to the system and its users, it is no exaggeration to argue that the most important dimensions of IS Success are System Use and User Satisfaction.

With reference to results, an unfavourable outcome of the IS Success Model has been the intensive emphasis on the explanation of a broad construct, System Use, theorised in a narrow manner (Benbasat and Barki, 2007). It is evident that System Use has always been defined and operationalised as the amount, duration, frequency, or variety of system functions used (Straub *et al.*, 1995). Simply put, the vast majority of individuals or organisations evaluating IS base their assessment on the number of 'clicks' or the duration of time a user spends on a website or another Information System. As a number of researchers have highlighted (for example, Doll and Torkzadeh, 1998; DeLone and McLean, 2003), such a naive and simplistic view of System Use leads to significant flaws in its measurement. Furthermore, paying intense attention to this extremely limited conceptualisation of System Use has left researchers disregarding other important constructs such as Intention to Use and Intention to Reuse (Agarwal, 2000), which are not only noteworthy in their own right, but

also highly relevant to comprehending IT implementation, adoption, and acceptance. Benbasat and Barki (2007) agree that the exclusive focus on the amount or extent of usage as the dependent variable has blinded researchers to other salient user behaviours as, in effect, the internal strength of the IS Success Model's logic has deterred researchers from advancing knowledge about how its constructs might differentially influence other behaviours. There are a number of papers pointing towards the deep influence that such behaviours have on IT implementation outcomes (for example, Orlikowski and Iacono, 2001; Beaudry and Pinsonneault 2005), with researchers proposing the development of a wider conceptualisation of System Use (Agarwal, 2000). Such a move would make possible a more truthful depiction of usage activities and see the creation of stronger links with salient outcome variables such as individual performance, adaptation, and the users' intentions to reuse systems.

The second dimension associated with IS Success, User Satisfaction, has occupied a central role in behavioural research within Management Information systems (MIS) since the 1970s. More often than not however, its theoretical underpinnings and relationship with other constructs such as effectiveness and System Use have been assumed, and as a result, little emphasis has been given to the assessment of these issues (Melone, 1990). In fact, User Satisfaction has often been utilised as a surrogate for IS effectiveness (for example, Bailey and Pearson, 1983; Baroudi and Orlikowski, 1988; Ives, Olson, and Baroudi, 1983), or even IS Success (for example,

Sedera and Gable, 2004; Wang and Liao, 2008). Even so, there is no evidence of a clearly articulated theory connecting these dimensions. In addition, the literature is far from informative about the process or the conditions under which a user's attitudes translate into effectiveness (Mahmood *et al.*, 2000). As far as IS Success is concerned, deciding on a transparent and widely acceptable definition is far from easy as systems refer to abstract concepts that do not easily lend themselves to direct measurement (DeLone and McLean, 1992). Also, not a single factor can be ascribed to explaining IS Success, mainly due to the existence of complex interrelationships between the system and its users, environment, and organisation (Zviran and Elrich, 2003). Several scholars insist that the recommendation to be cautious when using User Satisfaction as a surrogate for effectiveness and IS Success is founded on a coherent argument. The main rationale behind this view is based on the logic that satisfied users alone cannot be valid indicators of an effective or successful system and, hence, User Satisfaction cannot be a proxy measure for effectiveness (Melone, 1990). Despite this, there is justification for its utilisation based on the fact that numerous studies have found strong correlations between User Satisfaction and effectiveness and IS Success. In those cases, all instances of effective/successful IS result in satisfied users, while some ineffective IS are associated with satisfied users and other are not (Iivari, 1987). Furthermore, the possibility of an IS being effective or successful without satisfaction on the part of the users is realistic within a mandatory use environment, with an IS that is tightly linked to the user's work-system activities (Melone, 1990). Nevertheless, most researchers agree that due to its applicability and ease of use, User Satisfaction is a significant indirect criterion

for measuring the effectiveness/success of an IS (Mahmood *et al.*, 2000). For instance, in a study that produces an instrument to calculate User Satisfaction, Baroudi *et al.* (1986) determine that satisfied users lead to increased system use, and hence User Satisfaction should be the preferable measure of IS effectiveness and success. Also, Igbaria and Nachman (1990) assess the individual, organisational, and system factors affecting the success of end-user computing, and conclude that there are positive and significant relationships between User Satisfaction, leadership style of IT management, system utilisation, and software/hardware availability. Moreover, in a study that assesses the validity of the IS Success Model, Rai *et al.* (2002) find that a higher level of satisfaction creates greater user dependence on the system. They also provide empirical evidence that supports the assumption that User Satisfaction is the most suitable measure of IS Success and effectiveness.

The criticisms directed towards TAM are somewhat stronger in the sense that some scholars deem the model to be outdated and obsolete. For example, Benbasat and Barki (2007) insist that the TAM has fulfilled its original purpose and that it is time for researchers to move on outside its limitations and into more fruitful avenues that will enhance their understanding of IT adoption. This view is supported by Dwivedi *et al.* (2019) who, after a detailed comparison of TAM and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.*, 2003), establish that the TAM is, to some extent, outdated and not equipped to evaluate the technologies of today, while the focus is, and has been for a while, shifting away from the TAM and towards the UTAUT.

Legris *et al.* (2003) question the predictive power of TAM by arguing that even if extended versions of the model were to be employed, which include additional variables, the TAM would hardly explain more than 40% of the variance in System Use. As means of a solution they propose that despite its usefulness the TAM has to be integrated into a broader model, one that would include constructs associated with both human and social change processes. Sharma and Mishra (2014) also highlight the necessity to identify new constructs that may be employed in explaining adoption of emerging technologies such as cloud computing and m-Government. The need for a comprehensive theoretical model that can adapt to the requirements of the fast-paced IT environment has also been articulated by Al-Natour and Benbasat (2011), who advise that researchers should refocus their efforts towards analysing new constructs and consequences if the IS community is to fully grasp what drives adoption within different usage contexts.

Other researchers find faults within the dimensions/constructs of the TAM. While Perceived Usefulness has been described as the strongest predictor of an individual's intention to use a technology (Davis, 1989), several scholars doubt its importance. For instance, Yi *et al.* (2006), find no relationship between Perceived Usefulness and attitudes towards use. Bajaj and Nidumolu (1998) go one step further by suggesting that usefulness will negatively affect the attitude towards using the system. Szajna (1996) look into actual system usage and conclude that there is no empirical relationship between Perceived Usefulness and System Use. Even more surprisingly, Chau and Hu (2001)

reveal that contrary to the assertion of TAM and the results reported by other researchers (Venkatesh, 1999), Perceived Usefulness has no significant effect on Perceived Ease of Use. This is an unexpected finding, as both Perceived Usefulness and Perceived Ease of Use are constructs of the TAM and the relationships between them (Perceived Ease of Use is posited to be an antecedent of Perceived Usefulness) have been established and tested by a number of studies (Davis, 1989, Mathieson, 1991; Moore and Benbasat, 1991; Venkatesh and Davis, 2000). Scholars also fail to find a relationship between Perceived Ease of Use and actual use. Agarwal and Prasad (1997) state that although Perceived Ease of Use has been observed by other studies to be a significant predictor of technology adoption, it does not appear to be a determining factor, as no amount of Perceived Ease of Use will compensate for low system use. Another unanticipated finding is that researchers detect no significant direct relationships between Perceived Ease of Use and Intention to Use. Chau and Hu (2001) maintain that irrespective of whether the technology is easy to use or not, Perceived Ease of Use affects the user' s intention to use, but only indirectly. This outcome is contradictory to other studies (for example, Moore and Benbasat, 1991; Straub and Burton-Jones, 2007; Rahman *et al.*, 2017), where Perceived Ease of Use has been deemed a significant determinant of Intention to Use a technology.

In spite of these published papers that report paradoxical results with the TAM and its failure to consistently predict as it intended to, the vast majority of studies concur that the TAM is a functional mechanism for measuring

technology adoption, while Perceived Ease of Use and Perceived Usefulness are interlinked and also influence Intention to Use and System Use (Davis, 1989; Venkatesh and Davis, 2000; Bueno and Salmeron, 2008; Teo, 2010; Rahman *et al.*, 2017). In a study that tests the constructs of the TAM, Nelson *et al.* (1992) find evidence to substantiate the existence of a relationship between Perceived Usefulness and Perceived Ease of Use. They also indicate that the TAM is a consistent model when it comes to predicting and explaining system adoption. Hendrickson and Collins (1996) further test the reliability and validity of the scale items that are normally utilised to measure the TAM constructs. They discover that for both Perceived Usefulness and Perceived Ease of Use, the scale items exhibit significant test-retest reliability results. Even one of the TAM's toughest critics, Paul Legris, concedes that the TAM achieves its primary objective to offer a helpful tool for measuring the mediating role of Perceived Ease of Use and Perceived Usefulness in their relation between external characteristics and the probability of system use, the latter being a proven indicator of system success (Legris *et al.*, 2003). Goodhue (2007) suggests that the IS community was in need of a compelling reaction to the question of why individuals use systems, and the emergence of the TAM provided the answer.

The viewpoint of this thesis on the IS Success Model and the TAM is that their contributions to the IS field cannot be overstated. Both are prominent models for explaining and predicting IS Success and IT adoption, both have captured the attention of numerous researchers, and both have generated a lot of

interest. This study does, however, agree with Goodhue (2007) that it is possible to argue these models have been so overstudied and over relied upon that additional studies make very little contributions. It is also in agreement with Benbasat and Barki (2007) in the sense that both models have attained a dominance that has brought about a high degree of conformity and lack of innovation, and these outcomes have not been beneficial to the IS research community. Consequently, it is sensible to admit that research on the IS Success Model and the TAM has reached a saturation point. The only viable option to move IS research out of its current stagnation and into a new era where novel constructs are identified and established, and new models exploit the strengths of the IS Success Model and the TAM while discarding their weaknesses. This thesis feels that the only way to achieve that is the fusion of the two.

Chapter 4: Methodology

4.1. Introduction

While Chapter 2 has reviewed the literature on Information Systems evaluation and its approaches, Chapter 3 has followed a similar path but with a focus on hotel employees and the manner in which they perceive and assess IS. The present chapter concentrates on the methods used to organise and carry out this study. It sheds light on the research philosophy ingrained in the study and presents the research approach and strategy followed. It also offers details and a consideration of the use of secondary data, together with a justification of the primary data collection and reveals the decision-making process behind data recording, sampling, and analyses pertaining to the proposed research aims. The chapter ends by addressing the reliability and validity of the thesis and by reflecting on ethical issues.

4.2. Research Philosophy

Generally speaking, the research process revolves around several facets including the philosophy adopted, the strategy utilised, the instruments used, as well as the objectives and research question selected. This chapter seeks to explain these notions and their scope within this study. The research philosophy is principally concerned with the development of the research background, knowledge creation as well as the nature and subject of research (Saunders, Lewis and Thornhill, 2015). The most central element of any research philosophy is the research paradigm, an extensive framework that comprises perception, notions and comprehension of several theories and practices that are utilised to carry out research (Cohen, Manion and Morrison, 2011). A process that incorporates a number of stages via which the relationship between a study's objectives and questions is built, the research paradigm is not strictly a methodology, but rather a philosophy that directs how research is to be conducted in order to provide valid arguments and reliable results (Gliner, Morgan and Leech, 2009).

The two prevailing paradigms in social science research are positivism and interpretivism, however others also exist such as for example, realism. The main tenet of positivism is that reality is fixed and can be perceived from an objective rather than subjective point of view, without interference from the events under study (Cooper and Schindler, 2013). Positivists suggest that observations or experiments should be repeated by studying a single independent variable with the purpose of identifying regularities and forming

relationships between some of the constituent elements of the social world (Levin, 1988). Positivism involves collecting numeric/quantitative data, allows for generalisations, enables quantifiable observations, and evaluates results with the help of statistical methods and hypotheses (Easterby-Smith, Thorpe, Jackson and Lowe, 2008). Playing the role of an objective analyst, the researcher subsequently assesses the collected data and generates appropriate analyses and results so as to realise the aims and objectives of the research (Saunders and Lewis, 2011). Overall, positivism can be viewed as being linked to a visible social reality and its end result as being comparable to that of physical and natural sciences (Remenyi, Williams, Money and Swartz, 1998).

These notions surrounding positivism have often been the subject of debate, particularly on the subject of whether or not it represents an entirely appropriate philosophy for conducting research in social sciences, and more specifically on the validity of scientific/positivistic methodologies as suitable bases by way of which one can comprehend the intricacies of society. The main criticisms that encircle positivism arise from the viewpoint that it creates knowledge that is restricted solely to the field of science, and in doing so it reduces the entire research process to frameworks that function through classification, description, and generalisation (Giroux, 1983). By assuming that there only exists one scientific ‘truth’ and allowing for only one experience to be valid, positivism overlooks the complexities and social constructiveness of this ‘truth’ (Giroux, 1983). Giroux (1983) concludes that positivism corresponds to an inadequate paradigm for the analysis of human society

because it portrays knowledge in terms of conceptions of science, a notion that differs to knowledge as identified in a 'lived' society. Rasmussen (1996) argues that in paying no attention to the role of the observer/researcher in the formation of social reality, positivism fails to take into account the social and historical conditions that shape the representation of social facts. It attaches a misleading character to the subject of study/research by regarding social reality as existing objectively and independently of the individual researchers whose actions and labour, in actual fact, formed those conditions (Rasmussen, 1996). On this matter, it would be logical to presume that achieving absolute objectivity is unattainable, since discovering and reporting information is always ensnared in personal, ideological, and political inclinations (Hanson, 2008).

The emergence of the second dominant paradigm evident in social science research, interpretivism, has come to light due to the perception that it possesses the capacity to rectify the constraints that hinder positivism. Interpretivism epitomises the analysis of phenomena in their natural environment and its dogma is embedded in the belief that reality can be truly comprehended in its entirety only if researchers intervene in it and reflect on it through subjective interpretation (Saunders *et al.*, 2015). Interpretivists maintain that individuals construe their actions and environment in a manner that is affected by the actual cultures and different standards that pervade the society in which they live (Saunders *et al.*, 2015). Therefore, there appears to be a coexistence of distinct ways of life and diverse opinions about how the world functions that shape the particular character of human attitudes as well

as the ways people behave and comprehend their world (Denzin and Lincoln, 2011). Savin-Baden and Major (2013) share this view and add that cultural differences do not only exist between societies but also within them, as a result of their complex nature. In this fashion, even though there are many interpretations of reality, these interpretations become in themselves the branches of the scientific knowledge they seek (Holliday, 2007). Interpretivism posits that the existence of many possible truths and several meanings of a simple fact renders these as appropriate and suitable for every situation and research problem (Johnson and Christensen, 2010). Consequently, a researcher following the interpretivism paradigm does not only interact with the surrounding environment but also makes an effort to understand it by interpreting events and their significance (Saunders and Lewis, 2011). Thus, the role of the interpretivist is to make an effort to recognise the subjective reality of those being studied in order to make more sense of their motives, behaviours, personalities, and actions.

Yet the interpretivism paradigm, similarly to positivism, is also subjected to various criticisms. Positivists, such as for example, Giddens (1984) tend to doubt the overall benefit of interpretivist research by arguing that it is limited in that it discards the scientific procedures of verification, which in turn leads to results that cannot be generalised and applied to other circumstances (Mack, 2010). Another criticism is directed towards the belief that interpretivism can offer a deeper understanding of social phenomena compared to scientific methodologies (Nudzor, 2009). Its critics accuse interpretivism of falling short of providing any established set of guidelines that underlies all qualitative

social research; instead, the latter is dominated by the existence of many ‘isms’ (such as postmodernism, constructionism, interactionism) which may be accepted theories but do not constitute a standard recognisable and acknowledged doctrine (Silverman, 2013). Accordingly, interpretivism is regarded by its opponents as a somewhat insignificant philosophy, adequate for merely the early or exploratory stages of research and before a serious sampling process occurs (Nudzor, 2009). Interpretivism is also attacked because of the notion that it may produce results that lack reliability. Such criticism arises from interpretivism’s main concept, its intrinsic subjectivity, which can bring about contradictory and inconsistent explanations that are used to interpret social phenomena (Nudzor, 2009).

In recent times, the long-standing debate between positivism and interpretivism has been viewed by sociologists and other academics as a pointless dispute, simply offering polarised positions about whether social research should be scientific or otherwise (Blackburn, 2005). A relatively modern approach called realism is seen as offering a remedy for this dichotomy between positivism and interpretivism. Realists accept that individuals are reflective by nature and that social reality is complicated (Sayer, 2000). They argue that human agency (the ability of individuals to determine and choose their actions and beliefs) would be impossible without the existence of social structures which, in turn, comprise of individuals that are able to think about, and if necessary, change these social structures (Lopez and Potter, 2001). This is why realism is also described as a research philosophy that defines how individuals react to real situations (Johnson and

Christensen, 2010). It is important to point out that realists maintain that social sciences studies need to be pragmatic and employ whichever method (positivism, interpretivism, or a combination of the two) is suitable for the particular circumstances (Wikgren, 2005).

There are academics in the field of IS research that encourage the use of methodologies that incorporate elements from both positivism and interpretivism, often referred to as pluralist research methodologies (Landry and Banville, 1992; Jackson, 1999; Mingers, 2001). Benbasat, Goldstein and Mead (1987) argue that there is no one methodology that is fundamentally superior to another, while Kaplan and Duchon (1988), Lee (1991) and Gable (1994) recommend that a combination of methods can enhance the quality of the research. In contrast, Falconer and McKay (1999) dismiss the move to combine methods as an inability to reconcile diverse primary ontological assumptions and a failure to acknowledge the relevance of different research methodologies and the intrinsic variations between them. Falconer and McKay (1999) maintain that the research methods utilised have to correspond to the particular phenomenon of interest as different phenomena may necessitate the exploitation of different methodologies. This view is supported by Pervan (1994) and Benbasat (1984) who advise that in view of the complexity of the real world, researchers need to select methodologies suitable to their objectives and the problem under consideration. Mingers and Stowell (1997) advocate that with the passage of the 20th century, IT has become so vital within societies that the field of IS must now focus on the general evolution of human communication. As such, IS studies have to draw upon a wide range

of disciplines including technology, sociology, economics, and semiotics amongst other, which entail diverse research traditions. Because of this, IS can be classified in the same category as other management areas such as, for example organisational studies, that are also typified by a multitude of research paradigms and require certain research methods (Mingers, 2001). According to Mingers (2001) there are three distinct conceptualisations of the term 'methodological pluralism'. The first of those, loose pluralism, implies that IS as a discipline should encourage a range of research paradigms and methods within it, but should not specify how or when they be used. The second, complementarism, views diverse paradigms as revolving around different assumptions about their context of use in a way that each paradigm can be seen as more or less appropriate for a particular research situation. The third conceptualisation, strong pluralism, regards all research problems as inherently intricate and multidimensional situations that can benefit from a variety of research methods.

This research study seeks to critically evaluate Information Systems used by employees in the 4 and 5-star full-service hotel sector in the UK. By doing this, the main aspiration is to develop and propose an integrated model that can measure the intention to use IS by hotel managers. To accomplish that, it assesses extant IS evaluation frameworks in addition to perceptions of hotel departmental managers on IS effectiveness and on the different dimensions of these IS evaluation frameworks. These undertakings give rise to the development of the aims relating to this thesis:

Aim 1: To critically review Information Systems (IS) theory and evaluation approaches in the context of the 4 and 5-star hotel industry.

Aim 2: To analyse Information Systems (IS) evaluation frameworks, in particular those associated with employee IS usability.

Aim 3: To explore the dimensions and constructs used in evaluating the effectiveness of IS in 4 and 5-star hotels from the perspective of departmental managers.

Aim 4: To develop an integrated theoretical model for evaluating the intention to use IS by hotel employees.

It is fairly clear that answering these research aims cannot be addressed by insistence on the use of positivism, but rather requires an interpretivist philosophy implementation. This is because unlike positivistic philosophies, this thesis is not a discrete fixed event but a process that archetypally advances through a number of phases that require subjective interpretations and interference with the events under study. Accordingly, then, this study is guided by interpretivism, in a manner which allows the presence of several possible truths and meanings of a single phenomenon. Adopting positivism would have added only a limited view of the research situation pertaining to this study (Mingers, 2001). Moreover, the present study does not involve the strict, scientific quantification or measurement of attributes that is associated with positivism. Instead, it sees the researcher making an effort to comprehend and interpret behaviours and their importance by interacting with the

surrounding environment. More specifically, theory is constructed interpretively via the interview process by collecting and analysing the viewpoints of the interviewed hotel managers and forming the dimensions that later collectively build the proposed research model. Ultimately, these dimensions are directly compared with the literature review findings. Based on that comparison and the various interpretations compiled from the viewpoints of the interviewees, the conclusive decision is made as to which dimensions and measurements are to be used in the final proposed research model.

Although sometimes lacking the generalisability and reliability of positivistic approaches (Finn, Elliot-White and Walton, 2000), interpretivism has been credited with producing research that reflects the truth (Giorgi, 1994; Jones, 1998) as well as the realities and intricacies of social situations (Saunders *et al.*, 2015). Meanwhile, positivism has been criticised of being an inappropriate method for the social sciences because it presumes that knowledge can be created only by observing measurable phenomena, without the need to document and record feelings and experiences of the research participants (Guba and Lincoln, 2005). The above reasons support the use of interpretivism for this study. It would have been simply impossible to develop the proposed theoretical model without the use of interpretivist approaches, because it would have been unfeasible to assess the perceptions of hotel managers with regards to the different IS evaluation dimensions without employing interpretivism. The utilisation of an interpretivist paradigm is justified further in the following sections, where the research design of this thesis is presented.

4.3. Research Approach

Normally, the approach that a study adopts is influenced to a great extent by the research philosophy selected. The two main research approaches or methods of reasoning are deduction and induction; however, researchers also have the option of combining the two as a mixed approach. Deduction can be defined as the process of reasoning from general premises in order to reach a logical and particular conclusion (Sternberg, 2009). Induction on the other hand, denotes inference from particular instances that produces general or probable conclusions, based on available evidence (Copi, Cohen and Flage, 2007). Deductive approaches are underpinned by a syllogism that a valid conclusion can be formed from a rational premise via a sequence of formal logical steps, moving from the general to the particular (Cohen *et al.*, 2011). These types of approaches see empirical social research conducted on the basis of a hypothesis derived from universally accepted theories. The hypothesis is subsequently tested against empirical observation and then used to confirm or reject the original theoretical proposition (Miller and Brewer, 2003). The process of deductive reasoning is shown below, in Figure 4.1.

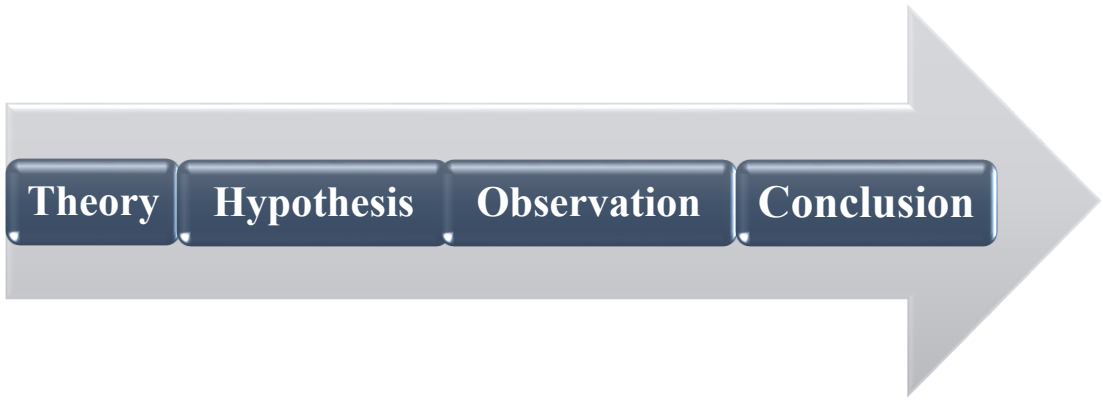

Figure 4.1. The Process of Deductive Reasoning

Deductive approaches are usually linked to positivism and natural science models of research (Crowther and Lancaster, 2008). According to Collis and Hussey (2009) positivistic philosophies are founded on a paradigm that human behaviour research should be conducted in an identical manner to studies in natural sciences. This paradigm also dictates that individuals respond to rules, norms, and forces external to themselves, which can be identified and distinguished by drawing on methodical, logical, and deductive processes (Collis and Hussey, 2009).

Inductive approaches have been purported to be responsible for concept formation, generalisations from instances, and predictions (Nisbett, Krantz, Jepson and Kunda, 1983). A standard inductive approach sees the researcher make specific observations, which is followed by detecting patterns and regularities. Subsequently, tentative premises are formulated and finally, general conclusions are developed, and theory is constructed. This process can be seen in Figure 4.2.

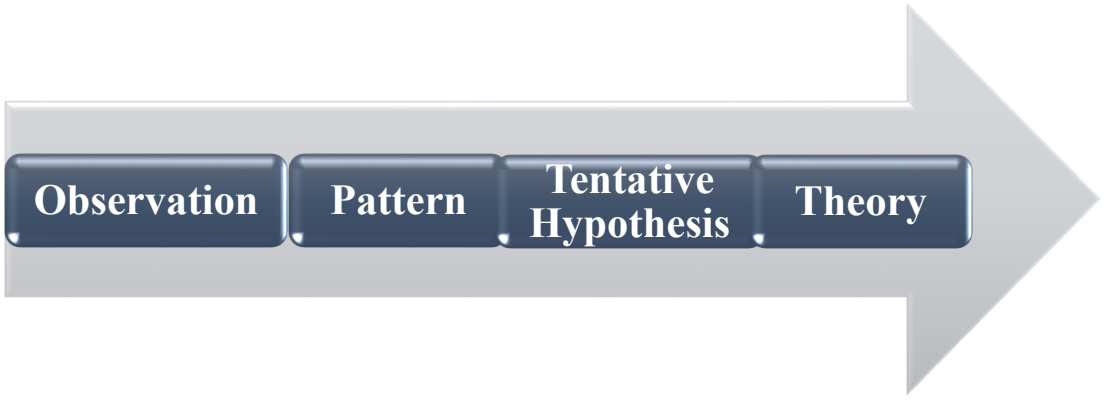

Figure 4.2. The Process of Inductive Reasoning

Induction is typically used to consider human behaviour in a social context and the interpretation of cause-effect relationships (Saunders *et al.*, 2015). According to Babbie (2013) even though there are several examples of inductive approaches in science studies, their reasoning is not always valid because it is not accurate to presume that a general principle is correct at all times. Crowther and Lancaster (2008) maintain that induction is usually associated with interpretivism and phenomenological philosophies, while Langenbach, Vaughn and Aagaard (1994) point out that deduction is usually part of positivistic studies, where the objects of research are clearly defined.

The current study employs inductive approaches due to the nature of its aims and the type of research involved. For example, to successfully answer Aim 3, which requires assessing the perspective of hotel managers on IS effectiveness, the use of induction is vital because this aim essentially implies the collection of empirical evidence, defined as knowledge acquired through interaction with the research environment: the interviewees (Pickett, 2006). At a simplistic level, the term ‘empirical’ can be taken to lead directly to a deductive approach of logic, which is traditionally associated with the hard sciences (Knox, 2004). Despite this, Knox (2004) argues that ‘empirical’ can also stand for evidence obtained from concrete situations rather than lines of reasoning fostered from purely theoretical bases. Hence, the possibility arises to place and use empirical evidence within the opposite end of the research spectrum, the social sciences, which embrace a more interpretative style of inquiry (Knox, 2004).

Simultaneously, the current research also utilises inductive approaches in order to achieve Aim 4, which seeks to develop an integrated theoretical IS evaluation model. Aim 4 involves identifying antecedents that represent relationships between distinct IS evaluation dimensions, as well as modifying and adding elements to existing theoretical models. These tasks are central and unique to the process of inductive reasoning and thus cannot be addressed by the use of deduction: in order to successfully answer Aim 4, a critical analysis of extant IS evaluation frameworks/models is necessary. To provide that evaluation, which is fixed on the hotel employee perspective of IS usability, themes are selected from the literature review with the intention of corroboration in accordance with the views of hotel managers, as obtained by the interviews. This represents the inductive approach, since a premise (themes identified by the literature review) is corroborated by means of interpretation of cause-effect relationships (views of hotel managers) to detect patterns and similarities and to build theory (final IS evaluation themes to be used in research model). The creation of theory by utilising inductive reasoning is also justified because by analysing the opinions of hotel managers, two new and previously unknown IS evaluation themes are identified (location of network server and location of system support services centre and its personnel). Therefore, starting from the opinions of hotel managers, patterns are detected (the majority of hotel managers highlight the importance of the location of the network server and the system support services centre together with its personnel), and eventually a new concept or theory is created (the two new and hitherto unidentified by the literature IS evaluation themes are established).

4.4. Research Strategy

Guided by the research philosophy and approach, a research strategy is responsible for the overall direction of the research and the process by which the latter is conducted (Remenyi *et al*, 1998). Apart from the philosophy and approach, a suitable research strategy selection is contingent upon the research aims, as well as the time and the resources available to the researcher. In recent times the number of available research strategies has grown, mainly due to the emergence of fresh procedures for conducting social research and to developments in IT that have made the analyses of complex models a possibility (Creswell, 2013). The leading strategies in social science research include experiments, surveys, narratives, biographies, action research, field research, phenomenologies, grounded theory, case studies, longitudinal studies, and ethnography (Saunders *et al.*, 2015; Denzin and Lincoln, 2011). While the above record of research strategies is by no means exhaustive, reviewing them comprehensively and in their entirety is outside this study's sphere of activity. Instead, a short account of the strategies is provided and only these pertaining to the aims of the current study are analysed in more detail.

Experiments represent empirical methods used in testing novel hypotheses or extant models and theories, with the purpose of supporting or refuting them (Griffith and Brosing, 2011). Narratives and biographies are forms of inquiry that explore the life of an individual (Creswell, 2013). While biographies focus on the individual, narratives fuse facts/stories/interpretations from the

individual's life together with those of the researcher's life in a narrative style (Clandinin and Connelly, 2000). Action research, also known as community-based research, is an iterative process which leads practitioners and researchers to cooperate under a mutually accepted ethical framework in order to solve commonly identified problems or address urgent issues (Lingard, Albert and Levinson, 2008). Field research or fieldwork is associated to research away from the laboratory or the workplace environment and encompasses a range of methods including direct observations, input, and group discussions (Salkind, 2010). Longitudinal studies require a number of follow-up measurements that are collected over a period of time and converge to assess aspects of human attitude or behaviour such as achievement or performance (Lavrakas, 2008). Ethnography is a holistic method of studying cultural systems (Whitehead, 2005). It has also been described as a strategy that aims to understand and interpret a cultural and social group (Creswell, 2013) and the ways in which that group has developed shared patterns of behaviour over time (Bryman, 2012).

Usually employed when a phenomenon cannot be directly observed, surveys have been described as an efficient, non-experimental instrument for gathering large sets of data that can be used in a descriptive, exploratory, or explanatory context (Saunders et al., 2015). Surveys have been associated with the deductive approach of reasoning and typically involve data collection, which is generally managed by conventional self-administered questionnaires with the objective of making statistical inferences and generalising results from a representative sample (small proportion) to a population (Babbie, 2013).

Alternative types of data collection include postal and online questionnaires as well as analyses of public statistics or reports (Alreck and Settle, 2004). Jick (1979) reveals that surveys can deliver great generalisability of results compared to other research strategies such as, for example, grounded theory or case studies. Gable (1994) points out that a survey can define relationships between variables within a sample while being precise in documenting the norm and in recognising extreme outcomes. Another strong point of surveys is that they produce empirical data, based on real-life observations (Kelley, Clark, Brown and Sitzia, 2003).

One of the weaknesses frequently associated with surveys is that they are intentionally formulated to deliver only a 'snapshot' of how things are at a certain point in time, thus merely carrying partial information on the core meaning of the data (Denscombe, 1998). Kaplan and Duchon (1988) warn that using a closed survey instrument may lead to data being stripped of their context, which can mask reality of its complexities. Another drawback is that surveys do not always have the capacity to measure some variables or relationships (for example, cause-effect) that may be of interest to a researcher (Gable, 1994). Gable (1994) also maintains that surveys are relatively inflexible when it comes to new discoveries because when the data collection process is underway there is little a researcher can do if, for instance, a question is too ambiguous or misunderstood by respondents. As the present study does not follow a deductive approach and does not involve the utilisation of a questionnaire, it has been decided that it clearly cannot be considered a survey.

A case study strategy incorporates thorough and meticulous exploratory or explanatory research on a single case such as, for instance, analysis of a community, organisation, event or individual, highlighting the intricacy and particular nature of the case in question (Bryman, 2012). Creswell (2013) explains that case study research and its in-depth inquiry can also be extended to include programmes, activities, or processes, while Stake (1995) maintains that this type of strategy requires a range of data collection techniques over a sustained time period. Case studies explore causality with the intention of theory formation (Yin, 2009) and have been described as resourceful alternatives to traditional strategies, laying emphasis on the participant's perspective as fundamental to the process (Zucker, 2009).

Advocates of the case study strategy point at its ability to enable researchers gain valuable insights into emerging themes, generate theories from practice, and understand the characteristics and complexity of the process under study (Benbasat *et al.*, 1987). Gable (1994) indicates that the main strength of case studies is their capacity to comprehend the specifics of the subject being examined by asking probing questions and capturing the essence of individual, organisational, or community behaviour. At the same time however, Gable (1994) acknowledges that case studies are also confined by their weaknesses, the main being that any conclusions drawn from their utilisation can be specific only to the particular subject under study and thus not be generalisable. Apart from insufficient generalisability, Lee (1989) identifies lack of deductibility, repeatability and controllability as problems associated with the use of case studies in social science research. Another aspect that

case studies may suffer from is limited external validity, an issue that can be compensated for by the use of triangulation (Johansson, 2003). Bryman (2004:1142) defines triangulation as "*the use of more than one approach to the investigation of a research question in order to enhance confidence in the ensuing findings*". Jick (1979) advises that triangulation can be a valuable tool not only because it allows studying the same phenomenon from different points of view, but also because it amplifies researchers' understanding by facilitating the emergence of fresh or deeper dimensions. He maintains that "*the effectiveness of triangulation rests on the premise that the weakness in each single method will be compensated by the counterbalancing strengths of another*" (Jick, 1979:604).

The nature of a case study, however, deviates from the character of this thesis and, therefore, it has been decided that it is not suited for what this thesis seeks to achieve. The main reason behind this is that the current study is a research project and not a study of a particular case. It would have been conceivable for case study to be employed in the present research if the focal point was to be a single hotel or a particular chain of hotels such as Hilton, Marriott or Intercontinental. However, the focus here is 4 and 5-star hotels in the UK, which does not justify the use of a case study strategy. Moreover, while potentially the topic of research (evaluation of IS used by hotel employees) could have been used as the phenomenon under study, the fact that the current research makes an effort to develop a theoretical IS evaluation model makes the need for generalisability an essential requirement. Another option, cross-case analysis, would have too been an ill-chosen avenue

because its intention is limited in merely detecting similarities and dissimilarities across different cases (Miles, Huberman and Saldaña, 2014). Additionally, in a comparable fashion to case study, cross-case analysis suffers from shortcomings in generalisability, evaluation of evidence, and objective reporting (Yin, 1994). Thus, case study is not a sufficient enough tactic, as the above reasons justify the use of an alternative strategy to sustain the breadth of the aims of the present study.

Grounded theory was initially developed by Glaser and Strauss (1967) as a systematic methodology that leads to theory building by rigorous analyses of data. The process requires several stages of data collection that lead to the refinement and correlation of sets of information (Strauss and Corbin, 1998). In grounded theory the researcher seeks to derive a general, abstract theory of a practice or a course of action, grounded in the views of the study's participants (Bryman, 2012). Bryman (2012) maintains that grounded theory is characterised by the continuous comparison of emerging sets of data, as well as the theoretical sampling of diverse groups to maximise the similarities and differences of information. Allan (2003) sees grounded theory as functioning almost in an opposite fashion from conventional social science research because instead of starting with the formation of hypotheses, it begins with data collection, where key findings are grouped into comparable concepts. This is followed by generating categories or sets of data, which are then coded and act as the catalyst for theory creation (Allen, 2003).

A grounded theory strategy initially appears as appropriate for the purposes of this study. Nevertheless, after revisiting the study's aims it becomes quite clear that grounded theory is not entirely apposite as its tenets are not compatible with the direction of the current study as well as the research methods and process of theory building that it represents. One of the reasons behind this incompatibility is that grounded theory is deeply associated with reinforcing the theoretical position and practices of the researcher (Addison, 1999). Ashford (1997:21) argues that in grounded theory "*the discovery of a 'theory' governing some social phenomenon is made inductively on the basis of the painstaking analysis of data*". However, a fair part of the current research revolves around the perceptions and experiences of hotel managers (Aim 3), which albeit indicating an inductive approach, is contrary to grounded theory's pursuit of strengthening the theoretical background of the researcher. Furthermore, the current study is of an exploratory nature when it comes to identifying the abovementioned perceptions and experiences of the hotel managers and does not involve the coding of categories of findings or the constant comparison of data sets associated with grounded theory. Also, in the current study, theory originates from the literature review and is subsequently corroborated or refuted by a process of induction, whereas grounded theory develops new knowledge by data analyses first and foremost rather than consulting extant research. What is more, the present study channels literature review findings into a corroborative process and subsequently into a proposed theoretical model, and the design of the data collection instrument (interview questions) is contingent upon the use of a different research strategy, presented below.

Phenomenology is concerned about the manner in which individuals make sense of the world around them (Bryman, 2012). Researchers using phenomenology attempt to identify the essence of human experiences relating to a phenomenon (Creswell, 2013). The process involves researching a small sample through extensive and prolonged engagement in order to foster patterns and relationships of meaning (Moustakas, 1994). Phenomenology is regularly considered to be related to interpretive philosophies (Denzin and Lincoln, 2011) because it seeks to describe and understand phenomena as experienced by individuals who have lived through them (Moran, 2000).

It has been decided that phenomenology is the most appropriate strategy for the purposes of the current research. Firstly, a phenomenological standpoint seems to be more germane to the aims of this study due to its link with interpretative and induction paradigms. Phenomenology seeks to generate understanding of a phenomenon from the perspective of those being studied (Creswell, 2013) and is one of the main ambassadors of inductive, qualitative research, which is also what the current study is (qualitative research is explained in the following section). In addition, a phenomenological study tends to feature superiority in producing generalisable results (Saunders *et al.*, 2015). Since this thesis ultimately seeks to develop an IS evaluation model, the intention is for that model to be applied to other similar circumstances, settings or contexts. Given that generalisability is pivotal in creating knowledge and can be defined as the effectiveness of one set of findings in explaining other similar situations (Grbich, 1999) or the extent to which research findings can be applied to other populations and samples (Ryan and Bernard, 2000), it

becomes clear that the need for generalisable outcomes is a central premise for the present study and phenomenology provides a reliable mechanism to achieve that. Another reason that explains the appropriateness of a phenomenological strategy is that it can deliver accurate and valid information regarding the behaviours, attitudes, and experiences of people. Seeing as one of the aims of the current study is to obtain and assess the perceptions of hotel managers, the adoption of this type of strategy appears to be a logical move that can facilitate this.

It has to also be mentioned at this point that a different research strategy could perhaps been considered if the aims of this study were to be viewed separately. For example, due to its potential in enabling new discoveries and theory building, grounded theory could have been employed to collect the hotel managers' perceptions. It could be argued that as another type of qualitative research, grounded theory can offer a better understanding of reality or in this case the perceptions of the hotel managers. After all, Lingard *et al.*, (2008:459) explain that "*its main thrust is to generate theories regarding social phenomena: that is, to develop higher level understanding that is "grounded" in, or derived from, a systematic analysis of data*". Nonetheless, the same authors also state that grounded theory is suitable when the study of social interactions or experiences aims to explain a process, not to test or verify an existing theory. Yet, the present study uses semi-structured interviews to ask hotel managers about their perceptions on IS strategy, IS evaluation, and other themes/theories related to the research aims. The main purpose of these interviews is to corroborate or disprove the literature review findings together

with identifying previously unexplored themes. Therefore, because these interviews can verify an existing theory (the literature review findings), phenomenology is preferred in comparison to grounded theory, since the latter is more favourable when a study's main aim is to explain a process, while the former is superior when it comes to theory verification.

4.5. Research Design

Research design can be broadly described as the blueprint for conducting a study (Burns and Grove, 2011). Prior to outlining the research design of the current thesis, the different types of research in the social sciences need to be clarified. The two main types are quantitative and qualitative research, although a combination of the two is also an option, in what is often known as mixed methods (Lingard *et al.*, 2008).

Quantitative research has been construed as an empirical mode of inquiry where data are represented in the form of numbers (Punch, 2009). Bryman (2012) states that quantitative research focuses on quantification during the collection and analysis of data and has several characteristics that distinguish it from qualitative research: it is associated with a deductive approach, which gives prominence to the testing of theories; it views social reality as an external and objective inevitability; it encompasses the practices and norms of the natural sciences, especially positivism. On the opposite end of the spectrum,

qualitative research encourages theory building and therefore an inductive approach, lays emphasis on the manner in which individuals perceive their social world, thus steering clear from the strict rules that govern the natural sciences, and holds reality as a perpetual function emerging from individuals' creation (Bryman, 2012). Thus, qualitative research seems to revolve around rich descriptions of attitudes, behaviours, or beliefs within the social world (emic views), while quantitative research is more concerned with strict, systematic protocols and nomothetic commitments (etic views) (Denzin and Lincoln, 2011).

Aside from theory testing, quantitative research also develops knowledge by using cause-effect logic, hypotheses formation, measurement, specific variables, and observation, with data collection negotiated through predetermined channels that support statistical analyses (Creswell, 2013). In qualitative research on the other hand, knowledge claims are largely founded on multiple meanings of individual experiences and data collection is managed through open-ended instruments that assist in establishing themes and theory building (Creswell, 2013). Strategies regularly employed in quantitative research include experiments and surveys, whereas qualitative research generally draws on lines of inquiry such as phenomenologies, narratives, ethnographies, and grounded theory (Saunders *et al.*, 2015). As far as the instrument is concerned, quantitative research regularly uses questionnaires, while qualitative research is normally associated with interviews (Salkind, 2010).

The third type of research, mixed methods, is based on a fusion of features that emanate from both quantitative and qualitative tenets and converge to generate findings in view of complex research questions (Lingard *et al.*, 2008). In mixed methods the creation or development of knowledge is mediated through realistic consideration and in accordance with the demands, issues, and aims of the study (Denscombe, 1998). Data collection involves both numeric and text evidence and is handled either simultaneously or sequentially in order for the final outcomes to reflect quantitative as well as qualitative information (Creswell, 2013). Mingers (2001) declares that in adopting only one type of research, for example giving attention only to measurable/quantifiable data that originate from questionnaires, or focusing solely on interviewees' subjective meanings, the researcher is obtaining merely a partial picture of a particular research situation. Mingers (2001) maintains that independently, each type of research is best suited to each individual phase of a study. Bryman (2007) notes that not contemplating the integration of quantitative and qualitative research raises questions about a researcher's resourcefulness. Silverman (2013) suggests that there are no principled grounds that support either quantitative or qualitative research and concludes that the two should be recognised not necessarily as polar opposites, but rather as parallel units that can be combined under appropriate circumstances. Kaplan and Duchon (1988) encourage the use of mixed methods research on the basis that it adds testability and context to a study and expands the robustness of its results, while Voss, Tsikriktsis and Frohlich (2002) suggest that it increases the substantiation of constructs and propositions. Johnson and Onwuegbuzie (2004) assert that rather than

attempting to replace quantitative or qualitative research, the goal of mixed methods should be to combine their strengths and offset their flaws. This view is also supported by Creswell (2013), who maintains that mixed methods can capture the strong points of both quantitative and qualitative research, particularly in instances when a researcher seeks to generalise findings to a population and simultaneously develop a comprehensive view of the meaning that a phenomenon signifies to individuals.

Nonetheless, Creswell (2013) warns that when the decision is made to use mixed methods, researchers ought to establish a rationale for the reasons why qualitative and quantitative data need to be combined. Moreover, Lingard *et al.* (2008:460) state that: "*Central to the effectiveness of a mixed methods study is a clear and strategic relationship among the methods in order to ensure that the data converge or triangulate to produce greater insight than a single method could*". Huysmans and De Bruyn (2013) advise that a mixed methods research necessitates an adherence to the methodological principles and quality standards of each research type. Mingers (2001) points out that the path that leads to a suitable and successful mixed methods study entails careful consideration of the different personal, social, and material dimensions of a real situation, the tasks involved during the several stages of the study, and the context/aims of the research. Attewell and Rule (1991) urge that the ideal implementation of mixed methods is one where the combination of quantitative and qualitative research is premeditated in a manner that sustains the needs of discovery and verification, in addition to the need to comprehend meanings and intentions while measuring objective distributions of outcomes.

According to Leech and Onwuegbuzie (2009), mixed methods research is still in its adolescence despite the recent upsurge in publications on the subject. Within the IS community, there are several academics (Jick, 1979; Kaplan and Duchon, 1988; Lee, 1991; Gable, 1994; Mingers, 2001; Bryman, 2007) lobbying for mixed methods as the optimal solution when studying a phenomenon. The swift developments in the IT world together with the diffusion of the Internet and the proliferation of social media present a rapidly changing environment that puts researchers in situations where extant theories do not offer adequate insights into a phenomenon of interest (Venkatesh, Brown and Bala, 2013). To cope with this state of affairs, Venkatesh *et al.* (2013) recommend the use of mixed methods as an apparatus that can bring solutions and enable the researcher to make contributions to knowledge.

Despite the advantages associated with mixed methods research, a qualitative methods design has been adopted for the purposes of this study. The latter dictated that the best way to collect the views of the hotel managers would be through interviews, which are the archetype of qualitative research. Therefore, it was also decided that quantitative research would not have served the aims of the current study since it would not be particularly suitable for identifying newly emerging themes. It is widely accepted that quantitative methods may suffer from rigid, confined processes that can sometimes be accused of ignoring the richness of the real world and the meanings that individuals construct from everyday situations or interactions (Saunders *et al.*, 2015). Hence, quantitative research is not the best option to follow when a study

seeks to record and analyse concepts, ideas, behaviours, beliefs, or perceptions because such variables require flexible processes that allow for a deeper understanding of reality and profound insights into human experiences. Moreover, quantitative research is ideal for circumstances that necessitate theory testing through hypotheses, but not when theory building is expected as is the case with the present study.

As mentioned earlier in this chapter, the present study uses interpretivist philosophies as well as inductive approaches, and such prerequisites unsurprisingly guide the research into using a qualitative design. Furthermore, since this thesis does not aim to validate the research model, but only to propose it, there is no need for the use of a questionnaire and, thus, quantitative research. Perhaps, when considering future research, the notion to test and validate the proposed model may appeal, and with it the need to use mixed methods will surface.

Another vital condition for selecting an appropriate design is that it matches the overall problem, research questions and aims that steer a study (Plano Clark and Badiee, 2010). In addition, the researcher has a responsibility to understand the logic behind using different research methods so that when a project reaches its completion it is coherent, justifiable, while featuring well-organised procedures/stages (Creswell, 2013). Creswell and Plano Clark (2010) recommend that when facing complex research problems or questions, the researcher needs to contemplate the different available options diligently

in order for the methodology design of the study to correspond to and agree with these problems and questions. The phases of the current study in relation to its aims, together with the type of research used to answer each aim are summarised on Figure 4.3 below:

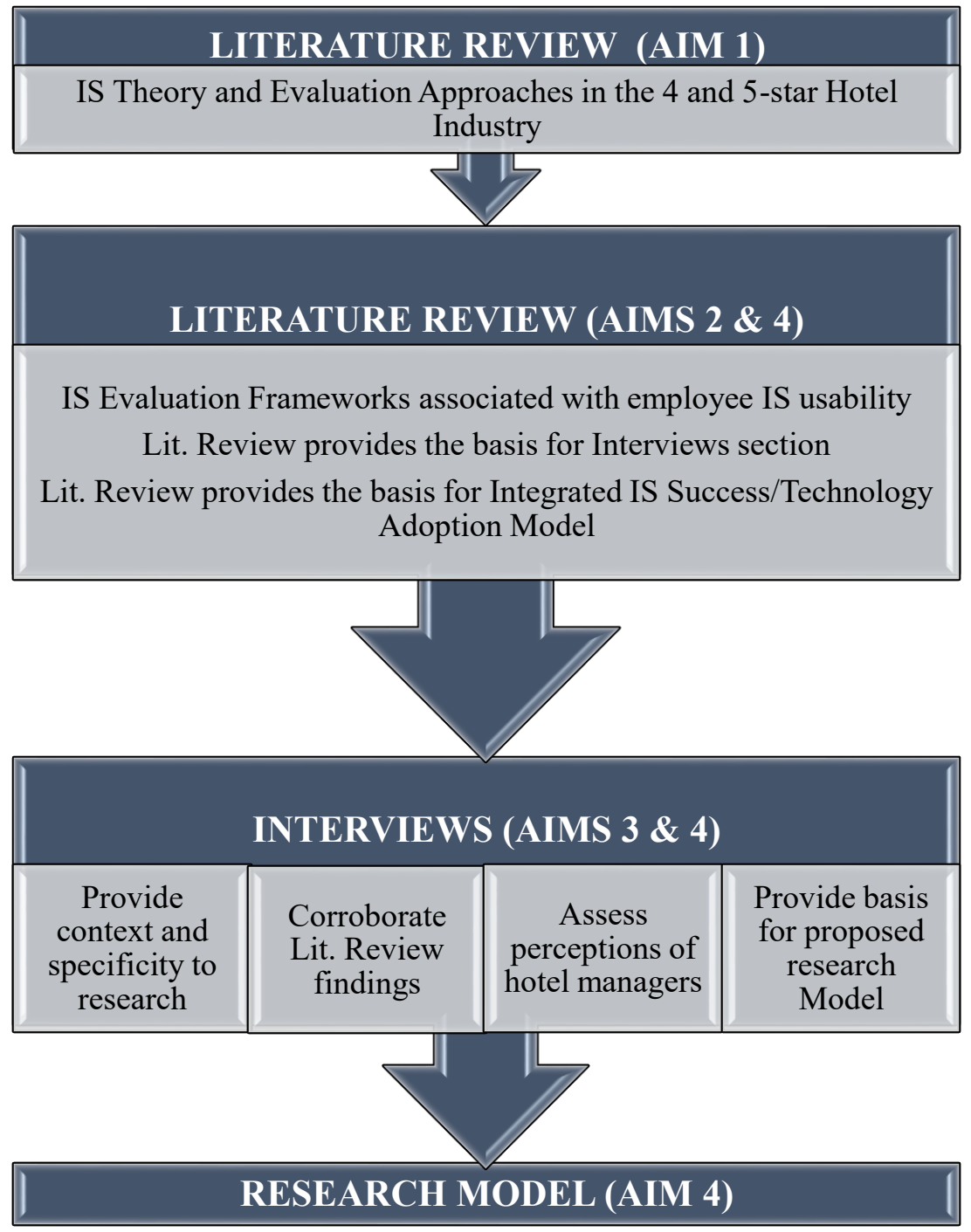

Figure 4.3. The Phases of the Current Research Study in Relation to its Aims

Figure 4.3 can be explained as follows: the findings from the literature review are utilised to answer Aim 1 and Aim 2. However, the literature review section is not sufficient to achieve Aim 4 on its own because, although comprehensive, it does not provide this study with the necessary context and specificity. Context and specificity are of great importance owing to the fact that hotel environments and working conditions vary significantly across continents and between different types of hotels. For instance, an IS evaluation measure may have been identified by the literature review as being appropriate for hotels in Asia or the USA, or even Europe, but that does not necessarily mean that it is applicable when assessing the IS used specifically by employees of 4 or 5-star hotels in the UK. As a result, the most suitable strategy for the current research to offer original contributions to knowledge and its themes (as identified by the literature review) to be placed within the context of the UK 4 and 5-star hotel scene, is to bring together the information acquired by the literature review and the insight and expertise of the hotel managers on IS use. To achieve that, two sets of interviews have been used. The reasoning behind this move is that while the literature can identify and organise material related to hotel IS evaluation, the viewpoints of the hotel managers have the potential to enrich the quality of the research by identifying new dimensions or validating the current literature review findings in order to ensure that they can be applied in the 4 and 5-star hotel sector in the UK. Accordingly, the first set of interviews is introduced to answer Aim 3 by obtaining the interviewees' views on IS strategy and organisational/employee benefits. Additionally, in order to realise Aim 4, the second set of interviews, more concise in comparison to the first, has been designed with the intention to obtain the positions of the hotel

managers on well-documented IS evaluation frameworks and their dimensions. Ultimately, the information collected and analysed by the literature review and the two sets of interviews are synthesised into the building blocks which form the foundation for the proposed model of this study. After presenting the research approach, strategy, and design, this chapter moves to explain and justify the secondary and primary research collection methods.

4.6. Secondary Research

Secondary research is used to formulate and develop the literature review chapters of this thesis (Chapters 2 and 3), which collect and critically analyse extant published material in the subject area of the research question. The earliest definition of secondary research is “the study of specific problems through analysis of existing data, originally collected for another purpose” (Glaser, 1963:11). Veal (2011:45) describes secondary data as “existing data, from research already completed on the topic or a related topic- where the researcher is the secondary user”. According to Boote and Beile (2005), the task of undertaking a literature review involves the evaluation and critical analysis of an academic area of knowledge by summarising, clarifying, and assessing published material related to this area. Apart from providing the theoretical basis and nature for a research study, the literature review can serve as a tool that assists in the development of concepts and study aims.

The main purpose of the literature review of the present study is to demonstrate an understanding of the existing state of affairs within the field of IS evaluation. After analysing and critically assessing research studies, theoretical frameworks and their dimensions, it was revealed that although there is an abundance of studies and models on IS evaluation, their vast majority focus on systems used by customers/guests. When the scope of enquiry narrows to evaluating hotel IS in particular, the number of studies seems to be declining. That number becomes even smaller when the evaluation centres around hotel IS used not by guests, but by employees.

Finally, when the focus of research is evaluation of IS used by employees of UK 4 and 5-star hotels, available studies are rare and extremely difficult to come across.

The literature review is responsible for fully answering Aims 1 and 2 of this study and provides the foundation for partially answering Aim 4 (together with the two sets of interviews). The nature of the research topic dictates that the sources of secondary information used need to be as up to date as possible, since Information Systems is an area with realities and studies that change rapidly. Therefore, an effort has been made to include a large proportion of recent studies, combined with research that has been seminal and pioneering in the subject area of IS evaluation and its predecessor, MIS evaluation. The literature search was performed using a vast range of academic resources including journals, books, reports, databases, indexes, scientific magazines, surveys, statistical records, government publications, and official websites. The research criteria and the keywords used to obtain information included: Management Information Systems, Information Systems evaluation, Information Systems evaluation frameworks/models, Information Systems and hotels, Information Systems in hospitality, Information Technology and hotel systems, hotel online applications, hotel employees and online systems, technology acceptance, technology adoption, and online systems performance.

4.7. Primary Research

Primary research data involves data that is acquired first-hand by the researcher for the purposes of a specific project, as opposed to being collected from published sources (Veal, 2011). Primary data can be either quantitative or qualitative and, as stated earlier, this thesis makes use of the latter. The collection and analysis of primary data is guided by the research philosophy, approach, strategy, and design, all considered and justified in the preceding parts of this chapter. This section gives details about the procedures used to treat the primary data in the present study, including data collection methods, design of data collection instrument, research population, sampling, and analytical techniques.

4.7.1. Interviews

The main scope of the qualitative research interview is to understand the meaning of phenomena or central themes in the life world of the interviewees. A research interview is tasked with encompassing both a factual and a meaning level (Kvale, 1996). Interviews are of particular value when interviewers pursue the acquisition of in-depth information around the topic while obtaining the full story behind an interviewee's experiences (McNamara, 1999). They are the most common form of qualitative data collection and they exist in several forms, including individual (face-to-face or telephone interviews) and group (focus groups or nominal group) (Saunders *et al.*, 2015). Face-to-face interviews are widely regarded as one of the most effective data

collection techniques as they focus on the individual and are suitable, unlike group interviews, for discussing sensitive topics (Babbie, 2013). Nevertheless, the interpersonal character of face-to-face interviews indicates that anonymity is lost and that, sometimes, interviewees might be unwilling to confide in somebody they have never met before (Frankfort-Nachmias and Nachmias, 2008). Therefore, a quantitative research data collection tool, the questionnaire, is preferable in a situation where the respondent wants to remain anonymous and they do not feel comfortable to talk freely to strangers. According to Frankfort-Nachmias and Nachmias (2008), reticence is a cause of strain for all researchers. A possible cost-effective alternative to face-to-face interviews are telephone interviews, which feature higher response rates and produce findings that are as accurate as their counterparts. However, telephone interviews do not facilitate the establishment of personal connections between interviewer and interviewee and can be often prematurely terminated when the interviewee may hang up due to not being comfortable to talk to the interviewer (Frankfort-Nachmias and Nachmias, 2008). The demands of the interview process for this thesis indicated that a connection between interviewer and interviewee had to be established, as the main function of the interviews was to build theory from the opinions expressed by the hotel managers. In order to obtain the necessary information, it was essential to create a calm atmosphere and a connection with the interviewees so they would speak freely and disclose their beliefs regarding the questions they were being asked. Hence, a face-to-face interview format was chosen, as telephone interviews are not designed in a way that would enable the two parties (interviewer and interviewee) to connect. The notion of a group

interview was also discarded due to the fact that some interviewees may have dominated the discussion, while there were difficulties identified with gathering all the hotel managers at the same time in the same place.

Meanwhile, the dilemma between using unstructured, structured, or semi-structured interviews had to also be addressed. Unstructured interviewing is better suited to individuals that are very experienced in interviewing (Babbie, 2013), and as the author of this thesis is not very experienced, the option of utilising unstructured interviews was rejected. The notion of structured interviews was rejected due to the demands of the research aims for interactivity and rich information. Structured interviews have a fixed structure and collect data by means of a questionnaire administered by the interviewer that asks all the interviewees a standardised set of questions in the same order (Saunders *et al.*, 2015). Consequently, semi-structured interviews were selected as the data collection method for this study, due to their flexibility in terms of carrying out an enquiry within the required context and their aptitude to explore links between the research variables (Saunders *et al.*, 2015). Semi-structured interviews are suitable to situations where the research is explanatory in nature and there are several open-ended questions that require detailed answers (Saunders *et al.*, 2015).

In order to be able to achieve what the interview process had set out to do, the interviewer used clear language throughout the interviews, avoiding jargon as much as possible. In addition, pauses were taken regularly during the

interviews to enable both parties to compose their thoughts and to avoid exhausting the interviewees. Moreover, the interviewer guaranteed the anonymity of each interviewee and revealed that pseudonyms would be used from that moment on to safeguard their privacy. Finally, any bias regarding the interviews and the questions set was avoided.

The design of the interview questions was guided by the literature review, but it also had to allow ample flexibility for the participants to talk about their experiences in a mode that they found meaningful. There were two separate sets of interviews. The reasoning for developing two distinct sets of interviews has to be explained: the first set was intended as a more relaxed set of questions, designed to discuss the experiences of the hotel managers and to encourage them to identify the IS evaluation variables that would subsequently be used in the proposed research model. Once identified, these variables were compared with the findings of the literature review to determine whether they are novel variables or if they have been previously studied by other researchers. The final step was to take the same interviewees through the second set of interviews, twenty more questions designed to be more direct and concise. The aim here was not for interviewees to talk at length about their viewpoints, but rather to obtain answers that would help corroborate or refute the already identified IS evaluation variables from the first set of interviews. The corroboration of the variables was necessary as it had to be made certain that these general literature review findings were validated by the hotel managers and could, therefore, be applied specifically in the 4 and 5-star hotel sector in the UK.

Another reason for interviewing the hotel managers twice was that this study aims to provide a mechanism that will evaluate IT adoption and IS Success. An integral part of both of these concepts is IT implementation, as a system cannot be adopted or deemed successful if it is not implemented by individuals and organisations. The notion of time has been included in the analysis of the factors that influence IT adoption and IS Success. Research shows that the influence of some factors on IS Success and even more so IT adoption, varies at different stages in the IT implementation process (Legris et al. 2003). Therefore, the idea of interviewing the respondents twice would provide a better explanation as to how they were performing during the IT implementation process, the challenges they might have been facing, and finally, their perceptions of whether the systems they were using remained worth adopting. The participating hotels had all purchased and installed new IS on the dates displayed in Table 4.1, presented further down. Those dates mark the start of the IT implementation process, and it is the position of this study that this was worth monitoring to determine how each hotel progressed through the different stages and how the managers felt about the procedures involved and the new IS that were implemented. It has to be noted that due to the rapidly developing technologies in the hotel industry most participating hotels had their systems updated or changed altogether in order to remain competitive. Interviewing the managers twice also helped to understand these procedures.

Furthermore, it was important to add a longitudinal character to the study, in a manner that enabled the evaluation of IT adoption and IS Success to be

performed in two stages. The interview process as a whole took a little over four months to complete, with the first set of interviews completed almost three months before the second set started. This means that the hotel managers were using the same systems for three months before being asked again about their perceptions of these systems. Moreover, as stated in the literature review chapter, this study is evaluating the views of these hotel managers on systems they must use every day to perform their jobs. This entails that they have no choice in using or rejecting a particular system; thus, System Use is mandatory. It has been established that mandatory behaviour may be more stable than voluntary behaviour in the early stages of an IT implementation, which indicates that mandatory behaviours can be predicted more successful longitudinally than voluntary behaviours (Rawstrone, 2005). It has to be noted that in mandatory settings, it is quite possible that rather than showing improved attitudes and perceptions of their overall satisfaction with the system that they were using, the hotel managers' attitudes and perceptions of User Satisfaction decreased over time. This decrease can be attributed to senior management overselling the benefits of the IS to line managers, which may have created expectations that could not be matched by subsequent use of the IS (Rawstrone, 2005). It had to be determined whether this was the case in the present study, which was another important reason for interviewing the participants twice. Benbasat and Barki (2007) insist that more use of longitudinal models is necessary in IS research to better capture the influence of salient belief variables on IT adoption and IS Success at different stages of a system's implementation. They maintain that many TAM studies typically focus on static models and measure all model constructs simultaneously. As

such, they do not adequately capture or describe the dynamic interplay that usually occurs between various user behaviours that revolve around System Use from go-live to the relatively more stable and steady states of an implementation (Benbasat and Barki, 2007). Longitudinal studies that view and assess IS Success and IT adoption over time are likely to be particularly revealing, as they can help researchers understand the fluid relationships that exist between a model's constructs and a variety of mutually influential set of behaviours users typically engage in (Goodhue, 2007).

The number of interviewees was fourteen for each set. Each interview lasted approximately between one to one and a half hours. Even though there is no concrete answer when it comes to the ideal duration of interviews in qualitative research, Weiss (1994) recommend a minimum of 30 minutes. The voices of the interviewees were recorded using digital equipment. The interviewees were the same for both sets of interviews, with the exception of the Front Office Manager, who relocated to Dubai shortly after the first set of interviews was conducted. The departing manager was immediately replaced by a colleague working in a customer-facing department (Concierge) for the same, 4-star hotel.

The first set of interviews consists of ten questions planned to encapsulate several themes, namely, IT Training, Senior Management Support, System Characteristics, and Troubleshooting/Failure Recovery Procedures. The second set of interviews contains twenty questions that represent a number of

IS evaluation dimensions including System Quality, Information Quality, Service Quality, Perceived Usefulness, Perceived Ease of Use, Perceived Benefits, Perceived Trust, User Satisfaction, Subjective Norm, and Intention to Use/Reuse. Both questionnaires can be viewed in the appendices section of this thesis (Appendices 1 and 2).

The interviews took place from the 28th of May 2013 until the 08th of October 2013. This is considered quite a lengthy period for data collection (Dey, 1993); however, the time required for researchers to complete their primary data collection varies according to the logistics involved (Miles, Huberman and Saldana, 2019). Therefore, and considering that the participants were interviewed twice, a period of just over four months represents a reasonable timeline for the completion of the primary data collection process. In addition, the participants were not easily contactable, as the researcher had to both telephone and email to arrange the interviews. This was not helped by the busy schedule of the participants, who were initially hesitant to put aside on their diaries the time required for interviewing, due to the demands and workloads they were committed to. Fortunately, they were eventually persuaded to take part by the researcher (who at this stage revealed to the potential participants that he also works in hotels) on the argument that they would be helping a colleague conduct social research and that their input would be invaluable for the results of the study. Finally, some interviews that were planned and confirmed by both parties (the researcher and the participant) had to be re-scheduled due to the dynamic nature of the hospitality industry, where the participants had to cover shifts for colleagues who called

in sick on the day, or if business suddenly picked up and the participants simply could not afford to spare the time to interview.

It was originally planned for eight hotel managers to be interviewed twice, thus making the number of interviews 16. Nevertheless, as this number of interviews did not generate sufficient or satisfactorily data, it was decided to increase the number of interviews to a total of 28 (fourteen managers interviewed twice). This second stage of data collection took place from the 10th of December 2016 until the 26th of February 2017. From the 49 properties in Manchester that qualify for the purposes of data collection (4 and 5-star chain hotels), 39 were telephoned by the researcher to obtain the contact details of the potential participants, and ten properties declined to disclose any information. The researcher then proceeded to telephone the potential participants directly to inform them about the study and to ask them whether they would want to get involved. In cases when participants were not available, the researcher emailed them. When an agreement to take part was established, a consent form was sent to the participants' hotel for the general managers' and human resources managers' approval. For the first stage of data collection, there were thirteen managers that declined to participate, and the desired number of interviewees (eight) was achieved after contacting 21 managers, giving a response rate of 38.1%. For the second phase of data collection, the additional six managers agreed to participate after contacting 11 hotels, representing a 54.5% response rate. Both response rates are within acceptable levels, with the recommended benchmark for organisational level studies (where respondents are organisational representatives) being

approximately 35-40% (Baruch and Holtom, 2008). The achieved response rates are more than satisfactory, given the exceptionally low response rates usually obtained from the hotel industry (Sigala, 2002). These results also support the view that contacting potential participants in person is more effective than sending a consent form through the post (Rowley, 2014), as it yields higher response rates and creates a more personal connection between interviewer and interviewee.

While a detailed profile of the interviewees is presented in the next chapter, it is vital at this stage to provide an overview (Table 4.1) of these participants and the hotels they are employed by. Table 4.1 displays how many stars each hotel possesses, its location and how many rooms it has. It has to be noted that the third interviewee, the director of IT services, who works for Westmont Hospitality Group, oversees two different hotels within this group; therefore, the number of rooms and stars columns are not applicable for this participant. The table also reveals the year that the most current IS was implemented at each hotel. This denotes the PMS (Property Management System), which is the main IS a hotel uses for any guest-related actions and data (check-in, check-out, guest preferences), conference and banqueting information, and for back office operations, including financial and management reports (revenue and occupancy reports). Some hotels like the Mercure and the Holiday Inn have opened in the 21st century, and thus the PMS they had initially installed remains the same to this day, albeit with some minor upgrades to the newest version available. For the majority of longstanding hotels like The Midland, The Palace (now renamed to Principal) and The Victoria and

Albert, there have been several PMS changes, and Table 4.1 shows the most recent one. Finally, Table 4.1 also shows the type of PMS that each hotel uses. It is evident that, even though there are other systems available (Protel, eZee Front Desk, Hotelogix, Hotello, InnQuest RoomMaster, and Brilliant) most luxury 4 and 5-star hotels use the Opera PMS, due to its functionality and level of customisation (Taylor, 2017). The success of Opera stems from its capacity to be tailored to individual requirements, allowing each hotel to create guest profiles, integrated to control in-room amenities such as minibars, TV and air-condition remotely, and to facilitate intra-departmental communication (receptionacademy.com). Table 4.1 can be viewed below:

Interviewee Position	Hotel Name	Rooms	Stars	Year IS Implemented	Type of PMS	Location
Front Office Manager	Renaissance Hotel	203	4 Stars	1972	Opera	Manchester City Centre
Food & Beverage Manager	The Edwardian Radisson	260	5 Stars	2004	Opera	Manchester City Centre
Director of IT Services	Westmont Hospitality Group	N/A	N/A	1999	Opera	Manchester City Centre
Executive House keeper	The Victoria and Albert	148	4 Stars	1987	Opera	Manchester City Centre
General Manager	The Palace Hotel	270	4 Stars	1996	Opera	Manchester City Centre
Conference& Banqueting Manager	Worsley Park Marriott	158	4 Stars	1998	Opera	Manchester Suburb
Front Office Manager	Manchester Airport Marriott	216	4 Stars	1980	Opera	Manchester Airport
Director of Sales	Mercure Hotel	280	4 Stars	2008	Opera	Manchester City Centre
Security Manager	Crowne Plaza	228	4 Stars	2005	Opera	Manchester City Centre
Guest Relations Manager	The Lowry Hotel	165	5 Stars	2001	Opera	Manchester City Centre
Financial Controller	The Midland Hotel	312	4 Stars	2004	Opera	Manchester City Centre
Head of Nights	Hilton Hotel	279	4 Stars	2004	OnQ	Manchester City Centre
Reservations Manager	Holiday Inn	147	4 Stars	2007	Opera	Manchester City Centre
Director of Spa and Leisure	Macdonald Hotel	338	4 Stars	2006	Opera	Manchester City Centre

Table 4.1: Overview of the Interview Participants and their Hotels

4.7.2. Population and Sampling

This thesis considers a number of factors in order to determine the appropriate sampling procedures that have guided the author to achieve the study's objectives. Additionally, these considerations can serve as guidelines to future researchers seeking to reference or expand upon this study. More specifically, in this section, the sampling criteria and frame are clarified and the reasons for the sample selection are explained and justified. Moreover, the methods for data analysis are also revealed.

An important element of this study is to determine the type of respondents to target, in other words the target population. For research purposes the target population refers to the entire group of people or cases of direct interest to the investigation (Walliman, 2017). Usually, the use of IT is beneficial to hotel managers as it can assist with marketing, reservations, check in/out and guest preferences. However, this will not always be the case, and it is not necessary that every technology will always have a positive impact. Law *et al.* (2013) state that hotels will adopt new IS when the benefits clearly exceed the costs involved. It is logical to presume that for smaller hotels that cannot afford vast amounts of capital to be spent on IT investment the use of technologies will be minimal compared to full service, 4 or 5-star hotels where competition intensifies around which hotel adopts the latest trends first. As a result, it follows that full-service hotels (4 or 5 star) use IT and the accompanying applications more frequently and to a greater extent, while the limited service hotels (3 star or below) use the technologies to a basic level, stripped down to

cover the managers' essential information needs. Chathoth (2007:396) identifies that full-service hotels "amplify the impact of IT" while Melián-González and Bulchand-Gidumal (2016:33) mention that the category of 4 and 5-star hotels has "a tested IT penetration". Since the 4 or 5-star, full-service hotels show increased rates of IS adoption and diffusion, in contrast to their 3-star or below counterparts, they are better suited for the purposes of this study because the probability of a manager from a 4 or 5-star hotel using a wide range of IS on a daily basis is larger than for a manager of a lower star, limited-service hotel. Therefore, intentionally seeking a population and sample that use hotel systems frequently should provide insights into the benefits associated with IS use.

In small hotels the only IS essentially used is the PMS as it is sufficient for managing the information needs of both guests and employees. Therefore, including any starred hotels apart from 4 and 5-starred would have limited the gamut of IS evaluated by this study. Although the PMS is a hotel's most important IS, there are other systems that are also vital in the successful opeartions of large hotels such as conference, banqueting and event systems, Spa temperature control systems, complex security systems, and sales systems including SEO and CRM platforms. Alas, small hotels do not have the budgets or indeed the need to purchase or utilise this type of systems.

After justifying the reasons for choosing 4 and 5-star hotels for the primary research, the logic behind the selection of departmental managers rather than

line employees has to also be clarified. Several studies (Siguaw and Enz, 1999; Camison, 2000; Ham, Kim and Jeong, 2005; Law and Jogaratnam, 2005; Sigala, 2005; Lam *et al.*, 2007; Kim *et al.*, 2008; Bilgihan, Okumus, Nusair and Kwun, 2011; Kwon, Bae and Blum, 2013; Kimes, 2016; Melian-Gonzalez and Bulchand-Gidumal, 2016; Buhalis and Leung, 2018; Law, Chan and Wnag, 2018; Nave, Rita and Guerreiro, 2018) identify a range of information technologies that hotels use including property management systems, revenue management systems, global distribution systems, yield management systems, financial and accounting systems, human resources management systems, electronic point-of-sale systems, mobile technologies, cloud-based services, hotel website and email among other. Departmental managers are experienced employees who have been using their organisations' IS for years, and from this regular system use they were able to obtain expertise and knowledge of the operations and applications of these technologies. More often than not, managers are team members who started at entry level and made their way to a managerial role through promotion; the latter would not have been possible if the individuals were not proficient in the use of hotel IS, particularly those relevant to each manager's department. Moreover, the primary research stage of this study is based on determining the perceptions and beliefs of hotel employees regarding the use of IS. Due to the bearing that this process has on the overall reliability of the study, only the most relevant perceptions can be analysed. For instance, attempting to identify the beliefs of a newly employed staff member who has not used the hotel's systems extensively would be an ambiguous move since the new employee would not know how to fully utilise the system and also what to expect from

the system in terms of its capabilities. Finally, a number of questions contained in the primary research instrument of this study require answers that can only stem from employees that are involved in the strategic planning and leadership of their hotel, which typically involves managers. For the above reasons, the population for the current study would be all hotel department managers of 4 or 5-star, full-service UK hotels.

To ensure generalisability of the study's results it is also important to clarify the sampling frame and criteria involved in the selection process. The sampling frame refers to a compiled list of all units comprising the study's population (Sigala, 2002). According to the latest figures, the UK hotel database comprises 79,909 hotels, motels, hostels, bed and breakfasts, and guesthouses. From these, 14,497 are star-rated hotels, including 1,212 5-star properties and 6,049 4-star properties (Delta-Check.com, 2019). This results in a total of 7,261 4 and 5-star hotels that qualify as the population for this study. The reasons for selecting 4 or 5-star hotels, as well as the logic behind the choice of hotel managers for the interviews have both been explained above. However, sampling differs between qualitative and quantitative studies. In quantitative studies, it is important to select probability samples so that statistics can be used to provide generalisations to the population from which the sample was drawn. Qualitative research necessitates having a small sample because of the detailed and intensive work required for the study (Anderson, 2010). Hence, sample sizes are not calculated using mathematical rules and probability statistics are not applied. Instead, qualitative researchers should describe their sample in terms of characteristics and relevance to the

wider population (Anderson, 2010). This study can demonstrate that its sample has remarkably similar characteristics and is relevant to its population. One of the purposes of the primary research conducted in this thesis is to assess the opinions of hotel managers on the systems they use daily to perform their jobs. It is believed that although the number of hotels in the UK is extremely large (almost 80,000 hotels) and perhaps creates doubt as to whether the findings of the study can be applied to the entire population, the whole of the UK. However, with a sample frame of a little over 7,000 4 and 5-star hotels, the sample size of 49 hotels (as explained further below) might be less than 1% of the population but this should not affect the generalisability of the study because of two reasons. First, this thesis is a qualitative study and the sample size in qualitative studies should be smaller than in quantitative research and large enough to obtain enough data to sufficiently describe the phenomenon of interest and address the research questions (Cohen et al., 2011). Second, the study is relevant to hotel employees using hotel IS. The IS that hotels in the UK use are quite standardised and offer more or less the same IT capabilities, with four to five brands dominating the market (Taylor, 2017); thus, if this study produces some findings that describe IS in hotel within the Manchester area, it is logical to assume that these results will be applicable to other, same status (4 or 5-star) hotels within the UK. Therefore, the small size of the sample should not affect the generalisability of the study.

The smaller group selected from within the population for the use of research, the sample, is analysed to make generalisations about the population from which it was drawn (Sommer and Sommer, 2002). The first step in selecting

an appropriate sample is to choose between probability and non-probability sampling. The former involves samples in which the probability for the inclusion of any given individual is known, while the latter are easier to obtain and involve samples in which the likelihood of selection is not actually known (Sommer and Sommer, 2002). In non-probability sampling, randomisation is not essential. This is why subjective judgement is applied to determine who is included in the sample. Typically, probability sampling is linked to quantitative research, while non-probability sampling is more evident in qualitative studies (Blaikie, 2000). Despite the fact that non-probability sampling is limited when it comes to generalisability and the subjective manner involved in choosing the sample, it is particularly useful when randomisation is impossible due to the very large size of the population, or when the researcher has limited financial and time resources (Etikan, Musa and Alkassim, 2016). Based on the above observations and with time and money limitations in mind, non-probability sampling was preferred for this research.

The second step in choosing a suitable sample is to establish the type of sampling technique to be followed. Due to practicality and suitability reasons explained below, the technique of convenient sampling was applied. Convenience sampling was utilised not only due to its ease of use but because it also has other research advantages. In pilot studies, a convenience sample is usually employed because it allows the researcher to obtain basic data and trends without the complications of using a randomised sample (Tuckett, 2004). It is also beneficial in identifying relationships amongst distinct phenomena and in documenting that a particular quality of a substance or

phenomenon occurs within a given sample (Patton, 2015). Convenient samples are those that "fortuitously present themselves for study" (Finn *et al.*, 2000, p.118). According to Dörnyei (2007), convenience sampling occurs when members of the target population that meet certain practical criteria, such as accessibility, geographical proximity, availability at a given time, or the willingness to participate, are included in the data collection process. Convenience sampling techniques tend to be the most commonly used by researchers (Acharya, Nigam and Prakash, 2013) and are usually brought into play when there is an emerging need to obtain a sample as quickly and resourcefully as possible (Saunders *et al.*, 2015). The main assumption associated with convenience sampling is that the members of the target population are homogeneous. That is, that there would be no difference in the research results obtained from a random sample, a nearby sample, a co-operative sample, or a sample gathered in some inaccessible part of the population (Etikan et al., 2016).

Convenience sampling has been the subject of strong criticism. The most obvious disapproval stems from issues with sampling bias and sample representativeness (Mackey and Gass, 2005). Sampling bias refers to a constant difference between the results from the sample and the theoretical results from the population (Walliman, 2017). Panzeri, Magri and Carraro (2008) note that sampling bias occurs when the samples of a stochastic variable that are gathered to establish its distribution are chosen inaccurately and do not represent the true distribution due to non-random reasons. The consequence of having this type of bias is obtaining skewed results (Tailor,

2005). According to Kitchenham and Pfleeger (2002) the risk of bias in non-probability convenience sampling also presents researchers with other disadvantages such as inability to use statistical analyses and the argument that people that are willing to participate in the data collection process may differ significantly from those who are not willing. Another significant criticism targeted towards convenience sampling is the lack of representativeness, in other words the limitation in drawing inferences about the entire population (Farrokhi and Mahmoudi-Hamidabad, 2012). Since the sample is not representative of the population, the results of the study cannot speak for the entire population causing studies to suffer from low external validity (Walliman, 2017). Another issue often associated with convenient sampling is the presence of outliers. The latter refer to observations that lie an abnormal distance from other values, or outside of the bulk of the sample data (Lavrakas, 2008). Due to the high self-selection possibility in non-random sampling, outliers adversely affect sample statistics and decrease the precision of estimates about population (Larson-Hall, 2010). Outliers pose a constant threat to the homogeneity of the sample on the one hand and to the reliability and validity of research findings on the other, if they are not accounted for and monitored in a systematic manner. However, their presence does not impose as big a challenge on qualitative studies as they do on quantitative studies (Farrokhi and Mahmoudi-Hamidabad, 2012).

Reflecting on the above warnings but also taking time and money constraints into account, the author considered the practicality of using convenience sampling and consequently this technique was adopted, because it was

regarded as ideal for covering the data collection process using the means available. It was decided that the drawbacks presented above pose no immediate threat to the current research as this study does not utilise any statistical analyses and does not draw conclusions based on arithmetic data. Moreover, it would have been impossible for the participants in the data collection process to differ significantly from one another as they are all managers working in the same type of hotel, thus homogeneity of the sample was not an issue. Additionally, the objective of the interviews is to assess the hotel managers' perceptions of IS evaluation approaches, not their personalities. Furthermore, there was no bias involved on the side of the researcher as he arbitrarily contacted hotels predominantly in the city centre of Manchester. These were seen as an ideal option due to the ease of access, minimisation of travel, and excellent sample representativeness as they serve the needs of all categories of guests (business, conference and events, transient, and leisure guests) as opposed to airport hotels (mainly business, conference and events, and transient guests), or suburb hotels (business and conference and events guests).

The reasons for selecting Manchester as the sample for the requirements of this thesis are abundant. As already mentioned in Section 4.7.2., there are over 7,000 4 and 5-star hotels in the UK, which corresponds to a very large population. These hotels are spread out across all cardinal directions, with the vast majority naturally located in London. It has to be noted here that the researcher lives in Manchester and is in full-time employment within the hospitality industry. Due to this, there are some limitations as to how often and

how far away the researcher is able to travel. These are mainly due to time and financial constraints. Extensive travelling would have been required if the data collection was to be carried out in all parts of the UK, especially as all participants work within hotels, which can often mean that interviews would have been cancelled at the very last minute due to the need to cover for colleagues at work or due to other ad hoc work commitments, such as covering busy shifts. Mindful of the above, the researcher decided to conduct the primary research within Manchester as he felt that this sample provides a very reliable representation of the population.

One of the key cities in the UK, Manchester has 49 hotels within the 4 and 5-star rating (Booking.com). It is a vibrant city where the hotel industry is booming, and new hotels are launched every year. Outside London, Manchester holds the highest number of hotels being built over the next few years with 2,895 rooms expected in the pipeline until 2021 (savoystewart.co.uk), while 2018 has seen Manchester's growth in hotel room rise by 17% (Premierhospitality.com). It also caters for all types of hotel guests, both foreign and domestic, has first-rate transport links and is the third most-visited city in the UK after London and Edinburgh (Visit Britain, 2018).

It is the intention of this study to compile and inductively analyse the perceptions of the hotel managers on IS evaluation by inductively exploring any similarities, variations, or predispositions within their views. The mechanism employed to achieve that, the interview questions, is based on the

relevant literature. Hence, the study seeks to corroborate existing theories or form new insights through in-depth inquiry. It is documented that for this type of research a small number of cases or interviews is recommended, usually not more than twenty (Crouch and McKenzie, 2006). Generally, due to the lack of prescription often associated with non-probability sampling, determining the right sample size is far from easy (Frankfort-Nachmias and Nachmias, 2008). Some academics argue that there are no rules when it comes to how many interviews are enough for respectable results in qualitative research (Saunders *et al.*, 2015). Others insist that a minimum number of interviews is required and that while a precise standard is difficult to define, some numerical guidelines are useful to steer the researcher, especially in organisational studies (Townsend, 2013). A valid viewpoint is that a sufficient sample size is the one that answers the research question adequately (Marshall, 1996). Dissimilar to quantitative research where there exists an abundance of projects and debates to determine statistical analyses parameters, qualitative research is limited in papers that point towards what an appropriate sample size is (Brinkman and Kvale, 2014). This number of papers become even less when the focus lies on the organisational research sphere (Townsend, 2013), which is the area of interest of this study. Even though the number of interviews conducted here adheres to the standards set for social organisational research, the researcher was of the opinion that the interview process should carry on until data saturation is reached.

It has been argued that qualitative studies often suffer from lack of representativeness (Saunders *et al.*, 2015). However, this is not the case with

the present thesis as its main concern is theory building rather than statistical testing. Qualitative research is usually focused on gaining an in-depth understanding of the phenomena under study rather than making generalisations from the data collection findings (Altinay and Paraskevas, 2015). Individuals participating in qualitative research should be selected in relation to the level of their insights regarding the developing theory (Flick, 1998). Hence, given that the interviewees continue to yield data that contribute towards theory building, their answers can be regarded as suitable for the purposes of qualitative studies. In fact, the optimal sample size is grasped when the theory is fully developed, and each category has reached saturation point (Strauss and Corbin, 1998). Saturation point, also referred to as data or theory saturation, can be defined as “the point when additional data do not lead to any emergent new themes” (Given, 2016:135), or “when the complete range of constructs that make up the theory is fully represented by the data” (Starks and Trinidad, 2007:1375). Saturation in interviews is being reached when the interviewer starts to hear the same comments repetitively over and over again, at which point data collection should cease and data analysis should commence (Saunders, Sim, Kingstone, Baker, Waterfield, Bartlam, Burroughs and Jinks, 2018).

According to Blaikie (2000), non-probability sample size decisions evolve along with the theory and they are not founded on a preconceived theoretical framework. Notwithstanding an element of choice or discretion on the part of the researcher, non-probability sampling can retain the aim of generating a representative sample (Denscombe, 2017). Instead of strictly adhering to the

principles of random selection, this study has sought to produce a sample that is of an exploratory nature because participants were selected on the basis of their IS experience and expertise and their selection was not a matter of pure chance (Denscombe, 2017). As mentioned earlier, fourteen hotel managers were interviewed twice, thus making the total number of interviews twenty-eight. It was planned for another manager to be added to the sample size; however, this was not necessary in the end as saturation had occurred after the twenty-eight interviews, meaning that no new IS evaluation dimensions or measurements were emerging.

Four methods were considered when it came to data analysis: content analysis, narrative analysis, thematic analysis, and template analysis. Content analysis is a technique that allows the qualitative data to be analysed systematically so that generalisations can be made in relation to the categories that are of interest to the researcher (Haggarty, 1996). According to Creswell (2013), content analysis is useful when the researcher tries to identify themes within the interview transcripts in order to create a map of topics relevant to the research question. In contrast, narrative analysis is closely related to grounded theory research and aims to identify themes and contexts of a story that is remembered in a sequenced way (Saunders *et al*., 2015). The present research has no need for a sequenced manner as the research topic is already identified.

From a first look, content analysis seemed like the right data analysis tactic for this study. However, when looking in depth at this study's aims it was decided that thematic analysis was a more appropriate choice. It has to be noted that the two techniques are similar and are often used interchangeably, leading to confusion over their similarities and differences (Sandelowski and Leeman, 2012). Powers and Knapp (2006) describe content analysis as a general term for several diverse strategies utilised to analysed text. According to Pope, Ziebland and Mayes (2006) content analysis represents a categorising technique used for exploring large amounts of textual information unobtrusively in order to determine trends and patterns, while Bloor and Wood (2006) brand it as an effort to analyse content characteristics by investigating who says what, to whom, and with what effect. Thematic analysis, on the other hand, is considered a flexible tool that provides a rich and detailed, yet intricate, account of the data (Braun and Clarke, 2006). It is ideal for identifying common threads that extend across a set of interviews (DeSantis and Noel Ugarizza, 2000). Another difference is that content analysis uses a descriptive method in both coding of the data and its interpretation of quantitative counts of the codes (Morgan 1993), while thematic analysis offers a purely qualitative, detailed, and nuanced 'story' of the data (Braun and Clarke, 2006). Since the interviews were planned to collect and analyse the perceptions of hotel managers regarding IS evaluation, thematic analysis was seen as more helpful as it provides a qualitative account of the data in a richer manner that allows more interpretation, whereas content analysis identifies themes with the prospect of converting them from qualitative into quantitative data and in a style that is more descriptive (Braun and Clarke, 2006).

Template analysis was discarded, even though it represents a form of thematic analysis (Brooks, McCluskey, Turley and King, 2015). The reason behind this was that template analysis focuses on the need for hierarchical coding, and puts textual data measurements into a rigid framework, which is not necessary for the purposes of this study. One of the main commitments of template analysis is that it concentrates its efforts on providing detailed guidance on the development of the coded structure (Brooks *et al.*, 2015). This, combined with the fact that template analysis requires a very clear-cut depth of coding, makes it more suitable for this study to use thematic analysis.

4.8. Reliability and Validity

The quality of any research can be assessed by two key measures, namely reliability and validity. The former refers to the extent to which a particular method can continuously and consistently generate the same results or measurements (Blaikie, 2000). It is also defined as the exact replicability of the process and the results (Leung, 2015). Validity denotes the extent to which the research instrument measures what it is expected to measure (Saunders *et al.*, 2015). Based on the accuracy of the produced results, it has also been defined as the appropriateness of the tools, processes, and data (Leung, 2015). In an ideal world, all research should be reliable and valid, measuring and producing results accurately and consistently. Realistically, however, this is not always the case, especially in qualitative research (Winter, 2000).

Both reliability and validity originate from the hard sciences and are, therefore, of a positivist nature (Flick, 1998). They have been applied to the social sciences predominantly in quantitative research; however, the emergence of qualitative studies has led to criticisms on whether they represent suitable benchmarks of quality assessment for conducting interpretive research (Creswell, 2013). More specifically, reliability and validity have often been described as measures that belong in the field of quantitative studies but are, nonetheless, also used in qualitative research (Creswell, 2013). As a result, the tests and measurements utilised to establish reliability and validity in quantitative research cannot be applied in qualitative studies (Rolfe, 2006) and alternative criteria need to be identified (Lincoln and Guba, 1985). Corbin and

Strauss (2014) advocate that when testing qualitative findings, the canons of hard sciences need to be redefined to fit the realities of qualitative research.

4.8.1. Reliability

In quantitative studies, reliability can be expressed by means of replicability of the process and the results (Leung, 2015). However, since qualitative methods are inherently different to quantitative methods in terms of philosophical positions and purpose, such a definition of reliability is challenging and epistemologically counter-intuitive (Noble and Smith, 2015). A quantitative study's concept when evaluating the overall quality of research is to provide a "purpose of explaining", while for a qualitative study the concept becomes "generating understanding" (Stenbacka, 2001). Consequently, "*the differences in purposes of evaluating the quality of studies in quantitative and qualitative studies is one of the reasons that the concept of reliability is irrelevant in qualitative research*" (Golafshani, 2003:601). The concept of reliability has also been termed as misleading in qualitative research, in the sense that "*if a qualitative study is discussed with reliability as a criterion, the consequence is rather that the study is no good*" (Stenbacka, 2001:552). Conversely, Patton (2015) argues that reliability and validity should both be the subjects of attention for any researcher assessing the quality of a qualitative study. Lincoln and Guba (1985) suggest that researchers in qualitative studies need to persuade their audience that their findings are worth of their attention. In the same vein, they propose that 'dependability' is a more

appropriate term for qualitative studies, set against the term reliability for quantitative studies. According to Leung (2015), in qualitative research a margin of variability for results can be tolerated given that the methodology and epistemological logistics consistently yield results that are ontologically similar but may vary in richness within similar dimensions.

Even though the notion of reliability is not applied in its traditional form, this study aspires to make it possible for other researchers to comprehend, and if needed, to replicate the research and data collection process by using standardised, widely accepted approaches. In this spirit, it uses face-to-face interviews with industry experts (hotel managers), a mainstream, recognised method of primary data collection. A further level of standardisation is also added by the semi-structured nature of the interviews. Complete standardisation would have been impossible since the data is derived from the interviewees, who are people and, therefore, a certain extent of unpredictability exists. What is more, a fully structured interview format- another potential avenue to achieve full standardisation- would have undermined the depth of the responses and, ultimately, the quality of the results. Furthermore, the instruments used for collecting the primary data (digital recording equipment and data transcription) are consistent with other studies. The questions were carefully developed and worded to remove interviewee bias. All interviews were fully transcribed cautiously and meticulously, with parentheses used to ensure that words that were omitted by the interviewee in the spoken language were maintained in the written form. Transcription errors were put right by repeatedly listening to the recording to

guarantee the accuracy of the transcript. A sample of a full transcript for each set of interviews in presented in Appendices 3 and 4.

A pilot study was also conducted to ensure that the interview questions were realistic and understandable. The pilot study pre-tested the interview instrument by means of two ‘mock’ interviews with the Front of House and the Food and Beverage Managers. The interviews were conducted with both managers and the relevance, sequence, and wording of the questions were also tested. The pilot study resulted in some minor changes to the second set of interview questions. The original number of questions was 24; however, this was reduced to 20 because some questions were repetitive and, therefore, merged. Also, some questions were reworded to avoid the use of complicated terms that could potentially confuse interviewees. The above factors combined make this study and its results dependable, and therefore reliable in the context of qualitative research.

4.8.2. Validity

In qualitative studies, the notion of validity is not a fixed, universally accepted concept, but rather a contingent construct grounded in the intentions of particular methodologies (Winter, 2000). For example, Creswell and Miller (2000) indicate that reliability might be shaped by the researcher’s choice of paradigm assumption. Accordingly, several researchers have developed their

own measurements of validity and have created what they consider to be appropriate terms, such as rigor and trustworthiness (Lincoln and Guba, 1985; Davies and Dodd, 2002). Davies and Dodd (2002) perceive rigor as a re-conception that can be developed by exploring subjectivity and the social interaction of interviewing. Trustworthiness, on the other hand, is an idea that intends to establish confidence in the findings of the research (Lincoln and Guba, 1985). Flick (1998) puts forward that the quality criterion that can potentially ensure trustworthiness is the extent to which the researcher's analysis constructions are transparent and empirically grounded in the constructions of the interviewees. Thus, the end result should be an uninterrupted narrative where the views of the interviewees are influenced as little as possible by the opinions of the interviewer (Flick, 1998). With the above in mind, the researcher of the current study made every effort to ensure the thesis is complete, candid, and accurately written. During the interview stage, he refrained from talking, even when there were 'uncomfortable' silences, so as to avoid bias, and he listened as much as possible. He produced notes that were accurate and in a manner that allowed the interviewees to see what was written. The semi-structured character of the interview permitted the participants to raise points they felt were important and the interviewer did not influence the content or context of these points. Most interviews took place in the interviewees' workplace for their convenience and comfort and in order to create an environment they would be more relaxed in. The interview questions were handed to the participant at the beginning of the interview as a visual aid, in case this was necessary. The researcher also maintained a meticulous record of the interview recordings and transcripts and demonstrated a clear

trail when it came to thought process and decision making, ensuring that interpretations of the interview data were as transparent and coherent as possible. Rich and verbatim descriptions of the participants' views were used to support the primary research findings. A conscious attempt was made to analyse and interpret only what was said, without prognosticating or assuming what the interviewee meant. Finally, the researcher, to the best of his knowledge, did not fail to disclose any findings or interpretations. The above statements render this research valid due to the veracity of the data analysis procedures involved, the clear and transparent process of the interview design and its administration, and the well-defined and unambiguous analysis and interpretation of the results.

4.9. Ethical Issues

Every effort was made to act in accordance with the ethical regulations set by The Manchester Metropolitan University. An attempt was also made to follow research best practices and to comply with data protection at all stages of this study. Qualitative inquiry is also often associated with low credibility and results that can be shaped by personal biases, subjectivity, or idiosyncrasies, as the researcher takes part and becomes involved in the study (Johnson and Onwuegbuzie, 2004). Therefore, at this stage of the study, it is important to mention that the author of this thesis is a hotel employee, at management level, with experience spanning 8 years. His research interests have developed and have been shaped through his academic studies to include IS evaluation research within the hotel environment. Since the author is a hotel employee, the desire to conduct research on IS evaluation from the viewpoint of employees arose naturally. The author will not receive any remuneration from his workplace for this thesis, nor does he personally know any of the interviewees. Therefore, it is hoped, that the above statement has removed any concerns regarding bias from the researcher's side and has suspended the researcher's own perspective of the phenomenon under study (hotel IS evaluation). Furthermore, prior to the commencement of the interviews, participants were made aware of the purpose of this study, the procedures put in place to guarantee the security of their personal details and the sensitive information that was discussed, as well as the fact that their responses were digitally recorded and the option to withdraw from the interview at any time. The participants' involvement was also discussed during the initial contact and just before the start of the interview, as was the promise to maintain their

anonymity and treat everything that was discussed with complete confidentiality, alongside an option for them to obtain the results of the study in the future if they wanted to. Additionally, a consent form was sent to the participants' hotel for the general managers' and human resources managers' approval. This can be viewed in Appendix 5, while the letter for inviting interviewees to participate is presented in Appendix 6. Finally, the research ethics framework of the University was fully completed and submitted to the Faculty Research Degrees Committee.

4.10. Summary of Methodology

This chapter explains and justifies the choices behind the research philosophy, approach, design, and strategy. The current research is interpretivist in its philosophy. In terms of the study's approach, induction has prevailed over deduction. When it comes to the type of research used, qualitative research has been preferred over quantitative. In addition, the chapter outlined the research tactics used to collect and analyse primary and secondary data. The population and sample size, the design of the data collection instrument, the data collection method and the manner of analysis were reflected on, encompassing every research step. A timeframe highlighting the most important phases of the research was also provided. As a final point, reliability and validity considerations were made and ethical issues were explained. Since this thesis is concerned with identifying the IS evaluation dimensions and measures that are suited for the proposed research model, an effort is made to identify and establish existing and new IS evaluation dimensions that will be incorporated in the model. The process of how that is achieved is presented in the ensuing chapter, which collects the interview findings.

Chapter 5: Interview Findings- Managers' Perceptions of IS

5.1. Introduction

This chapter presents the results of the interview analysis, highlighting any emerging findings. Two sets of interviews have been conducted in order to detect and corroborate IS evaluation themes that have either been previously encountered in the literature or are completely original. Initially, the themes identified during the interviews are revisited and organised into two broad categories, namely 'Managers' Perceptions of IS Use/ Factors contributing to IS strategies' and 'Managers' Perceptions of IS Evaluation Frameworks'. These themes are drawn from the main dimensions of evaluating IS in the hotel context, as revealed by the literature review chapters. This section is then followed by a detailed assessment and interpretation of the responses of interviewees- departmental managers from 4-star, full-service hotels. The managers' responses are thematically arranged, and the resulting outcomes are reported and visually displayed, paying attention to any new themes that have transpired from the interviews. The chapter closes with a summary of the interview findings. Conclusions drawn from the interview analysis and a discussion of primary data in relation to the literature and their impact on the development of this thesis are all presented in the following chapter (Chapter 6).

5.2. Managers' Perceptions of IS Use and Factors Contributing to IS Strategies

This section looks at the perceptions of hotel department managers in relation to the systems they use and the factors that contribute to the formation of IS strategies adopted by the hotel they work for. Fourteen managers have been interviewed and to guarantee anonymity, an interviewee code has been assigned to each one of them. Accordingly, the interviewee codes used are: FOM 1 (Front Office Manager 1), F&B Manager (Food and Beverage Manager), IT Manager (Information Technology Manager), HSK Manager (Housekeeping Manager), GM (General Manager), C&B Manager (Conference and Banqueting Manager), FOM 2 (Front Office Manager 2), Sales Manager (Sales and Marketing Director), Security Manager, GRM (Guest Relations Manager), FC (Financial Controller), Night Manager (Head of Nights), RES Manager (Reservations Manager), and Spa Manager (Spa and Leisure Director). An effort has been made to include at least one representative from each hotel department. Front Office is represented by two interviewees (FOM 1 and FOM 2) because they tend to use IS more often compared to other departments (Van Hoof, Collins, Combrink and Verbeeten, 1995; Jones and Lockwood, 2004). The interviewees are all between 31 and 56 years old and have extensive experience within the hospitality industry, ranging from 9 to 22 years. All the hotels at which the interviewees work are full-service, 4 or 5-star properties located in Manchester; moreover, all hotels are part of a larger chain or hotel group. The initial sixteen (eight managers interviewed twice) interviews took place between the 28th of May 2013 and the

08th of October 2013. However, it was decided that the data collected was not sufficient and, as a result, the sample size was too small. The reason for this insufficiency was a lack of richness of information and the inability of the initially collected data to record any considerable differences and/or noteworthy trends from within the opinions of the interviewees. Thus, a concern that the study would suffer from insufficient statistical power, combined with the need to produce comprehensive findings that would thoroughly answer the research questions created the need to increase the sample size. Consequently, six more interviewees were contacted and interviewed twice, between the 10th of December 2016 and the 26th of February 2017. This took the total number of interviewees to fourteen and, as they were interviewed twice, the total number of interviews to 28.

The profiles of the interviewees are presented in Table 5.1.

Interviewee Code	Position	Age	Hospitality Experience	Hotel Name	Hotel Type	Hotel Location
FOM 1	Front Office Manager	34	14 Years	Renaissance Hotel	Chain Hotel	Manchester
F&B Manager	Food & Beverage Manager	32	10 Years	The Edwardian Radisson	Chain Hotel	Manchester
IT Manager	Director of IT Services	45	20 Years	Westmont Hospitality Group	Chain Hotel	Manchester
HSK Manager	Executive House keeper	48	19 Years	The Victoria and Albert	Chain Hotel	Manchester

GM	General Manager	46	22 Years	The Palace Hotel	Chain Hotel	Manchester
C&B Manager	Conference & Banqueting Manager	31	9 Years	Worsley Park Marriott	Chain Hotel	Manchester
FOM 2	Front Office Manager	33	11 Years	Manchester Airport Marriott	Chain Hotel	Manchester
Sales Manager	Director of Sales	35	12 Years	Mercure Hotel	Chain Hotel	Manchester
Security Manager	Security Manager	41	11 years	Crowne Plaza	Chain Hotel	Manchester
GRM	Guest Relations Manager	34	10 years	The Lowry Hotel	Chain Hotel	Manchester
FC	Financial Controller	46	19 years	The Midland Hotel	Chain Hotel	Manchester
Night Manager	Head of Nights	39	13 years	Hilton Hotel	Chain Hotel	Manchester
RES Manager	Reservations Manager	35	9 Years	Holiday Inn	Chain Hotel	Manchester
Spa Manager	Director of Spa and Leisure	37	12 years	Macdonald Hotel	Chain Hotel	Manchester

Table 5.1: Profiles of the Interviewees (First Set of Interviews)

The main body of the interviews consists of ten questions, designed to encapsulate several themes, namely, IT Training, Senior Management Support, System Characteristics, and Troubleshooting/Failure Recovery Procedures. Prior to moving to the main interview analysis, there is one main observation to be made at this point: all managers confirmed that the use of IS is vital in the workplace and that they would not be able to complete their daily tasks without it.

5.2.1. IT Training

The first theme that emerges from the interviews pertains to IT training. As the latter consists of a broad spectrum of aspects and elements, there are several actions undertaken by this section: determining the level of IT training the respondents have had prior to using the IS at work, establishing whether or not they believe the current systems are easy to be trained on, assessing their perceptions regarding the importance of that training as well as their hotel's strategy on IT coaching/training in general, and ascertaining whether the necessary facilitating conditions such as resources and time are available in order for employees to use systems to their full potential.

Most interviewees have not had specialised IT training prior to working in hotels, which is a prevailing trend in the hospitality industry since nearly all entry-level positions (such as front office or food and beverage) do not require vast IT knowledge or expertise as a precondition for employment, but rather a basic understanding of simple tasks such as using the Internet or Microsoft Office programs (Suh, West and Shin, 2012). As a consequence, and due to the fact that all the interviewed managers started their careers at entry-level posts, the IT experience they had acquired from high school or from using their computers at home was sufficient to qualify them for employment within a hotel. It was from the time of the beginning of their employment and onwards that they received training on the systems they were working with, and through daily practice and exposure to the systems at their hotels, they became expert users. The C&B Manager disclosed:

> "*The only IT training I ever had was at High School, where everyone did Information Technology. It was the classic lessons that you had, looking at how to get on the Internet, how to use normal Word documents."*

However, it is clear that even the elementary training attained through college or courses was crucial for the interviewees as it laid the foundations for their development in using IS: "*I can't imagine myself being able to use any kind of system at work if I wasn't trained on the basics in school. It all started from Microsoft Word, moved to Excel and PowerPoint, and then I moved to databases and social media management as well as basic accounting like Profit and Loss accounts"* (GRM).

Only the IT Manager, FOM 2 and the FC have had specialised IT training in college or university prior to joining the hospitality industry. FOM 2 felt that this type of specialised training is an invaluable tool as it allows an individual to become familiar with IS:

> "*When I had that training, I was in college and if I had not had that I would not be able to walk into the job I am in now, it gave me a better understanding of computer programs, definitely!*"

For the FC, a specialised knowledge of IT applications like spreadsheets and databases was a necessary prerequisite: "*I would certainly not be able to do what I do on a daily basis without exhaustive training while at university; we studied software such as bookkeeping, payroll, invoicing, inventory management and cloud-based accounting applications"* (FC). Therefore, it is evident that while previous IT experience is not a major requirement for finding a job in hospitality, there are some sectors within the hotel operation (such as accounting or payroll) that actually demand extensive exposure to specialised IT training.

Thirteen out of the fourteen interviewees rated themselves as being expert users of the systems, with only the HSK Manager declaring a moderate level of expertise. Encapsulating the essence of the analysis above, the F&B Manager stated:

> "*I would say that now I am leaning towards expert because I have been using those systems for five to ten years on varying degrees, but when I first joined the company, I was probably just moderate in terms of my IT knowledge.*"

The hotel managers also laid emphasis on how valuable IT training had been for their careers and how it enabled them to use the systems to their full capacity. FOM 1 identified IT training as a medium which, together with daily

use, enables hotel employees to fully use the functions a system has to offer. At the same time, the GM acknowledged the ability of managers to utilise the data they are working with as a catalyst for using the knowledge gained from IT training in an effective and efficient manner. The Security Manager accepted that while systems evolve and new updates are constantly emerging, "*it is up to us to decide what we take from the system and we are the ones that control how we utilise what we can obtain. A system only gives you the necessary tools to find or process information; what we do with this information varies according to the individual and how deep they wish to analyse it*". Hence, system use depends not only on the level of IT training provided or attained, but also on the self-determination, desire, and sometimes intelligence of each employee to utilise the system to its full potential. According to the IT Manager, the knowledge that hotel employees gain from IT training augments their levels of customer service:

> "*So training is very important, especially for the staff. It really is- the more you are training the less hassle you have, and at the end of the day, the guests get a better experience from it too.*"

However, it can be argued here that it does not always follow that a well-trained employee will necessarily offer better customer service, as this might depend on the individual's personality and their customer service skills. Despite this, well-trained employees are usually more confident, a factor that induces good customer service.

Additionally, all managers pointed out that the systems in their respective hotels were easy to train on. More specifically, the F&B Manager commented that the systems used are straightforward and process-driven, which makes them easy to train on and become skilled at, as long as the process is clearly defined. FOM 1 agreed that the current systems are easy to be trained on, but also highlighted that the users of these systems need to have the ability to extract appropriate information from guests:

> "*It is the knowledge of what we need to 'take' from the guest that I feel is more complicated than actually using the system.*"

Furthermore, the interviewees indicated that the hotel they work for offers them the necessary facilitating conditions, such as resources and time, to use the systems to their full potential:

> "*Our hotel often reviews the level of resources we have and, if needed, would have given us new computers…we could always use more time, of course, but we have a fair amount of time for the work we need to do.*" (FOM 2)

It was also implied that sometimes using the systems to optimum levels is up to the individuals' willingness to do so. FOM 1 noted:

> "*I do not believe it is time, I think it is down to the individual and how far they want to go.*"

However, a different viewpoint supported the notion that limited time is always an issue when it comes to system use.

> "*The cruel reality, especially for UK hotels is that there is never enough staff to complete the given tasks for any shift. This is mainly due to lack of investment in training and the small budgets available. I feel we do the minimum of what we should be doing. If we had more staff available, staff that were properly trained, we would have more time to do everything necessary for a hotel to be successful because all tasks would be fairly divided and allocated. So, we would prepare better for our guests and their needs*" (Nights Manager).

As far as the departmental or general hotel strategies on IT training are concerned, most managers claimed that all new starters at each individual hotel, regardless of department, receive a standardised type of training during the induction period of their employment. The process usually begins with some videos, as well as Webcast training sessions or WebEx seminars, during which a person from a central location facilitates the training online and many employees from several different hotels attend, following the provided instructions. The next step involves one-to-one sessions with departmental managers, frequently followed by trial versions of the system, where new hotel employees can sample 'live' situations and practice tasks without actually affecting the real system. Eventually, when the employees reach a point where

they are relatively comfortable with the system, their managers let them repeat the same tasks or processes under supervision, on a daily basis, until correct completion of those tasks/processes becomes an uncomplicated and effortless routine:

> "*I guess it depends on the person: when I was training, I was shown the system for a week and then I was left to do everything on my own. There was a supervisor there to keep an eye, but that was how I learned everything, I was left in the deep end*" (Spa Manager).

Following the training period, one of the main strategies that hotel managers typically pursue in order to sustain success is to foster job engagement and empowerment (Neupane, 2015). To achieve that, they align their talent management strategies with organisational goals, together with locating and promoting specific employee competencies to develop systematic growth (Gutierrez, Orozco and Serrano, 2009). In this manner, employees feel they have a greater participation in the hotel's success and become more committed to realising targets. Moreover, they attain a clearer vision of what the company is trying to achieve and its business needs. Yet, Lee and Singh (2016) argue that there is little evidence to support the extensive adoption of IT training in the hotel industry. They claim that in other industries, employees have an opportunity to select where and when they want to be trained, due to advances in technologies and reduced costs. It is debatable whether the hotel industry can offer the flexibility for employees to train in a location and time of

their choice as the levels of accessibility to training and IT investment are not on a par with other industries (Ali and Magalhaes, 2008).

IT training is often referred to as the sum of planned efforts by a hotel to facilitate employees' learning of job-related competencies that are critical to job performance (Noe, Hollenbeck, Gerhart and Wright, 2019). Nasurdin, Ahmad and Tan (2015) advise that IT training provides hotel employees with the necessary task-related skills to manage guest needs and requests in an effective manner. Successful IT training programmes can yield perceived benefits, mostly intangible in nature as they cannot be converted directly into monetary values, for hotels and employees alike (Dhar, 2015). For hotels, these benefits can include improved performance and enhanced organisational commitment, while for employees these can extend to three perspectives such as personal benefits, job-related benefits and career benefits (Dhar, 2015). The sub-themes and measurements identified by the interviewees on the subject of IT training are presented below in Figure 5.1.

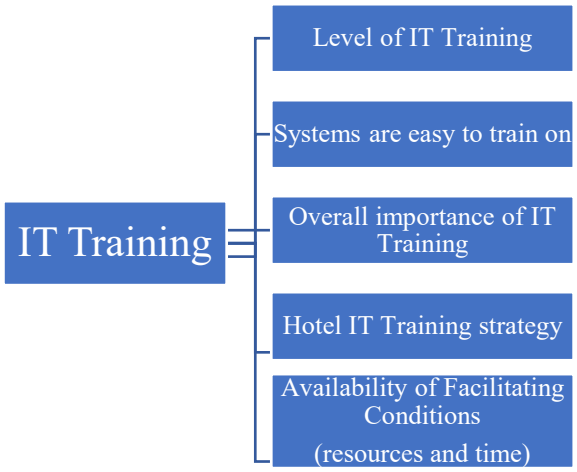

Figure 5.1: Emergent Themes on IT Training

5.2.2. Senior Management Support

This part is concerned with determining the extent of senior managerial support available throughout the replacement or procurement procedure of software/hardware products in hotels. It also seeks to comprehend whether the interviewees deem this support to be an important factor during these systems acquisition/substitution processes and whether there are any associated employee benefits.

It is a typical phenomenon amid large hotel chains that software/hardware replacement or procurement occurs centrally, whereby potential proposals for new IS are submitted by the hotel departments to the general manager, who in turn communicates the information to the company's head office (Punpugdee, 2005). Responsible for ultimately overseeing any outcome on the matter, the head office then assesses the situation and come to a decision. This trend also seems to be evident among the views of the hotel managers. According to FOM 2:

> "*The process by which, in our company, new hardware and software programs are introduced is that, first of all, it needs to be needed in a process within a department and then it is basically put forward to the company, to the general manager, who will then request it from the central office…When this is ok by the general manager and the central office it is then supplied to the hotel. It is a lengthy procedure, but evidently a necessary one.*"

The IT Manager, who typically plays a central role in IS replacement, revealed that such a process usually occurs every four years and a benchmarking approach is often followed, while there is also a tendency by hotels to use the same types of software:

> "*On a refresh basis the equipment is changed every four years. We normally go out and look at vendors, to see what equipment is out there…So we discuss, we buy what the standard of the industry is, and we tend to try and match our hotels together so they are using the same software.*"

Other managers commented that system replacements and particularly upgrades are necessary more frequently if the hotel wants to remain competitive: "*From a reservations point of view we use systems that analyse historical occupancy data, rates and trends, and also what our competitor set is doing. I use systems like STR, Yield management tools, ROI Insights and Revenue Forecaster. New versions of these emerge every year; sometimes even every six months so I have to have the latest upgrade, otherwise I can't compete if I have out-dated tools."* (RES Manager).

The GM, a general manager with 22 years' experience in the hotel industry, explained the replacement process from the point of view of senior

management, clarifying that hotels should be replacing IS only if the process is viable in terms of business effectiveness and usefulness:

> "*I think it would be presented to us at a senior level in terms of what the new hardware could potentially do for us going forward…Now most of the time this sort of system would be already ingrained in our business model so if we can see the results from that in terms of what it can produce and what information it can give us, if we can see the benefit of that, then that is how we would look at it…You have to use the data you have got and if something out there is proved to be effective and useful then it would come to light, we will hear about it and see if that is the right thing to do.*"

All interviewees approved the level of support provided by senior management during IS replacement/procurement periods. For instance, the C&B Manager stated that senior management in her workplace are proactive and that systems are replaced on a consistent basis, once they become problematic or not up to industry standards:

> "*I do not think that we have any sort of systems which are really tired and needed to be replaced for a long time that management did not agree with. I think we definitely adapt where and when needed…they* (senior management) *do move with the times and they are*

proactive when it comes to changing and upgrading technology."

FOM 2 identified organisational and employee benefits that stem from the presence of managerial support during IT replacement. He hinted that hotels and their daily operations benefit from having the latest hardware and software applications (which is achieved by frequent IT replacements supported by senior management), whilst employees' tasks and responsibilities become easier to perform by systems that are faster, straightforward, and current:

"*This process is supported because the managers and the company will benefit in the long run from having current hardware and software in the hotel…The employees will benefit too, because obviously their lives will be made easier by the systems being faster and easier to use and more up-to-date.*"

The IT Manager, a professional who has spent the last 20 years working on IS within hotel environments, reported another employee benefit as a result of regular IT replacement and senior management support:

"*Yes, I believe the senior management do go with the flow. They will see what is happening in the industry and they will take advice from their IT people because every day something new is coming out. I believe these*

(system replacements) *are better for the staff also, especially if you have a faster computer that does not break down all the time and has no issues.*"

It was also highlighted that regular system replacement offers a further benefit to employees, in terms of their confidence and belief that their employers are keeping abreast of technological developments: "*We all feel proud when we get new computers or systems because we can show off to colleagues from other hotels. It is always nice to have the latest gadgets, it makes us feel that we work in a great hotel*" (Spa Manager).

It has been documented that senior management support is positively linked to successful implementation of new IS (Wang, Li, Li and Zhang, 2016). The interviewees indicated that the replacement of IT typically takes place every four years and the decision-makers, usually senior managers, look at the hotel's requirements and the industry standards available at the time to determine what is to be replaced and how long will the process last. It is important to note from the interviewees' responses that, as a rule, chain hotels ensure that all properties under the operating brand purchase the same software to cut costs and to simplify the processes of equipment replacement and troubleshooting. The interviewees also identified several benefits from IT replacement or upgrades, including systems that have superior performance (less system failures, quicker systems, updated software, more system capabilities) and employees with improved performance due to using the

updated superior system. Furthermore, employees perceive frequent successful IT software and hardware replacements positively, as they are often associated with working in a prestigious hotel brand that is keen to invest in order to provide the best tools for its employees. As far as senior management support is concerned, the main themes emerging from the interviews are presented in Figure 5.2.

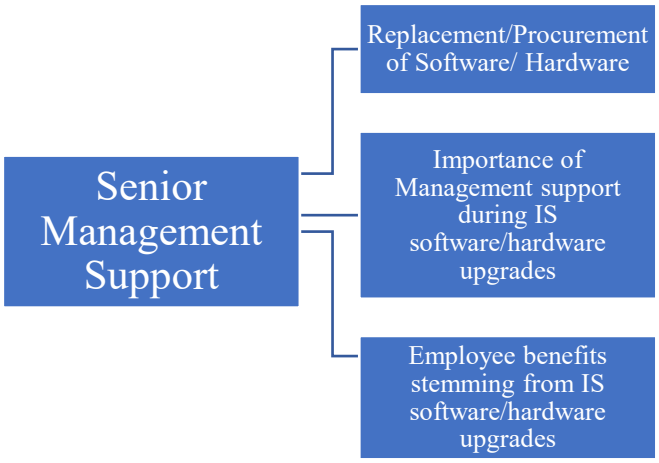

Figure 5.2: Emergent Themes on Senior Management Support

5.2.3. System Characteristics

This section seeks to identify the most important aspects relating to a system's characteristics. Incorporating both hardware and software, these characteristics are integral to the processes by which a system is built and the manner in which it operates. System characteristics are one of the main measures by which a system can be assessed on how it functions in terms of IT capabilities.

The attributes that were recognised by the interviewees as the most important characteristics of a system include speed (response time), reliability and accessibility. Managers also highlighted network safety alongside security of the system in transactions and during the log in process. On system characteristics, FOM 1 commented:

> "*For me, speed and reliability are the most important. Obviously, from a guest's point of view as well, security is very important- we do not disclose any information that we should not- but if the system is not reliable and easy to access, we do not have anything, anyway.*"

The Nights Manager also identified speed and reliability as the most vital system attributes:

> "*During the night shift we run all the hotel reports, the night audit, and the whole hotel's banking. We can't afford for*

the system to be slow because if it was, we would not finish until next morning. For the same reason, the system has to be reliable; if it was to freeze during running the night audit that would take us back many hours."

Underlying the significance of having a secure network and a system that is secure when it comes to transactions, the IT Manager declared:

"*Security is always a key, as a hotel we process confidential information such as guests' credit card details on a daily basis. All that is going to be protected, we are PCI* (Payment Card Industry) *compliant, and we just need to make sure our network cannot be attacked from the outside. These days you need Internet access for everything, mainly for the guests' requirements, but that opens us up to attack* (from hackers, viruses, spyware) *and that is why we build firewalls*."

Furthermore, two managers with over 40 years of experience in hospitality between them, the HSK Manager and the GM, underlined the importance of flexibility in system functions and capabilities. Remarking on how the functions and capabilities of IS can benefit the organisation, the GM indicated that the criteria that can distinguish one system from another are directly linked with the capacity to retrieve data and the manner the data is used:

> "*For me it is about the ability to pull data as and when needed for any period in the future and some historical data. So, it is good to look back at what has happened and then be able to interrogate that data to understand and predict the future.*"

The above statement not only refers to a system's functions and capability to produce the required data, it also brings to light its flexibility in terms of generating defined, applicable and comprehensive reports. The concepts of accuracy and applicability of reports are closely related to the flexibility of systems to provide precise, reliable, and complete data.

Another characteristic which was identified as an important attribute that can enhance the overall operation of a system was the location of the network server. More specifically, the managers felt that it would be more preferable for the main network server of the hotel to be located on property rather than at a site hundreds or even thousands of miles away, as this would improve the speed and reliability of the system and minimise the occurrence of problems. For instance, the IT Manager confirmed:

> "*I would bring the system in house instead of hosting it in Germany* (where it is currently)*. I would have the local server here because then you have control over it, there is no expectancy on the outside network, it is here, you*

know where it is and you build your network for maximum speed. My problem with the system being in Germany is that you have no control."

FOM 2 also raised the same point, stating that a central server presents a disadvantage when compared to a server that is located on site because the former operates for the benefit of a number of hotels, while the latter performs exclusively for the hotel it is located at:

"*If the servers were on site it would be faster. Maybe the engineer would have even been on site at some point. That type of knowledge would definitely be an improvement… if it is a central server it works for the benefit of the masses and not for your individual hotel. So, if the servers were to work only for your benefit, it would be far more effective.*"

The C&B Manager spoke about the experience of moving from a centrally positioned server to a server that has been relocated on site, highlighting changes in speed, reliability, and occurrence of problems:

"*The systems that we have on our PCs at the moment are relatively good; they are quicker now that we have a new server that is in the building rather than having a server that is not on property…printing facilities are quite*

speedy, and the reliability has really changed recently, it seems to be more reliable than it used to be and you do not get as many problems."

The Nights Manager also commented that bringing the network server on property was an informed investment:

"I remember years ago when we used to run Fidelio from our UK head office in London. There were regular disruptions, and all security updates were run centrally, meaning that they could run it on the worst possible time for us, such as a Saturday night. Now that all the hubs are on site, we choose the date and time to apply security updates and it has made the system more flexible and more suited to the demands of the business."

It is evident from the above statements that the location of the network server has a significant impact on a system's performance, in particular with regards to its speed, response time, and reliability. Thus, it is evident that if a network server is located on property as opposed to an off-site location, the functions, applications, and connectivity of the hotel IS are all faster, more dependable and responsive. "*It is all simple logic: a central system serves many hotels at the same time. If you have a system on the premises it serves only you, so it can be tailored for the needs of your hotel and it can be made to work quicker*

and more efficiently" (Security Manager). Moreover, response time, reliability, and accessibility were established by the interviewees as indispensable ingredients that affect the day to day functioning of a system. The same stands true for network safety and security in transactions and during the log in process. It is clear that safety and security represent subjects that are taken seriously by hotel managers as they contain sensitive and confidential guest or corporate information. The themes emerging from this section can be summarised in Figure 5.3.

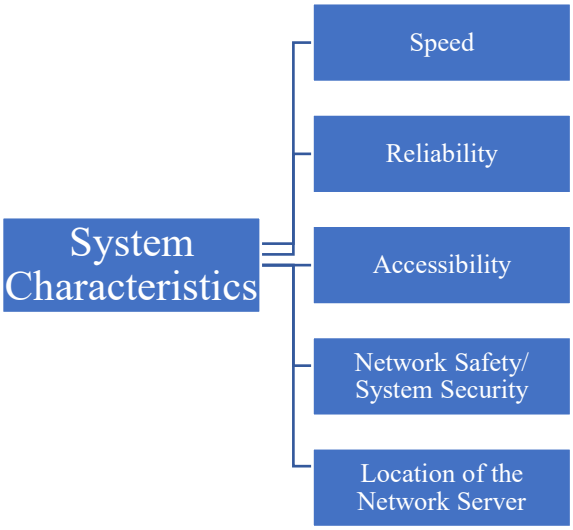

Figure 5.3: Emergent Themes on System Characteristics

5.2.4. Troubleshooting/Failure Recovery Procedures

The final theme that comes to light from the first set of interviews is on the subject of the nature of service provided by an IS during troubleshooting, system backup or failure recovery. The interviewees declared that they had recently been involved in system failures, troubleshooting, and recovery processes. They also stated that, when faced with situations of this nature, they sought help from system support services personnel. Also, the respondents expressed their approval in relation to the performance of system support services and indicated that they were content the course of action by which their issues had been handled. The F&B Manager stated:

> "*There is a system support line that you can ring anytime that is usually really helpful and they will work on your problem and then ring you back when they have a solution… They always issue a log number as well and follow up to ensure that the issue has been resolved.*"

The HSK Manager offered a similar position:

> "*There are times when the system completely fails; it goes down as we like to say. There is a support network you can call, and I have always found them pretty reliable and very quick to come back to you and give you the answer you need…I am quite happy with the help that we are getting from the call centre.*"

There were some managers who expressed their disappointment with the effectiveness of the system support service. FOM 1 commented that sometimes the problem resolution is speedy and at other times slow, leading to, in the latter case, poor system performance and weakened hotel operations, which in turn can result in frustrated employees and dissatisfied guests:

> "*When we have a problem, we have to log it with the head office and we just have to wait: sometimes they answer the phone, sometimes they get back to you straightaway and other times we can just wait and we can be chasing and chasing…it is not always the best.*"

According to the IT Manager, the ineffectiveness of the system support service can sometimes be caused by system support employees who, when troubleshooting, are unwilling to streamline the solutions they offer and tend to overcomplicate matters. The IT Manager maintained that this pervasive and industry-wide phenomenon is moulded by the frequent insistence of the system support personnel to try and find the hardest and most convoluted ways to fix problems rather than to create straightforward solutions:

> "*The problem in the industry is that if someone has a problem, they will try to find the hardest way to fix it, not the simplest way, they always think it must be something complicated…So often it can be a tick box not ticked or something misspelled, and that is all it is, but they will try*

and pull out all the cables for instance when it was just a misspelling. When they troubleshoot, they are always looking for the most complicated thing there can be instead of looking for a simple solution."

FOM 2 voiced concerns about the location of the system support services division:

"*Our help is not based on site so when the systems go down we have to call them* (system support)*… When doing so, obviously it would be easier if they were based locally or even if our servers were on site, our job would be quicker, easier to do.*"

Leading a hotel that has recently experienced a shift in the location of the system support services division (moving from a centralised support services hub to having IT contractors located on property), the GM also referred to the advantages of having system support engineers on site:

"*I think the benefit is that we now have a point of contact for things and I do not know if that was the case before. I would say before you might had to speak to an individual and that person speaks to another individual and that person speaks to another individual in Frankfurt (for example), and Frankfurt has got speak to*

… Atlanta or Washington- it is a lengthy process. Now we pick up the phone or send an email to our contractors."

As seen above, both FOM 2 and the GM clarified that it would be advantageous if the system support services centre was positioned on property or at least near each hotel. This way, the system support engineers would be able to physically access each hotel when necessary and would know the specifics of each property's IS. Hence, they would have an enhanced level of know-how that they could then possibly apply to each hotel's troubleshooting demands or system failure issues and offer solutions to IT problems to enable the hotels to operate more effectively. As the FC put it: "*this is the way forward, anytime we have a problem we can call our dedicated engineer and he will come on property and tell us exactly where the problem is, what we need to do to resolve it and how much it is going to cost us*". Thus, the location of the system support services centre and its personnel is purported to be an important aspect affecting the nature and levels of service provided by an IS. This, together with the quality and performance of the system support services' employees are the main themes identified by the hotel managers on the subject of troubleshooting, back up, and system recovery procedures, as seen below, in Figure 5.4.

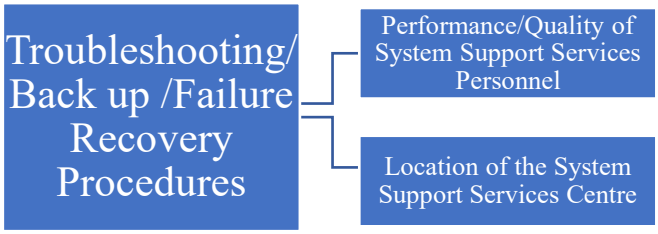

Figure 5.4: Emergent Themes on Troubleshooting/Back up/Failure Recovery Procedures

The perceptions of the interviewed managers on IS Use as well as their views on factors that contribute to IS strategy formation have produced a variety of themes and sub-themes that can be summarised in Table 5.2, below.

IT Training • Level of IT Training • Systems are Easy to Train on • Overall Importance of IT Training • Hotel IT Training Strategy • Availability of Facilitating Conditions
Senior Management Support • Replacement/Procurement of Software/ Hardware • Importance of Management support during IS software/hardware upgrades • Employee benefits stemming from IS software/hardware upgrades
System Characteristics • Speed • Reliability • Accessibility • Network Safety/ System Security • Location of the Network Server
Troubleshooting/ Back up /Failure Recovery Procedures • Performance/Quality of System Support Services Personnel • Location of the System Support Services Centre

Table 5.2: Emergent Themes on IS Use and IS Strategy Formulation

5.3. Managers' Perceptions of IS Evaluation Frameworks and Dimensions

The second set of interviews attempts to analyse the views of department managers with respect to different IS evaluation frameworks/dimensions. In order to accomplish this, the interview questions are designed to be more direct and concise, with an intention to determine the manner in which the interviewees would evaluate the IS in their respective workplaces if they were given a group of pre-set assessment criteria. Following the same methods as in the first set, fourteen managers have again been interviewed and Interviewee Codes have been assigned to guarantee anonymity. To distinguish this second set of interviews from the previous, the letter 'B' has been added after each pseudonym. Hence, the pseudonyms used here are: FOM 1B, F&B Manager B, IT Manager B, HSK Manager B, GM B, C&B Manager B, CON Manager B, Sales Manager B, Security Manager B, GRM B, FC B, Night Manager B, RES Manager B, and Spa Manager B. The profiles of the interviewees are identical with the first set of interviews, with only one inconsistency: FOM 2 was not available for interviewing due to the fact that he was relocated to Dubai and currently works there. As a result, FOM 2 has been replaced by CON Manager B (Concierge Manager). The profiles of the interviewees can be viewed on Table 5.3.

Interviewee Code	Position	Age	Hospitality Experience	Hotel Name	Hotel Type	Hotel Location
FOM 1 B	Front Office Manager	34	14 Years	Renaissance Hotel	Chain Hotel	Manchester
F&B Manager B	Food & Beverage Manager	32	10 Years	Edwardian Radisson	Chain Hotel	Manchester
IT Manager B	Director of IT Services	45	20 Years	Westmont Hospitality Group	Chain Hotel	Manchester
HSK Manager B	Executive House keeper	48	19 Years	The Victoria and Albert	Chain Hotel	Manchester
GM B	General Manager	46	22 Years	The Palace Hotel	Chain Hotel	Manchester
C&B Manager B	Conference& Banqueting Manager	31	9 Years	Worsley Park Marriott	Chain Hotel	Manchester
CON Manager B	Concierge Manager	56	6 Years	Manchester Airport Marriott	Chain Hotel	Manchester
Sales Manager B	Director of Sales	35	12 Years	Mercure Hotel	Chain Hotel	Manchester
Security Manager B	Security Manager	41	11 years	Crowne Plaza	Chain Hotel	Manchester
GRM B	Guest Relations Manager	34	10 years	The Lowry Hotel	Chain Hotel	Manchester
FC B	Financial Controller	46	19 years	The Midland Hotel	Chain Hotel	Manchester
Night Manager B	Head of Nights	39	13 years	Hilton Hotel	Chain Hotel	Manchester
RES Manager B	Reservations Manager	35	9 Years	Holiday Inn	Chain Hotel	Manchester
Spa Manager B	Director of Spa and Leisure	37	12 years	Macdonald Hotel	Chain Hotel	Manchester

Table 5.3: Profiles of the Interviewees (Second Set of Interviews)

5.3.1. Perceived Employee/Organisational Benefits

Prior to looking into the views of the managers with regards to evaluation dimensions, it is important to determine their perceptions on the importance of having IS in their workplace and whether there is evidence of any employee or organisational benefits stemming from IS Use. All respondents maintained that it would be simply impossible for their corresponding departments to operate without the daily use of IS and that noticeable benefits, resulting from the use of systems, exist for both employees and organisations.

Perceived Employee Benefits

According to the managers, the use of IS creates benefits for their employees in that they can complete day-to-day tasks more quickly and effectively, which results in better performance and higher levels of guest satisfaction. At the same time, the range of functions that the systems possess enables hotels to sustain guest satisfaction, by offering capabilities such as guest profiles and preferences, membership statuses, and complaint tracking tools. This view is epitomised by CON Manager B:

> "*The Information Systems that we work with are very important in order to facilitate the guests' arrival, departure, and experiences while they are here. Without that information* (provided by the systems) *we would not be able to find out, especially for return guests, what their favourite items of food are, or what their favourite rooms*

are, or any other idiosyncrasies that they might have throughout their stay."

The managers ascribed employee benefits to the ability and functions of the systems, which enable staff to complete their tasks more effectively. According to Sales Manager B this leads to enhanced levels of customer service and guest satisfaction:

"T*he biggest employee benefit is that the systems allow us to do our jobs, which then reflects on the guest. If we have good systems that provide good service for us then we are bound to provide better service for our guests.*"

The RES Manager B commented:

"*For me, I simply couldn't do my job without it* (the system). *I cannot imagine how it would have been possible to see what rate we were charging this time last year and at what occupancy we were operating. The current system also offers tremendous data storage ability."*

Furthermore, CON Manager B added that, as a general rule, prolonged use of a particular IS leads to expertise on that system:

> "*Certainly, the employee benefit would be the fact that the more time they are using a particular system in order to obtain information, the more experienced they are going to become on that system, and therefore the more efficient they are going to become on that system.*"

Most answers indicated that with persistent use of the systems, employees can reach a degree of expertise that enables them to utilise different functions to optimum levels, which leads to better customer service provision.

The use of IS provides another benefit in terms of employee development as systems can help individuals to improve their skills and progress their careers. The hotel managers concurred that using IS has aided them in enriching their experience and in acquiring new knowledge about the hotel they work for. The GM B stated:

> *"In terms of employee development, the critical thing there is you are making sure that you are helping to develop people and grow people for the future and systems help us do that.*"

An assumption that can be made is that employees who are knowledgeable about their hotel will put that knowledge across in order to assist guests, and systems are one of the available means to facilitate that (sometimes an

employee might possess vast knowledge and experience but would not be able to apply it and make the most of it without an appropriate system that could channel and relay this information). According to the GRM B: "*it happened to me recently, when a couple requested the same room, they had two years ago when they got married. Without having a system to retrieve that information from, I would not be able to help and the guests would not have been happy*".

The opinions of the interviewees stand as evidence that employee benefits exist, stemming from continued use of IS. These include quicker and more effective completion of their daily tasks, enhanced performance, system expertise, knowledge and skills development, and higher levels of customer service and ultimately, guest satisfaction. The employee benefits identified can be summarised on Figure 5.5 below.

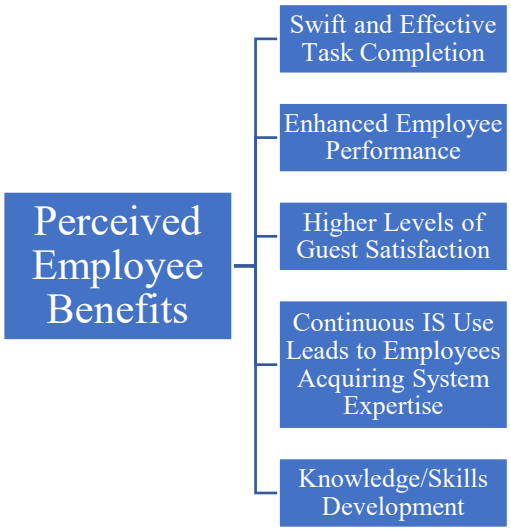

Figure 5.5: Emergent Themes on Perceived Employee Benefits

Perceived Organisational Benefits

The GM B touched on the notion that continuous use of a system develops the performance and capabilities of employees, but also saw organisational benefits arising from the use of IS, such as efficient payroll control:

> "*I think this is significant both from an organisational point of view and from an employee point of view. From a business point of view we are able to maintain and monitor our payroll levels because people can be more efficient, so your cost benefit is significant.*"

In identifying a further organisational benefit, the GM B laid emphasis on the capacity of IS to support data assessments and decision-making by stating that without the systems, data processing and analyses would have been unmanageable, and hotels would not have been able to understand the developments taking place within the industry:

> *Without the systems we are not able to process the data that we need analysing and understand the trends of the business…they* (the systems) *are providing data and analyses which help us to make more informed decisions going forward and improve our position in the market.*"

The GRM B highlighted that the main organisational benefits of using the systems are the possibility of interaction between users and the degree of

personalisation that is available. The first notion refers to situations when hotel employees have the option to communicate between themselves for work purposes through the systems they use. For example, internal mail systems permit users to communicate the main points of a meeting that some staff members could not attend. Additionally, they allow users to share information regarding an upcoming event, for instance a wedding and the main order of operations on the day, with specific instructions and timings. Moreover, systems that support internal chats between staff members, make it possible, for example, to provide 'warnings' when VIPs check in, so every department in the hotel is aware that a specific guest has arrived and that they will be making their way to the bar and restaurant. This gives the food and beverage teams the chance to be fully prepared and to have everything organised. The second aspect of the organisational benefits, personalisation, represents the capacity of the system to personalise the needs of the user. Nowadays, several employees, usually management level, are able to take work home because the IS they use is flexible and personalised enough to accommodate this. For instance, a lot of companies, such as Opera and Protel, offer 'lite' versions of the full PMS (Property Management System) that hotel receptionists use, which can be installed on laptops and tablets in order for Front Office or Front of House managers to be able to have access remotely from home.

From an organisational viewpoint, both interactivity and personalisation of IS encourage a healthy organisational culture, promote virtual collaboration and decrease the effort needed to assimilate pertinent knowledge and strengthen

the set of attainable skills that employees can acquire (Kafuko, Namisango and Gorretti, 2016).

Therefore, it is clear from the respondents' comments that IS Use also results into organisational benefits for management team of the hotel, including efficient payroll control and data analysis, as well as decision-making support, personalisation, and interaction (Figure 5.6).

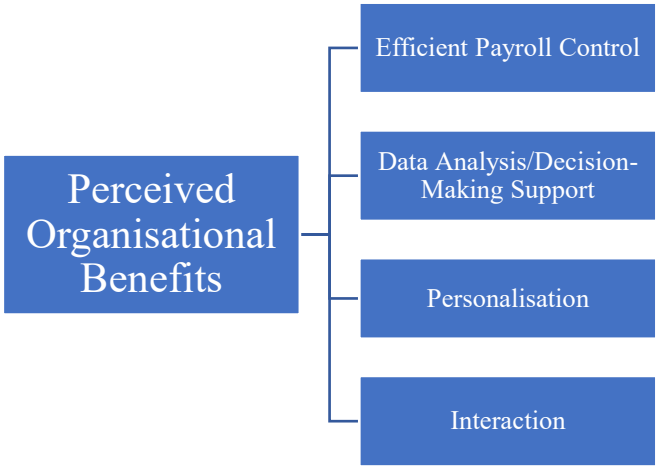

Figure 5.6: Emergent Themes on Perceived Organisational Benefits

5.3.2. System Quality

This section seeks to analyse the opinions of the respondents with regards to the contribution of System Quality attributes to system performance. Another theme considered is the impact of system design components (part of System Quality) on IS success. The quality of an IS and its characteristics have a direct effect on how well a system performs and, consecutively, on the manner by which system performance affects hotel operations and daily employee tasks, and how it enhances the efficiency of the organisational workflow (Seddon, 1997; Chen, 2010).

Speed/Response Time

Response time refers to how quickly a system responds to what a system user wants it to do (Ünal, 2000). All managers replied that they find response time to be vitally important in the day-to-day operation of the business and the efforts of each hotel to run its operations in an effective manner. CON Manager B focused on the advantages a fast and responsive system can offer with respect to customer service:

> "*We need to access the correct data very quickly in order to give the guest the accurate answers they need. Thereby, what this reflects on is that the guest will be pleased, and we will receive less negative feedback.*"

GRM B also highlighted that a responsive system is central to meeting guest needs, minimising delays and, therefore, improving customer service:

> "*When we have corporate clients staying, they don't want to spend 20 minutes waiting until the receptionist processes their request or until the restaurant changes their reservation time. Without quick and responsive systems to back us up, it would have been a disaster, guest satisfaction would have dropped significantly due to protracted delays."*

The F&B Manager B commented how a speedy system is essential for completing daily tasks:

> "*Speed is a key factor for me because I am not office-based; generally, if I come into the office to do some work I soon need to be back in the restaurant or bar area and, therefore, I need to be able to do my task and get back out, so definitely speed is an issue."*

System speed was also important for the FC B:

> "*Every Monday morning, we run payroll for the previous week for the whole hotel, and we have a limited time to submit it to head office. If the T&A* (payroll system) *was slow, there would be various problems and delays with*

paying our employees; and we are talking about hundreds of people that would be affected."

Information systems developers are constantly redesigning IS that have historically suffered from slow download speeds and response times mainly due to large files or graphic-intensive material (Hoxmeier and DiCesare, 2000). The same authors warn that this will not be an acceptable long-term solution as the demands of system users grow in tandem with the need for quick access to information. Shneiderman, Plaisant, Cohen, Jacobs, Elmqvist and Diakopoulos (2016) warn that lengthy response times may bring about declines in customer satisfaction and poor productivity among system users. Customer satisfaction is paramount in hotels as it is the reason that guests return to stay in a particular hotel that is to their liking. Dissatisfaction can lead to guests deciding to stay elsewhere, as there is a plethora of alternative options available that would be happy to accommodate their needs. Poor productivity on the side of the users may lead to discontinued use of a system and force a hotel to pursue different IS solutions (Hoxmeier and DiCesare, 2000). As the use of systems in hotels is mandatory, employees do not have a choice but to use an IS that might have slow response times. However, this will most certainly result in low productivity, which will be noticed by senior management and might result in the latter looking for alternative system options (Shneiderman *et al.*, 2016). Response times is very closely linked to Internet speeds and segments of the hotel industry are relying on the application of 5G Internet, which promises speeds that are ten times faster than its predecessor, 4G (Yan and Villas-Boas, 2019). Nonetheless, and

despite the fact that some operators like Verizon, AT&T and Starry in the USA, and EE in the UK, are making efforts to have 5G up and running by the end of 2019, it will still be a few years before this speed advantage can be enjoyed by users as the technology itself is still in its infancy stage (Yan and Villas-Boas, 2019).

Thus, it is revealed by the hotel managers that response time and a fast system that reacts swiftly to cover all the information needs that employees require are aspects that are significant when determining the quality of a IS (Figure 5.7).

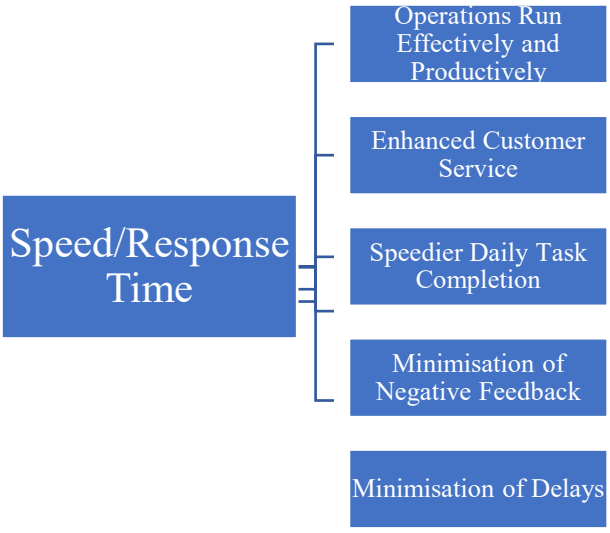

Figure 5.7: Emergent Themes on System Speed/Response Time

Reliability

Reliability of an IS determines whether the system performs consistently and according to its specifications (Tiwana, 1998). A hotel's information processing capabilities are often challenged by issues concerning the reliability of their IS, making the need for dependable and unfailing systems a key requirement (Nelima, Mbugua and Kilwake, 2016). The F&B Manager B insisted that possessing a reliable system is fundamental in providing a continuous and undisrupted operation:

> "*It is crucial for the system to perform well and it is crucial for it to be reliable because it makes life easier for us, it enables us to offer a better flowing service, and without such features we would not be able to compete in the hotel industry and with our rivals.*"

4 or 5-star hotels are usually extremely busy environments and service can be interrupted and, therefore, hindered by systems that are not reliable or break down constantly. Hence, a reliable system can have a decisive impact on the levels of service, and it can provide a competitive edge for the hotel. "*I can't imagine for a moment how the spa would operate without being able to rely on the system. All our appointments for treatments and use of the leisure facilities go through the system. If the system was not dependable it would have a catastrophic effect on us; our members and the hotel guests would simply find somewhere else where they will know exactly what they have booked, what time and with the option to change their booking when necessary. It is the*

same for all other departments too, reception, the restaurant…we could not trade as a hotel, let alone talk about profits" (Spa Manager B).

It is clear from the responses of the hotel managers that an uninterrupted system operation, together with consistency when it comes to the way the systems perform are indispensable aspects that determine the quality of an IS. They also ensure that the hotel offers good levels of customer service and that its guests are satisfied which, in turn, translates into repeat business and the ability to remain competitive. Behjati, Nahich and Othaman (2012) argue that an unreliable IS carries with it numerous problems associated with the provision of services, which influence customer service. Wixom and Todd (2005) and later Forsgren, Durcikova, Clay and Wang (2016) find that there are four constructs at the core of System Quality, namely reliability, flexibility, integration, and accessibility. Patterson *et al.* (2002) argue that downtime or outage, which is the period during which systems fail to perform or are unavailable, is one of the major disruptions that a hotel business can encounter. Andrus (2018) notes that organisations are losing an average $100,000 for every hour of downtime on their websites. Therefore, Forsgren *et al.* (2016) regard reliability as an imperative part of System Quality, but also warn that the tools utilised to manage, maintain, and monitor these systems need to also be reliable themselves.

The themes that emerge on the topic of system reliability can be viewed in Figure 5.8.

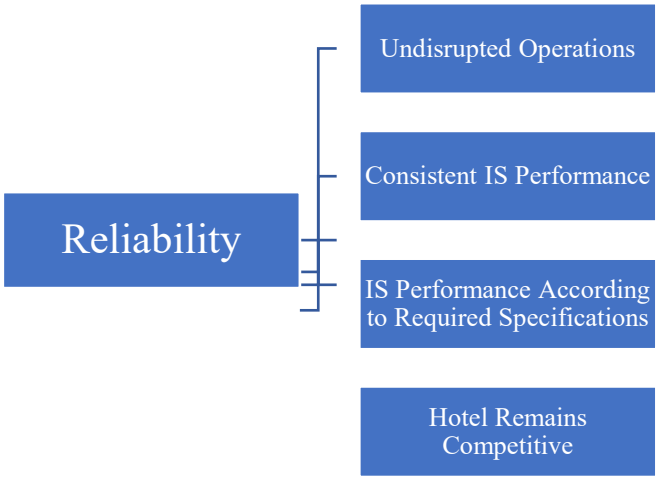

Figure 5.8: Emergent Themes on System Reliability

Accessibility/Flexibility

Accessibility and flexibility are system capabilities that act as protagonists in the effectiveness and performance of an IS (Peppers and Rogers, 1997). It is vital for hotel employees to be able to faultlessly connect and access the system they use; failure to do so may disrupt service (at the hotel's restaurant or bar) in a manner that can be harmful to the hotel's reputation. The managers maintained that possessing an accessible and flexible system is a useful tool that assists hotel employees in completing their daily routine tasks. The IT Manager B clarified:

> "*Such characteristics are highly important and definitely a crucial part of the business. Without these factors I would say that the operation of the hotel and running of the day-to-day business will become quite a difficult task, not to mention that sometimes it would force us to go back to pen and paper."*

The Security Manager B agreed by maintaining that access to files is one of the essential characteristics of a system:

> "*For me, use of my files is really important. We have a shared drive where all the hotel data is stored, and all employees have access to it. I also have my work email files, which I assume are stored on some sort of cloud storage. Then, I have also the hotel's security files, things like evacuation procedures and the crisis manual. If I couldn't access any of these files, I couldn't do my job. If I couldn't access the security files… that could put peoples' lives in danger."*

It is evident from the interviewees' comments that a system has to be accessible at all times and flexible enough to allow storage and file transfers should the user need these. Since the vast majority of IS applications are web-based, another important element is that the system needs to be connected to

the Internet at all times (IS connectivity) in order to provide an unremitting service. Velasquez and Weisband (2008) describe flexibility as the manner by which a system adopts to the changing demands of the user and identify it as a first-order construct that covers the essential aspects of System Quality. The themes emerging from this section are presented in Figure 5.9.

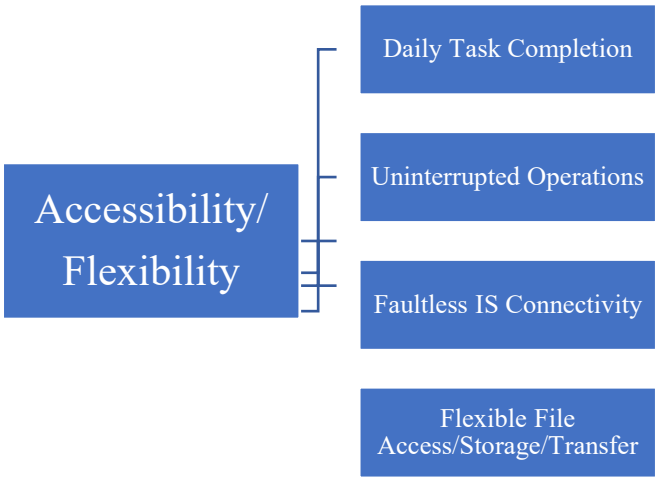

Figure 5.9: Emergent Themes on System Accessibility/Flexibility

System Safety/Security

The interviewees highlighted the need for systems to be safe and to provide security during transactions, particularly in circumstances when guests' personal information or credit card details are involved. Moreover, they stressed that in recent times being PCI (Payment Card Industry) compliant and abiding by The General Data Protection Regulation (GDPR) standards is the minimum requirement for hotels. The F&B Manager B declared:

> "*I personally believe that systems safety and security are really important. The last thing that we want is for our guests to feel that their credit card details, or confidential information is not handled professionally by us.*"

On the same question, Sales Manager B added:

> "*Well, I think there has to be security within any kind of system that contains personal knowledge of guests' sensitive information- obviously we are bound by the Data Protection Act* (now replaced by GDPR)- *so therefore we have to be very careful security-wise as to who or when we use that information.*"

Thus, it becomes apparent that within the hotel setting, where employees process guests' credit card details and personal information on a daily basis, system safety and security of transactions become indispensable features of any hotel IS (Figure 5.10), to an extent that it would be unthinkable for a system today to not incorporate them in its interfaces. "*We would not pass any kind of financial audit if the systems we have were not secure*" (FC B).

The effects of system safety and security on IS Use and User Satisfaction become particularly important in an online context. Like many other industries, the vast majority of payments that hotels receive and process is by means of

credit/debit card. Whether online prepayments or payments on property, credit/debit card transactions work on the basis that guests insert their card into the point-of-sale terminal and enter their PIN in order for the payment to be processed. In order for guests to do that, they need to feel that the system facilitating the payment is a secure one, since this type of transaction involves the transmission of sensitive data such as addresses and credit card information. As a consequence, negative perceptions about the safety and secure handling of online transactions (such as taking credit/debit card payments) are a major factor that adversely affects guests' adoption and use of these systems (Chang and Chen, 2009). Kim, Tao, Shin and Kim (2010) find that IS adoption and use is positively affected by the perceived safety and security of users and confirm that perceived safety and security is influenced by the quality of a system's interfaces. All these systems and their interfaces must be compliant to the Payment Card Industry's (PCI) standards, designed to ensure that all organisations that accept, process, store, or transmit credit/debit card information maintain a secure environment (pcicomplianceguide.org). Moreover, all transactions involving personal data need to comply with the standards of GDPR, a new directive that was voted by the European Parliament in April 2016 to replace the Data Protection Act as the primary law regulating how companies protect EU citizens' personal data (De Groot, 2019).

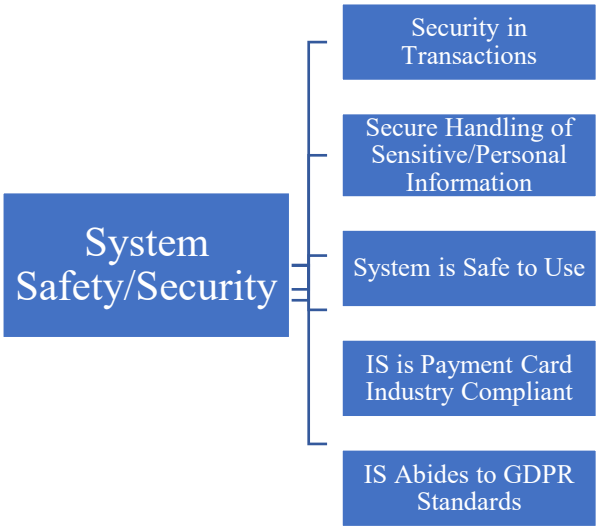

Figure 5.10: Emergent Themes on System Safety/Security

System Design

The responses of the hotel managers were inconsistent when it came to the subject of a system's design capabilities. More specifically, only the C&B Manager B identified all three aspects of a system's design (good graphics, playfulness, and a sense of enjoyment) as critical in a hotel environment. All other interviewees described playfulness and sense of enjoyment as insignificant attributes that do not appear to have any substantial impact on either system effectiveness or employee performance. The HSK Manager B pointed out that for daily use of the systems and completion of tasks, reliability and response time were far more significant features than playfulness or sense of enjoyment:

> "(Our system) *is not a system that offers enjoyment and playfulness. We have to use these systems and it is*

critical for me to ensure that the systems are showing the correct amount of data. I cannot necessarily play with them; it is a system that I have to use and it has to be reliable, it has to connect correctly."

The F&B Manager B argued that playfulness and sense of enjoyment would be appropriate for a different type of business rather than hotels, but drew attention to graphics as an important element of a system's design:

"*Playfulness and enjoyment would be more appropriate for another type of business to be honest. However, good graphics are quite important because we need something that is easy to the eye and it makes it easier if you spend hours on the system.*"

Comparing playfulness with good graphics, the CON Manager B commented:

"*I think playfulness on the system with regards to the hotel industry does not carry as much importance, certainly very little importance in fact, in comparison with good graphics. If you got good graphics your brain reacts much better to what is written down and your brain will facilitate and manufacture better that information, in a way that you wish it to be manufactured.*"

This opinion was shared by the Security Manager B:

> *"A system that is reliable, fast and secure comes first. Good graphics are not quite as important in my opinion I am afraid, but you still need to be able to see what you are doing. Where good graphics and screen analysis comes in for me is when I look at our CCTVs; sometimes I look for the tiniest of details and that is where I need Full HD video and cameras. I am not too sure whether I would need a system that can provide playfulness; I think this is more suitable for multimedia systems, perhaps in education or advertising."*

The only interviewee that rendered the design implication completely irrelevant to the hotel setting was the GM B, who underlined the importance of response time and accuracy of information:

> "*I actually think at this point that it is not that important. The purpose of the Information Systems* (in our environment), *it is critical that they can deliver the information you need as quickly and accurately as possible. The design implication of it is almost irrelevant at this stage.*"

Using the above comments, it can be concluded that, from a design perspective, the managers have identified good graphics and an easy to the eye design as the main components that affect employee and system performance within the hotel context (Figure 5.11). The quality of graphics in an IS depends on the graphical user interface (GUI) that the system uses. Mainly built into a system in order to enhance the efficiency of its design, GUI is the interface designed to enable system users to interact with IS though graphical images and visual indicators as opposed to a text-based interface (Nader, 2012). At the same time, the managers declared that playfulness and sense of enjoyment are dimensions of an IS that might have relevance in a different industry but are insignificant in the hotel environment.

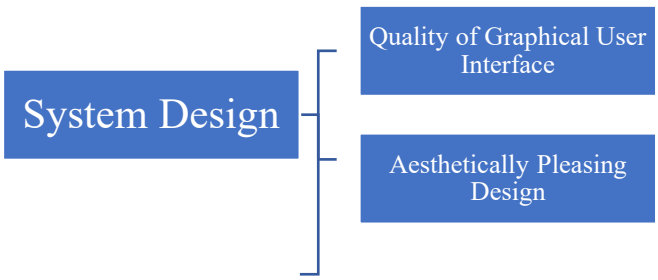

Figure 5.11: Emergent Themes on System Design

Location of the Network Server

The final element of this section is the location of the network server. Its inclusion can be explained as follows: the location of the network server was originally identified during the first set of interviews (by six out of the total fourteen interviewed managers) to be affecting the performance of a system. However, this finding was coincidental. In order for the location of the server to be established as a significant dimension of IS evaluation it has to be verified by the majority of the interviewees. This is the reason it has also been incorporated here (second set of interviews) and a separate question has been allocated to it. Whereas in the first set of interviews the managers revealed that if the network server is positioned within the property, the overall performance of the system is augmented trough better connectivity and speed, the focus of the second set of interviews was on whether they prefer a large server based in the company's headquarters as opposed to a smaller-scale server located on property. Working in a hotel that has shifted from using a main server located far away at a centralised site to a smaller server positioned on property, the HSK Manager B described the advantages of having a smaller scale server:

> "*For us, we have just moved over to a smaller scale server located on property. It is much, much better. We have got better connectivity and if something goes wrong the engineer can be called direct to us, it is more personal instead of if it was in the company's headquarters where they can be looking at hundreds of*

different hotels before they locate the challenges that we would have here, or the problems."

Drawing from 20 years of experience acquired in the IT industry, the IT Manager B summarised the shortcomings associated with large scale servers:

"*Personally, I am not a big fan of centralised systems. The reason behind it is that centralised systems create unfortunately a single point of failure. So, if there is a chain of hotels which has a centralised server with a prime controller and a centralised exchange platform, if something goes wrong, for example if they lose Internet connection, at that point a whole chain of hotels becomes pretty much useless and goes back to pen and paper because there was a single failure in a single point where all systems were installed to run centralised services.*"

Another very experienced manager, the GM B, commented that centralised servers can reach a saturation point where they become ineffective due to the sheer size of operations involved:

"*Having a large-scale network gets to the stage where it becomes too big and the whole process slows down and actually the benefit of having the systems is no longer there. So, actually my suggestion is that is best to have*

a smaller scale set up, ideally on property, and for the support network to be either on the phone or on the internet so that they can log in at any stage, twenty-four hours a day, and assist whenever is necessary rather than being in global set up, which it is with some companies."

The Nights Manager B suggested that having a smaller server on site is much more practical:

"After the IT people installed our main server on property, we were trained on little things, like how to reset the server when it loses connection, or how to restart the system interfaces when they stop working sometimes. If something like that happens, I can reset the system and have it up and running within five minutes. When the system was based in a central location this would take hours."

The responses of the remaining managers were along the same lines as they also favoured the option of having a smaller scale network server located on property. Therefore, it has been verified that the location of the network server is a meaningful factor that influences the performance of IS, and the sub-themes that transpire can be seen below, in Figure 5.12. IS connectivity, also referred to as network connectivity, is a key performance metric of the quality

of a network and of User Satisfaction, in view of the fact that difficulties may arise when processing information or transmitting data when the system is disconnected to the network (Shao, Leng, Zhang, Vinel, and Jonsson, 2014). The second sub-theme, personalised service draws attention to the difference between working with a network engineer that is based on or near the site where the network server is located, and an engineer that is based in a location that is far away. The former will be able to physically visit the hotel to resolve complex problems or assist in a crisis situation (system downtime), while the latter will merely offer advice over the phone without being able to be on property in person in order to resolve complicated trouble-shooting issues. The third sub-theme revolves around the fact that the network server host will have immediate control and direct management of the network server if the latter is located on property. As Night Manager B commented above, if a system 'goes down', a hotel employee can manually reset it and bring it back to full operation within minutes. The same task would have taken hours if the server was located elsewhere, simply because of the involvement of many intermediaries.

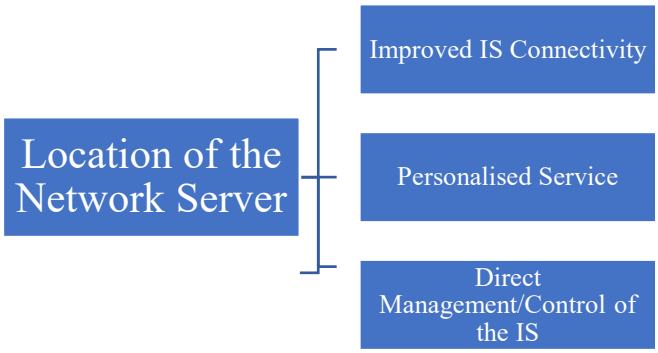

Figure 5.12: Emergent Themes on Location of the Network Server

It has become apparent from the collation and analysis of the interviewees' comments that System Quality is a critical part of any hotel IS for the very simple reason that a system that enables secure transactions with good connectivity and reliability, with fast response times and a network server that is located in close proximity will be an effective means of running the daily operations of each hotel. The components that form the sub-themes of System Quality have been presented in Figures 5.7 to 5.12. Figure 5.13 summarises these sub-themes into what the interviewees understand System Quality to be.

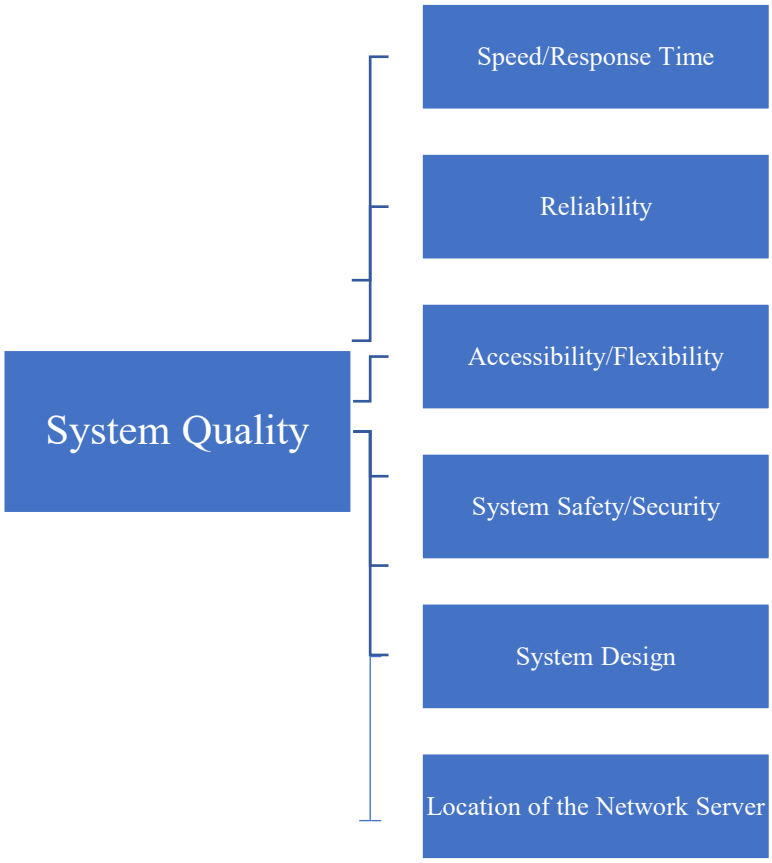

Figure 5.13: Emergent Themes on System Quality

5.3.3. Information Quality

The quality of information a system provides to its users is one of the most crucial determinants of its success or failure, simply due to the fact that the lack of accurate and up to date data can reduce a system to complete obsolescence (DeLone and McLean, 2003). This section seeks to ascertain whether system characteristics (System Quality) are adequate on their own to qualify a system as successful or if a further dimension (Information Quality) needs to be considered in order to magnify its overall performance. A simple way of verifying the above is to establish the extent to which the interviewees believe that a system with excellent technical characteristics may not always be effective or successful if the information it handles is of inferior quality. This notion is interrelated with the impact that information-related factors such as accuracy, ease of understanding, relevance, currency, completeness, and dynamic and personalised content, have on the overall quality of information a system provides.

Information Accuracy

The interviewees insisted that System Quality alone is not sufficient to brand a system as successful and emphasised the need for IS to offer accurate information, thus proving the significance of Information Quality as a dimension that enhances system performance. The interviewees confirmed that even systems with exceptional technical characteristics cannot be

effective if the information they provide lacks in accuracy. Characteristically, the F&B Manager B stated:

> "*No matter how quick and reliable a system is, if the information is different and is not accurate then overall the system would not be successful. So, you need something that gives something that is very accurate, something that is spot on.*"

The Sales Manager B warned about how systems that provide inaccurate information are likely to result in guests being misinformed, which can have a detrimental effect on hotel operations:

> "*I think that the information we obtain from the system has to be accurate. If it is inaccurate then we are passing on incorrect information to our guests, thereby increasing the risk of getting complaints.*"

The GM B maintained how accurate information input is equally important to accurate information output:

> "*I think that the information that is going in needs to be accurate to ensure that the data that is coming out is appropriate.*"

The GRM B commented that hotels often do give out wrong information to their guests but due to human error:

> "*I have spoken with so many guests that say that they have been given wrong information about our product or the services we offer. This is usually because of undertrained employees or lack of communication between the hotel staff. The systems are there to offer us a platform which we can access to view the correct information. Making sure the systems are themselves accurate is up to the IT people for updates and the marketing people for content."*

It is clear from the opinions of the managers that information has to be accurate when it enters the system and also in the form of its output. The components comprising information accuracy are presented in Figure 5.14. Correct information communication refers to the ability of the employee to enter and obtain the correct information from the system. Information is expected to represent valid knowledge on which employees rely for rational action (Ulrich, 2001). According to Stahl (2006), correct information communication may suffer from misinformation issues (wrong or misleading information due to human error), or disinformation issues (dissemination of deliberately false information). From a technical and functional perspective, a system should provide accurate information, operate at optimal speeds, meet the needs of the organisation, and be functionally correct (Fisher, 2001). The manifestation

of information accuracy may be a difficult task to demonstrate, yet it can be accomplished by carefully testing the systems, triangulating several sources of information, and thorough employee training (Forsgren *et al.*, 2016). The first two aspects, rigorous testing, and triangulation, are associated with the information output a system can provide, while employee training is connected to the information input that system users enter in the IS (MacKenzie, Podsakoff and Podsakoff, 2011).

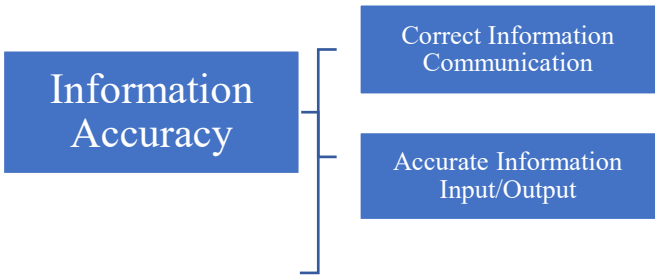

Figure 5.14: Emergent Themes on Information Accuracy

Information and Ease of Understanding

Apart from being accurate, the information provided needs to also be easy to understand if a system is to be effective. All the respondents concurred that the extent to which information is understandable has an impact on the overall

quality of an IS. The GM B emphasised that easy to understand systems can improve the performance and effectiveness levels of hotel employees:

> "*We operate with so many systems in our day-to-day lives, we need to make sure that they are easy for the team to understand. When people are able to understand the system and the data it produces, they become more effective.*"

The IT Manager B advised that a lot of hotel systems and the information they carry can be overcomplicated, which causes them to lose their usability and their appeal:

> "*Sometimes systems can be overcomplicated and unless they are fully scaled and tailored to a particular business, they pretty much lose their usability and in many cases certain functions are never touched by any of the users."*

It cannot be assumed that all computer users are experts in IT and understand jargon terminologies; hence, it is vital for a system to offer understandable information. This way, hotel employees will be able to comprehend and convey the information to their guests in an effective manner. "*I need a system that I can understand. Sometimes they will send us emails or system updates information that are too technical. If the information that is there on an email is*

complicated it wastes my time; I have to call the IT team and get them to explain how it is going to work or what it is they mean. Or I will have to ask one of my colleagues who are more familiar with computers" (Security Manager B).

The sub-themes identified by this section can be seen on Figure 5.15. The ease of understanding the information provided by the IS, also known as understandability, is an integral part of Information quality and, therefore, has an impact on User Satisfaction and System Use, as well as the overall quality/success of the IS (DeLone and McLean, 2003). It has also been documented (Rivard and Huff, 1984) that understandable information can lead to higher levels of employee productivity and performance. Understandable information also has to be designed and scaled to suit the needs of the organisation that uses it (Stockdale and Standing, 2006).

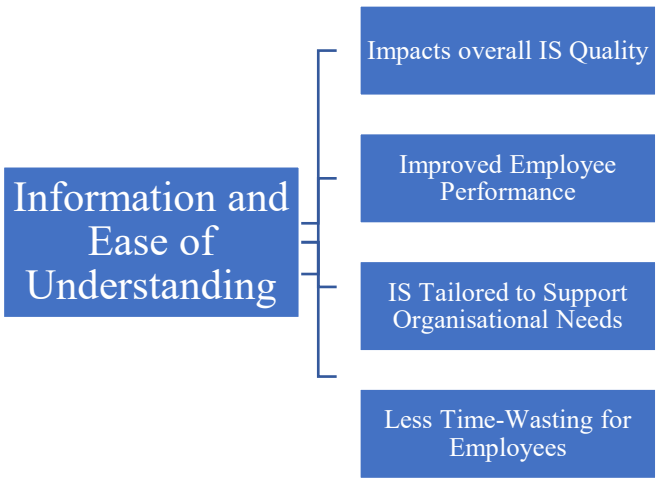

Figure 5.15: Emergent Themes on Information and Ease of Understanding

Information Relevance and Completeness

Hotels are hectic and highly demanding environments and employees are expected to be able to answer any question a guest may ask. However, such a task may prove impossible if they cannot find the relevant information on their systems. It is also crucial that the system offers complete information and therefore covers all information needs. The F&B Manager B stated:

> *"If a system provides relevant and complete information then it enhances the overall performance and that is what we are looking for."*

The IT Manager B argued that it is not only the relevance and completeness of information that are important, but also the ability of the individuals using the system to access and process data that is relevant to the task they are working on:

> *"In every system environment we need to take into consideration the human factor, which can make a lot more mistakes than the actual system. Once the user understands the system they know when to input relevant data and what is required and where, and that is important in a hotel environment."*

Most interviewees identified the relevance and completeness of the information a system provides as important components of Information Quality

as they can improve the performance of the employees (Figure 5.16). "*A guest may approach you at any time and ask you even the most random of questions. It is your job to be able to answer that question and if the information that you have at your disposal is not complete the guest would think that you are incompetent and that you do not know what you are talking about. Sometimes, we can't remember every piece of information from the top of our heads, so we have a look on the system*" (Nights Manager B). Information relevancy has been described as the degree to which system users perceive the IS information content to meet their needs, whereas completeness is defined as the perceived comprehensiveness of the information available on the system (Muylle *et al.*, 2004). Completeness has been referred to as one of the core constructs of Information Quality, and it has also been posited that together with relevance they add to the overall performance of the system (Forsgren *et al.*, 2016). A further important factor in a system being able to produce relevant and complete information is the input: if an organisation wants the information output to be complete and relevant, the information entered into the system will need to also be complete and relevant.

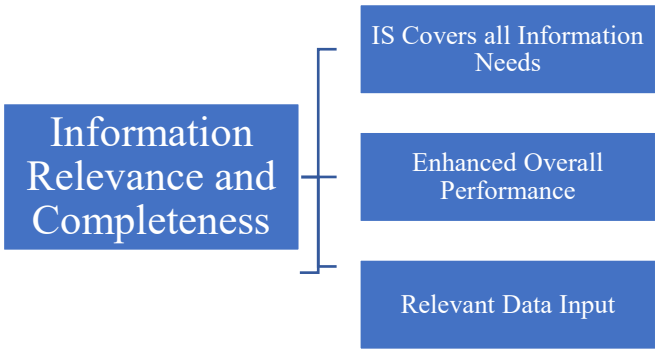

Figure 5.16: Emergent Themes on Information and Relevance/Completeness

Information Currency

Another sub-section that can affect Information Quality is the currency of information that a system offers. It is no coincidence that all major websites are updated on a regular basis to include up-to-the-minute information. The same stands true for all Information Systems: a system cannot be successful or effective if the information it features is not up to date. The hotel managers confirmed that information currency is an important aspect of the systems they work with (Figure 5.17). The CON Manager B demonstrated the significance of information currency with an example:

> "*It is absolutely imperative that we can give correct information and pass that on to our guests. The information needs to be up to date so that we can advise guests accordingly: there is no point in us looking at a train timetable from 2009 when all the trains are now running at different times. So, being up to date is imperative.*"

The RES Manager B also highlighted the significance of information currency:

> "*Although we set our own rates for accommodation and conferences and events, I need to have an up-to-date picture of what our competitors are doing, what prices they are selling at and at what volumes. If the system was old-fashioned and didn't offer live information, then we would struggle to make informed decisions and drive profit for the hotel."*

The Spa Manager confirmed the importance of updating information regularly:

> "*We offer a large number of different treatments to our members and to hotel guests…if these were not up to date, we just would not be able to sustain our client base and be profitable. Updated pricing also plays a big role because people check everything online these days.*"

The importance of updated information has been identified by early MIS studies and in particular by Bailey and Pearson (1983) who put it forward as a strong predictor of User Satisfaction. Wixom and Todd (2005) find that information currency is an antecedent to Information Quality, while Takayama and Kandogan (2006) reinforce the importance of current and up-to-date information by revealing that administrative users of IS prefer systems to return information in real time, instead of having to refresh screens or waiting for information updates. Another study argues that even if the information at hand is available and relevant, User Satisfaction will be poor, unless the information is also current and accurate (Onwukanjo and Men, 2017).

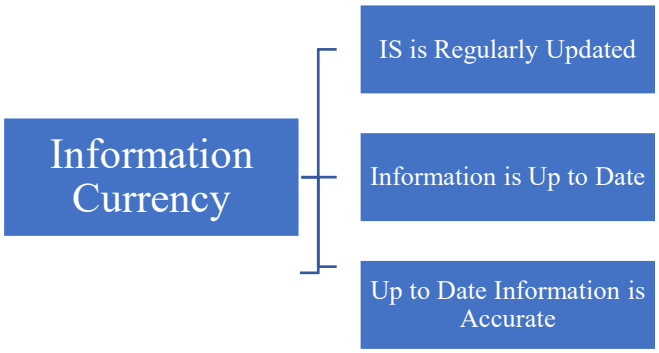

Figure 5.17: Emergent Themes on Information Currency

Dynamic and Personalised Content

Most interviewees replied that they would be satisfied if the IS were integrated to project a sense of individuality and to include information that is not static and generalised (dynamic and personalised content). The CON Manager explained that dynamic and personalised content can aid hotel employees to provide better service by knowing about guests' favourite rooms, food and drinks, their previous visits, and their preferences:

> "*Although this is a multi-property company throughout the world, each building has its own characteristics…the information that we retrieve from our systems means that for any returning guest we can find out exactly where they have been staying, what their favourites are…so in that respect, it can become very individualistic to the guest and also adds a personal touch to the information we can lay hands on.*"

The F&B Manager B was of the opinion that the systems are departmentalised rather than individualised, with functionalities that are custom-made to perform the tasks of every department and not for the purposes of each individual:

> "*I feel the systems that we use at our workplace are departmentalised rather than individualised. What I mean by that is that the systems are tailored for each department to perform its tasks, and not necessarily for the individual.*"

The answer by the F&B Manager B is germane to a hotel environment because the IS that operate within a hotel setting are designed with departmental duties rather than individual responsibilities in mind. In other words, it is more likely that a hotel system will be tailor-made for the particular requirements of each department and will incorporate specific functions to assist in departmental routines rather than be customised to each employee's preferences. The sub-themes emerging from this section are presented below, in Figure 5.18. One of the earliest studies on content is by Neumann and Segev (1980) who, while designing a survey of user perceptions of IS, find that content, among other attributes, is a strong predictor of User Satisfaction. More contemporary studies find that the process of creating personalised content requires user involvement, which affects attitude towards use and System Use (Liang, Lai and Ku, 2007). Personalisation, on the other hand, has been defined as "*the process of collecting and using personal information to uniquely tailor products, content, and services to an individual*" (Tuzhilin, 2001:116).

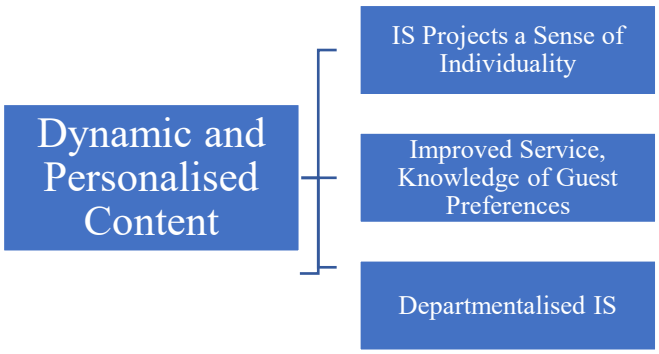

Figure 5.18: Emergent Themes on Dynamic and Personalised Content

Given that all interviewees agreed that the Information Quality characteristics are essential for a hotel system to operate competently, it has been proven that this dimension (Information Quality) has a direct impact on IS success and is a vital element of IS evaluation. Information Quality consists of several themes, and each theme has been summarised in Figure 5.19.

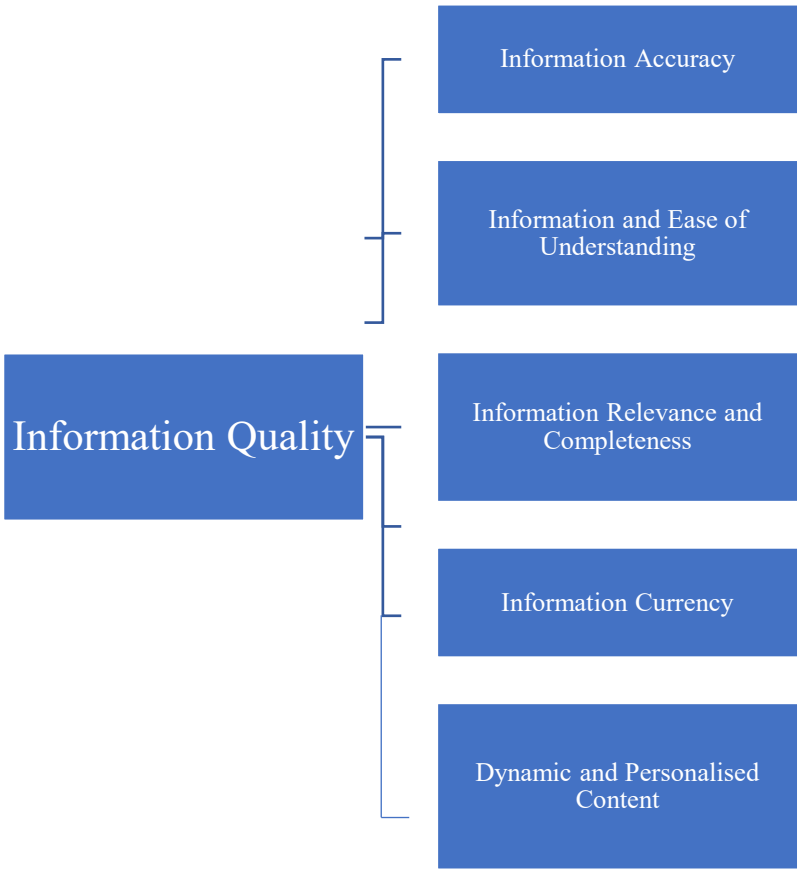

Figure 5.19: Emergent Themes on Information Quality

5.3.4. Service Quality

It is vital for hotel employees to have the necessary resources that can offer assistance and support with technical issues. Commonly referred to as system support services, these resources often come from within the system itself in the form of online support capabilities such as integrated (in-built) help tools, sitemaps, and frequently asked questions sections, or from outside the system by means of system support services centres, call centres, hotlines, emergency lines, online assistance, forums, and helpdesks. The demands of a hotel environment for fast-paced information exchange and reliable systems intensify the need for high-quality, well-organised support services. The output and the quality of support services a system can offer its users is a theme that appears regularly in IS research and is better known as Service Quality. This section seeks to determine the manner in which, according to the respondents, hotel operations would be affected if the systems did not offer online support or services including helpdesks and call centres. Additionally, it intends to shed light on the hotel managers' understanding of the term Service Quality in an IS context and their thoughts with regards to the appearance of recognisable logos or standard company colours on the interfaces of systems.

Responsiveness and Effectiveness of Online Support Services

A theme that appears commonly in the literature as a measure of Service Quality is the responsiveness and effectiveness of IS support services (Liu and Arnett, 2000). Large chain hotels are operational every single day of the

year, 24 hours a day; this requires hotel IS (and the accompanying support services) to be functioning effortlessly and uninterruptedly. It is, therefore, critical for the IS support services to be helpful and quick to respond when a hotel calls for assistance. All interviewees revealed that they rely on the help of call centres, online system support, helpdesks, real-time web tools, and software and hardware engineers. Revealing about how Service Quality is perceived within a hotel environment, the F&B Manager B declared that key elements include how the service departments respond and the manner in which issues are resolved:

> "*I understand it* (Service Quality) *as the quality that you get from the service departments, how they respond and how they resolve issues.*"

The GM B highlighted the need for a highly responsive support services network, commenting that a maximum of four hours response time is the standard required in the hotel industry:

> "*I think it* (Service Quality) *is the ability to have a support network available. Now, whether that is through email or the telephone, a quick response is imperative. So we would normally look for a four hour response time on Information Systems.*"

The HSK Manager B was of the opinion that call centres and helpdesks can be effectual as long-term solutions in times of serious issues, but when it

comes to problems associated with day-to-day operations, hotels usually have contingency reports and backup systems on standby that can substitute the main systems on a temporary basis.

The Security Manager B noted that system support is an area that has grown in the last 20 years and foresaw further growth and development:

> "*Before the arrival of the Internet, system support was very very basic and everything was done over the phone, often inaccurately and ineffectively. The Internet and other technological developments have enabled our IT people to log in to our computers from far away and resolve most issues that we may have that way. Now we have moved to fibreoptic Internet and the connections become speedier; soon connection problems will be a thing of the past and our engineers will be able to fix issues with a click of a button.*"

It is clear from the responses of the hotel managers that they were aware what the term Service Quality entails in an IS environment, acknowledging the usefulness/responsiveness of the service departments, the fashion in which they resolve issues, and the overall ability to have a support network available (Figure 5.20). They view system support as an integral part of any IS. "*It all started with the really big companies like IBM, Dell and Microsoft and now every software program or hardware piece of equipment will have online*

tutorials or a 'contact us' page. Or you can still call someone for help on the phone" (FC B). Responsiveness refers to the readiness of the system to provide service (Negash, Ryan and Igbaria, 2003), but also the willingness of the employees to provide prompt service and assistance (Parasuraman *et al.*, 1990). Quick assistance response from the online support services is of the upmost importance in upscale hotels as they are establishments that need to offer services to guests constantly, services that require the full function of the IS (full use of the PMS, electronic check in/out, payments for accommodation, wake-up calls, notes on the guest profile, room service or restaurant orders, drink orders from the bar) (Sahadev and Islam, 2005). When the online support team respond quickly and efficiently to system issues reported by hotels, they enhance their overall quality (Negash *et al.*, 2003). The latter is also enhanced by follow-up service, often a courtesy call by the services team to ensure that the system user is satisfied with the resolution of the issue by the online support team (Gilmore, 2001).

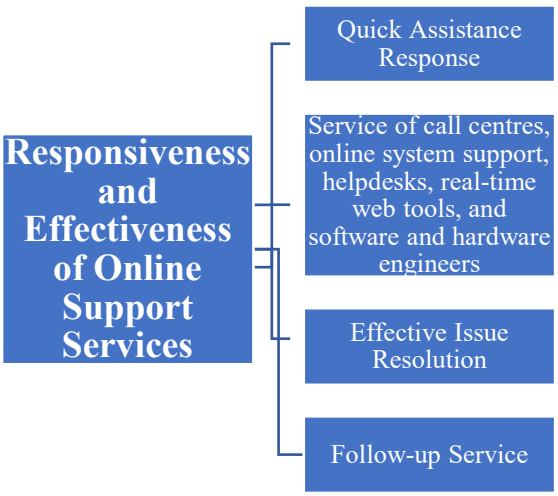

Figure 5.20: Emergent Themes on Responsiveness and Effectiveness of Online Support Services

Importance of Online Support Services

The interviewees admitted that the whole hotel operation would be extremely difficult to move forward with no online help or call centre assistance when IT problems arise. Characteristically, the GM B added that hotel employees are not IT specialists, thus explaining the need for obtaining help from the IT services personnel:

> "*We are not specialists in Information Systems; we are specialists in hospitality, which is why it is critical to have the ability to contact somebody and then the specialist to be able to adjust or assist with whatever is needed.*"

The F&B Manager B also spoke about the importance of support services:

> "*They* (Information Systems) *would not operate very effectively at all. IS are a man-made machine and at some point they will fail, but it is what the call centres and their people are there for, to bring the systems back up*"

On the same subject, the IT Manager B advised that in a modern hotel context, having a support service centre, help desks, and support contractors is a minimum requirement:

> "*Nowadays, having a support service centre of some sort, support contractors' service, and help desks in*

place is a minimum requirement that everybody looks for when purchasing software for hotel environments."

GRM B was also of a similar opinion:

"*The choice of a new IS in hotels is the same as buying a new computer at home or a new tablet. You know you will get the product and everything it can do for your needs, but you also purchase the service that goes with it- service to help you on set up and connection and to guide you through problems when they occur and to ensure you are getting the maximum out of what you paid for. The product and service go hand in hand these days."*

It is apparent from the comments of the hotel managers that a hotel would not be able to operate without the presence and support of the system support services (Figure 5.21). Hence, the latter represent a vital part of Service Quality and, consequently, of a successful IS. In fact, Service Quality and its different sub-dimensions are today considered as being one with the actual IS. Several studies have suggested that User Satisfaction will benefit from a service department that focuses on customer needs while adopting to customer-centric approaches (Terziovski, 2006; Chathoth, Ungson, Harrington and Chan, 2016; Finne and Grönroos, 2017).

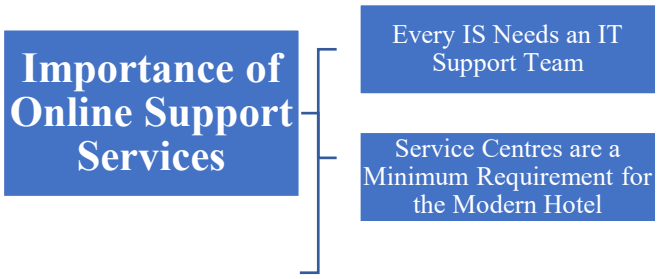

Figure 5.21: Emergent Themes on Importance of Online Support Services

Sense of Empathy

It has been suggested in the IS literature that noticeable company emblems can create a sense of empathy and familiarity for employees using online systems (Young and Benamati, 2000). The use of identifiable logos or familiar company colours/emblems is common practice for hotel chains in order to distinguish each hotel group from the other. Company colours and logos are important aspects of an organisation's branding efforts and they must be applied cautiously in order to transpose offline attributes of a brand to its online system (Egger and de Groot, 2000). The views of the interviewees on this matter differed, with some believing that the application of logos and company colours is important and others that it is not critical but aesthetically pleasing (Figure 5.22).

The GM B commented that recognisable logos are not the most significant aspect of a system:

> "*I do not think it is critical that it has that* (recognisable logos and colours)*. The important thing is that it represents something that can be used by all areas and if the layout is something that you are familiar with, that you might use in day-to-day work… then it is fine.*"

The F&B Manager B was on the same wavelength as the GM B when it came to logos and company colours:

> "*It is not really that important. However, it is pleasing to the eye and it is good to see, for example, consistent corporate logos.*"

The HSK Manager B claimed that working within a branded hotel necessitates the need for corporate logos and company colours:

> "*Our system is instantly recognisable because you have the logo, and the colour is instantly recognisable too. If you were to go onto a system where maybe you put it in wrong you would instantly recognise that* (you are not using our system)*… we do work with brands at a hotel level. So, yes, it is better for us to have the recognisable corporate logos there.*"

On the other side of the spectrum, the IT Manager B was directly and completely against the use of company logos and colours:

> "*A system as such should not be tailored with regards to colours and applications like that, especially if you take under consideration the fact of how often people move between jobs in a hospitality environment, from property to property, from department to department.*"

The Spa Manager B agreed by saying that recognisable logos are important in branding, but their presence is not necessary on the system:

> "*We sell several products which are branded; this is where we need the hotel's logo, to make sure that customers recognise our products. Our products have to be of great quality to reflect the reputation of the hotel and to build a distinguishable brand. It is not necessary for the hotel logo to appear on our system because the customers do not see that, only us, employees do*."

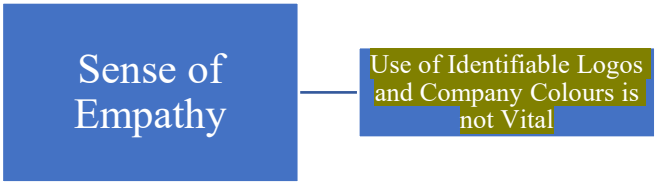

Figure 5.22: Emergent Themes on Sense of Empathy

Consequently, it is concluded that the support services are usually assessed in terms of their responsiveness, the effectiveness of their online support capabilities, the follow-up services available, and whether or not the system projects a sense of empathy through recognisable logos or standard, distinguishable company colours. Only two attributes, recognisable logos and company colours, have not been fully corroborated by the interviews section as several managers did not find them to be vital. The themes that have emerged for Service Quality are presented in Figure 5.23, below.

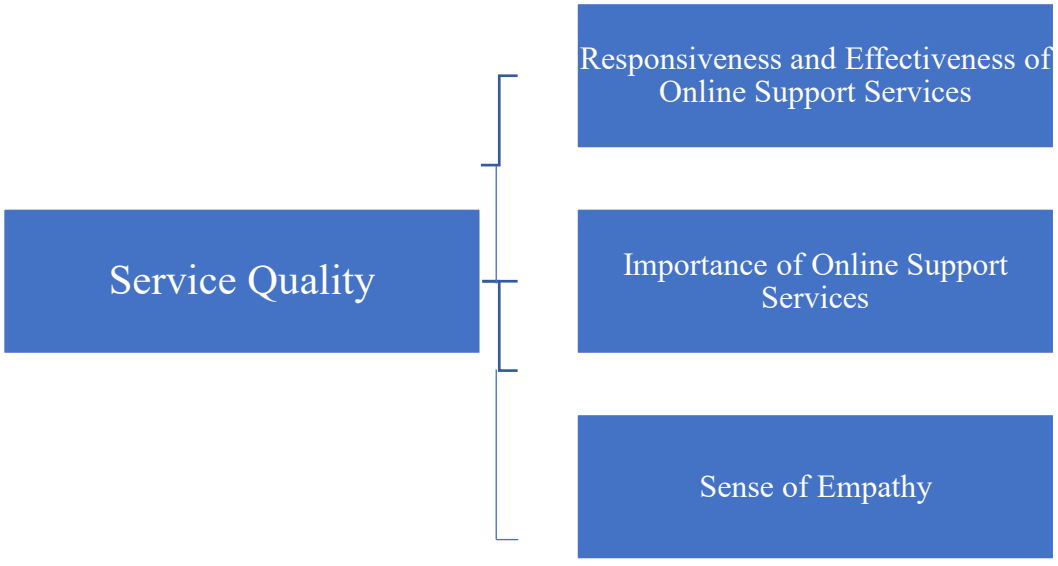

Figure 5.23: Emergent Themes on Service Quality

5.3.5. Perceived Usefulness

The next dimensions analysed in the two ensuing sections, Perceived Usefulness and Perceived Ease of Use, both emanate from technology acceptance approaches within the literature of IS evaluation and in particular from the Technology Acceptance Model (Davis, 1989). According to Davis (1989), Perceived Usefulness and Perceived Ease of Use can encapsulate all the attitudes involved in IT usage contexts and also influence each other and the attitudes or inclination of users to accept IT. The main aspiration of this section is to collect and analyse the perceptions of the hotel managers with respect to system usefulness and the attributes usually associated with a useful system.

System Usefulness

The interviewees perceived the capability of a system to facilitate task completion as the main factor contributing to system usefulness. The F&B Manager B was of the opinion that a useful system should fulfil its purpose: to support employees in their day-to-day duties:

> "*I think it* (system usefulness) *is the ability of the system to help you do all that needs to be done.*"

The HSK Manager B also commented that systems should be built in a way that enables employees to complete their tasks:

"*The systems that I use and the way we operate in housekeeping is: we know what we need to do, it is there, it is very, very quick and useful, and also the room attendants can understand the reports that we print off.*"

A further factor that was identified as a major contributor to system usefulness was the ability of the system to allow a hotel to deliver more personalisation in terms of its guest relations or customer services. The IT Manager B suggested that a way to achieve personalisation of services would be to utilise the system by means of retaining guest profiles and preferences.

Attributes of System Usefulness

With regards to the attributes that could characterise a system as useful, the general consensus was that they include speed, accuracy, efficiency, and effectiveness of task accomplishment. These characteristics can be seen in Figure 5.24. The GM B recognised all these attributes as the core components of system usefulness:

"*I think the key thing is making sure that it* (the system) *is quick, it is effective and efficient, and it helps the person accomplish the task they set out to accomplish.*"

The CON Manager B highlighted the accuracy and effectiveness of systems in relation to assisting employees with their daily routine:

> "*I think any system has to be useful in as much as it has got to be accurate, it has got to give the correct information, but also it has to assist whoever you are finding information for.*"

Task completion varies within a hotel as each department has different tasks to complete. For instance, the finance department would need a system that is accurate, while food and beverage operations would need a system based on speed. This notion was substantiated by the HSK Manager B:

> "*It (the system) has to be quick. I have roughly half an hour in the morning to get the tasks ready for the housekeeping team.*"

It is, therefore, clear from the interviewees' comments that when a system is quick, accurate, effective and efficient, it will prove useful in assisting employees to perform their tasks successfully. If successful task completion occurs, it is reasonable to assume that the system will be perceived as being useful. At the same time, if hotel employees use a system to help them complete their daily tasks in a swift, well-organised, and practical manner, then it can be posited that such a system also enhances their job performance. "*We are here to work and to perform in order for the hotel to be profitable and*

successful. The systems we use need to help us achieve that. Our employees need to believe that the systems they use are useful tools to assist them in their tasks. At the end of the day they (the systems) are here to make our lives less difficult and to help us be competitive. If a system can't offer you usefulness, speed or reliability, it is not worth investing in" (FC B).

Efficiency, as indicated by task completion, in tandem with system effectiveness, as indicated by quality and accuracy of tasks, are the two main attributes of Perceived Usefulness (Frøkjær, Hertzum and Hornbæk, 2000). A useful system should be able to enhance the job performance of employees (Davis, 1989) and provide support for daily duties completion in a speedy and reliable manner (Rahman, Lesch, Horrey and Strawderman, 2017). Furthermore, a useful system should have the capacity to offer comprehensible reporting and other means of personalised services in order to increase the customer service levels in hotels (Lee and Cranage, 2011).

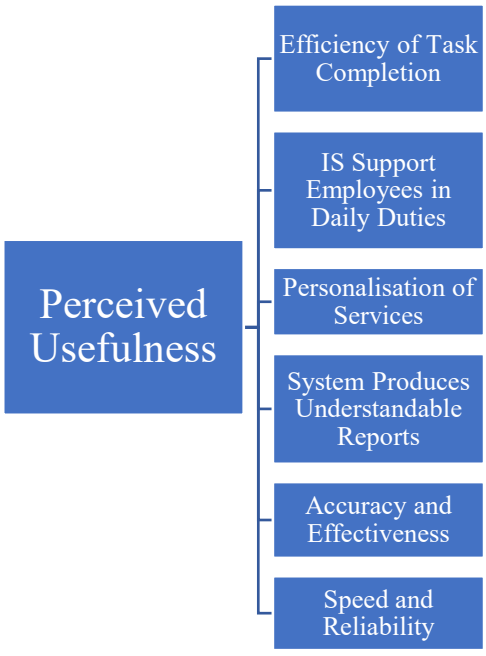

Figure 5.24: Emergent Themes on Perceived Usefulness

5.3.6. Perceived Ease of Use

Perceived Ease of Use is the second dimension that originates from technology acceptance approaches and in particular the Technology Acceptance Model (Davis, 1989). Davis (1989) specifies that Perceived Ease of Use is the antecedent of Perceived Usefulness because Perceived Ease of Use indirectly affects technology acceptance intention through Perceived Usefulness. This section attempts to ascertain the hotel managers' perceptions in relation to characteristics that constitute systems that are easy to use.

Ease of Use

Ease of use was encapsulated in the thoughts of the hotel managers as a straightforward concept that denotes unproblematic, effortless, and easy to use systems.

Describing the attributes of an easy to use system, the F&B Manager B stated:

> "*What I would look for in a system that is relatively easy to use, it should be effortless, and it should not have constant problems.*"

The GM B maintained that an easy to use system is one that is uncomplicated and free of effort when it comes to providing information:

> "*I think it is in the title, is it not? So, the key thing is making sure it is easy to use. The system is set up in such a way that it does not overcomplicate things. It means that you can get the information that you need as quickly as possible.*"

The GRM B linked a system's ease of use to its design:

> "*A good and easy to use system is one in which design concentrates on the requirements that we as employees have. A system designer should understand our needs and base their design on those. If our point of view is not incorporated in the design, then the end-product will not be easy to use and it will not be accepted easily by the hotel staff."*

User-friendliness

Another key tenet of Perceived Ease of Use is user-friendliness, a term that describes systems that are easy to operate and understand. The hotel managers stressed the importance of having systems that are easy to work with and require little effort in terms of input but offer high-quality output. Talking about the simplicity a system should offer, the HSK Manager B added:

"*It is easy to use, you do not want to be taken off onto different windows to try and look for something else. You want a system where you can go straight into it…you do not have to do too much work with it, it is there; it is instant and specific to your job role.*"

The IT Manager B highlighted the ease of operation within the system:

"*It is very similar to the strategy and sort of guidelines that web designers and software developers follow, where everybody asks 'how many clicks does it take you to get to a particular task?' and if you cannot reach a certain object within the environment in three to maximum five clicks, it becomes very frustrating for a user if they have to pretty much run around loops in order to find a single piece of information in the system.*"

The RES Manager B linked user-friendliness to efficiency:

"*How quickly and accurately can I finish what I need to do? This is what I am looking for in a user-friendly system. Can it offer simple menus and shortcuts that I can take using my keyboard? Can it shorten the time I need to allocate to my daily tasks?"*

Evidently, the interviewees recognised that the main characteristics of an easy to use system include that it is user-friendly, easy to operate, quick, specific to the task, effortless, without complications and problems, and that it relays correct information in the simplest way possible (Figure 5.25). To begin with, an easy to use system should be effortless to use while providing high-quality output (Davis, 1989). Moreover, if a system is unproblematic and processes information quickly, it will create a sense of efficacy and personal control for the system user (Davis *et al.*, 1989); it will also enhance employee performance with the same amount of effort (Rahman *et al.*, 2017). The more knowledge and confidence through direct experience in using a system a user acquires, the more he/she will perceive an IS as easy to use, and this relationship can be strengthened if the system is user-friendly and designed with the users' needs in mind (Hackbarth, Grover and Yi, 2003).

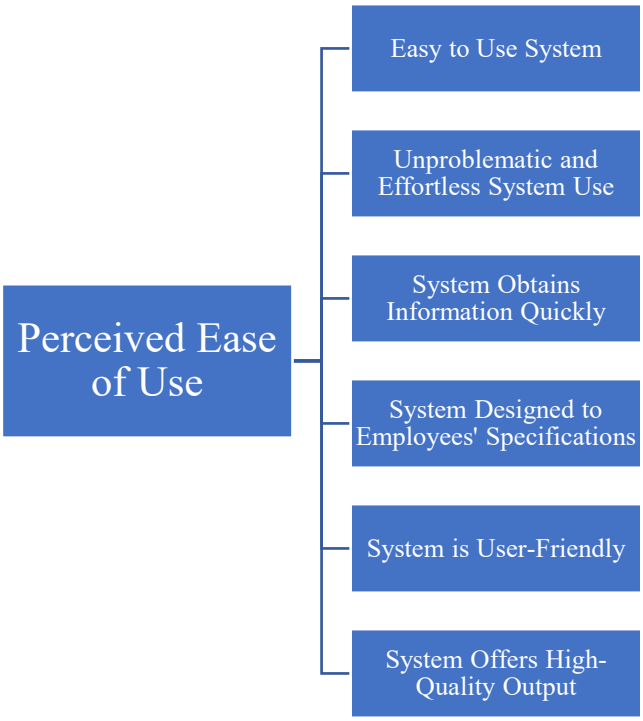

Figure 5.25: Emergent Themes on Perceived Ease of Use

5.3.7. Perceived Trust

This section seeks to determine the extent to which the interviewees trust the IS of the hotel they work for and whether they perceive trust to be an important element that contributes to the performance and effectiveness of the system. In an IS context, trust generally describes systems that have the ability to carry out safe and secure transactions and can project a feeling of dependability and trustworthiness (Pavlou, 2003). The ability of the system to carry out safe and secure transactions has already been covered both in the System Characteristics section and in the System Quality section. Because of this, it will not be analysed further in order to avoid repetition. Hence, only dependability and trustworthiness will be considered.

All the interviewees highlighted the importance of having trustworthy and dependable systems in the workplace. They also affirmed that they trust the systems they currently work with, but also saw room for improvement. The F&B Manager B confirmed that the hotel managers trust the systems they work with:

> "*I do trust the systems because I have no reason not to. But I believe there is always room for improvement with systems because as technology advances so do the systems.*"

The HSK Manager B stated:

> "*I trust the Information Systems at the hotel. Of course, there is always room for improvement and the hotel industry is developing all the time and it is up to the designers and the developers of these systems to enable the improvements to happen.*"

From the managers' interviews it can be deduced that they view trust as an important element of an effective system. They also trust the IS and depend on them to do their jobs. Perceived Trust is a transparent and self-explanatory term which, as pointed out above, denotes the level of trust that users show towards IS (Figure 5.26). If employees trust the systems they work on and they feel confident and secure in using them, their performance improves, which is beneficial for the hotel and ultimately translates into a system being successful. Yet, in order for trust to grow, users need to feel that the system they use is dependable (McCole, 2002) and that it projects a sense of trustworthiness (Chen, 2006). In addition, an IS must be ever improvable, supporting refinement mechanisms and allowing users to 'teach' the system their preferences (Chen and Prasanna, 2012).

The Nights Manager B described that Perceived Trust leads to User Satisfaction, even in environments that system use is mandatory:

"We chose to work here but we did not choose the systems we are using. The systems are property of the hotel and we have to use them day in day out; not using them is not an option. But if we trust a system that we use daily anyway, it makes our interaction with the system easier and, even though it increases our dependence on the system, we feel more confident in using it. This also helps us use these systems in the long run."

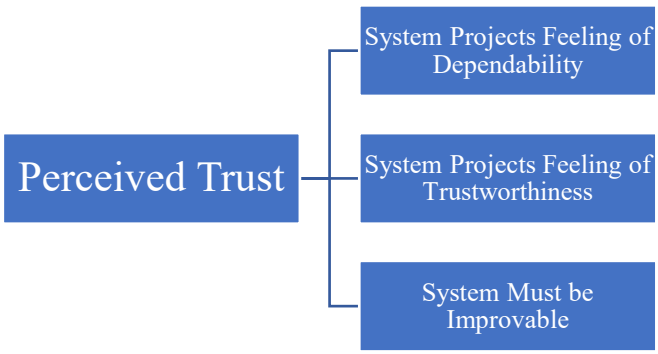

Figure 5.26: Emergent Themes on Perceived Trust

5.3.8. User Satisfaction

User Satisfaction is one of the most widely referred to dimensions of IS evaluation. The IS literature is abundant with studies that examine User Satisfaction, albeit from the point of view of the customer, or guest if in a hotel setting. This study concentrates on the hotel employee perspective, and as a consequence User Satisfaction, particularly in the interview process, is looked at with this principle in mind. It has been put forward that any analysis of User Satisfaction should embody the entire experience, including information retrieval, transactions, and the overall performance of an IS (DeLone and McLean, 2004). DeLone and McLean (2002) have even gone as far as claiming that User Satisfaction is sometimes synonymous to IS success.

General Experience of IS Use

This section intends to capture and analyse the thoughts of the hotel managers on the general experience of using IS daily. The interviews suggest that the hotel managers were satisfied with the routine of their daily interaction with the systems and the general experience of utilising them. The HSK Manager B acknowledged that the general experience of using the systems is positive as they assist employees with their duties:

> "*The general experience of using the systems is great; they help me do my job."*

The CON Manager B also referred to the high quality of the general experience of using the systems and underlined their contribution to customer service:

> "*The general experience of it is that it is a very good system, the information that we obtain from it is accurate, informative…and therefore the guests' perceptions of their whole experience here is being enhanced.*"

The GRM B referred to how the experience of using the system enhances the quality of work of the hotel employees and how it simplifies their duties:

> "*Sometimes when I have to deal with a serious issue or complaint, I will have to go to the system, retrieve previous data for this particular guest and either issue a refund or input notes on their guest profile. Also, when a group of VIPs arrive I have to consult the system and find their preferences. All these little journeys I take within the system pose a welcome challenge for me; it is one of the things that motivate me to come to work every day. So, yes I am satisfied with the way our systems work."*

Overall Performance of IS

The purpose of this section is to collect the hotel managers' viewpoints with respect to the overall performance of the systems they use on a daily basis. All interviewees declared that they were pleased with the manner IS at their

respective places of work function. The HSK Manager B expressed a feeling of contentment when it came to the manner the IS operated:

> *"The overall performance of all the systems that I use is perfectly satisfactory for what I need to do on a day-to-day basis, so at the moment I do not have any problems with it.*"

This view was echoed by the F&B Manager B, who emphasised the quick responsiveness of the systems and their ability to assist with carrying out daily tasks:

> *"The overall performance here is actually really good. I mean I can complete the tasks that need to be done because they* (the systems) *help me do these tasks quickly and they are also responsive and that is what is essential for me."*

It is clear that the hotel managers believe that the overall performance and the general experience of using the systems are above acceptable and satisfactory. The themes emerging from this section are presented in Figure 5.27 below. As per the hotel managers' interviews, User Satisfaction is affected by the performance of the system, or more specifically, by the system's capacity to simplify operations and assist with effective and efficient task completion. It is logical to assume that a user will be more satisfied with a particular system that enables him/her to complete any given task with fewer

'clicks' than another, comparable system, given that the quality of the resulting completed task is the same for both systems. The same principle applies to food and beverage environments. A restaurant manager would prefer a system that enables instant communication between the different areas of the restaurant: the waiter takes a food and drinks order from the customer on a tablet-based IS. The system then automatically charges the order to the POS (point of sale) till register, while at the same time sending the order to the chefs to start preparing the food and to the bar to begin making the drinks. Such a system saves the waiter time and effort, simplifies operations, and also minimises the margin for human error. The functionality of the system and the quality of its output, together with their impact on user performance have been advocated by Etezadi-Amoli and Farhoomand (1996) and Vaezi, Mills, Chin and Zafar (2016). Further important attributes associated with User Satisfaction include the quality of the general experience of using the system and the overall system performance (Griffiths, Johnson and Hartley, 2007). Hildreth (2001) argues that User Satisfaction should be gauged with additional dimensions such as Perceived Ease of Use and Perceived Usefulness.

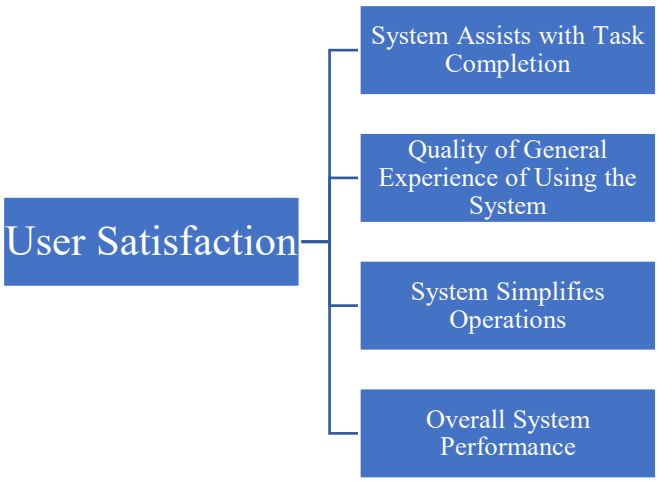

Figure 5.27: Emergent Themes on User Satisfaction

5.3.9. Social Norms

Subjective norm is closely linked to attitudes, behaviours, and intentions that individuals form during the process of technology adoption. Understandably, the more unproblematic and swifter the process by which users are able to adopt a system is, the more successful this system will be. This section focuses on determining the extent to which the interviewees' intentions/attitudes/behaviours to use a system have been influenced by their colleagues' beliefs about these systems. The replies of the hotel managers suggest that they acknowledge the presence of subjective norm as an element that influences the intentions or attitudes/behaviours of employees to use systems in their workplace. Characteristically, the F&B Manager B stated:

> "*I think subjective norm is something that definitely happens within the workplace and within society. People have a tendency to be influenced by other people who they consider as influential or a role model, so it is bound to happen."*

Recalling the experience of having to change payroll systems recently, the HSK Manager B stated:

> *"Some of the employees do not particularly like it* (the new system)*; however, me as a manager, I have to speak to my team positively about it because it is a system that has been put in place and it is a system that*

the staff have to use. So, the more positive behaviour and attitude I have towards that it does reflect on my colleagues."

From the above statement it can be assumed that if a hotel manager forms a belief with regards to one of the systems in place and communicates that to employees, the latter are likely to share that belief and this may possibly affect their System Use. In general, it is evident that he hotel managers believe that subjective norm exists within a hotel environment. They also accept that their intentions/attitudes/behaviours to use a system can be influenced by their colleagues' beliefs about these systems (Figure 5.28). "*If a new system comes out and the company agree to purchase it for the hotel, I have to have a look at it first. Most of the times, the systems are really easy to use and very effective for what they are being bought to do. However, even if a system is complicated, I still need explain it as plainly as possible to the hotel staff. If I am training them on it, I have to 'promote' it as an uncomplicated and straightforward system, because for them, I am the one that knows this system inside out and they trust me*." (IT Manager B). Research indicates that major antecedents of subjective norm are governed by the reality that employees' perceptions and decisions are influenced by colleagues (peer influence) as well as by managers (superiors influence) (Taylor and Todd, 1995). Moreover, it has been suggested that managers and individuals in senior roles within an organisation should be the figures that lead with positive attitudes when it comes to System Use (Talukder and Quazi (2011).

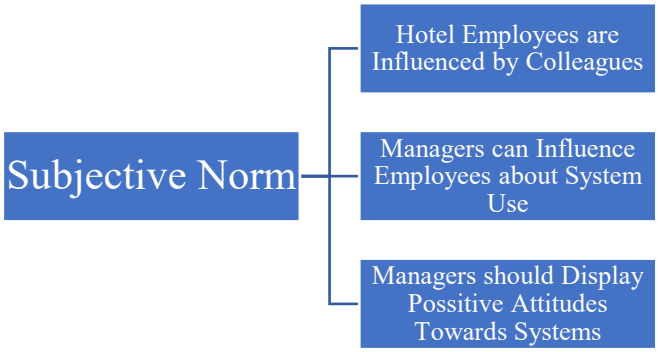

Figure 5.28: Emergent Themes on Subjective Norm

5.3.10. Intention to Use / Reuse

Intentions, attitudes, and behaviours represent dynamic forces that, in the IS evaluation context, are associated with technology adoption and acceptance paradigms, and theoretical models such as the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1991), and the Technology Acceptance Model (Davis, 1989). These concepts, also known as intention-based theories, seek to establish the determinants of users' behavioural intentions to adopt and accept new or existing systems. The main focus of this section is to collect and analyse the views of the hotel managers on attributes that are associated with the Intention to Use/Reuse dimension. With this in mind, an effort is made to ascertain the existence of a relationship between User Satisfaction and Intention to Use. Another ambition is to determine whether the hotel managers would recommend the systems they presently use to colleagues from other hotels, whether they would talk positively about their online capabilities, and whether they would use the current systems in the future, given they had a choice in the matter.

Intention to Use

It is logical to presume that if hotel employees are satisfied by the systems they use at present they will have an intention to continue to use these systems, if given a choice. Thus, in order to determine if a hotel employee intends to use a system, it has to be ascertained whether a relationship between User Satisfaction and Intention to Use exists. The responses indicated that the hotel managers accept a relationship between User

Satisfaction and Intention to Use exists in their workplace. The F&B Manager B stated that, if given a choice, Intention to Use would be dependent on whether the system could cover business needs, which is basically another way of defining User Satisfaction:

> *"As hotel employees we don't have much of a choice when it comes to system use. However, I feel that if we use a system that we like and it covers my business choices and preferences, then I would be inclined to use it in the future."*

The CON Manager B confirmed that intending to use an IS would hinge on the user's satisfaction with the system:

> *"Within our industry I personally do not have a choice of which system I use. The system I use is the hotel system; therefore, I am obliged to use that system. However, if there was a choice to be had, I would continue to use the same system. There are certain systems I would continue to use because I enjoy using those systems and they can give me the information I need, and those are in a choice situation."*

FC B pointed out that Intention to Use is set according to User Satisfaction, especially if the users are happy with all aspects of the system and if the systems set the industry benchmark:

> "*As far as I am concerned, our systems are the best around. We always look at the industry and try to identify what are the best and most financially viable systems out there, and if we need them, we acquire them. The staff seem to be really happy using the systems we have in place; I've certainly had no complaints. So as a hotel we are satisfied with the systems we have, and we intend to keep using the same systems for the foreseeable future."*

Therefore, it has been verified that the hotel managers would be content to continue utilising the systems they work with because they are satisfied by the capabilities, overall performance, and general experience of the IS they currently use. The next step in the process of establishing the Intention to Use/Reuse dimension is to determine whether repeated use (Reuse) will take place in the future.

Intention to Reuse

The purpose of this section is to identify whether the interviewees would be confident to use the existing systems in the future. The hotel managers revealed they would not only talk positively about the online capabilities of the systems, they would also recommend these systems to colleagues from other hotels. Underlining the efficiency and security of the IS, the CON Manager B also drew attention to its popularity and overall design:

"*Absolutely, I would recommend the system. It is an efficient and secure system and I believe that other hotels are using it as well. So it is a very commonly used and well thought-after system.*"

The GM B spoke about the system's capacity and effectiveness:

"*Yes, I would recommend the system. I think it is very effective, it has a huge amount of capacity, and we have just set up for some additional training now to take place because we established that we are not as effective and as efficient as we could be with the system, but that is a skill gap as opposed to a system issue.*"

The GRM B, who has used several different systems in the past revealed that Intention to Reuse could be dependent on a system's future potential:

"*I always talk about the systems with my colleagues and it is always a topic for discussion when we meet from managers from other hotels. For me it is not only about what the system offers you at the moment, it is also what it will be able to do in the future. Our system seems to be future-proof, I mean the interfaces and menus look like they can evolve in line with any future technological developments. It is a system that is ready for the next generation of options and capabilities."*

Finally, all managers declared that they would unreservedly use the current systems in the future, even on a voluntary basis. The CON Manager B explained that the main reasons behind this were the system's usefulness, accuracy, and security:

> "*I think I would use it on a voluntary basis because the system is so informative, accurate and secure.*"

Drawing from 22 years' experience of working with different systems, the GM B remarked about recommending the current systems:

> "*Yes, I would, there is no question. I have used lots of different systems and I am happy using the systems that we operate with currently and would continue to do so even if it was not a necessary part*"

With regards to the Intention to Use/Reuse dimension, the following conclusions can be made: the managers recognise the presence of the relationship between User Satisfaction and Intention to Use/Reuse, they would talk positively about the online capabilities of the systems they currently use as well as recommend them to colleagues from other hotels, and they would be very keen to continue using the current systems in the future. It is quite clear that if employees would talk positively and recommend the systems they use, they would also believe that these systems are effective and successful. Generally speaking, the literature supports the notion that User Satisfaction has an impact on Intention to Use/Reuse. Oliver (1999) posits that satisfied system users will exhibit a greater Intention to Use, demonstrate a more

notable reuse intention, favour positive word-of-mouth and have a lower propensity to look for alternatives. Likewise, Kim, Jin and Swinney (2009) suggest that if a system can fulfil all the business needs of an organisation and is perceived as having the potential to be used in the future, users would use the system in the future (Intention to Reuse) and would be happy to recommend it to colleagues. Consequently, it can be inferred that once users reach certain levels of satisfaction with prior use of an IS, their perceptions of satisfaction will shape any future reusage intentions (Belanche, Casalo and Guinaliu, 2012). All the above can be summarised visually in Figure 5.29.

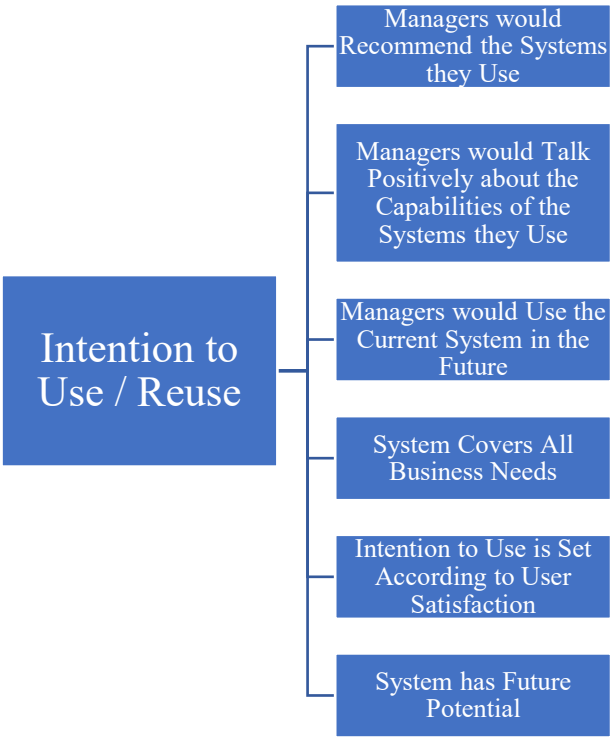

Figure 5.29: Emergent Themes on Intention to Use / Reuse

The plethora of themes and sub-themes that have emerged from the analyses of the perceptions of the interviewed hotel managers with respect to IS evaluation frameworks/approaches and their accompanying dimensions can be synopsised visually in Table 5.4, below.

Table 5.4: Emergent Themes on IS Evaluation Frameworks and Dimensions

A summary of Tables 5.2 and 5.4 onto a single table (Table 5.5) brings to light the full depiction of all the themes/dimensions emerging from the hotel managers interviews, consisting of the managers' perceptions of IS Use and factors contributing to IS strategies, in addition to the managers' perceptions of IS evaluation frameworks and dimensions.

IT Training
Senior Management Support
System Characteristics
Troubleshooting/Backup/Failure Recovery Procedures
Perceived Employee Benefits
Perceived Organisational Benefits
System Quality
Information Quality
Service Quality
Perceived Usefulness
Perceived Ease of Use
Perceived Trust
User Satisfaction
Subjective Norm
Intention to Use/Reuse

Table 5.5: Emergent Themes from Hotel Managers Interviews

5.4. Summary

This chapter has presented and analysed the results of the interview process. Initially, key IS evaluation themes, which had been previously identified by the literature review section, were reorganised together with the questions used during the interviews. This was followed by a detailed assessment and presentation of the responses of the interviewees (hotel department managers from 4star, full-service hotels). These responses were then thematically categorised, and the findings were discussed, with a focus on established subjects and newly discovered areas, variables, or arguments emerging from the interviews.

The main outcomes of the interview analysis included the corroboration of all the IS evaluation dimensions identified by the literature review, with some minor adjustments regarding the variables within them. For instance, two measurements assessing system design within the System Quality dimension, namely playfulness and sense of enjoyment were found by the interviewees to be insignificant. Similarly, the use of company colours and recognisable logos, which measure empathy within the Service Quality dimension, were also regarded as not significant.

One of the most important outcomes that came to light by the interview process was the emergence of two new variables, previously unidentified by the literature. First, the location of the network server was initially discovered

in the first set of interviews as some of the hotel managers suggested that a server located near or on property could improve connectivity issues and might result in fewer problems and more reliable and responsive systems. These views were verified by the second set of interviews, where the location of the server was allocated a separate question and the interviewees confirmed its importance. Since attributes such as response time, speed, and reliability are associated with System Quality, it was decided that the location of the network server was going to be added to this dimension. In a similar fashion, the location of the system support service centre personnel was also added to the System Quality dimension, as the variables that assess system support services and their personnel belong within it.

The ensuing chapter will attempt to put the interview process into perspective by providing a thorough analysis and interpretation of the findings. This analysis is devised to lead to conclusions regarding the views of the hotel managers on the different IS evaluation dimensions and measures. Moreover, the interview analysis will be incorporated into a discussion about how the primary data relates to the literature and about their collective impact on the development of this thesis.

Chapter 6: Interview Findings Discussion

6.1. Introduction

While the previous chapter revealed the results of the interview process, the main purpose of this chapter is to provide a discussion based on these results. The findings are once again arranged thematically and analysed in order to establish which IS evaluation dimensions and themes have been considered as significant by the interviewees. Moreover, the findings are assessed with reference to the literature review in order to create linkages between primary and secondary research. Finally, conclusions are drawn from the results and the analysis of the interview process, leading to the presentation of the Proposed Integrated IS Success/Technology Adoption Model of this thesis. Even though the model is not empirically tested, hypothesised relationships between its dimensions are presented, based on the literature.

6.2. IT Training and Facilitating Conditions

The purpose of this section was to establish whether the interviewees have had any IT training prior to using the current IS and to assess their perceptions regarding the importance of IT training. A further intention was to determine if the current systems are easy to be trained on, and to verify whether employees have ample time and resources to use systems to their full potential. Most hotel managers admitted that they have not had IT training prior to working within hospitality, a trend that conforms to the present status quo in the industry. Moreover, the managers acknowledged that the IT training they had received while working for their respective hotels was particularly valuable, adding that the systems were reasonably easy to be trained on and that the necessary facilitating conditions (resources and time) for optimal system use were available.

The topic of IT training has been raised in the literature review section of this thesis (Chapter 3). Igbaria, Guimaraes and Davis (1995) describe IT training as the extent to which individuals have been trained on IS through college courses, in-house training and self-study- a definition that is consistent with the findings of the interviews conducted: as already mentioned, only two of the hotel managers have had college training on IT, while the rest have received in-house IT training (throughout their careers, in the hotels they have worked at). The importance of IT training is emphasised by Choi *et al.* (2007) who not only agree that it is highly advantageous, but also maintain that the benefits go beyond merely learning how to use a system because IT training can

additionally facilitate positive attitudes towards IS and amplify user acceptance. Similarly, Koh, Gunasekaran and Cooper (2009) advise that IT training is a necessary prerequisite for the successful implementation and operation of systems, whereas Sabherwal *et al.* (2006) note that effective training can facilitate user involvement in IS development.

Despite this, Ho, Arendt, Zheng and Hanisch (2016) argue that little attention is given to the significance of hotel employees' training evaluation in real life. Albeit focusing on employee training, their study is similar to the current study in the sense that they interviewed hotel managers in order to attain insightful information on training practices within the hotel industry. Their results identify observation as the most common method of evaluating training. For this study the results of the interviews indicate that hotel managers, through daily observation and monitoring, consider IT training to be a crucial factor that sets in motion an essential transition for hotel employees: starting at a beginner level, progressing to become a moderately-skilled system user, and finally reaching a level of expertise. It is no coincidence that all interviewees who have been using IS in their respective roles for a considerable amount of time are expert users of these systems. It is logical to presume that they have attained this level of proficiency by means of lengthy training, continuous practice, and by exploring the system on a daily basis. In addition, despite the fact that eleven out of the fourteen interviewees have not had IT training at a college/university level, they are all in unison believing that the IT training they have received at work has played a major role for the development of their careers in hospitality. This is supported by the findings of Dhar (2015), who

maintains that the more an organisation keeps offering effective training programmes to employees, the more the latter feel that the organisation expresses a willingness to invest in them. This, in turn, makes them loyal and committed to their employer and more likely to stay at the same company for longer (Brunetto, Farr-Wharton and Shacklock, 2012). Thus, the level of employee IT training has been established as a significant theme in this study.

The same can be claimed about facilitating conditions (resources and time), since the interviewees suggested that without the necessary resources and time to use the systems, they would not be able to use IS to a level that maximises efficiency and productivity. This is supported by Wang and Luo (2018) who suggest that facilitating conditions, alongside training opportunities and degree of attention are factors that increase hotel trainee employees' job satisfaction, their productivity and their sense of belonging to the hotel. Woods, Johanson and Sciarini (2012) also emphasise the importance of facilitating conditions and training as crucial paths in boosting productivity and motivation amongst employees. Facilitating conditions appear in the Model of PC Utilisation (Thompson *et al.*, 1991), UTAUT (Venkatesh *et al.*, 2003) and UTAUT 2 (Venkatesh *et al.*, 2012) as the perceived importance of organisational and technical infrastructure to support IS use (Dwivedi *et al.*, 2019). Sandeep and Ravishankar (2014) maintain that facilitating conditions influence attitude, since the availability of resources such as training and help desks, for example, may be instrumental in aiding employees to form positive attitudes about the technology. Therefore, hotels should be inclined to provide adequate infrastructural facilities and suitable training to their employees so

they can be motivated to adopt and use new technologies (Rana, Dwivedi, Lal, Williams and Clement, 2017). Venkatesh *et al.* (2003) argue that in specific contexts when constructs like performance expectancy and effort expectancy are present, facilitating conditions become inconsequential in predicting behavioural intention. It has to be noted that hotels, where use of the systems is compulsory, are indeed an environment where performance expectancy and effort expectancy are both evident. Hence, the suitability of facilitating conditions as an IS evaluation dimension for the purposes of this study might be questionable to begin with. However, there exist a number of studies that defend their inclusion, even in cases where performance expectancy and effort expectancy are clearly manifested. For instance, Chiu, Fang and Tseng (2010) explore behavioural intentions in the context of service innovations and find that facilitating conditions have a mediating effect on Intention to Use/Reuse. Further studies that reinforce this view include Lee and Lin (2008), Schaupp, Carter and McBride (2010), Carter, Schaupp, Hobbs and Campbell (2012).

6.3. Senior Management Support

The main reasoning behind this section was to uncover the extent of senior managerial support available throughout the replacement or procurement procedure of software/hardware products in hotels. This section also sought to identify whether senior managerial support is an important factor during systems acquisition/substitution processes. Although typically a centralised process overseen by each hotel chain's head offices, the hotel managers perceived IS acquisition or substitution as a relatively effortless procedure, vastly supported by senior management. Top management support has long been recognised in the literature as a critical success factor (Garrity, 1963; Doll, 1985) and most practitioners and academics are in agreement when it comes to its importance and necessity (Markus, 1981; Lederer and Mandelow, 1988).

Symptomatically, all interviewees endorsed the level of support provided by senior management during IS replacement/procurement periods and identified employee benefits that spring from the presence of managerial support during IT replacement. Managerial support during IT replacement periods has been the subject of criticism within the literature mainly due to the lack of clear definitions and practitioner-led prescriptions that can influence top managers' behaviours (Young and Jordan, 2008). As a result, most IS research efforts to delineate top management support advocate about its importance, yet they only pay lip-service to this idea because they fail to substantiate and support it (Jarvenpaa and Ives, 1991; Huff, Maher and Munro, 2006).

The hotel managers confirmed that hotels and their day-to-day operations benefit from having the latest hardware and software applications (which is accomplished by frequent IT replacements supported by senior management), whilst employees' tasks and responsibilities become easier to perform by systems that are faster, uncomplicated, and current. Doll (1985) argues that often the requirements for top management resources are extremely demanding because they are developed to improve the technical qualities of the systems and increase User Satisfaction but pay little attention to the objectives or interests of top managers. In simpler terms, although the presence of top management support is regarded as inherently beneficial to the organisation and its employees, there is also evidence to suggest that too much support can bring dysfunctionality and may sometimes lead to failure (Keil, 1995).

There are two main conclusions to be drawn from the interviewees' responses. First, the process of IS replacement/procurement appears to be generally homogenous within large chain hotels because, as a rule, all hotels within this sector seem to follow the same procedure when changing their systems. The procedure starts from each department identifying their technology needs and communicating those requirements to senior management who, usually in the form of the general manager, pass the information on to the company's headquarters or head office. The latter consider the benefits of the proposals and eventually make a decision, which if positive, results in the hotel department receiving permission and the desired equipment or software is finally delivered by means of a supplier who is normally contracted to supply

all the hotels within the chain. This is supported by Young and Jordan (2008) who maintain that senior managers have the freedom to offer or withhold their support depending upon whether desirable benefits are being targeted and realised; if they are being realised, the proposal (IS replacement or procurement) will come to fruition successfully leading to effective corporate governance (Young and Jordan, 2008).

The second major conclusion lies in the fact that all the hotel managers interviewed are in agreement when it comes to the degree of senior management support in times of IS replacement/procurement. More precisely, every interviewee believes that the level of senior management support during this type of process is no less than satisfactory. This approval for the support provided by senior management stems mainly from the willingness of the latter to listen to departmental propositions regarding the substitution of existing technologies within each hotel. Moreover, according to the interpretations of the interviewees, the high-ranking managers within the hotels' hierarchy (usually the general manager or the director of operations) are keen to offer training courses for their employees on newly installed IS, seem to be open to ideas and suggestions from sources outside their own organisation, and often follow benchmarking or best practices approaches generated from other hotel chains or institutions within the hospitality industry. On account of the above notions, senior management support is perceived by the hotel managers as an important element of IS evaluation because shortage of support might translate into lack of system upgrades/replacements, which in turn means that hotels would not have the latest technology available and would not be able to

compete with their rivals. On this notion, Luftman and McLean (2004) and Nelson (2007) warn that IT investment has to be meticulously planned instead of being thrown into disarray; they maintain that successful governance is not exclusively based on being technology-focused but should be built on how IS can deliver value to organisations.

It is important to note that apart from IT Training and Senior Management Support, the first set of interviews has produced a further two dimensions, namely System Characteristics and Troubleshooting/Backup/Failure Recovery Procedures. However, since the sub-themes within these dimensions are closely linked with the system and service elements of an IS, it has been decided to include these sub-themes within the broader System Quality and Service Quality dimensions, analysed subsequently.

6.4. Perceived Employee/Organisational Benefits

Regardless of whether the use of IS becomes mandatory or voluntary, it has to produce some benefits for the end-user, which in the case of the present study is the hotel employee. Therefore, the interview process aimed to collect the perceptions of the hotel managers on the importance of having IS in their workplace and the presence (or lack of) any employee or organisational benefits arising as a result of using IS. All respondents were in agreement that hotels would not be able to operate without IS and that discernible benefits, resulting from the use of systems, exist for both employees and organisations. It was also found that IS enable employees to complete day-to-day tasks in a swifter and more effective manner, which leads to enhanced performance and greater levels of guest satisfaction. At the same time, the range of functions that the systems possess such as the capacity of the system to incorporate guest profiles and preferences, membership statuses, and complaint tracking tools, makes it possible for hotels to sustain levels of service. It was also mentioned among the interviewees that the lack of systems in the hotel industry would have a catastrophic effect as operations would have to go back to a pen and paper era.

Another employee benefit acknowledged by the hotel managers was that, as a general rule, with continued use of IS, employees can attain a degree of expertise that enables them to utilise different system functions to optimum levels, which ultimately gives rise to better customer service provision. In addition, the use of IS delivers a different benefit in terms of employee

development, considering that systems can facilitate skill improvement and career progression for employees. The hotel managers confirmed that IS have enriched their experience and knowledge of the hotel they work for. Furthermore, the interviewees identified organisational benefits springing from the use of systems, including efficient payroll control and informed decision-making. Emphasis was laid on the capacity of IS to support data assessments, data processing, and results/statistics analyses, as it was established that without systems such tasks would have been unmanageable, and hotels would have been incompetent in analysing trends or following developments taking place within the industry.

The views of the managers regarding employee and organisational benefits stemming from the use of IS are consistent with the findings of the literature review. For example, Ham *et al.* (2005) advocate that the use of systems in a hotel environment produces benefits such as better job performance, improved operational efficiency and enhanced customer service. According to Hensdill (1998:51) "*there is no denying or avoiding it, automation has become the arbiter of success in the industry…without it, failure is just a matter of time*". Other researchers suggest that the use of IS can bring about benefits including an advancement in customer knowledge (Loftus, 1997) and an improvement of customer experience (Hoffman and Novak, 1996). Karlinsky-Shichor and Zviran (2016) find that Perceived Benefits are influenced by user IS competence and organisational attitudes towards technology adoption, in addition to being positively associated with customer satisfaction. Gan and Wang (2017) discover that Perceived Benefits have a significant effect on User

Satisfaction, which further influences Intention to Use/Reuse, implying that hotels should take measures to develop the system satisfaction of their employees by strengthening their Perceived Benefits and minimising their perceptions of risks associated with IS use. They maintain that an avenue to achieving User Satisfaction is to retain employees that exhibit acceptable levels of IS competency and intensify their system training in order for them to reach expertise use levels. Finally, in the context of organisational benefits, Spathis (2006) confirms the viewpoints of the interviewed hotel managers by stating that an organisation can benefit from effective IS use in terms of reduced times for processing payroll, enhanced financial report management, improved decision-making process, increased internal communication, and superior quality of reports.

The concept of Perceived Benefits appears in several IS evaluation studies, sometimes under a different name depending on the area or topic of research. Academics have recommended a number of IS impact and benefits measures, such as individual impacts (DeLone and McLean, 1992; Torkzadeh and Doll, 1999), work group impacts (Myers, Kappelman and Prybutok, 1997), organisational impacts (DeLone and McLean, 1992; Mahmood and Mann, 1993), and inter-organisational impacts (Clemons and Row, 1993). In their updated model of IS success, DeLone and McLean (2003) maintain that IS use together with user satisfaction interdependently give rise to a new dimension called net benefits, which takes account of a wide range of stakeholders such as users (employees), customers, suppliers, markets, organisations, industries, and society as a whole.

In a study of hotel front office systems, Kim *et al.* (2008) use the term 'perceived value' to describe the overall assessment of the use of a product or a service. According to Wirtz and Lovelock (2016), perceived value can be synopsised as a trade-off between Perceived Benefits and perceived costs. Seddon (1997) argues that if seen from the perspective of the user (in this case hotel employee), 'perceived value' becomes a net benefit. Although he defines net benefits in the context of expenses and profits, a definition attributed to marketing papers, Seddon (1997) confirms that the former are a factor for successful IS. Kim *et al.* (2008:503) state that "*net benefit is the practical application in the use of IT*". However, the terms within which Kim *et al.* (2008) and Wirtz and Lovelock (2016) define 'perceived value' are based on findings from the marketing literature that are relevant to consumers and the purchasing decisions they make. Given, therefore, that this study is about IS evaluation from the point of view of hotel employees and not hotel guests or consumers, the term 'perceived value' does not appear to be entirely appropriate as it cannot encompass notions such as the experience or the knowledge employees acquire about their hotel or their guests through the use of IS. Moreover, 'perceived value' is linked to marketing and management dynamics including profits and costs, while this thesis is specific and exclusive to IS evaluation. As a result, the use of the term 'Perceived Benefits', which includes both employee and organisational benefits, has been selected as more suitable for the purposes of this thesis. Alshawi *et al.* (2011) highlight Perceived Benefits among a range of organisational factors that affect the level of IS adoption and success within a company. Further research on this topic comes from Wu and Wang (2006), who indicate that Perceived Benefits are

influenced by other IS evaluation dimensions including System Quality and Information Quality, both analysed subsequently.

Adam and O'Doherty (2000) note that despite the benefits that usually relate to IS adoption, there is also a high element of risk involved in the introduction of new IS, due to the complexity of these systems, with some organisations achieving only a few of the benefits they originally targeted (Martin and Cheung, 2005). In general, the realisation of benefits is limited within the IS sphere due to people, technology, or process-driven barriers (Hawking, Stein and Foster (2004), with the main barrier being organisational change (Khawk, 2006). Reducing the volume of barriers is an undertaking that has divided academics, with one school of thought suggesting that barriers ought to be eradicated before the new system goes live (Saatçıoğlu, 2007; Teltumbde, 2000), and the other insisting that the only way to achieve perfect implementation and adoption is to include end-users in the process (Light, 2005). While this study cannot accept that a perfect implementation or adoption process exists, it is evident from the findings of the interviews that at least a section of the hotel managers (GRM B, GM B, FC B) believe that users should be involved, or in any case, consulted in both the design and implementation processes.

There are a number of benefits that can be attained by employees working in the hotel industry. For instance, receptionists make use of the PMS (Property Management System) on a daily basis. Apart from the benefit that they have

a tool that simplifies their job, they also gain knowledge of how to use the PMS and, at some point, become skilled at operating the system and utilising its functions. Those skills are transferable and experienced employees can use them to train new starters at the hotel. Furthermore, they can add those skills in their resumes, as knowledge of PMS is a valuable qualification that hospitality recruiters look for. The same applies to hotel employees that work within other departments such as payroll or sales and marketing.

6.5. System Quality

System Quality is a well-documented dimension of IS evaluation that embodies the technical characteristics of a system. Such characteristics have been identified by the literature review to be valid predictors of IS success and include speed and response time, reliability, accessibility and flexibility, safety and security, as well as system design characteristics. The importance of system characteristics as measurements of IS success was first highlighted in the early 1980s by Hamilton and Chervany (1981). The interviewees confirmed that the System Quality attributes are indeed important components of a successful IS, in particular when it comes to functionality and system capabilities. These attributes are analysed below.

6.5.1. Speed/Response Time

Response time determines the time frame in which a system responds to a user request and poor responsiveness has been found to discourage the use of an IS (DeLone and McLean, 2004). It was clear amongst the interviewees that speed or response time is one of the core factors affecting the daily operation of an IS and contributing to the customer service efforts of a hotel. In the literature, response time, speed and system responsiveness have been depicted as antecedents of IS success by Tiwana (1998) and Molla and Licker (2001). Another measurement very closely linked to responsiveness, download time, has also been found to affect IS success (Lohse and Spiller,

1998; Palmer, 2002). Kitsios, Stefanakakis, Kamariotou, and Dermentzoglou (2019) state that despite advances in hardware speed and data communication bandwidth, issues of slow response times and system performance remain a real concern that can lead to user dissatisfaction and poor employee performance (Hoxmeier and DiCesare, 2000). Both speed and response time of an IS have been identified by the interviewees as important elements of System Quality, since they enable employees to offer better customer service with less delays and, thus, less complaints and negative feedback. Shneiderman (1998) agrees that faster response times generally lead to increased User Satisfaction and warns that the opposite may result in users choosing to discontinue using a particular system and opting to find an alternative. However, this notion is not as straightforward as it appears, as there is uncertainty over whether a user's perception of a system depends entirely on response time. Moreover, it is difficult to determine the exact point at which users become dissatisfied with an IS and look for another system (Hoxmeier and DiCesare, 2000). Response time is a significant factor in hotel operations. A large proportion of guests, especially business guests, have limited time when interacting with hotel staff. When checking in at a hotel they would be irritated if the process took, for example, twenty minutes due to the systems being slow in downloading information. Likewise, if a guest asks for a document to be printed by the concierge team, he/she expects this task to be performed momentarily and it would be debatable whether a long delay due to slow printer response time would constitute good service. Such service failures may seem inconsequential but sometimes they are the difference between a great and an average guest review. Therefore, since response time

is affecting the levels of guest satisfaction, hoteliers must ensure that the systems are well-maintained, regularly renewed, and that the hotel subscribes to an Internet provider that supplies fast service.

6.5.2. Reliability

Reliability is a decisive factor that is responsible for flawless and uninterrupted system performance. Systems are designed with precise specifications and configurations in mind and reliability gauges the extent to which these specifications are followed (Tiwana, 1998). Other scholars that have identified reliability as a significant IS evaluation component include Liu and Arnett (2000), Ünal (2000), and Molla and Licker (2001). The interview findings suggest that constant system disruptions or a generally unreliable IS can have a catastrophic effect on the operations of a busy 4 or 5-star hotel, an environment that demands impeccable service provision, which is largely reliant on how dependable and available an IS can be. Schay, Beach, Caldwell and LaPolice (2002) define reliability as the ability of a system to perform the expected service accurately, dependably and consistently. As mentioned in the previous chapter, times where systems are not operational (outage or downtime) can have serious cost implications for hotels (Andrus, 2018). Wixom and Todd's study (2005) supports the view that reliability is a significant determinant of System Quality, as according to their calculations, the former (together with flexibility and integration) accounts for 74% of the total variance in System Quality. The importance of reliability as a system characteristic is

also confirmed by Bharati and Chaudhury (2004) who highlight reliability, Ease of Use, and convenience of access as crucial elements of a successful system. Kim, Lee and Ham (2013) report that reliability enables a system to perform in line with the standards or specifications it was designed for; they also indicate that a reliable system refines operational management. Dreheeb, Basir and Fabil (2016) advocate that a reliable system is able to maintain a listed level of performance, with minimal crashes, under stated conditions and for a stated period of time. Furthermore, Barua, Aimin and Hongyi (2018) theorise that a reliable system can enhance employee performance and form the basis of an undisrupted and well-organised operation that can sustain an organisation's competitiveness.

In a busy environment such as those in 4 and 5-star hotels, unreliable systems that break down frequently can cause serious problems including service disruptions and unsatisfied guests. Apart from guest dissatisfaction, system unreliability can also have severe financial repercussions for hotels. Patterson *et al.* (2002) argue that downtime or outage, which is the period during which systems fail to perform or are unavailable, is one of the major disruptions that a hotel business can encounter. Andrus (2018) notes that organisations are losing an average $100,000 for every hour of downtime on their websites. If a hotel was to experience a short outage of one to two hours, unable to proceed with check ins and basic services, customers would feel less inclined to visit the hotel in the future and would consider using a rival. If the outage period was for one or two days, the impact would be nothing less than catastrophic as the hotel could lose its customers forever and its reputation would be

tarnished (Gough, 2018). Hence, hotels should agree on organisational costs for both shorter and long downtime and the required resources have to be allocated to improve system reliability and safeguard against outage threats (Gough, 2018).

6.5.3. Accessibility/Flexibility

Accessibility and flexibility are two more system characteristics that represent the ability of an IS to be accessible at all times and flexible in order to accommodate the varying requirements of the environments within which it operates (Peppers and Rogers, 1997). Within the fast-paced environment of a 4 or 5-star hotel, employees need to be able to access and use the system at any time in a seamless and rapid fashion. Accessibility has been identified as a significant metric of IS evaluation by Drury and Farhoomand (1998) and Wixom and Todd (2005). IS also need to have flexibility and capacity for upgrades, updates, and production of data and reports. In hospitality, the need to have accurate and thorough reports with applicable data is fundamental (Kim *et al.*, 2008). Therefore, if a system is adequately flexible to produce data that can be accessible as and when needed, it becomes more practical and beneficial for the organisation. The above notions about accessibility and flexibility have been confirmed by the interviewed hotel managers who claimed that an accessible and flexible system can prove to be a valuable tool that supports hotel employees in completing their daily routine tasks. This view is supported in the literature by Zmud (1979) who finds report format and

flexibility, and by Olson and Lucas (1982) who identify report accuracy and accessibility, as determinants of a system's success. Moreover, Wöber (2003) highlights resource databases and management report engines as indicators of a system's effectiveness. Wan (2002) includes accessibility and flexibility as constituents of a system's user interface rather than System Quality, which in his study is assessed by simplicity, currency, and completeness. However, and in line with the majority of IS research on System Quality (DeLone and McLean, 1992, 2003; Gable, Sedera and Chan, 2008; Peppers and Rogers, 1997; Tiwana, 1997; Wixom and Todd, 2005), this thesis employs simplicity, currency and completeness as components of Information Quality and treats accessibility and flexibility as System Quality measures.

The interviewed managers also identified faultless connectivity of the IS as a key measure of accessibility. Wixom and Todd (2005) define accessibility as the effortlessness by which IS connect with each other and the ease with which information can be accessed or extracted by the system; however, they also note that, despite the general applicability of this measure, its relative importance is contingent on the system itself and its specific settings. The same authors find that accessibility is a significant determinant of System Quality and also affects User Satisfaction. While researching mobile technology adoption amongst luxury hotel managers, Kim *et al.* (2014) discover that through improving accessibility by means of investment in mobile applications, hotels can augment the ways and the simplicity by which customers communicate with them. One example here is the gradually increasing presence of mobile check in kiosks in large hotels, which eliminate

the need for guests to queue for a long period before obtaining their room keys and paying for their rooms.

Aside from being an integral part of System Quality flexibility is also instrumental in strategy development. Given that IS are internal resources, their influence in strategy formation and implementation is unquestionable (Bharadwaj, 2000). However, if a new strategy is to be considered as viable by a hotel, it has to be aligned with the IS in place, and this alignment can only materialise if the systems are flexible enough to sustain strategy implementation (Tanlamai, 2006). The interviewees of this study have agreed that the flexibility of a system should assist hotel employees in their daily tasks, with flexible file transfers and storage, in order for hotel operations to run uninterrupted. The question then, according to Tanlamai (2006) becomes one of whether hotel systems can support these undertakings by being agile enough to adapt to strategy and its implementation, and by producing a flexible type and format of data.

6.5.4. System Safety/Security

Safety and security of transactions have become greatly significant System Quality characteristics in hotel environments because transactions such as credit card payments/authorisations take place over the internet rather than a proprietary network (DeLone and McLean, 2004). These types of transactions

entail the use of confidential information and a necessary requirement for hotels is compliance to the Payment Card Industry's (PCI) standards, which stipulate that confidential information such as guests' credit card details need to be stored in locked cabinets and discarded by industry-approved shredders after use. From the employees' perspective, a secure log-in process with protected password facilities is a standard prerequisite demanded of systems.

The interviewees emphasised that systems must be safe when it comes to protecting employee passwords during the logging in process. Additionally, IS must provide secure platforms to conduct transactions, particularly in circumstances when guests disclose their personal information or credit card details. Ultimately, the hotel managers also pointed out that being PCI (Payment Card Industry) compliant and abiding by the GDPR (General Data Protection Regulation) standards is the minimum requirement for hotels in the modern era.

System safety, security, and privacy of transactions have been identified in the academic field by Molla and Licker (2001), Barnes and Vigden (2002), and Ahn, Ryu and Han (2004) as factors of great magnitude, particularly in electronic environments and online systems, because without them users would not trust, and by implication, not use the system. According to Aladwani and Palvia (2002), a secure system should incorporate protected transaction software together with policies and declarations of security. Understandably, within the hotel setting, where employees process guests' credit card details

and personal information on a daily basis, system safety and security of transactions become indispensable features of any hotel IS, to an extent that it would be unthinkable for a system today to not incorporate them in its interfaces. Thus, the hotel managers agreed that the serious nature of handling confidential information and its importance within a hotel setting makes network safety and security in transactions a fundamental component of the System Quality dimension in IS evaluation.

This is supported in the literature by Ali (2016) who recognises security and privacy as the most important aspects of the quality of an IS. Likewise, Mwangi and Kagiri (2016) pinpoint to security as a critical factor of a system's technical capabilities. Nonetheless, Berezina *et al.* (2012) admit that even though it would be extremely difficult for hotels to remain competitive in the modern marketplace without accepting credit card payments, the convenience of cashless payments can trigger issues of private information vulnerability and security breaches. Because the nature of their operations requires hotels to capture a lot of customer sensitive and personal information for reservation purposes and for sustaining traveller loyalty programmes (guest profiles, frequent guest preferences), hotels have become particularly vulnerable to data breaches (Collins, Cobanoglu, Bilgihan and Berezina, 2017). The hospitality industry is very appealing for hackers' attacks due to the traditionally low computer and network security practices employed by hotels (Cobanoglu and DeMicco, 2007; Jones, 2018). According to a recent report by PWC (PWC Hotels Outlook Report 2018-2022), hotels suffer the second highest number of data breaches, which proves that they still lack the

necessary security measures while they operate in the digital space. As a counter-step to safeguard cardholders' personal information, the credit card industry creates the PCI DSS (Payment Card Industry Data Security Standard) in 2004 by merging all respective security standards into a universal guideline which has to be adhered to by all merchants that process credit card payments (Schubert, Bennett, Gines, Hay and Strand, 2008). This is reinforced by the approval of GDPR in 2016 by the European Parliament, a directive designed to further protect European citizens' personal information. It is for the above reasons that the interviewees have specified that hotel IS simply must be PCI compliant and abide by the rules of GDPR.

Revisiting the managers' viewpoints about transaction security, a measure that is gaining ground rapidly is Near Field Communication (NFC) mobile payments (Morosan and DeFranco, 2016), which are considered to be more secure than rival methods since no credit card information is exchanged and there is no card swiping, eliminating malware-based fraud and skimming (Kassner, 2014). In spite of this, Kasavana and Cahill (2011) quite rightly point out that there is no absolutely secure system, as such a system would have to be in complete quarantine from the rest of the world. However, a completely isolated system would be ineffectual and incapable of supporting any hotel operations, as the latter require IS to interact with each other via the Internet, receive and transmit information, process information, and produce output (Berezina *et al.*, 2012). Similarly, Castro, Santos, Sà and Magalhães (2019) posit that even though the Internet provides an unparalleled platform for effortless payments and communication between consumers and companies,

it can also hinder the security of systems due to the fact that the algorithms that power it can be broken in time by fraudsters and because governments impose regulations of cryptography that prohibit the deployment of security standards. In the case of hotels, Morosan and DeFranco (2016) point out that the only realistic solution that can lead to long-term system security is frequent and comprehensive audits, while Orme (2019) identifies biometrics as a future trend that can lead to increased levels of security in transactions, proposing that the arrival of simple, personal biometric authentication will signal the demise of the payment card fraudster and provide users with a sense of payment security confidence.

6.5.5. System Design

The design of a system is a characteristic typically perceived to entail three interrelated aspects, namely good graphics, playfulness, and a sense of enjoyment (Bell and Tang, 1998; Ahn *et al*., 2004). It has been postulated that an IS which can incorporate all the above design aspects will offer an enhanced experience of using the system (Liu and Arnett, 2000). Nonetheless, this seems to be the case only in environments where the use of a system is voluntary, such as gaming or online shopping. In environments where system use is mandatory, like the hotel industry or banking, not all three aspects of a system's design are as significant (Jarvenpaa and Dickson, 1998; Moon and Kim, 2001; Koh, Prybutok, Ryan and Wu, 2010). This has also been observed by the interviewees, as their responses suggested that the three aspects of a

system's design are not as critical in a hotel setting. They described playfulness and sense of enjoyment as insignificant attributes that do not appear to have any substantial impact on either system effectiveness or employee performance. Conversely, good graphics were identified as the main system design component that steers performance. This viewpoint is further corroborated in the literature by Wang and Lin (2012) who distinguish between hedonistic or recreational system use and a utilitarian use. The former is closely tied to values akin to playfulness and sense of enjoyment, which can be realised when interacting with services like multimedia, downloads, games, ringtones, and other Internet applications based on voluntary system use. Conversely, the utilitarianism of services is determined by the three quality dimensions (System, Information, Service) (Wang and Lin, 2012). The hotel industry falls into the latter category as the use of the systems is mandatory and for work purposes. Thus, it is not driven by hedonistic values but by a utilitarian purpose, which is to complete a specific set of tasks. It is for those reasons that playfulness and sense of enjoyment have been discarded, for the purposes of this study, as credible measures of System Design. Oppositely, good graphics, are essential as they enable employees to clearly see and perceive the task they perform.

6.5.6. Location of the Network Server

A final characteristic verified by the interviewees as having an impact on System Quality was the location of the network server. Although never previously identified by the literature, the location of the network server is an original element expected to become a significant factor of IS evaluation. The interviewed hotel managers declared that if the network server is positioned within the property, the overall performance of the system is amplified through better connectivity and speed. Network connectivity refers to the process whereby different parts of the network connect with each other by means of servers, routers, switches, and gateways, and how well that connection works (Shao *et al.*, 2014). An important factor in establishing and facilitating connectivity between computerised systems is network topology, which describes the overall structure and the arrangement of elements within a network (Lammle, 2018).

The interviewees also agreed that they would prefer a smaller-scale network located on property as opposed to a large server based in the company's head offices. Apart from favouring a smaller-scale server, this preference also encompassed the location of the system support services centre personnel. When dealing with system failure circumstances, the hotel managers conceded that, in general, their first reaction would have been to call the system support services centre in search for help. However, sometimes managers can be made to wait for lengthy periods of time while the system support engineers work on the reported issues, a situation that is not ideal for

hotel operations, since the absence or failure of some key systems may have an impact on guest satisfaction. Although the quality of system support services can be assessed in terms of the level and effectiveness of the overall support offered, there is an undeniable logic behind one of the managers' assertions- that if the system support services centre was to be located on property or near each hotel, (as opposed to a large server thousands of miles away that serves all hotels in the chain) its employees would have been more knowledgeable about specific IS, as well as more mobile, and would be able to physically visit each hotel in order to resolve complicated issues. Moreover, the system support employees' knowhow on the specific system that each property uses could steadily improve, since they would work exclusively on that system and hotel, rather than a cluster of hotels and a plethora of systems. This way, they would become experts on these specific systems and could offer a more hands-on approach and service, enriching the overall System Quality offering. In this manner, both the level and the effectiveness of the system support services centre would have been enhanced. Assuming that IS embraces not only the hardware/software that run the systems, but also the service that accompanies them, it is reasonable to deduce that the overall quality of the system is comparable to the departmental personnel responsible for the IS (Baroudi and Orlikowski, 1988).

Therefore, it is for the above reasons that the location of the network server and the system support services centre with its personnel was underlined by the interviewees as a significant characteristic of an effective IS, with the capacity to become a germane measurement in IS evaluation. It is important

to mention that it was identified twice by the hotel managers (in both the first and second rounds of interviews) as a factor that can, if managed correctly, have a positive impact on the quality of systems by means of improved IS connectivity, personalised service, and direct control of the IS. Another notable consideration is that the location of the network server and the accompanying service personnel have not been previously researched, certainly within a hotel context. As a result, there is no existing literature to support or oppose the views of the hotel managers. As an original discovery made by this study, its significance lies with the fact that it has been identified by hotel managers as a factor that contributes to the quality of an IS.

6.6. Information Quality

The dimension of Information Quality is an important aspect of IS evaluation, especially in customer service environments, where a single piece of misinformation can lead to major issues and complaints. Information Quality is typically assessed by the quality of the information a system can input or output, often referred to as content quality (Molla and Licker, 2001). Liu and Arnett (2000) consider Information Quality to have a direct impact on IS success, while Turban and Gehrke (2000) regard it as the most vital element of any quality evaluation. Hanai and Oguchi (2008) find a positive relationship between Information Quality and the effectiveness of a system. The literature review has identified several significant measurements that shape Information Quality including accuracy, ease of understanding, relevance and completeness, currency, and dynamic personalised content (Zwass, 1996; Barua, Whinston and Yin, 2000; D'Ambra and Rice, 2001; Molla and Licker, 2001). The interviewed hotel managers have identified that these measurements are important to the day-to-day running of a hotel and have a significant impact when it comes to the success of an IS. The measurements are analysed in further detail below.

6.6.1. Information Accuracy

One of the main characteristics of Information Quality is the accuracy of the information a system provides. The interviewed hotel managers agreed that if

a system is to be considered as successful it has to combine the System Quality attributes with accurate information and other Information Quality elements. This is also evident in the literature: one of the first academic efforts that identifies information accuracy as an important IS evaluation measurement is the study by Bailey and Pearson (1983), where it is also proposed that the accuracy of a system's information has a significant effect on User Satisfaction. This effect can be easily visualised in a hotel scenario: if a guest approaches the front desk asking for room rates and the system cannot provide accurate information, the guest might be misquoted, which can lead to dissatisfaction. Equally, if a system produces accurate live information, guests will feel satisfied as their information needs are going to be fulfilled. Murphy, Forrest, Wotring and Brymer (1996) assess hotel IS attributes at the stage of system development and their findings reveal that information accuracy is strongly correlated to the effective performance of an online system. In a different study that compiles success factors from European destinations' IS, Frew (1999) finds information accuracy to be one of the key factors affecting whether a system is perceived as successful or not.

The interviewees also established that information accuracy is based on correct information communication and accurate information input and output by the system. These measurements represent the competence of the employee to enter, obtain, and convey the correct information from the system. Gorla, Somers and Wong (2010) define information accuracy as an agreement between system and information attributes about a value stored in a database or the result of an arithmetic computation. They also propose that information

inaccuracy maybe the by-product of low-quality software that an IS uses. According to Redman (1998), poor information accuracy has an adverse effect for organisations at strategic, operational, and tactical levels. The same authors posit that at the strategic level the selection and implementation of a comprehensive strategy will become a difficult task, at the operational level it will result in customer dissatisfaction and lack of employee job satisfaction, while on the tactical level it will negatively affect the level of decision-making. For hotel employees, accuracy of information is critical as misinformation or misquotation of prices will inevitably lead to complaints and a drop in the levels of guest satisfaction. The importance of accuracy as an Information Quality construct has been highlighted in the literature by Huh, Keller, Redman and Watkins (1990), DeLone and McLean (1992; 2003), Rai, Lang and Welker (2002), Sedera and Gable (2004), and Nelson, Wixom and Todd (2005).

6.6.2. Information and Ease of Understanding

The ease of understanding sub-dimension becomes important in an electronic environment because not all computer users are IT experts and hence are not familiar with technical terms. A lot of IS available presently are overflowing with specific language and jargon that makes it difficult for users to understand and utilise the system. Therefore, it is crucial for a system to convey comprehensible information in a fashion that will enable hotel employees to communicate with their guests in an unrestricted and accommodative manner. This notion was shared amongst the interviewees as they agreed that ease of

understanding has a positive impact on IS success as well as on employee performance levels. Ease of understanding or understandability has also been found to influence IS success. One of the first studies to establish this link is by King and Epstein (1983) who compile several information characteristics to produce an amalgamated Information Quality evaluation instrument. Rivard, Poirier, Raymond and Bergeron (1997) include ease of understanding as a principal metric in their 40-item framework of IS evaluation, while Molla and Licker (2001) associate understandability with User Satisfaction and IS success.

The interviewees also disclosed that an IS that provides easy to understand information can be tailored to suit organisational needs and result in less-time wasting from employees. In the literature, it has been documented by early MIS studies (Rivard and Huff, 1984) that understandable information is positively related to increased employee productivity and performance. As a result, the presence of clearly organised and easy to understand information is a precursor for less idleness and time-wasting for employees (Yi and Hwang, 2003), because if the information they are given is well-defined and comprehensible, they will not need to spend copious amounts of time in order to process it and understand it. Yet, irrespective of how understandable information on a system is, the latter also has to be designed and scaled to suit the needs of the organisation that uses it (Stockdale and Standing, 2006). Khan, Strong and Wang (2002) define understandability as the extent to which information is easily comprehended, while Muylle, Moenaert and Despontin (2004) introduce the term ‘comprehensibility’ to denote the extent to which the

user can easily decode and understand the information on the system. Gorla *et al.* (2010) argue that the ability of a system to produce easy to understand information is generated by the utilisation of modern, user-friendly technology in the sense that high system sophistication can lead to high information content (completeness and accuracy) and format (understandability and consistency).

Revisiting the hotel context, it is quite often that employees receive emails from the IT department informing them about updates to the systems. Even though these updates usually take place at night in order to minimise service interruptions, employees will have a set of instructions to follow to ensure that the update is successfully implemented. These instructions can often be superfluously complicated and written in a difficult style that uses a lot of jargon. It is in the hotel's best interest to simplify this type of procedures by prompting the IT team to compose simple and concise directions.

6.6.3. Information Relevance and Completeness

If a system to be effective it needs to offer not only accurate and easy to understand content, but also relevant and complete information in order to enable hotel employees to access data or reports that are applicable and embrace all information needs as diverse as these may be. The hotel managers highlighted relevance and completeness of information as essential

Information Quality constructs, but also underscored the capacity of the individuals using the system to retrieve and manage data that is relevant to the task they are working on. In the literature, the first studies that depict the magnitude of the role that completeness and relevance play in the formation of Information Quality come from Bailey and Pearson (1983) and Miller and Doyle (1987). Zwass (1996) finds information completeness to be affecting IS success as a factor that determines how wide-ranging the content a system offers is. Javenpaa and Todd (1997) depict both completeness and relevance of information as integral components of a system's success. Molla and Licker (2001) and Wixom and Todd (2005) also find relevance and particularly completeness to be a central Information Quality construct that influences User Satisfaction and, in turn, System. Use. Krishnaraju, Mathew and Sugumaran (2016) posit that when a system is personalised and offers complete and relevant information, this facilitates self-reference, which assists in minimising the cognitive load on users performing daily tasks, like using IS. Jeong and Lambert (2001) research user perceptions of hotel IS and conclude that, among other attributes, information relevance and completeness are crucial factors in increasing system use. Out of the six key drivers that the authors use to gauge users' online intentions, completeness is found to be the most critical for User Satisfaction with system information. In a study that aims to form a conceptual framework consisting of the building blocks of Information Quality, completeness is identified as one of the two top constructs, while relevance is not rated as so important. However, the authors do concede that users and developers of IS should not discard relevance, as it still represents a valid measure of Information Quality, depending on the context of the study

(Tao, LeRouge, Smith and De Leo, 2017). The current study treats both relevance and completeness as constructs of equal gravity as the hotel context demands the information provided by the systems to be both relevant and complete.

The interviewees also perceived information relevance and completeness as the two concepts responsible for ensuring that a system covers all information needs for users. Zaid (2012) confirms this notion by urging IS developers to design systems that provide information precisely according to the users' needs. This view is also supported by Kwong (2019).

6.6.4. Information Currency

The currency of information that a system offers has become a particularly important subset of Information Quality in an online environment. The Internet era has become synonymous with the need for up-to-the-minute information. To stay abreast of the competition all major websites are updated on a regular basis to include the most current information. This premise is also applicable to all Information Systems: a system cannot be regarded as successful or effective if the information it features is not up to date (DeLone and McLean, 2004). The hotel managers agreed that information currency is a critical aspect of the systems they work with and has a major impact on the success of a system. Information currency first appears in the literature in Hamilton and

Chervany (1981) as a valid determinant of IS success. D'Ambra and Rice (2001) also identify it as attribute of a successful system. Through their study, Molla and Licker (2001) demonstrate that information currency affects User Satisfaction and, therefore, IS success. This link is also recognised by Wixom and Todd (2005).

The interview findings also revealed that hotel IS need to be regularly updated with the latest information that is also current and accurate. This is supported in a study by Goodhue (1995) who suggests that systems should convey information that is current and correct in detail but also warns that this is not sufficient for a system to be comprehensive unless the source of information is competent. Entwistle, Sheldon, Sowden and Watt (1996) argue that sometimes the source of information may not be dependable or legitimate as it may have been derived from a range of unspecified perspectives. Kim, Eng, Deering and Maxfield (1999) advocate that the advent of the Internet has brought a rapidly changing environment, which poses challenges when it comes to searching, retrieving, and using current information. They maintain that while it is recognised that the Internet has led to a proliferation of available material to the user, and even though this material may be current and up to date, it does not necessitate its dependability and legitimacy. The opposite can also stand true for online environments, whereby the information provided may be legitimate and dependable, yet it might be out of date and obsolete (Shepperd, Charnock and Gann, 1999).

Hotels should make certain that the information on their systems is up to date. The same stand true for the websites that hotel employees visit in order to provide information for their guests. For example, if a guest asks for train times and the website from which the hotel receptionist obtains the information from is not updated, the result will be that the guest is misinformed and might miss the right train. The same risk applies if there is a major event taking place near the hotel and the guest asks for some simple information regarding road closures. If that information is not current the guest might drive towards a road that has been closed or miss a road that has recently opened.

6.6.5. Dynamic and Personalised Content

The interviewed hotel managers stated that dynamic and personalised content has a positive impact on the effectiveness of a system as it can assist hotel employees by offering bespoke data about guest preferences and their previous visits. By accessing the hotel's IS, employees will have the information pertaining to previous guests' visits at their hotel, and can be more proactive and plan ahead for guests' future visits because they will have knowledge of guest preferences via the IS.

The interviewees' viewpoint finds support in the literature. Dynamic and personalised content refers to the capacity of an IS to be integrated to such an extent that it projects a sense of individuality and includes information that is

not static and generalised (DeLone and McLean, 2003). In the hotel context, IS are designed with the needs of each department in mind, as opposed to the needs of each employee (Phillips, 1999). To be precise, it is to be expected that a hotel system will be tailor-made to fulfil the particular requirements of each department, featuring specified functions to assist in departmental routines rather than be customised to each employee's preferences (Kuo, 2009).

Apart from contributing to departmentalised IS, dynamic content is also recognised by Barua *et al.* (2000) as central to a system's effectiveness, while personalised dynamic content is found by Parsons, Zeisser and Waitman (1998) to be a determinant of the quality of information a system can provide. Molla and Licker (2001) link content personalisation to User Satisfaction and, consequently, IS success. In hotels, a dynamic and personalised environment akin to e-learning would benefit employees in the sense that it would guide them to identify and manage their personalised activities, to interpret the multitude of domain context perspectives and endorse collaboration (Sun, Williams and Liu, 2003).

Although most contemporary hotel property management systems (PMS) such as Opera and Protel offer wide-ranging dynamic personalisation options, especially when it comes to inter-departmental cooperation, there are a myriad personalisation opportunities that can be explored if hospitality is to move to the 21st century, such as chatbots, automated conversational marketing, and

artificial intelligence applications, which can help hotel employees to obtain and manage guest preferences/profiles and offer an enhanced level of service for the benefit of customers (Hejny, 2019). Despite this, Hejny (2019) advises that personalisation cannot be accomplished by a plug-and-play approach, but rather by placing processes in place, especially when it comes to data: while the latter has to be dynamic and hyper-personalised, the PMS itself needs to be cloud-based and allow data sharing with other systems, and the employee operating the PMS must be trained in using the system.

6.7. Service Quality

The main difference between Information Technology (IT) and Information Systems (IS) lies in the fact that the former includes the software and hardware by which a system functions, while the latter also embraces people and processes, more specifically the support services that are necessary to maintain the unproblematic and effortless operation of a system (Leidner and Kayworth, 2006). In a demanding and high-paced setting like the hotel environment, it is imperative that systems operate in a flawless, trouble-free mode. However, in circumstances when the hotel operation is interrupted by system errors or system crash/malfunction, it is the output and quality of the system support services that ultimately determine the success or failure of an IS (Brenner, 2006). This quality of the system support services is a well-established domain in IS research, known as Service Quality. Service Quality has been identified by the literature review section as a salient dimension in evaluating IS and can be defined as the overall support offered by the service provider, regardless of whether it is delivered by the company's IT department, a different organisational division, or an outsourced unit (DeLone and McLean, 2003). Another definition of Service Quality that can be applied in an IT context is as the extent to which the expectations of users are met by the service offered (Parasuraman *et al.*, 1985). DeLone and McLean (2003) maintain that the arrival of end-user computing during the mid-1980s positioned IS organisations in a role consisting of two functions: creating an information product as an information provider and offering end-user support as a service provider. Pitt, Watson and Kavan (1995) suggest that early measures of IS effectiveness concentrate on the products as opposed to the services of the

IS function and warn that researchers might be at risk of miscalculating IS effectiveness or success if they fail to include Service Quality factors in their assessment.

6.7.1. Importance of Online Support Services

As mentioned above, the most conventional way to assess Service Quality is by measuring the responsiveness, effectiveness, and overall importance of the online support services. It is clear from the responses of the interviewees that their understanding of Service Quality was consistent with the definition identified by the literature review. The hotel managers not only recognised the importance and function of the system support services but also admitted to relying on the knowledge and proficiency of the system support personnel to find solutions when IS problems surface. The importance of the overall system support service was emphasised by the statement that hotel employees are hospitality specialists and not IT specialists; therefore, they need support services when they face difficult situations such as system malfunction. This is supported in the literature by Parasuraman *et al.* (1988) who highlight the importance of the IS support services and find that they should provide the right solutions to users' requests, offer suitable alterative resolutions, supply prompt service, and notify exactly how and when the service will be performed. Negash *et al.* (2003) note that unlike System and Information Quality constructs that focus on the system and its output, IS support services present a fundamentally different challenge as, sometimes, a service is consumed as

it is being produced, which makes it difficult to control and deliver consistent and responsive service. Therefore, depending on the level of service and situation, the IS support services may act as enablers or impairments of the overall Service Quality experience.

Twelve out of the fourteen interviewees also revealed that they depend on the responsiveness and effectiveness of the system support services, including the manner in which helpdesks, call centres, and software/hardware engineers respond to queries and the approach by which issues are dealt with and resolved. In addition, it was highlighted that in terms of the responsiveness of the support services, the minimum requirement for a modern hotel is a service centre and a maximum of four hours response time is the standard required in the hotel industry. The views of the managers on IS support services effectiveness and responsiveness are supported by the literature. For instance, Pitt *et al.* (1995) argue that researchers cannot measure IS accurately if effectiveness and responsiveness of the IS support services are disregarded. Liu and Arnett (2000) draw attention to responsiveness and follow-up services as two of the main components of Service Quality. Molla and Licker (2001) propose that Service Quality should be measured by the effectiveness and responsiveness of online support capabilities and customised site intelligence. Moreover, Leclerq (2007) maintains that the relationship between the IS function and its system support services has a bearing on User Satisfaction and the overall success of the system. Weaver, Spratt and Nair (2008) argue that the satisfaction of users with the systems they operate may be a subjective notion, since in many circumstances IS

support might be available, but the hotel employee does not know how to contact the support helpdesk or is not even aware of its existence. With the increased demands of the modern IS user, a vast number of hotel IS support teams offer the option of self-service portals, chats, and troubleshooting guides, in an effort to provide greater efficiency of service, cost reduction, and convenience for users (Meuter, Bitner and Ostrom, 2005; Xu, Benbasat and Cenfetelli, 2015). However, Barrett, Davidson, Prabhu and Vargo (2015) dispute this perspective by claiming that some degree of self-service is implicit in automated customer interface systems and that over-reliance on self-service solutions may limit enhancement of service and effective system use.

It has to be noted that for the purposes of this study, Service Quality is not to be confused with quality of service. The latter is, at least in the context of the present study, associated with the service that hotel employees provide to their guests through the use of IS, while as described previously, the former refers to the service provided by the IS support team via helpdesks, call centres and online help tools. The reliability, responsiveness, and competence of the IS support team become truly critical factors in a busy 4 or 5-star hotel, where guests have high expectations of quality of service. If a system stops working, the departmental manager will call the IS support desk and an IT specialist will start dealing with the problem. The sooner the issue is resolved the better for the hotel, as service is disrupted when the systems are ‘down’ and customer requests are waiting to be accommodated, which causes frustration to everyone involved, including the guests. If a service disruption takes a long time to be resolved, the levels of guest satisfaction, which is closely linked to

quality of service, are expected to drop. Even by using the calculation by Parasuraman *et al.* (1985), which states that: quality of service = perceptions of services – expectations of service, it can be deducted that while the expectations will be high in a 4 or 5-star hotel, the perceptions will be low if a service is simply unavailable for hours. Therefore, since hotels spent money and time on training their employees on providing good levels of service for the guests, they are also advised to reserve some funding for the IS support teams, and ideally have an IT engineer working within the hotel full-time.

6.7.2. Sense of Empathy

The use of identifiable logos and company colours or emblems is practised by large hotel chains to distinguish one hotel group from another. According to Young and Benamati (2000), distinctive logos or company colours can generate a sense of empathy and familiarity for employees using IS. Empathy is a part of the SERVQUAL model (Parasuraman *et al.*, 1988) and has also been identified as an IS success determinant (Liu and Arnett, 2000). It refers to the individual attention that users receive from the IS support services (Osman, Cole and Vessell, 2006), and has also been described as the IS support staff sensitivity to users' needs, and being polite, courteous, and reassuring (Andaleeb and Simmonds, 1998).

Recognisable logos and company colours have not been fully corroborated by the interviews section as the majority of hotel managers did not find them to be vital. Despite this, because most managers saw them as being unimportant yet aesthetically pleasing to the eye, the empathy subset will also be added to the Service Quality dimension in the Proposed Integrated IS Success/Technology Adoption Model. It can be inferred that even though these attributes may be perceived by the interviewees as not playing a major role in contributing towards the Service Quality of an IS, the fact that they are easy to the eye creates a feeling of familiarity and comfort to the user, attributes that can enhance the success of a system. The literature confirms that IS developers and designers should focus on promoting the usability of the systems by means of clarity and simplicity, instead of giving unwarranted attention to brand logos and company colours (Johnson, 2004). This view is supported by Cappel and Huang (2007), who insist that when it comes to IS design, certain guidelines must be followed in order to improve IS usability, in particular with regards to the inclusion of features, such as link appearance, navigation, ‘breadcrumb trails’ and search boxes, while they maintain that the inclusion of logos is futile. Hotel company logos are effective when identifiable and they can reinforce customer recognition of the hotel and build brand recognition in general (Hsu, 2012). However, their role is not as important when it comes to employees, although it has been suggested that they act as a collective of symbols that can aid in generating an organisation’s identity (Baruch, 2006).

6.8. Perceived Usefulness

The main aspect of Perceived Usefulness relates to the capacity of a system to facilitate task completion. A system can be perceived as useful if it possesses attributes that include speed, accuracy, efficiency, and effectiveness of task competition (Davis, 1989). All the interviewed hotel managers recognised the above attributes as fundamental elements of system usefulness. It is important to note, however, that the nature of task completion and the system features required in order to complete daily tasks may vary among different hotel departments. For instance, accuracy may be a system attribute needed by the finance department, while the food and beverage unit may need a system based on speed and variety of menu options. Senior management may demand a system that offers variability and agility in terms of generating reports, while the sales and marketing office may ask for a system that incorporates real-time offers and promotions. The hotel managers' views confirmed that, in general, when a system is quick, accurate, effective, and efficient it will also be perceived as useful in assisting employees to complete their daily tasks successfully.

The views of the interviewees are supported by the findings of the literature review. Davis (1989) defines Perceived Usefulness as the extent to which an individual believes that use of a particular system would improve job performance. This definition is not distant from how the hotel managers understand system usefulness: when a system is quick, effective, and efficient, it is reasonable to assume that it will prove useful in assisting employees to

perform their tasks successfully. Simultaneously, if hotel employees use a system that helps them perform their daily responsibilities in a speedy, precise, and practical manner, then it can be hypothesised that such a system is also useful by increasing their job performance. Research also shows that Perceived Usefulness has a positive influence on attitude towards system use and actual system use (Shin, 2004). Thus, if a user perceives a system to be useful, there is a high probability that he/she will develop confidence and an encouraging attitude towards using the system, which will eventually result in actual use. Bokhari (2005) acknowledges that the actual use of a system is a critical dimension of IS success. The characteristics that a system should possess (quick, accurate, effective, and efficient task completion) if it is to be useful have also been identified by the literature and are the subject of several studies, most notably Davis (1989), Venkatesh and Davis (2000), Wixom and Todd (2005), Kim et al. (2008), and Morosan and Jeong (2008). Nielsen (1993) advises that good task performance is contingent upon the quick, effective, efficient, and well-trained execution of a chain of actions that can yield consistent, high-quality results. Hence, the literature definition of Perceived Usefulness corresponds to the definition conceived by the interviewees, and additionally, the same characteristics have been identified by both sections (the literature review and the interviews).

One other aspect identified by the hotel managers as a determinant of system usefulness was the function of the IS to allow a hotel to deliver more personalisation in terms of its guest relations or customer services. This is verified in the literature by Hsu and Kulviwat (2006), who develop a theoretical

model by combining the TAM (Davis, 1989) with expectancy theory (Oliver, 1977) in order to examine the effect of personalisation and Perceived Usefulness on User Satisfaction with mobile IS applications. Their findings reveal that personalisation has an effect on Perceived Usefulness and can prove to be a key feature in unlocking user loyalty and satisfaction. A further example comes from the study by Ho and Kwok (2003), who adopt the two main elements of the TAM (Perceived Usefulness and Perceived Ease of Use) to test the importance of personalisation in mobile commerce environments. Their findings show that Perceived Usefulness of personalisation was the most important factor on the decision to adopt a new technology. The main objective of personalising systems is to make usage easier and to strengthen communication channels between service providers and users (Light and Maybury, 2002). Morris-Lee (2002) finds that personalisation can also increase user interest and involvement, while Zhang (2003) indicates that it translates individual profiles into unique presentations that can be built upon user preferences, user locations, context, user network, and terminal capabilities. While the production of personalisation is substantially more costly than that of non-personalised features (Greer and Murtaza, 2003), its benefits by far outweigh its pitfalls as is proven to increase User Satisfaction and Intention to Use/Reuse (Hsu and Kulviwat, 2006).

The interviewees also agreed that a system is perceived to be useful when it can deliver understandable reports. This relationship between Perceived Usefulness and report understandability is defended in the literature. Since hotel IS produce financial, revenue, and employee performance reports that

can help management in decision-making, the data output emanating from these reports has to be presented in a coherent format so that they can be easily understood and interpreted (Benbasat and Dexter, 1985). Ramey (2000) comments that log file analysis tools can compile raw data into understandable reports, but users must interpret the results sensibly. Morosan and DeFranco (2019) maintain that if hotels want to utilise wide-raging business intelligence platforms, they must adapt an effective reporting framework and a reliable information delivery network, which will give users the ability to form educated interpretations and make informed decisions based on reports that are understandable and clear.

6.9. Perceived Ease of Use

Perceived Ease of Use is essentially composed of ease of use and user-friendliness (Legris *et al.*, 2003). Ease of Use is a concept that usually portrays unproblematic and effortless, easy to use systems, while user-friendliness represents systems that are easy to work with and understand (Morosan and Jeong, 2008). The opinions of the interviewed managers confirmed that systems should be user-friendly and easy to use, and that system use should be effortless and convenient. The hotel managers also stressed the importance of having systems that are easy to work with, relay correct information in the simplest way possible, and require little effort in terms of input but offer high-quality output.

In the literature, Davis (1989) defines Perceived Ease of Use as the extent to which an individual believes that use of a particular system would be free of effort, while Venkatesh (2000) describes it as a construct tied to an individual's assessment of the effort required to use a system. As an antecedent of Perceived Usefulness, the dimension of Perceived Ease of Use influences attitudes towards use and the actual use of a system (Davis, 1989); this notion infers that an employee's positive attitude to use the system (given that the system is easy to use) will translate in the system actually being used, which is a sign of IS success. Researchers associate attributes such as user-friendliness (Christou and Kassianidis, 2002; Vijayasarathy, 2004), as well as convenience (Law and Chen, 2000) to Perceived Ease of Use. Venkatesh (2000) states that the perception of whether a system is easy or difficult to use

very much depends on users' direct system experience and knowledge, and their confidence in computer-related abilities, also collectively referred to as computer self-efficacy. However, these notions surrounding Perceived Ease of Use are based on the influence of computer self-efficacy, which represents perceptions of internal control. One of the main criticisms encircling Perceived Ease of Use is that as a dimension of measuring system use it overlooks the importance of external control issues and disregards control over resources (Mathieson, 1991). In the hotel environment, these external control issues include organisational efforts to help users overcome hurdles to technology use. Thus, the function of Perceived Ease of Use hinges on the context of IS usage and the inclusion of both internal and external control factors (Venkatesh, 2000).

One of the main directions for hospitality's future is mobile technology. Hotels are devoting increasingly larger budgets towards improving their mobile communications platforms. One of the main antecedents of Perceived Ease in a mobile technology context is found to be accessibility, defined as the ability to access a hotel's social media network from anywhere, anytime (Tom Dieck *et al.*, 2017). Guests also frequently access hotels' mobile versions of websites to reserve rooms and make special requests or they can even check into their rooms from their mobile phone; therefore, accessibility has to be guaranteed if a hotel wants to survive in the competitive market.

6.10. Perceived Trust

From the interviews it can be deduced that the hotel managers regard trust as a central element of a successful system. All the interviewees underlined the benefit of having trustworthy and dependable systems in the workplace that can stimulate employees' confidence to rely on them; they also highlighted the need for the system to be open for improvements. These perceptions are supported in the literature.

Trust is more critical in an electronic as opposed to a brick-and-mortar environment because of the uncertainty surrounding the former: in the case of hotels, which are not purely electronic companies (as they combine online and traditional capabilities and services), uncertainty starts the moment a guest reserves a room and thereby surrenders personal information and credit card details to the discretion of the merchant (Wang *et al.*, 2016). In doing so, the guest entrusts the hotel to handle that sensitive data in a professional manner and to guarantee that it is not shared by other parties but used solely for the purpose of making the room reservation. To honour that agreement, hotels have to possess Information Systems that are safe and that will enable employees to process transactions securely (Morosan and DeFranco, 2016). If this occurs, employees will trust the hotel's systems as being secure and the guests will have faith in the integrity, honesty and professionalism of the hotel and will show confidence in it handling their personal information and credit card details discreetly (Khalifa and Ali, 2017). Thus, in the hotel context, Perceived Trust can also be described as the faith that a party (in this case the

hotel) will behave in a socially responsible manner and by doing so will fulfil the trusting party's (the guest) expectations without taking advantage of its vulnerabilities (Gefen, 2000). Pavlou (2003) defines trust as the belief that allows consumers to willingly become vulnerable to retailers after having taken the retailers' characteristics into consideration. Additionally, trust refers to systems that can carry out safe and secure transactions and can project a feeling of dependability and trustworthiness (Pavlou, 2003). The power of the system to carry out safe and secure transactions has already been covered in the System Quality section. As a result, for the purposes of this study, system safety and security will not be considered as part of Perceived Trust.

In spite of the above analysis, seeing as this thesis is on the subject of IS evaluation from the perspective of hotel employees and not hotel guests, the focus has to be on the capacity of the system to make it possible for employees to handle transactions in a secure fashion. The aforementioned definition supplied by Pavlou (2003) can be applied fittingly to this context because it inherently captures two diverse aspects of trust. Pavlou (2003) maintains that the first of those aspects represents the conventional view of trust between guest and hotel, while the second embraces trust implicitly, through the integrity of the transaction medium, represented by the IT infrastructure of the hotel or the Information Systems it possesses. By implication, when guests willingly become vulnerable to a hotel (as per the definition by Pavlou), they consider the characteristics of both the hotel and the associated technological infrastructure, in other words, the hotel's IS. From the side of the employees, they also need to trust the systems they use in order to handle the guests'

credit card details and personal information expertly and to provide them with the confidence they need to offer the expected levels of customer service.

In a hotel context, where the use of systems is mandatory and employees do not have a choice in using a particular IS, it could be argued that the dimension of Perceived Trust is not critical, since hotel employees have to use systems regardless of whether they trust them or not. However, it can be posited that the work performance of staff will be enhanced if they trust the systems they work on because trust is synonymous with feelings of confidence and security (Rempel, Holmes and Zanna, 1985). Hence, if employees trust the systems they work on and they feel confident and secure in using them, their performance improves and their intention to use the systems in the future grow, which is beneficial for the hotel and ultimately translates into a system being successful (Alsharo, Gregg and Ramirez, 2017).

As mentioned at the beginning of this section, the interviewees also identified the ability of the system to self-improve as an important factor shaping Perceived Trust. Users have their own individual preferences or 'settings' with regard to how they use a particular system (Huang and Benyoucef, 2015). Technological innovations in the hotel industry enable employees to have different 'settings' saved on a cloud-based server, and these settings can come in effect when the employee logs in, providing personalisation and ease of operation (Wang *et al.*, 2016). Through artificial intelligence developments, hotel systems can now 'learn' about user predispositions and offer

recommendations and proposed solutions, a concept that was previously only available for the entertainment and mass media industries (Netflix, Amazon Prime) (Lai and Hung, 2018). Moreover, advanced Property Management Systems enable total automation of all business processes, effective synchronisation with other IS platforms, virtual assistance, and reliable storage solutions (Autor, 2015).

6.11. User Satisfaction

User Satisfaction is perhaps the most universally known and acknowledged dimension of IS evaluation. The IS literature contains copious amounts of studies that research User Satisfaction, albeit from the point of view of the customer, or guest if in a hotel setting. This study concentrates on the hotel employee perspective, and as a consequence, User Satisfaction is looked at with this principle in mind. It has been put forward that any analysis of User Satisfaction should embody the entire experience, including information retrieval, transactions, and the overall performance of an IS (DeLone and McLean, 2004).

The interviewed hotel managers revealed that they were satisfied with their general experience of using the systems and their day-to-day interaction with them, particularly in terms of information retrieval and transaction processing. The systems were found to be effective tools that assist employees with their duties, simplify operations, and enhance customer service. Moreover, the interviewees declared that they were content with the overall performance of the systems at their respective places of work and expressed a feeling of satisfaction and loyalty with regards to the manner the IS operated.

There is evidence in the literature that supports the views of the hotel managers on User Satisfaction. According to Bailey and Pearson (1983:531) "*satisfaction in a given situation is the sum of one's feelings and attitudes toward a variety of factors affecting the situation*", while Ives at al. (1983)

define User Satisfaction as the extent to which users believe the Information System available to them meets their information requirements. Molla and Licker (2001) describe User Satisfaction as the reaction or feeling of users in relation to their experience with all aspects of a system. The opinions of the hotel managers correspond to the above literature review findings, particularly those by Molla and Licker (2001), as they look into the user experience as a totality.

The IS literature also points to loyalty, or e-loyalty in an electronic environment (Reichheld and Schefter, 2000), as a proxy measure of User Satisfaction. E-loyalty has been extensively used to portray a relationship between customers and companies, and according to Turban, King, Viehland and Lee (2006) it refers to customer loyalty to a company that sells directly online. Within the context of this study, e-loyalty is comprehended as a relationship between the users (hotel employees) and the IS they use. If hotel employees develop a sense of loyalty towards the systems in their workplace then it is plausible that their work performance as well as their satisfaction with the systems (User Satisfaction) will improve, which will be a direct benefit to the hotel (Hemsley-Brown and Alnawas, 2016).

User Satisfaction directly affects system use as well as Intention to Use/Reuse and is affected by both tangible and intangible aspects of Service Quality (Bharwani and Jauhari, 2013). User dissatisfaction, on the other hand, is closely linked to repeat service failure, which in turn negatively influences

Intention to Use/Reuse (Prentice, 2013). This means that if users become dissatisfied by an IS they will form a negative behaviour towards using it, and would not reuse this system if they were given a choice (Venkatesh and Bala, 2008). Parasuraman *et al.* (1990) describe that dissatisfaction occurs when requirements exceed performance. Thus, hotels need to recognise and comprehend the attributes that mould User Satisfaction in order to prevent employee dissatisfaction (Berezina, Bilgihan, Cobanoglu and Okumus, 2015).

Overall, User Satisfaction has occupied a central role in behavioural research on Information Systems as a surrogate measure for IS effectiveness and is the key link between system, information, and service dimensions, as well as a useful diagnostic for system design (Doll and Torkzadeh, 1988; Melone, 1990; Wixom and Todd, 2005). A potential integration of User Satisfaction and technology acceptance constructs could build a conceptual bridge from design characteristics to the prediction of usage, together with improving the predictive power of User Satisfaction and augment the practicality of technology acceptance (Wixom and Todd, 2005). The present thesis attempts to achieve such integration in the sense that it views the TAM constructs (Perceived Usefulness and Perceived Ease of Use) as being linked with User Satisfaction, as its antecedents. In addition, User Satisfaction is seen as influencing Intention to Use/Reuse.

6.12. Social Norms

The interviewed hotel managers recognised the presence of social norms (also known as subjective norms) in the hotel industry and described it as a factor that affects the intentions or attitudes/behaviours of employees to adopt and use systems in their workplace. They also acknowledged that managers should display positive attitudes towards systems and are more likely to influence their employees on IS use rather than vice versa.

The views of the hotel managers are supported by the literature review as their perceptions of subjective norm are parallel to the definitions by Ajzen and Fishbein (1975) and Oliver and Bearden (1985). For example, the responses of the interviewees agree with Fishbein and Ajzen (1975) that it is more likely for hotel employees to develop specific beliefs regarding the systems they use if they perceive the existence of greater social pressure from salient or key referents to develop these beliefs. Furthermore, and in line with Oliver and Bearden (1985), the interviewees acknowledged that individuals or groups that are important to a hotel employee will prefer, and sometimes demand, that he/she engages in a particular (positive or negative) behaviour regarding the use of a certain system. Additionally, in the Unified Theory of Acceptance and Usage of Technology (UTAUT) model (Venkatesh *et al.*, 2003), social norms are treated as a key precursor of behavioural intention, which is explained as a conception where managers (peers) display positive attitudes towards systems and influence employees about Intention to Use/Reuse. It has also been found that social influence derived from subjective norm is considered

as having a major impact on attitude and intention to adopt new technologies (Kaushik *et al.*, 2015).

The concept of social norms originates from the literature on attitudes and behaviours. Behaviour can be predicted by a defined intention to behave in a specific way at a subsequent point in time; this intention is affected by attitudes and subjective norms (Fishbein and Ajzen, 1975; Oliver and Bearden, 1985; Kim *et al.*, 2008). In the context of this study, social norms seek to explain how the interviewees' intentions/attitudes/behaviours to adopt and use a system have been prompted or induced by their colleagues' beliefs about these systems. Understandably, the more uncomplicated and instantaneous the process by which users are able to adopt and use a system is, the more successful this system will be.

Social norms have the potential to explain intentions and behaviours, particularly in environments where IS use is mandatory, such as the hotel industry, where employees use systems involuntarily as part of their jobs. Their inclusion in studies of compulsory IS use environments is supported in the literature by Venkatesh and Davis (2000), who propose a theoretical extension to the original Technology Acceptance Model, or TAM (Davis, 1989). The extended TAM, often referred to as TAM 2, includes the addition of subjective norm as an antecedent of intention to use a system. According to the findings by Venkatesh and Davis (2000), subjective norm has no impact on voluntary environments but becomes significant in mandatory circumstances.

Furthermore, in a study of the predictive validity of social norms in technology adoption, Rivis, Sheeran and Armitage (2009) maintain that behaviours with a moral dimension produce strong relationships between subjective norms and intentions to use technologies.

The social influence that hotel managers exert on their employees should also be considered as a serious determinant of whether the latter will adopt systems in an effective manner. Although managers are colleagues, they are generally regarded (together with long service employees) as influential persons within the working environment. Taylor and Todd (1995) suggest that social norms are shaped by two influences, namely peers' influence and superiors' influence. Hotel managers' perspectives normally have an effect on employee IT adoption and their technology acceptance (Lam *et al.*, 2007).

6.13. Intention to Use/Reuse

It is clear that Intention to Use/Reuse can be broken down to two stages: Intention to Use is delineated by the logic that if hotel employees are satisfied by the systems they use at present they will have an intention to continue to use these systems, if given a choice. More plainly, if hotel employees are satisfied by the systems, they will be likely to use these systems if system use was voluntary. Therefore, a hotel employee's Intention to Use a system is very much connected to the level of User Satisfaction this employee obtains from using the system (DeLone and McLean, 2016). Thus, the interview section had to ascertain whether a relationship between User Satisfaction and Intention to Use is present among the hotel employees. The interviewed managers revealed that a relationship between User Satisfaction and Intention to Use exists in their respective hotels and maintained that this relationship is based on whether the system can support all business needs. The managers also disclosed that, if system use was voluntary, they would be content to utilise the current IS because they are satisfied by the overall performance and general experience of using the systems. The overall performance and the general experience of using an IS are User Satisfaction constructs, which confirms the presence of a relationship between User Satisfaction and Intention to Use.

The second stage of Intention to Use/Reuse is Intention to Reuse, which involves determining whether repeated use (Reuse) will take place in the future. The hotel managers communicated that they would be confident to use

the existing systems in the future, they would talk positively about the online capabilities of the systems, and they would not hesitate to recommend the systems to colleagues from other hotels. Thus, the interviewees had positive beliefs about Intention to Reuse, mainly due to the effectiveness, ease of use, reliability, speed, security, popularity, and overall design of the systems they presently use. These factors (among other aspects of IS such as usability, flexibility, correct and accurate information, quality of service) were also responsible for the predisposition of the hotel managers to use the existing systems in the future, even on a voluntary basis. Furthermore, the interviewees indicated a desire to recommend the current IS to their colleagues within the industry due to the fact that they perceive these systems to be effective and successful.

The standpoints of the hotel managers are supported in the literature. Intention-based studies reveal that there is solid evidence of positive relationships between attitude towards use and actual use (Mathieson, 1991; Adams *et al.*, 1992; Bajaj and Nidumolu, 1998). Moreover, it has been documented that the attitude towards the use of a specific system has a direct effect on the intention to use that system in the future (Davis, 1989; Venkatesh and Davis, 2000; Venkatesh, Speier and Morris, 2002). In other words, if end-users have a specific behaviour in relation to a system, they will form a positive or negative attitude towards that system (Taylor and Todd, 1995). If this attitude is positive, this will develop into a positive intention to use the system, and in succession, to actual use of the system by the end-user. If, on the other hand, the attitude is negative the user is likely to develop a negative intention

to use the system, which can sometimes result in system non-use. However, a situation of non-use is highly improbable in a hotel setting because the use of IS is mandatory (Venkatesh *et al.*, 2003), employees simply have to use the systems as part of their jobs, and refusal to use a system will probably lead to disciplinary action and dismissal. Therefore, system use in a hotel environment can be seen as a somewhat static and permanent reality because no matter what the employees' attitudes towards use or intentions to use are, the systems will continue to operate all the same. DeLone and McLean (2003) declare that even though intention to use and actual use are alternatives, the former is a more reasonable variable in the context of mandatory usage. Due to the above reasons, this thesis draws on intention to use rather than actual use.

In the literature, Intention to Reuse a system in the future involves measurements such as recommendation, whether the system's performance and operation is on a comparable level to competitors' offerings, and if it projects a sense of professionalism (Venkatesh and Davis, 2000). It can be assumed that if hotel employees are satisfied by the overall performance of the system, they will be communicating their experience to colleagues within and outside their workplace and possibly recommending the system. Moreover, their satisfaction levels will play a decisive role in shaping their intention to reuse the system in the future. This is supported in the literature by Kim, Kim and Kim (2009) who discover that User Satisfaction is a very strong antecedent of word-of-mouth, and Wixom and Todd (2005) who identify a strong relationship between User Satisfaction and Intention to Use/Reuse.

Shih (2004) suggests that positive attitudes toward a system result in strong intentions to use that system in the future. Karatepe (2006) finds that Intention to Use/Reuse is influenced by loyalty, while Wong and Sohal (2002) posit that a user's intentions to use or reuse a system are shaped by trust, and the latter builds when users have confidence in a system's reliability and integrity. As User Satisfaction arises from a system meeting or exceeding the expectations of the users, satisfaction over time strengthens this relationship by means of trust, which then cultivates Intention to Use/Reuse (Kim *et al.*, 2009). Finally, Huh *et al.* (2009) posit that Intention to Use/Reuse is influenced by Perceived Usefulness, self-efficacy, technical support, and Social Norms, while Wang and Chen (2011) propose System Quality as a predictor of Intention to Use/Reuse mobile services.

6.14. Conclusions

One of the core principles of this research maintained that the interview process was not adequate on its own to solely cover such an extensive and multidimensional subject like IS evaluation. Due to this, the literature review was used to tackle the vastness of the IS evaluation approaches and to channel and bring together the interview questions. Equally, the findings collected by the literature review could not answer this study's aims on their own because they might be well-founded and rational but are not context specific. Context was an important issue due to the fact that hotel environments and working conditions vary significantly across continents and between different types of hotels (Wang *et al.*, 2017). Therefore, an IS evaluation variable might have been appropriate for hotels in Asia or the USA, or even Europe, but that is not to say it could be applied to assess the IS used specifically by the employees of 4star hotels in the UK (Tellis, Yin and Bell, 2009). To elaborate on this point, one needs to look no further than the perceptions of hotel employees with regards to IS and the ways in which hotels utilise systems as both are likely to differ from one region to another, according to established traditions, customs, beliefs, and business demands of each area. At the same time, IT investment, general working conditions, and quality standards may also vary between a 4 or 5star and a 2star hotel since there is a good chance that their business objectives and budgets are not the same (Gretzel, Kang and Lee, 2008). As a result, it was decided that the most apposite tactic for this study to become context specific and for its outcomes to be germane to the realities of the UK 4star hotel scene, was to bring together the information obtained by the literature review and the insight and expertise

of the hotel managers on IS use. The reasoning behind this move was that while the literature would identify and organise material related to hotel IS evaluation, the viewpoints of the hotel managers had the potential to enrich the quality of the research by validating the literature review findings in order to ensure that they can be applied in the 4star hotel sector in the UK. As a consequence, the first set of interviews was used to encourage the interviewees to talk at length about their views on IS strategy, IT training, senior management support and organisational/employee benefits. Equally, the second set of interviews, more concise and direct in comparison to the first, was brought into play with an intention to obtain the positions of the hotel managers on well-documented IS evaluation frameworks and their dimensions.

After an analysis of the interviews, it can be concluded that while several literature review findings are verified, there are also some new, previously undiscovered areas emerging from this section. The paragraphs that follow present the main conclusions from both sets of interviews. First of all, it is evident that all interviewees found IS to be virtually indispensable tools which, if not present in the workplace, would bring hotel operations back to a pen and paper era alongside all the disadvantages and difficulties associated with such conditions. Secondly, most hotel managers admitted that they have not had IT training prior to working within hospitality, a trend that conforms to the present status quo in the industry (Seymour and Sandiford, 2005). Moreover, the managers acknowledged that the IT training they had received while working for their respective hotels was particularly valuable, adding that the systems in

their workplace were reasonably easy to be trained on and that the necessary facilitating conditions (resources and time) for training and system use were available. Another topic established by the interviews was that the hotel managers were of the same opinion when it came to the level of senior managerial support provided in times of IS replacement or procurement. Albeit typically a centralised process overseen by each hotel chain's head offices, IS acquisition or substitution was perceived as a relatively effortless procedure, vastly supported by senior management. IT training, facilitating conditions and senior management support represent important IS strategies that hotels invest in to ensure increased employee performance and optimal system use (Lihalo, 2013).

The interviewees were also positive in their thoughts on the benefits they can gain by the use of IS in their workplace. This dimension, called Perceived Benefits, was measured by whether the use of systems helps employees enrich their experience and acquire new knowledge about the company they work for. Characteristically, the managers revealed that noticeable benefits for both employees and their organisations arise from the use of systems. The use of systems enables employees to complete daily tasks more quickly and efficiently, which enhances guest satisfaction. Moreover, the managers declared that their experience and knowledge had been enriched by the use of systems, a logical outcome, since prolonged use of systems has the potential to transform employees to expert users that can utilise different system functions to optimal levels.

With regards to System Quality, all the hotel managers found characteristics such as response time, reliability, flexibility and accessibility to be vitally important in everyday operations and in the endeavours of each hotel to compete successfully within the industry. Two additional components, system safety and security of transactions, were also deemed as significant by the interviewees, with the latter highlighting that modern systems should, as a minimum requirement, have the capacity and sophisticated design to be safe and provide security during transactions, especially when processing guests' personal information or credit card details. Nevertheless, when the hotel managers were asked about the design capabilities of a system including good graphics, playfulness, and a sense of enjoyment for the end-user, their views shifted and only good graphics were recognised as important, while playfulness and sense of enjoyment were described as insignificant aspects that do not have any substantial bearing on either system effectiveness or employee performance.

A final element that was added to the System Quality dimension as a meaningful factor that can influence IS performance was the location of the network server and the accompanying system support services engineers. It was revealed that the hotel managers favoured the option of having a smaller scale network server located on property against a large server positioned in a central location such as the company's headquarters. Moreover, the hotel managers disclosed that they would prefer it if the system support service centre was located at or near the hotel, because its employees would be more

mobile and could physically access the hotel in times of troubleshooting, resulting in a more effective and efficient IS.

Another dimension of IS evaluation analysed was Information Quality. All the hotel managers proclaimed that System Quality characteristics are not sufficient on their own to qualify a system as effective and confirmed Information Quality aspects including accuracy, ease of understanding, relevance, currency, and completeness, as indispensable features that enhance the overall performance of a system. Furthermore, the replies of the hotel managers suggested that they would be satisfied if the IS in their workplaces were integrated to include dynamic and personalised content.

The interviewees also established that system characteristics (System Quality) as well as information-related factors (Information Quality) were not adequate to sustain a system's completeness without the necessary support services (Service Quality), in the form of support service centres, call centres, hotlines, helpdesks, forums, online help tools, and the accompanying personnel. The majority of managers were aware what the term Service Quality entails and acknowledged that the whole hotel operation would be extremely difficult to move forward with no online help or call centre support when IT problems surfaced. In addition, the hotel managers recognised that notions such as responsiveness, effectiveness of online capabilities, and the amount of follow-up services available are central features of Service Quality. The views of the managers, however, lacked consistency when it came to the

use of logos and company colours as Service Quality components that project a sense of empathy, with most interviewees stating that they are not critical, but merely aesthetically pleasing.

The next dimension discussed during the interviews, Perceived Usefulness, originated from the technology acceptance literature. The way hotel managers perceived the term is similar to the literature definition (Davis, 1989), describing it as the extent to which an individual believes that use of a particular system would improve job performance. The interviewees emphasised that several characteristics such as speed, accuracy, effectiveness, and efficiency of the system contribute to its usefulness (Davis, 1989; Venkatesh and Davis, 2000; Kim *et al.*, 2008). Additionally, the interview results implied that a system which helps employees to complete tasks successfully and in a timely manner also boosts their job performance.

Another dimension drawn from the technology acceptance literature was Perceived Ease of Use. Davis (1989) maintains that Perceived Ease of Use is the antecedent of Perceived Usefulness as the former indirectly affects technology acceptance intention through the latter. Most interviewees responded that they usually associate an easy to use system with a capability to be specific to the task, effortless, quick, problem-free, and easy to operate, all characteristics that abide by the definition of Perceived Ease of Use as the extent to which an individual believes that use of a particular system would be free of effort (Davis, 1989).

A further dimension identified by the hotel managers was Perceived Trust, which can be applied in the hotel context on a dualistic basis. From the perspective of the guests, trust comes into view when they willingly surrender their credit card details and personal information to make a room reservation. On the other hand, the employee point of view involves the trust and confidence they need to have in the systems they use to handle guests' credit card details and personal information in a professional manner. All the interviewees responded that they trust the systems in their workplace implicitly, noting, however, that there is always room for improvement. It could be argued that Perceived Trust may not be as critical as other dimensions (Information Quality or Perceived Usefulness) in the hotel environment, where System Use is mandatory, and employees have to use certain systems regardless of whether they trust them or not. Nonetheless, if trust is present among hotel employees, it can be postulated that their work performance will also be enhanced because trust is synonymous with feelings of confidence and security (Rempel *et al.*, 1985). In turn, better employee performance is beneficial for the hotel and can ultimately lead to increased system use (Wong and Sohal, 2002). Besides improving performance levels, trust also positively influences User Satisfaction (Pavlou, 2003; Yu *et al.*, 2005; Ling *et al.*, 2011).

One of the most extensively studied concepts within the literature is User Satisfaction. In the context of this study (IS used by employees) it is usually related to the overall performance of systems, the general experience of using them daily, and the level of loyalty between employee and system that can be established by IS use. DeLone and McLean (2004) indicate that User

Satisfaction should signify the entire experience of user/IS interaction, including information retrieval, transactions, and the overall performance of a system. Molla and Licker (2001) share this view and see User Satisfaction as the reaction or feeling of users in relation to their experience with all aspects of the system. Accordingly, all hotel managers responded that they were pleased with the manner the systems at their workplace function. Furthermore, they were satisfied by their everyday interaction with the systems and the general experience of using them.

The penultimate concept analysed in the second set of interviews was Subjective Norm, which has its origins in the literature on attitudes and behaviours. An individual's intention to perform a specific act is a function based on attitude toward behaviour and the associated Subjective Norm (Fishbein and Ajzen, 1975). The interviewees acknowledged the presence of subjective Norm as an element that affects the intentions and behaviours of hotel employees to use systems in their workplace. Subjective Norm was proved as a valid predictor of intentions and behaviours, especially in environments where IS use is mandatory such as hospitality.

The final dimension explored in the interview process was Intention to Use/Reuse, which is closely related to intentions and behaviours, as well as actual system use. DeLone and McLean (2003) recommend that although Intention to Use and actual use are alternatives, the former is a more practical variable in the context of mandatory system use. This research leans towards

using the term Intention to Use as opposed to actual use because in the hotel setting, where the use of Information Systems is compulsory, actual use is constant and always present since employees need to use their systems to store and produce information, process transactions and complete their daily tasks. Therefore, Intention to Use is a more sensible and realistic representation of system usage within the mandatory use environment. Intention to Use can be assessed by metrics including whether a system is dependable and functional, and its capability to cover all business needs. These metrics were verified by the interviewed hotel managers.

If Intention to Use a system is sustained over time, the system's users will be inclined to reuse it in the future (Intention to Reuse). This involves measurements such as recommendation and the capability of the system (in terms of its performance and operation) to compete with rival IS. The interviewees showed that they were ready to recommend the systems they use to colleagues from other hotels and would be comfortable to both talk positively about the online capabilities of those systems and keep using them in the future.

Prior to a summary of the findings of the interview process, their visual representation by means of a table is provided in order to recap the analysis. The table below (Table 6.1) shows how the themes identified by the literature review (A Priori themes) have been transformed by the interview process and

presents the final themes (Emergent themes). The table also includes the reference sources from which the A Priori themes have originated.

A PRIORI THEMES	EMERGENT THEMES
Managers' Perceptions of IS Use and IS Strategies	
Importance of IS at work	**Importance of IS at work** • *IS are indispensable tools* • *IS enable employees to complete tasks*
IT Training • Level of IT Training • Overall importance of IT Training Ives, Olson and Baroudi (1983) Igbaria, Guimaraes and Davis (1995) Guimaraes and Igbaria (1997) Bharati and Berg (2003) Sabherwal, Jayaraj and Chowa (2006) Choi, Kim and Kim (2007) Kim, Lee and Law (2008) Koh, Gunasekaran and Cooper (2009)	**IT Training** • Level of IT Training • Overall importance of IT Training • *Systems are easy to train on* • *Hotel IT Training strategy*
Facilitating Conditions • Resources and time • Supporting organisational policies • Organisational culture • Healthy job conditions Taylor and Todd (1995)	**Facilitating Conditions** • Resources and time • Supporting organisational policies • Organisational culture • Healthy job conditions • *Availability of Facilitating Conditions*

Venkatesh, Morris and Davis (2003) Staples and Seddon (2004) Sabherwal, Jayaraj and Chowa (2006) Park and Lee (2011) Sun and Bhattacherjee (2011)	
Senior Management Support • Senior Management Support provides employee benefits • Senior Management Support provides leadership • Senior Management Support provides the necessary resources Thong , Yap and Raman (1996) Jafari, Osman, Yusuff and Tang (2006) Burton-Jones and Hubona (2008) Kim, Lee and Law (2008) Rouibah, Hamdy and Al-Enezi (2009)	**Senior Management Support** • Senior Management Support provides employee benefits • Senior Management Support provides leadership • Senior Management Support provides the necessary resources • *Senior Management Support during IS replacement* • *Senior Management support during software/hardware upgrades*
Managers' Perceptions of IS Evaluation Frameworks	
System Quality • Response Time • Minimisation of delays • Effective and productive operations Emery (1971) Swanson (1974) Belardo, Karwan and Wallace (1982) Bailey and Pearson (1983) Srinivasan (1985) DeLone and McLean (1992) Tiwana (1998) Molla and Licker (2001) Nielsen (2003)	**System Quality** • Speed/Response Time • Minimisation of delays • Effective and productive operations • *Enhanced customer service* • *Speedier daily task completion* • *Minimisation of negative feedback*

• Reliability • Consistent IS Performance • IS performance according to required specifications Swanson (1974) Hamilton and Chervany (1981) Srinivasan (1985) DeLone and McLean (1992) Tiwana (1998) Liu and Arnett (2000) Ünal (2000) Aladwani and Palvia (2002) Limayem, Vogel and Hillier (2003)	• Reliability • Consistent IS Performance • IS performance according to required specifications • *Undisrupted operations* • *Hotel remains competitive*
• Accessibility • Daily task completion • Faultless IS connectivity DeLone and McLean (1992) Drury and Farhoomand (1998) Tiwana (1998) Turban and Gherke (2000)	• Accessibility/Flexibility • Daily task completion • Faultless IS connectivity • Flexible file access/storage/transfer • *Uninterrupted operations*
• Flexibility • Flexible file access/storage/transfer Hamilton and Chervany (1981) Mahmood (1987) DeLone and McLean (1992) Peppers and Rogers (1997)	
• Safety/security of transactions • Security in transactions • System is safe to use • Secure log in process Ünal (2000) Molla and Licker (2001) Barnes and Vigden (2002) Mich, Franch and Gaio (2003)	• System Safety/Security • Security in transactions • System is safe to use • Secure log in process • *Secure handling of personal information* • *IS is Payment Card Industry compliant* • *IS abides to GDPR standards*

Ahn, Ryu and Han (2004) • Design • Good graphics • Playfulness • Sense of enjoyment Liu and Arnett (2000) Cho and Park (2001) Kim and Lim (2001) Ahn, Ryu and Han (2004) Choi, Lehto and Morrison (2007)	• System Design • *Quality of graphical user interface* • *Aesthetically pleasing design* **Playfulness and Sense of Enjoyment Have Not Been Corroborated by the Interviews** • *Location of the Network Server* • *Location of the system support service centre personnel* • *Improved IS connectivity* • *Personalised service* • *Direct control of IS*
Information Quality • Accuracy/Understandability of information • Correct information communication • Accurate information input/output • Improves overall IS quality • Improves employee performance • IS supports organisational needs Neumann and Segev (1980) Olson and Lucas (1982) Bailey and Pearson (1983) Miller and Doyle (1987) Doll and Torkzadeh (1988) DeLone and McLean (1992) Molla and Licker (2001) Aladwani and Palvia (2002) Barnes and Vigden (2002)	**Information Quality** • Information Accuracy • Correct information communication • Accurate information input/output • Information and Ease of Understanding • Improves overall IS quality • Improves employee performance • IS supports organisational needs • *Less time-wasting for employees*

• Relevance of information • Relevant data input • User preference information Bailey and Pearson (1983) Srinivasan (1985) Miller and Doyle (1987) DeLone and McLean (1992) Molla and Licker (2001)	• Information Relevance • Relevant data input • User Preference Information
• Currency of information • IS regularly updated • Information is up to date Bailey and Pearson (1983) King and Epstein (1983) DeLone and McLean (1992) D'Ambra and Rice (2001) Aladwani and Palvia (2002) Barnes and Vigden (2002)	• Information Currency • IS regularly updated • Information is up to date • *Up to date information is accurate*
• Completeness of information • IS covers all information needs • Information integration across multiple channels Bailey and Pearson (1983) Miller and Doyle (1987) DeLone and McLean (1992) Zwass (1996) Palmer (2002)	• Information Completeness • IS covers all information needs • Information integration across multiple channels • *Enhances overall performance*
• Personalised content • IS projects a feeling of individuality Barua, Whinston and Yin (2000) Molla and Licker (2001) Barnes and Vigden (2002)	• Dynamic and Personalised Content • IS projects a feeling of individuality • Variety of information

Mich, Franch and Gaio (2003) • Dynamic content • Variety of information Parsons, Zeisser and Waitman (1998) Tierney (2000) Albert, Goes and Gupta (2004)	• *Improved service through knowledge of guest preferences* • *Departmentalised IS*
Service Quality • Responsiveness • Quick assistance response • Service of call centres, online system support, helpdesks, real-time web tools Parasuraman, Zeithaml and Berry (1985; 1988) Pitt, Watson and Kavan (1995) Liu and Arnett (2000) Young and Benamati (2000) Wang and Tang (2003) Ahn, Ryu and Han (2004) Hu (2009) • Online support capabilities • FAQs • Forums Liu and Arnett (2000) Young and Benamati (2000) Ahn, Ryu and Han (2004) • Follow-up services Liu and Arnett (2000) Young and Benamati (2000) Smith (2001) Ahn, Ryu and Han (2004) • Feeling of empathy • Company colours • Recognisable logos	**Service Quality** • Responsiveness and Effectiveness of Online Support Services • Quick assistance response • Service of call centres, online system support, helpdesks, real-time web tools • Online support capabilities • FAQs • Forums • Follow-up services • *Software and hardware engineers* • *Effective issue resolution* • *Importance of Online Support Services* • *Every IS needs an IT support team* • *Service centres are a minimum requirement for the modern hotel* • Sense of empathy

Parasuraman, Zeithaml and Berry (1985; 1988) Wang and Tang (2003) Ahn, Ryu and Han (2004) Liu and Arnett (2000) Young and Benamati (2000) Molla and Licker (2001)	**Use of Identifiable Logos and Company Colours Have Not Been Corroborated by the Interviews**
Perceived Usefulness • Effective task accomplishment • Efficiency of task completion • IS supports employees in daily duties • Quick task accomplishment • IS improves job performance Nielsen (1993) Pavlou (2003) Vijayasarathy (2004) Kim, Lee and Law (2008) Morosan and Jeong (2008) Pavlou (2003) Vijayasarathy (2004) Kim, Lee and Law (2008) Morosan and Jeong (2008) Pavlou (2003) Vijayasarathy (2004) Kim, Lee and Law (2008) Morosan and Jeong (2008) Davis (1989) Venkatesh and Davis (2000) Pavlou (2003) Vijayasarathy (2004) Shih (2004) Lai and Li (2005) Wixom and Todd (2005)	**Perceived Usefulness** • Effective task accomplishment • Efficiency of task completion • IS support employees in daily duties • Quick task accomplishment • IS improves job performance • *Personalisation of services* • *System produces understandable reports* • *Accuracy and effectiveness* • *Speed and reliability*

King and He (2006) Kim, Lee and Law (2008) Morosan and Jeong (2008)	
Perceived Ease of Use • Easy to use system • System is user-friendly • Unproblematic and effortless system use • System is specific to the task at hand • Interaction with IS is easy to understand • Information is easy to find Davis (1989) Venkatesh and Davis (2000) Pavlou (2003) Shih (2004) Vijayasarathy (2004) Kim, Lee and Law (2008) Davis (1989) Law and Chen (2000) Venkatesh and Davis (2000) Christou and Kassianidis (2002) Pavlou (2003) Shih (2004) Vijayasarathy (2004) Kim, Lee and Law (2008) Davis (1989) Law and Chen (2000) Venkatesh and Davis (2000) Christou and Kassianidis (2002) Pavlou (2003) Shih (2004) Vijayasarathy (2004) Kim, Lee and Law (2008)	**Perceived Ease of Use** • Easy to use system • System is user-friendly • Unproblematic and effortless system use • System is specific to the task at hand • Interaction with IS is easy to understand • Information is easy to find • *System obtains information quickly* • *System designed to employees' specifications* • *System offers high-quality output*

Venkatesh and Davis (2000) Christou and Kassianidis (2002) Pavlou (2003) Lai and Li (2005) Wixom and Todd (2005) King and He (2006) Vijayasarathy (2004) Lai and Li (2005) Wixom and Todd (2005) King and He (2006) Kim, Lee and Law (2008) Morosan and Jeong (2008) Law and Chen (2000) Pavlou (2003) Shih (2004) Vijayasarathy (2004) Lai and Li (2005) Wixom and Todd (2005) King and He (2006) Kim, Lee and Law (2008) Morosan and Jeong (2008)	
Perceived Benefits • Employee Benefits • IS helps acquire new knowledge • IS helps acquire experience • Swift and effective task completion • Enhanced employee performance • Higher levels of guest satisfaction Dodds, Monroe and Grewal (1991) Hoffman and Novak (1996) Loftus (1997) Torkzadeh and Doll (1999) Vijayasarathy (2004)	**Perceived Benefits** • Employee Benefits • IS helps acquire new knowledge • IS helps acquire experience • Swift and effective task completion • Enhanced employee performance • Higher levels of guest satisfaction • *Continuous IS use makes employees expert users*

Wu and Wang (2006) Kim, Lee and Law (2008) • Organisational Benefits • Data analysis/decision-making support • Personalisation • Interaction Dodds, Monroe and Grewal (1991) Hoffman and Novak (1996) Loftus (1997) Wu and Wang (2006) Kim, Lee and Law (2008)	• Organisational Benefits • Data analysis/decision-making support • Personalisation • Interaction • *Efficient payroll control*
Perceived Trust • System projects a feeling of trustworthiness • System projects a feeling of dependability • IS handles credit card details and personal information securely • IS processed previous transactions expertly (Rempel, Holmes and Zanna, 1985) Gefen (2000) Pavlou (2003) McKnight and Chervany (2002) Mich, Franch and Gaio (2003) Pavlou (2003) Yu, Ha, Choi and Rho (2005) Gefen (2000) Olson and Olson (2000) McKnight and Chervany (2002) Mich, Franch and Gaio (2003) Pavlou (2003) Yu, Ha, Choi and Rho (2005)	**Perceived Trust** • System projects a feeling of trustworthiness • System projects a feeling of dependability • IS handles credit card details and personal information securely • IS processed previous transactions expertly • *System must be improvable*

User Satisfaction	User Satisfaction
• Good information retrieval process • IS enables loyalty to be established • Overall performance of IS • General experience of using the IS	• Good information retrieval process • IS enables loyalty to be established • Overall performance of IS • General experience of using the IS
Alomaim, Tunca and Zairi (2003) Bokhari (2005) Cheung and Lee (2005) Wixom and Todd (2005) Stockdale and Borovicka (2006) Kim, Lee and Law (2008) Reichheld and Schefter (2000) Turban, King, Viehland and Lee (2006) McKinsey and Company (1968) Powers and Dickson (1973) Swanson (1974) Lucas (1978) Bailey and Pearson (1983) Ives, Olson and Baroudi (1983) King and Epstein (1983) Barti and Huff (1985) Baroudi, Olson and Ives (1986) Doll and Torkzadeh (1988) DeLone and McLean (1992, 2004) Seddon and Yip (1992) Reichheld and Schefter (2000) Cox and Dale (2001) Molla and Licker (2001) Szymanski and Hise (2001) Singh (2002) Alomaim, Tunca and Zairi (2003) Bokhari (2005) Cheung and Lee (2005)	• *System assists with task completion* • *System simplifies operations*

Wixom and Todd (2005) Stockdale and Borovicka (2006) Kim, Lee and Law (2008) King and Epstein (1983) Barti and Huff (1985) Baroudi, Olson and Ives (1986) Doll and Torkzadeh (1988) DeLone and McLean (1992, 2004) Seddon and Yip (1992) Reichheld and Schefter (2000) Cox and Dale (2001) Molla and Licker (2001) Szymanski and Hise (2001) Singh (2002) Alomaim, Tunca and Zairi (2003) Bokhari (2005) Cheung and Lee (2005) Wixom and Todd (2005) Stockdale and Borovicka (2006) Kim, Lee and Law (2008)	
Social Norms • Behaviour to use IS is affected by the beliefs of influential colleagues Ajzen and Fishbein (1973) Fishbein and Ajzen (1975) Ajzen and Fishbein (1977) Oliver and Bearden (1985) Venkatesh and Davis (2000) Kim, Lee and Law (2008) Rivis, Sheeran and Armitage (2009)	**Social Norms** • Behaviour to use IS is affected by the beliefs of influential colleagues • *Managers can influence employees about system use* • *Managers should display positive attitudes towards systems*
Intention to Use/Reuse	**Intention to Use/Reuse**

• IS performance and operation on a similar level as other hotels • Positive feedback on the online capabilities of the IS • Recommendation • Intention to Reuse IS	• IS performance and operation on a similar level as other hotels • Positive feedback on the online capabilities of the IS • Recommendation • Intention to Reuse IS
Mathieson (1991) DeLone and McLean (2004) Shih (2004) Lam, Cho and Qu (2007) Schaupp (2010) Wixom and Todd (2005) Lam, Cho and Qu (2007) Venkatesh and Davis (2000) Wixom and Todd (2005) Lam, Cho and Qu (2007) Venkatesh and Davis (2000) Venkatesh, Speier and Morris (2002) DeLone and McLean (2004) Shih (2004) Wixom and Todd (2005) Lam, Cho and Qu (2007) Schaupp (2010)	• *System covers all business needs* • *Intention to use is set according to User Satisfaction* • *System has future potential*

Table 6.1. A Priori and Emerging Themes

It is evident from Table 6.1 above that there is a number of IS evaluation dimensions and constructs that emerge both from the literature and the interview findings. The literature review ensured that the whole pool of IS evaluation constructs was visited in order to extract the measures that were pertinent to the evaluation of systems from an IS Success and technology adoption perspective. The interview process then filtered these through the

beliefs of the hotel managers. This gave the IS evaluation measures a specificity, a context, which means that they are applicable to a 4 or 5-star hotel environment. Since applicability and context have been accomplished, the next step is to synthesise these dimensions and constructs into a theoretical model that can measure employee Intention to Use/Reuse Information Systems in a luxury hotel environment. It is also crucial to mention that this study does not test the proposed model at any stage, as its main aspiration is theory building and not testing.

6.15. Proposed Integrated IS Success/Technology Adoption Model

The Interview Findings Discussion chapter has established the IS evaluation dimensions that have been found as significant for the 4 and 5-star hotel industry, after being corroborated by the literature review and the interviews. Thus, these dimensions can now be assembled in order to present the Proposed Integrated IS Success/Technology Adoption Model of this thesis. The model can be viewed below, in Figure 6.1.

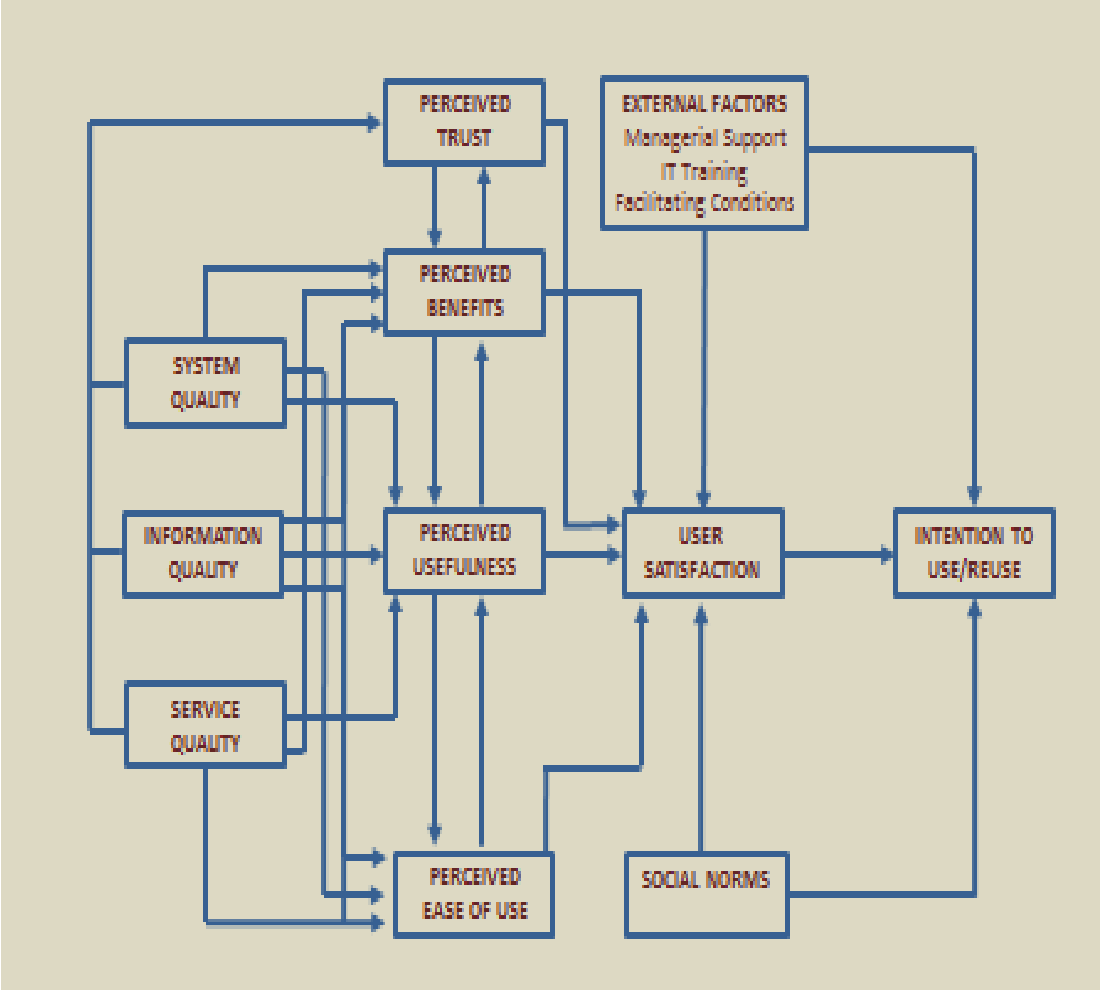

Figure 6.1. Proposed Integrated IS Success/Technology Adoption Model

The name of the Model was conceived to present an integration between the IS Success Model (DeLone and McLean, 1992;2003), and the TAM (Davis, 1989), with the addition of other constructs such as Perceived Benefits, Perceived Trust, Social Norms, and External Factors. The Model was designed to measure the success and technology adoption of IS, using Intention to Use/Reuse as the dependent variable. More specifically, it explains how the effects of the quality dimensions (System Quality, Information Quality, Service Quality) affect the perception dimensions (Perceived Trust, Perceived Benefits, Perceived Usefulness, Perceived Ease of Use). The perceived dimensions are the antecedents of User Satisfaction, which in combination with Social Norms, influence the hotel employees' Intention to Use/Reuse IS. The literature has proved that relationships between these dimensions and their constructs exist, and these are explained below. For instance, it is expected that a combination of high System Quality, Information Quality and Service Quality, will lead to systems that are trustworthy, provide several benefits for their users, are easy to use and assist employees with their jobs. This, in turn, is expected to result in users being satisfied with the systems they use. If the right conditions are present (employees are IT trained, system adoption is supported by top management, and there is money and time spent on adopting new systems), and influential colleagues within the hotel talk positively about the capabilities of the systems, then employees are expected to have good intentions to use and reuse these IS in the future.

Alternatively, the conception behind the model can also be explained as follows: the three quality dimensions (System, Information, and Service)

influence Perceived Trust, Perceived Benefits, Perceived Usefulness, and Perceived Ease of Use. In turn, these attitude dimensions affect each other and influenced by External Factors and Social Norms, affect User Satisfaction, and ultimately, Intention to Use/Reuse. The Proposed Integrated IS Success/Technology Adoption Model is based upon several relationships between its dimensions, represented by the arrows in Figure 6.1. As mentioned above, these relationships have not been tested by the present study but have been identified in the literature and are analysed below.

6.15.1. Interrelationships between System Quality, Information Quality, and Service Quality

The interrelationships between System Quality, Information Quality and Service Quality have been documented in the IS Success Model (DeLone and McLean, 1992; 2003; 2004). DeLone and McLean (1992) mention that although early Information Systems studies focus on identifying and measuring the characteristics and performance of the processing system itself (System Quality), a vast number of researchers prefer to concentrate on the quality of the information system output or the quality of the reports that a system can produce (Information Quality). The two dimensions are interconnected in that one could not exist without the other, as it is the system's processing abilities that produce reports and information output, while a system would have not purpose if it was not to process information (Mason, 1978). In terms of the relationship between System Quality and Information Quality with Service Quality, Pitt *et al.* (1995) posit that the term 'IS' does not

encapsulate only the technical and information aspects of a system, but also its service. More specifically, "*the IS department is not just a provider of products. It is also a service provider*" (Pitt *et al.*, 1995:174), thus making Service Quality a key indicator of Is Success.

6.15.2. Relationships between System Quality, Information Quality, Service Quality and Perceived Trust

The relationship between System Quality/Information Quality/Service Quality and Perceived Trust is verified by Vance, Elie-Dit-Cosaque, and Straub (2008), who in a study that empirically tests a model of Perceived Trust in IT artefacts, find that System Quality constructs significantly influence users' trust in IS activity. A further study that confirms this relationship is by Suki (2012) who, in an effort to find parallels between the quality dimensions and trust in a mobile social networking service context, discovers a strong correlation between System Quality, Information Quality and Perceived Trust. In a research on consumer attitudes towards online shopping, Al-Debei, Akroush and Ashouri (2015) also discover the effect of System Quality and Information Quality (termed Web Quality by the authors) on Perceived Trust. The proposed path from Service Quality to Perceived Trust is supported by Kassim and Asiah Abdullah (2010), who empirically prove that Service Quality is a strong antecedent of Perceived Trust within an e-commerce setting. This is further corroborated in a study of online self-service systems by Hwang and Kim (2007) who attest that web quality (System and Information Quality) and service contents (Service Quality) have a profane effect on users' e-trust.

6.15.3. Relationships between System Quality, Information Quality, Service Quality and Perceived Benefits

The next path to be analysed is the one between System Quality, Information Quality, Service Quality and Perceived Benefits. In a study of customer support IS, Negash *et al.* (2003) discover that both System Quality and Information Quality have an impact on the Perceived Benefits of users and on system effectiveness. While evaluating new development stages of IS, Goffin (1998) recommends that IS managers and designers should include the quality dimensions in their plans for new technology development, as they can deliver Perceived Benefits including improved cost control and strategy formation. While researching the adoption of mobile hotel reservation systems, Wang and Wang (2010) reveal that System Quality and Information Quality are the two critical components influencing Perceived Benefits (presented as perceived value in their paper). Service Quality is also found to affect Perceived Benefits. A study that develops an instrument that evaluates IS measurements in mobile value-added services environments, Kuo, Wu and Deng (2009) posit that Service Quality, measured predominantly by levels of customer service and reliability, positively influences Perceived Benefits. This direct relationship is complemented by Service Quality also having an indirect effect on Intention to Reuse, through Perceived Benefits and User Satisfaction. In a paper that seeks to develop a framework that integrates attitudinal perspectives and behavioural intentions, Jen, Tu and Lu (2011) not only find a relationship between Service Quality and Perceived Benefits, but also theorise that the latter have often been operationalised in terms of Service Quality. It has also been shown in the marketing literature that Perceived

Benefits in a service result mainly due to Service Quality (Zeithaml, 1998; Lapierre, Filiatraut and Chebat, 1999).

6.15.4. Relationships between System Quality, Information Quality, Service Quality and Perceived Usefulness

The next relationship to be justified is that between System Quality, Information Quality, Service Quality and Perceived Usefulness. Liaw (2008) discover a strong correlation between System Quality and Perceived Usefulness in an e-learning context. They findings show that System Quality is the biggest predictor that enhances the Perceived Usefulness of e-learning systems. Saeed and Abdinnour-Helm (2008) provide evidence that both System Quality (measured by system integration) and Information Quality strongly influence Perceived Usefulness. Moreover, they also determine that both have a direct effect on system use, with Information Quality affecting extended system use, while System Quality affecting exploratory system use. Naidoo and Leonard (2007) find a positive relationship between Service Quality and Perceived Usefulness, in a study that proposes a model of e-service continuance by integrating the Technology Acceptance Model (Davis, 1989) with theoretical findings from marketing research. Their results indicate that continuance is determined by the higher Perceived Usefulness of the e-service, whereas Service Quality is more effective at lower levels of Perceived Usefulness.

6.15.5. Relationships between System Quality, Information Quality, Service Quality and Perceived Ease of Use

The final relationship between the quality dimensions and the perception dimensions is the one between System Quality, Information Quality, Service Quality and Perceived Ease of Use. In a study of IS usage, Igbaria, Guimaraes and Davis (1995) confirm that System Quality, together with computer experience exert a strong impact on users' perceptions of ease of use. Furthermore, while exploring factors linked to IS Success in the context of e-commerce, Liu and Arnett (2000) utilise ease of use as one of the measurements of System Quality. A study on intentions to use e-government portals (Almahamid, McAdams, Al-Kalaldeh and Al-Saeed, 2010) discovers a significant positive relationship between Information Quality and Perceived Ease of Use; these two dimensions are also found to influence Intention to Use IS. On the same subject, Seddon (1997) postulates that System Quality and Information Quality are two major determinants not only of Perceived Ease of Use, but also Perceived Usefulness. The presence of the relationship between Service Quality and Perceived Ease of Use is validated by the findings of Yang, Cai, Zhou and Zhou (2005), who develop a five-dimension instrument that measures Service Quality of IS. The existence of this relationship is also vindicated by Yang and Jun (2004) in a study that proposes a scale of measurement for Service Quality.

6.15.6. Relationships between Perceived Trust and Perceived Benefits

The next step in explaining the flow of the Proposed Integrated IS Success/Technology Adoption Model of this thesis is to present the interrelationships between the perception dimensions. The literature provides evidence for the relationship between Perceived Trust and Perceived Benefits. In a study that develops and tests a theoretical model that rationalises decision-making in e-commerce, Kim, Ferrin and Rao (2008) find that Perceived Benefits affect Perceived Trust and perceived risk, and all together have an influence on Intention to Use/Reuse. The authors explain that a user will be more likely to use an IS (Intention to Use/Reuse) when perceived risks are low, Perceived Benefits are high, and Perceived Trust is high. Kim, Xu and Gupta (2012) also find that Perceived Trust and Perceived Benefits are related, in a research that looks into online purchasing decisions. Their results indicate that Perceived Trust exerted a stronger effect than Perceived Benefits on Intention to Use/Reuse.

6.15.7. Relationships between Perceived Trust and Perceived Usefulness/Perceived Ease of Use

Perceived Trust is also found to affect Perceived Usefulness and Perceived Ease of Use. Gefen, Karahanna and Straub (2003) propose a modified TAM, with the integration of Perceived Trust to Perceived Usefulness and Perceived Ease of Use. Their results show that Perceived Trust is as important to online commerce as the widely accepted TAM use-antecedents, and that together,

these dimensions explain a considerable proportion of variance in Intention to Use/Reuse. A study that draws on TAM to develop a model for User Satisfaction with mobile services (Amin, Rezaei and Abolghasemi (2014) produces comparable results by confirming that Perceived Trust is positively related to Perceived Usefulness and Perceived Ease of Use, and all three positively influence User Satisfaction.

6.15.8. Relationships between Perceived Benefits and Perceived Usefulness/Perceived Ease of Use

There is also evidence that Perceived Benefits have an effect on Perceived Usefulness and Perceived Ease of Use. A study on online banking (Lee, 2009) that integrates Perceived Benefits with the TAM and Theory of Planned Behaviour (Ajzen, 1985) in order to propose a theoretical model that could measure Intention to Use/Reuse, finds the presence of a relationship between Perceived Benefits, Perceived Usefulness and Perceived Ease of Use. The same research also reveals that Intention to Use/Reuse is positively affected by Perceived Benefits and Perceived Usefulness, but not by Perceived Ease of Use. While evaluating users' adoption of innovative technologies in the retail sector, Renko and Druzijanic (2014) discover the presence of a relationship between Perceived Benefits, Perceived Usefulness and Perceived Ease of Use.

6.15.9. Interrelationships between Perceived Usefulness and Perceived Ease of Use

Perceived Usefulness and Perceived Ease of Use originate from the same model, the TAM; therefore, their relationship is proved by the high correlation found between the two constructs and the theoretical assumptions associated with the TAM. Its creator, Fred Davis, posits that from a causal perspective, Perceived Ease of Use is an antecedent to Perceived Usefulness, and both contribute to usage of an IS (Davis, 1989). Davis (1989) maintains that the casual influence of Perceived Ease of Use on Perceived Usefulness is also justifiable conceptually because the easier a system is to interact with, the less effort is necessary to operate it, thus allowing for more effort to be allocated to other activities, which can contribute to overall job performance.

6.15.10. Relationships between System Quality, Information Quality, Service Quality and User Satisfaction

The next step is to analyse the link between the quality dimensions and User Satisfaction. There is strong support for the relationship between the three quality dimensions and User Satisfaction in the literature. According to Petter, DeLone and McLean (2008), the type of IS under consideration affects the manner in which the quality dimensions are measured. For instance, Hwang and Thorn (1999) find that System Quality has a positive impact on User Satisfaction, mediated by the presence of user engagement. Using reliability and response time as measures, Palmer (2002) discovers that System Quality has a strong positive relationship with User Satisfaction. Measuring

Information Quality by timeliness, reasonability, consistency, and punctuality, Baroudi, Olson and Ives (1986) discover that it has a strong positive relationship with User Satisfaction. This conclusion is shared by the study by Kim, Lee, Han and Lee (2002) who measure Information Quality through layout and content. Amoroso and Cheney (1991) describe System Quality and Information Quality as the two major constructs of User Satisfaction. Doll and Torkzadeh (1988) consider User Satisfaction in terms of System Quality (measured by ease of use and accuracy) and Information Quality. Other researchers that confirm this relationship include Seddon and Kiew (1996), Bharati (2002), and Wixom and Todd (2005). As far as Service Quality is concerned, Leonard-Barton and Sinha (1993) find that the technical performance and responsiveness of the IS support team is positively associated to User Satisfaction. Leclercq (2007) discovers that a combination of the IS function and the quality of the support services have an impact on User Satisfaction.

6.15.11. Relationships between Perceived Trust and User Satisfaction

It is also important to establish the relationships between the perception dimensions and User Satisfaction. Using loyalty as the dependent variable and Perceived Trust and User Satisfaction as mediating variables, Kim, Chung and Lee (2011) find that Perceived Trust positively affects User Satisfaction in the context of e-commerce. Corbitt, Thanasankit and Yi (2003) suggest that User Satisfaction is likely to increase if users sense a higher level of trust and are

more experienced in using the Internet. Jones and Leonard (2008) develop a model of Perceived Trust based on e-commerce markets and identify a relationship between trust measurements (including loyalty) and User Satisfaction. The existence of such relationship is also supported by Harris and Goode (2004).

6.15.12. Relationships between Perceived Benefits and User Satisfaction

The literature also presents evidence of the relationship between Perceived Benefits and User Satisfaction. While studying the connections between IS expectations, Perceived Benefits and User Satisfaction, Staples, Wong and Seddon (2002) find a positive relationship between Perceived Benefits and User Satisfaction. However, they warn that unrealistically high IS expectations could lead to decreased Perceived Benefits and User Satisfaction. Based on a meta-analysis on 45 empirical studies, Mahmood, Burn, Gemoets and Jacquez (2000) propose a model designed to measure User Satisfaction. The main constructs of the model are Perceived Benefits, user background and organisational support.

6.15.13. Relationships between Perceived Usefulness, Perceived Ease of Use and User Satisfaction

Furthermore, there are also studies that establish the relationship between Perceived Usefulness and Perceived Ease of Use with User Satisfaction. Wixom and Todd (2005) divide User Satisfaction into information satisfaction and system satisfaction but find positive relationships between the two constructs and Perceived Usefulness and Perceived Ease of Use, more specifically Perceived Usefulness influencing information satisfaction, and Perceived Ease of Use influencing system satisfaction. Amin, Rezaei and Abolghasemi (2014) also find that there is a positive relationship between Perceived Usefulness, Perceived Ease of Use and Use Satisfaction among mobile website users.

6.15.14. Relationships between Social Norms and User Satisfaction

The next relationship to be corroborated is between Social Norms and User Satisfaction. Social Norms (also referred to as subjective norm) is mostly associated with Intention to Use/Reuse (Fishbein and Ajzen, 1978), however, its relationship with User Satisfaction is also documented. Thong and Yap (1996) find evidence of a relationship between Social Norms and User Satisfaction in a study of access to online databases. Lee (2010) finds that Social Norms have a positive effect on User Satisfaction, and that the two dimensions, combined with Perceived Usefulness, attitude, concentration and

perceived behavioural control have significant effect on Intention to Use/Reuse.

6.15.15. Relationships between External Variables and User Satisfaction

It is also useful to justify the path between External Variables (IT Training, Facilitating Conditions and Senior Managerial Support) and User Satisfaction. Igbaria, Zinatelli, Cragg and Cavaye (1997) reveal that exogenous factors and in particular Senior Management Support have an impact on User Satisfaction. Al-Gahtani and King (1999) modify the Tam by adding several constructs including compatibility, user characteristics, and system rating. Their results reveal that External Variables influence User Satisfaction, and that a TAM with different external variables than the original can better predict attitudes and usage from beliefs.

6.15.16. Relationships between User Satisfaction and Intention to Use/Reuse

The final relationship to be verified is between User Satisfaction and Intention to Use/Reuse. Rai *et al.* (2002) find that User Satisfaction is strongly correlated to Intention to Use/Reuse when gauged by system dependence. Kim, Kim and Wachter (2013) find that User Satisfaction influences Intention to Use/Reuse in a mobile IS user engagement setting. Liaw (2008) discovers that User

Satisfaction, together with Perceived Usefulness, are the main predictors of Intention to Use/Reuse in an e-learning context. Belanche, Casalo and Guinaliu (2012) also establish that User Satisfaction has a direct effect on Intention to Use/Reuse. Other researchers to confirm this relationship include Kim *et al.* (2002), Wu and Wang (2006), and Chiu, Chiu and Chang (2007). Finally, Wixom and Todd (2005) find a strong relationship between User Satisfaction and Intention to Use/Reuse, when both dimensions are mediated by technology acceptance constructs.

6.16. Summary

The main intention of this chapter was to put forward a discussion based on the findings brought to light by the interviews. The findings were organised according to theme and analysed in order to establish which IS evaluation dimensions and themes have been deemed as significant by the interviewees. Additionally, the findings were assessed with reference to the literature review in order to create linkages between primary and secondary research. Finally, conclusions were drawn from the results and the analysis of the interview process, producing the Proposed Integrated IS Success/Technology Adoption Model of this thesis. The model is founded on the principles and concepts unearthed by the literature review and based on the findings of the primary research process. Initially, the discussion focused on the external variables permeating the proposed model, including IT training, facilitating conditions, and senior management support. Then, potential employee and organisational benefits were explored. After this, the discussion moved towards the three quality dimensions, namely System Quality, Information Quality, and Service Quality, before progressing to the perception dimensions, more specifically Perceived Trust, Perceived Benefits, Perceived Usefulness and Perceived Ease of Use. The ensuing step was to concentrate on User Satisfaction and Social Norms, while the final dimension to be considered was Intention to Use/Reuse. An attempt was made to explain how each dimension and subtheme is applicable to the realities of the 4 and 5-star hotel industry. Finally, a synopsis of the dimensions and their constructs as identified by the literature review and the interviews was provided in order to show comparisons between

them and to form the basis for the Proposed Integrated IS Success/Technology Adoption Model.

The core function of the interviews was to provide the necessary context to this study and to corroborate the literature review findings in a manner that would allow the research model to be proposed. Overall, it can be deduced that the interview process was successful in achieving what it intended to do. Context and specificity enriched this thesis because the analysis of the interviews was based on the thoughts and interpretations of department managers from 4 and 5-star hotels in the UK, as opposed to generic and non-specific views from other regions or hotels with different star ratings.

Chapter 7: Conclusions and Recommendations

7.1. Introduction

The main ambition of this thesis is to develop and propose an integrated theoretical model that measures Intention to Use/Reuse IS used by employees in the 4 and 5-star full-service hotel sector in the UK. In order to achieve this, the Integrated IS Success/Technology Adoption Model was developed based on the relevant literature and on the views of 4 and 5-star hotel managers, obtained by a process involving interviews. After reviewing the literature on existing IS evaluation frameworks and models (Chapter 2), the study moved to assess the literature publications that are pertinent to evaluation of IS used by employees, with a focus on hotel employees (Chapter 3). The subsequent chapter (Chapter 4) represented the methodology of the study. Guided by an interpretive philosophy, the primary research was carried out by means of two sets of interviews with hotel department managers. The interview data were presented and analysed in Chapter 5 and the interview findings focused around identifying and establishing the principal IS evaluation dimensions that arise from system use by employees in a hotel environment. These dimensions originating from the primary data were discussed together with the underlying analyses in Chapter 6, all in association with the literature findings. Chapter 6 also produced the study's original contribution to knowledge, the proposed research (IS evaluation) model that is germane to the realities of a

4 and 5-star UK hotel environment and designed from the perspective of IS use by hotel employees.

The present chapter revolves around providing a conclusion to the study. Initially, the main outcomes are synopsised in accordance with the study's aims. The next step involves articulating the contribution to knowledge alongside the practical and academic implementations that this thesis has achieved. Subsequently, potential avenues for future research are suggested, while recommendations, reflections on, and limitations of the current study are also presented.

7.2. Review of Research Aims

This section delivers conclusions to each of the four aims of this thesis. The purpose behind each of the study's aims is clarified in the context of the research process and explanation is provided on how each aim was achieved in order to arrive at the outcomes of this thesis. The first two aims were answered through secondary research, which resulted in the identification of IS evaluation approaches, models and dimensions that have been used extensively in previous research efforts and publications. The remaining two aims were achieved through primary research, with the views of hotel department managers identifying and corroborating the IS evaluation dimensions that could be potentially used in the design of the proposed research model.

The four aims of this study are represented below:

1. To critically review Information Systems (IS) theory and evaluation approaches in the context of the 4 and 5-star hotel industry.

2. To analyse Information Systems (IS) evaluation frameworks, in particular those associated with employee IS usability.

3. To explore the dimensions and constructs used in evaluating the effectiveness of IS in 4 and 5-star hotels from the perspective of departmental managers.

4. To develop an integrated theoretical model for evaluating the intention to use IS by hotel employees.

7.2.1. Research Aim 1

To critically review Information Systems (IS) theory and evaluation approaches in the context of the 4 and 5-star hotel industry.

As explained in the Methodology Chapter, secondary research was conducted by reviewing the literature that is pertinent to the purposes and foci of this study. Apart from answering the study's first two objectives, the reasoning behind the review of the literature was to provide a structured research approach and to comprehend the research topic in order to form a theoretical platform from which the data collection instrument would be developed.

The literature review process commenced by detecting and assessing the dimensions and measurements used in publications from the last four decades, pertaining to the evaluation and measurement of Information Systems. Initially, an effort was made to clarify what constitutes IS evaluation, followed by an analysis of the term IS Success/effectiveness and the challenges surrounding its definition and interpretation. It was found that IS evaluation does not entail simply a test based on system pass-or-fail criteria (Irani and Love, 2001) or basic assessments such as calculating the number of visits on a system or just asking customers/employees whether they are happy with a particular new IS. It has been established that page views or visits (IS use) fail to provide adequate insight into the ultimate success of a system (Picarille, 1993). Page views or visits are not adequate enough as a solitary means of evaluation mainly because they alone do not offer sufficient

insight into the full operational processes, functions, and capabilities of an IS (Palmer, 2002). Conversely, an expertly conducted IS evaluation would need to be carried out by a systematic approach, utilising methodological techniques and valid measurements that capture system as well as design features and can result in a set of hypotheses that are pivotal to the success or failure of a system (Palmer, 2002).

In this fashion, DeLone and McLean (1992, 2003, 2004) identify and advocate that IS Success is the dependent variable responsible for shaping IS evaluation. This is one of the main canons of this study, the premise that IS should be evaluated in terms of their success and that IS Success is the main determinant of how any online system evaluation should be planned. This, however, requires further explanation, as a large number of studies still employ IS use (for example, Goodhue and Thompson, 1995; Taylor and Todd, 1995; Guimaraes and Igbaria, 1997; Gelderman, 1998; Rai *et al.*, 2002), and not IS Success, as their dependent variable, or as the ultimate measure to assess a system. As mentioned previously, IS use is not an adequate dimension to use on its own in order to evaluate Information Systems, as it does not have the capacity to encompass the full scale of parameters involved in deciding whether to adopt or discard a new system (Chin and Marcolin, 2001). Organisations devote extensive time and financial resources into investments in IT infrastructure, expecting enhancements in operations, streamlined business processes, improved performance and competitive advantage (Petter, DeLone and McLean, 2012). Despite the fact that the Internet has

made it possible to almost infinitely improve the way organisations conduct business, the resources required to do so are very much finite. Thus, senior managers need to carefully calculate the returns on investment and associated risks against demands for organisational capabilities, in order to proceed with IT investment and new technology adoption (Feeney, 2001). These requirements have forced companies to change the manner in which they approach IT investment and strategy formulation (Ross and Beath, 2002). Therefore, IS use is simply not comprehensive enough a measure to support an IS evaluation that can lead to an informed investment decision or minimise risk in IT investment (Burton-Jones and Grange, 2013). Burton-Jones and Straub (2006) argue that, because the literature is limited when it comes to a sound definition and theoretical assessment of it, IS use as a dimension often escapes scrutiny from academic cycles. The literature does provide evidence of IS use utilised as a dependent variable in IS implementation and IS decision-making studies, and as an independent variable in IS Success and IS acceptance studies (Burton-Jones and Straub, 2006). The fact that, together with User Satisfaction, IS use is only an independent variable in the IS Success research domain infers that IS Success is a more inclusive measure of an IS.

In addition to the main approaches/avenues to IS evaluation, the role of the environment within which the system is used was highlighted as vital in understanding IS evaluation (DeLone and McLean, 1992). When in an electronic or online environment, for instance, the use of a system needs to be

more or less entirely positioned around the goals of the organisation's management (Hasan and Tibbit, 2000). Seddon (1997) insists that even IS use can often be tantamount to IS Success, providing that it has been set as an objective by stakeholders at the outset. Torkzadeh and Doll (1999) agree that the outcomes and determinants of IS evaluation depend on the context of adoption and the aims decided by the organisation's senior management. As a general rule, Sharkey *et al.* (2010) observe that in any online environment, determining the effectiveness/success of an IS has to spring from the targets set by whoever manages that system. In a similar manner, the selection of IS evaluation metrics is dependent on the intention of the research or the environment in which the company operates (DeLone and McLean, 2003). In their own words: "*the challenge for the researcher is to define clearly and carefully the stakeholders and context in which net benefits are to be measured"* (DeLone and McLean, 1992:23). Along these lines it is logical to presume that different stakeholders may have different opinions about what constitutes a benefit, and different organisations may define IS Success or failure differently (Seddon, Staples, Patnayakuni and Bowtell, 1999). According to Dwivedi, Wastell, Laumer, Henriksen, Myers, Bunker, Elbanna, Ravishankar and Srivastava (2014) there are several diverse perspectives surrounding how IS Success is evaluated, including the top management perspective, the system developer perspective, the project management perspective, and the user perspective. This thesis adopts the user perspective, since technology adoption and IS Success are analysed from the users' standpoint.

The remainder of the first chapter of the literature review (Chapter 2) focused on providing a thorough account documenting the chronological development of IS evaluation approaches, with special focus on examples from the tourism and hotel industries. It was clarified that the main IS evaluation approaches include the User Satisfaction, IS use, IS Success path, the technology adoption path, and a combination of the above. The next step in the review of the literature would be to discover which IS evaluation models are inspired by these mainstream approaches.

7.2.2. Research Aim 2

To analyse Information Systems (IS) evaluation frameworks, in particular those associated with employee IS usability.

Aim 2 was achieved by presenting an analysis of the most prominent theoretical models of IS evaluation. As aforementioned, these models spring from either object-based approaches and User Satisfaction, IS use, or IS Success constructs, or attitude/behaviour-based approaches and technology adoption constructs (including DoI), or a fusion of these. Prior to the conception of the IS Success Model (DeLone and McLean, 1992), the term IS Success was non-existent. Until that time, object based IS evaluation models were based purely on either System and Information Quality constructs or User Satisfaction and IS use measures. The IS Success Model synthesised all previous System Quality, Information Quality, User Satisfaction, and IS use

research outputs into a comprehensive framework. Apart from DeLone and McLean's work, other important theoretical models based on User Satisfaction and IS use were also identified and analysed by the literature review, including the Computer User Satisfaction Instrument (CUS) (Bailey and Pearson, 1983), the User Information Satisfaction Instrument (UIS) (Ives, Olson and Baroudi, 1983), the End User Computer Satisfaction Instrument (EUCS) (Doll and Torkzadeh, 1988), and the User-perceived Web Quality Model (Aladwani and Palvia, 2002). Subsequently, the attitude/behaviour-based technology adoption models (also referred to as technology acceptance models) were also analysed. The most important of those was found to be the Technology Acceptance Model (Davis, 1989), while other included the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis, 2003). Finally, the leading model combining the User Satisfaction/IS Use path with the technology adoption path, the Integrated Model of User Satisfaction and Technology Acceptance (Wixom and Todd, 2005) was also analysed. The reputation and significance of the IS Success Model and the TAM made it necessary to provide further analysis, as ultimately, the Integrated IS Success/Technology Adoption Model, this study's main contribution to knowledge, is based on those.

IS Success is difficult to define and depends upon the context of the study. Several approaches towards establishing what it entails have been documented. For DeLone and McLean (2003) IS Success is explained in

terms of net benefits (or individual and organisational impacts in the original model). Seddon (1997) sees IS Success as a separate variable from the behaviours that occur as a result of IS Success. He proposes an alternative model of IS Success to that of DeLone and McLean, based on the variance aspects of the relationships between the different IS evaluation dimensions. A number of other scholars have attempted to conceptualise IS Success (Sabherwal *et al.*, 2006), justify its theoretical pertinence (Sedera, Eden and McLean, 2013), and construct measurement models that deliver alternative measurements (Gable, Sedera and Chan, 2008). This study employs IS Success as conceived and defined by DeLone and McLean (1992, 2003). This notion is based upon the realisation that DeLone and McLean's studies on IS Success are the most all-encompassing and far-reaching research efforts within the IS evaluation sphere, spanning over almost three decades of research. The recognition, significance, and application of their work is manifested in the fact that since the original IS Success model's inception in 1992, there has been evidence of numerous research papers conducting empirical analyses on the multidimensional relationships between its dimensions and measurements. Besides its applicability, DeLone and Mclean's model makes several other vital contributions to the modern understanding of IS Success and IS evaluation. It provides a typology for classifying IS Success measures and a structure for temporal and causal interdependencies between these measures (McGill, Hobbs and Klobas, 2003). In addition, it consolidates previous studies while offering a platform for future research. Moreover, it sets the standard when it comes not only to IS Success, but also to predicting IS use and User Satisfaction. This is supported

by a number of literature reviews and metanalyses that have confirmed its explanatory power (Petter *et al.*, 2013).

As already discussed, IS Success is not the only precept on which this study is based on. A further principle embraced is technology acceptance and adoption. The reason behind this is that the technical, information or service qualities of a system do not guarantee its success, which can also be affected by behavioural motivations, attitudes, intentions, and other factors of political, social, and institutional nature (Brown, 1998; Elbanna, 2007). Technology acceptance characteristics have been found to incorporate measurement of perceived beliefs and attitudes in order to determine behaviours or intentions to use IS (Davis, 1989; Vijayasarathy, 2004; King and He, 2006). Establishing the determinants of these behavioural intentions to adopt new IS has been the main function behind intention-based theories (Diez and McIntosh, 2009). Technology acceptance has been recognised as a major factor affecting the successful implementation of a system (Thomas, 2006). The most renowned intention-based theory is the Technology Acceptance Model (TAM) (Davis, 1989), based on the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975). While the latter has been utilised to predict a broad range of behaviours, Davis (1989) applied TAM to explain and predict individual acceptance of technology. The Technology Acceptance Model is universally acknowledged as one of the most meaningful and frequently utilised ideas in the research of Information Systems (Lee, Kozar and Larsen, 2003; Bruner and Kumar, 2005; Lee, Kim and Lee, 2006; Kim *et al.*, 2008). Overall, it fundamentally streamlines the TRA, while enabling the conduct of IT adoption research and

facilitating the aggregation of results across diverse settings (Benbasat and Barki, 2007). The TAM also creates knowledge on the determinants of IS use and is an archetype of how to approach researching IS without differentiating IS types or organisations (Diez and McIntosh, 2009). The end-product of this study, the Integrated IS Success/Technology Adoption Model, is based on a combination of IS Success and TAM elements. The literature is abundant with examples of papers theoretically combining or testing elements of these two IS evaluation approaches. In addition to the traditional, established studies (Venkatesh, Morris, Davis and Davis, 2003, Wixom and Todd, 2005), there is recent material emerging that demonstrates this fusion of the two models. For example, Mohammadi (2015) combines the TAM and IS Success models in a paper that investigates users' perspectives of learning. Sari, Akkaya and Abdalla (2017) assess e-Government systems by validating both the TAM and IS Success models. Safsouf, Mansouri and Poirier (2018) merge elements of the TAM and IS Success with continuity of use constructs to develop a model that can identify the factors that influence online learning environments. Zhang, Chen and Chen (2019) integrate the TAM into the IS Success model in an effort to determine the influence factors of user adoption intention of mobile systems.

A further technology adoption concept/model covered by the literature (Chapter 3), which can be used in the context of IS evaluation is Diffusion of Innovations (DoI) (Rogers, 1962). DoI sheds light on how innovations such as ideas, practices and objects are adopted, implemented, and diffused. Diffusion of Innovations aims to generate an understanding of how innovations, such as

ideas, practices and objects are adopted, implemented, and diffused. Diffusion indicates the process by which an innovation is communicated through certain channels among the members of a social system, group, or organisation over time (Agarwal and Prasad, 1997). Diffusion of Innovations shows how the adoption of new IS in groups and organisations depends primarily on the perceptions of early adopters with regard to factors of compatibility, trialability, observability, and complexity (Rogers, 1983). The main reason for its inclusion in this thesis is that it shares some TAM, the TRA and the TPB. More specifically, some of the constructs from these models are also present in the DoI: Perceived Ease of Use takes the form of 'complexity', while Perceived Usefulness portrays what is called in diffusion theory 'relative advantage'. These constructs are antecedents of behavioural intention and consequently, behaviour. The latter is a sign of system use and without using the system there can be no adoption, thus the whole process of IS evaluation becomes futile. Another reason for using the DoI in the current thesis is that it complements the paradigms set by the technology acceptance models. In particular, while the TAM includes attitudinal variables (Perceived Usefulness, Perceived Ease of Use, attitude towards use) and both TRA and TPB feature social variables (subjective/social norms), the DoI contributes with motivational variables (observability, trialability). Therefore, with the addition of the DoI elements, the evaluation of IS used by hotel employees is enhanced by becoming more systematic and comprehensive.

Moreover, in order to answer Aim 2, five of the most important and widely used IS evaluation dimensions in the IS usability context (System Quality,

Information Quality, Service Quality, User Satisfaction and System Use) were analysed. This was carried out not only to develop a comprehensive account of the various models/frameworks utilised in IS evaluation, but also to uncover the diverse measurements used when assessing systems, as they would later form the basis of this thesis's proposed model.

Also, to answer Aim 2, the second chapter of the literature review (Chapter 3) sought to focus on the hotel employee perspective of Information Systems. First, the different types of IS and IT applications used by hotel employees were presented. It was found that the main IS that a hotel simply could not operate without are the front office systems, back office systems, restaurant and banquet management systems, and guest-related interfaces (Ham, Kim and Jeong, 2005; Kim *et al.*, 2008). Other IT applications that can be added to that list include revenue and forecasting tools, payroll systems, marketing databases, online accounting management solutions, and inventory management applications. Most researchers, however, agree that the hotel front office system is the most important hotel Information System, operating 24 hours a day, seven days a week, 365 days a year, and used by service employees at the point of contact with the guest (Law and Jogaratnam, 2005; Kim, Lee and Law, 2008; Sanders, 2011). Amongst hotel front office IS, the literature identified that the most crucial system is undoubtedly the property management system (PMS). The PMS is the system that hotel receptions use to check guests in and out, to settle guest bills, and to accommodate all basic guest needs (allocating room types, checking which rooms are clean, room availability, rates, and room prices). Academics support the view that PMS is

the most important hotel IS by maintaining that they have a significant impact on hotel operations and performance (Collins and Cobanoglu, 2008; Pucciani and Murphy, 2011). Apart from the functions mentioned above, a PMS is also critical to a hotel's efficient operation because it collects significant amounts of data that may be used to enhance tactical and strategic decision making (Pucciani and Murphy, 2011). Handling the administration of guests, their profiles and bookings, together with the accompanying revenue figures, it was concluded that PMS is the central data infrastructure of a hotel (Pucciani and Murphy, 2011). Research shows that almost all hotels own a PMS (Kokaz and Murphy, 2009).

The task of answering Aim 2 also dictated that the literature review included concepts such as employee characteristics, employee productivity and IS performance, employee participation and involvement, as well as other user-related attributes and factors linked to IS adoption in a hotel setting. It was deducted that these factors play a central role in explaining the principles of technology adoption. For instance, a hotel may purchase a new system or a new IT application, but without the input and participation of employees that system will never be used successfully in order to contribute with organisational or employee benefits. Employees are often presented with a system, and if they perceive that system to be easy to use and helpful in task completion, they are more likely to adopt it (Davies, 1989). Nonetheless, the extent of adoption is also governed by issues such the employees' prior IT knowledge, their IT training, performance, job relevance, self-efficacy,

innovativeness, and the manner in which they process and treat information (Venkatesh *et al.*, 2003).

7.2.3. Research Aim 3

To explore the dimensions and constructs used in evaluating the effectiveness of IS in 4 and 5-star hotels from the perspective of departmental managers.

Aim 3 was answered by the primary research through conducting interviews with 4 and 5-star hotel managers and analysing their outcomes. It was extremely vital to ascertain the perceptions of industry experts as this provided the necessary context to the study. As a result, the effectiveness of IS, expressed in terms of IS Success and technology adoption in the current work, was determined in the context of 4 and 5-star hotels.

The purpose of the interviews and the analysis of their results were dual. On one hand, it sought to solely answer Aim 3 of this research. On the other, it was used to complement the literature review findings and act as a medium for the design of the Integrated IS Success/Technology Adoption Model, an undertaking that was pivotal in answering Aim 4. The main outcome of the primary research process was that the interviews corroborated the dimensions and subthemes that had already been identified by the literature, bar minor exceptions. A cardinal finding was that IS are indispensable tools that enable

hotel employees to complete their tasks. The level of IT training and senior management support, as well as the provision of the necessary facilitating conditions, including resources and time, organisational policies, organisational culture, and healthy job conditions were found to be important subthemes that affect IS effectiveness. The effectiveness of an IS was also found to be contingent upon System Quality and its several constituents, namely speed and response time (measured by minimisation of delays and negative feedback, speedier task completion, and enhanced customer service), reliability (measured by consistent IS performance according to required specifications, and undisrupted operations), accessibility and flexibility (measured by daily task completion, faultless IS connectivity, undisrupted operations, and flexible file transfer and storage), system safety and security (measured by security in transactions, secure log in process, secure handling of personal information, and PCI and GDPR compliance), system design (measured by the quality of the graphical user interface and the aesthetically pleasing design), and a newly discovered subtheme, location of the network server (measured by improved connectivity, location of the system support centre and its personnel, the level of personalised service, and the direct control of the system).

A further IS evaluation dimension identified as significant for the 4 and 5-star hotel IS was Information Quality with constructs such as accuracy (measured by correct information communication, and accurate information input/output), ease of understanding (measured by improvements in employee performance and overall IS quality, less time-wasting, and the extent to which information

output supports organisational needs), relevance (measured by relevant data input and user preference information), currency (measured by accurate up to date information, and regular updates to IS), completeness (measured by information integration across multiple channels, and the extent to which IS covers all information needs and enhances overall performance), and dynamic and personalised content (measured by variety of information, feeling of individuality, departmentalised IS, and knowledge of guest preferences).

The third quality dimension, Service Quality, was also found to be a major component in IS evaluation for 4 and 5-star hotels. The main measures of Service Quality included responsiveness and effectiveness of online support services, quick assistance response, service levels of call centres, helpdesks, forums and web tools, as well as online support capabilities, follow-up services, effective issue resolution, presence of software engineers, and sense of empathy.

The next dimensions to be identified as crucial by the interviewees were the perception dimensions. Perceived Usefulness was measured by effective task completion, efficiency of task completion, IS support in employees' daily duties, quick task accomplishment, improvements in job performance, personalisation of services, understandable reports, and accuracy, speed, and reliability. Perceived Ease of Use was attributed to easy to use and user-friendly systems, unproblematic and effortless system use, interaction that is easy to understand, information that is easy to find, information that is obtained

quickly, high quality output, and an IS that is designed to employees' specifications. Perceived Trust was gauged by whether IS project a feeling of trustworthiness and dependability, and whether it processes previous transactions expertly while handling personal information securely.

It has been pointed out earlier that hotel IS are used by employees regardless of their personal desires, since system use is compulsory rather than voluntary. As a result, the hotel managers' perceptions of IS are instrumental in determining the value and effectiveness a system adds to the operations of a hotel. It is reasonable to assume that the more benefits that can be foreseen from the use of hotel IS, the more likely hotels are to adopt the technology. These benefits can be either organisational or employee related. Organisational benefits were found to include increased efficiency and payroll control, improved personalisation and interaction, as well as higher data analysis and decision-making support. Employee benefits included higher levels of IS knowledge and experience, system expertise, swift and effective task completion, enhanced employee performance, and higher levels of guest satisfaction.

User Satisfaction was also identified by the interviewees as one of the most essential aspects of IS evaluation in 4 and 5-star hotels. Its main constructs included good information retrieval processes, overall IS performance, IS that enable loyalty to be established, simplify operations, and assist with task completion, and general experience of using the IS. Social Norms,

hypothesised to influence User Satisfaction, were also revealed by the interviewees as important. Their main observation was that behaviour to use IS can be affected by the beliefs of influential colleagues. It was also discovered that managers should display positive attitudes towards systems as they have the propensity to influence employees about system use. In a hotel environment, if a manager suggests that a particular system is useful and effective, a line employee may eventually subscribe to that belief and form an intention to use it.

The final dimension that the hotel managers regarded as significant was Intention to Use/Reuse, which is the dependent variable of this study. Its measures included recommendation, positive feedback, IS performance on par with competitors' IS, and a system that can cover all business needs and has future potential. According to DeLone and McLean (2004) there has been a lot of confusion and difficulty in interpreting the multidimensional aspects of a system's use, which mainly vary depending on the level of use, for example, effective vs ineffective, mandatory vs compulsory, and informed vs uninformed. DeLone and McLean (2003, 2004) advise that Intention to Use may be a more appropriate measure than system use or IS use in some contexts. This study follows this recommendation and uses Intention to Use/Reuse because it believes that Intention to Use fits with the mandatory context of use within the 4 and 5-star hotel environment, while Intention to Reuse measures whether the Intention to Use will be sustained in the future.

Some minor subthemes including playfulness, sense of enjoyment, (both identified by the literature as parts of the design construct within the System Quality dimension) as well as identifiable logos and company colours (identified by the literature as parts of the empathy construct within the Service Quality dimension) were regarded by the interviewees as insignificant measures that had no bearing or were not relevant for the hotel setting. Furthermore, none of the DOI measures (relative advantage, compatibility, complexity, trialability and observability) were identified by the interviewees as vital in the hotel context. As previously indicated, the primary research also revealed novel subthemes, such as the location of the network server and the location of the IS support team. These were found by the interviewees to improve IS connectivity, help the hotel deliver a more personalised service, provide direct management of the IS, and offer more hands-on support when problems arise.

7.2.4. Research Aim 4

To develop an integrated theoretical model for evaluating the intention to use IS by hotel employees.

The final aim of this research has been accomplished by the development and proposal of the Integrated IS Success/Technology Adoption Model, displayed in Figure 7.1 below. This is also the thesis's main contribution to knowledge.

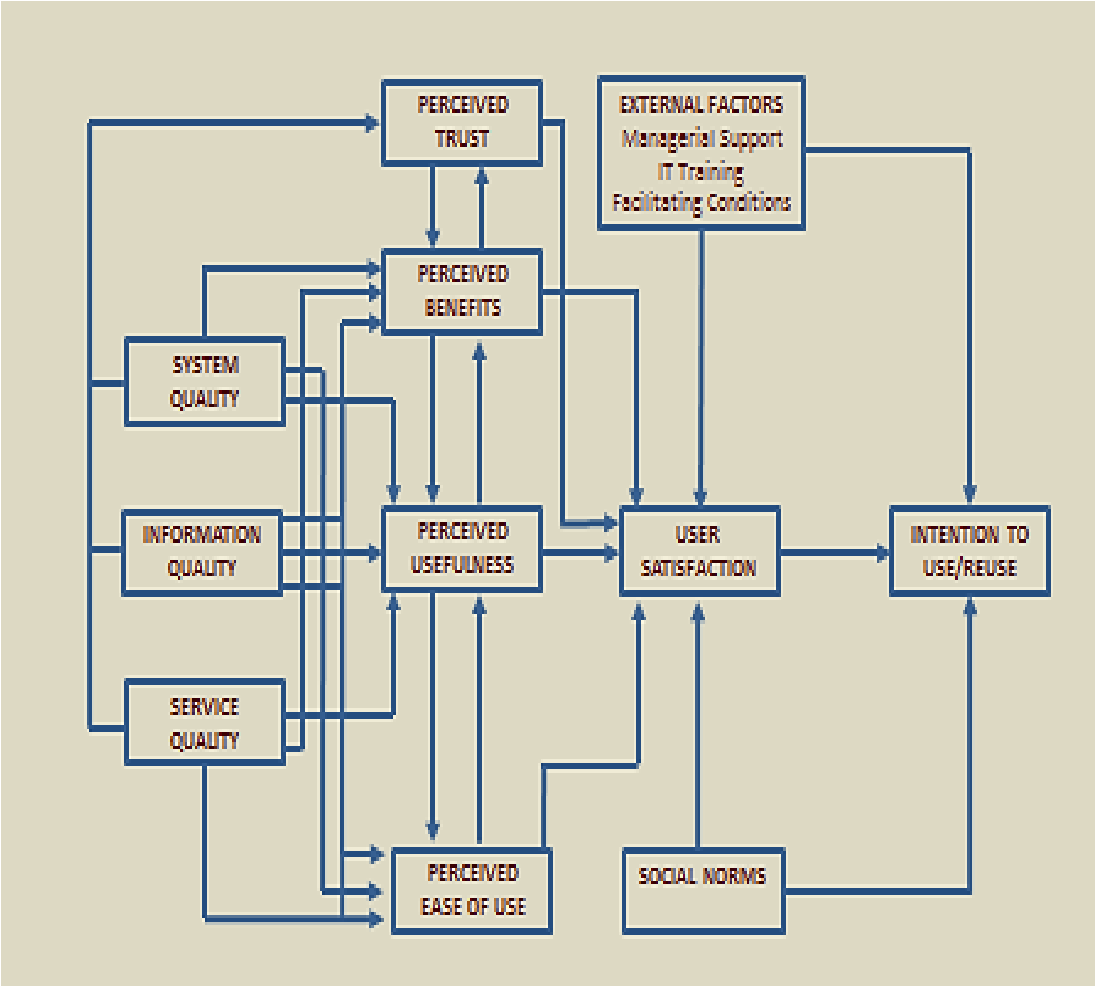

Figure 7.1: Integrated IS Success/Technology Adoption Model

The Integrated IS Success/Technology Adoption Model presents eleven dimensions, each dimension including several constructs and each construct containing various measurements. All these components have been identified by the literature and subsequently corroborated by industry experts, the interviewed hotel managers. The arrows in Figure 7.1 represent relationships between the different IS evaluation dimensions; those have been explained and analysed in Chapter 6 of this thesis. The Model has not been tested by

this research; therefore, the arrows originate from theorised findings in the literature. After analysing the opinions of the hotel managers, it was confirmed that the main dimensions comprising the Model would be System Quality, Information Quality, Service Quality, Perceived Trust, Perceived Benefits, Perceived Usefulness, Perceived Ease of Use, User Satisfaction, Social Norms, External Factors, and Intention to Use/Reuse.

System Quality, Information Quality and Service Quality originate from the IS Success Model (DeLone and McLean, 1992), while Perceived Usefulness and Perceived Ease of Use from the TAM (Davis, 1989). Dimensions such as User Satisfaction, Perceived Trust and Perceived Benefits are added in the Integrated IS Success/Technology Adoption Model because of the characteristics of the users and the impact they may have on a straightforward measure such as, for instance, Intention to Use/Reuse.

Yet, despite the User Satisfaction, Perceived Trust, or Perceived Benefits that Information Systems can offer, they are not likely to be accepted or adopted quickly and effectively if barriers of human factors are neglected (Hasan, 2003). This type of barriers, hindering the successful implementation and adoption of IS, can emerge in the form of employees' unwillingness to accept the new system, their inability to use it, their lack of training, lack of resources and time, and the lack of managerial support available (Lam *et al.*, 2007). However, the importance of such impediments has been anticipated by the current study in the sense that it includes a dimension in the Model, External

Factors, which includes IT training, facilitating conditions, and senior management support, and addresses the potential risks associated with the absence of these factors. External Factors are also incorporated in the Model to accommodate the complexities and idiosyncrasies of the users. Thompson and Richardson (1996) argue that IS are designed and implemented with hardly any or no consideration at all either to the requirements of employees or to the impact that systems might have on an organisation's personnel. Elzawi and Wade (2012) support this viewpoint by stating that effective IT and IS adoption is hindered by a lack of understanding individual needs and an insufficiency in fully including users in planning and implementation processes. This is an issue that this study attempts to address because the Integrated IS Success/Technology Adoption Model has been designed to accommodate users' feedback and needs (this argument is presented in the next section).

The reasoning behind the choice of the study's dependent variable, Intention to Use/Reuse, has to be justified. By laying emphasis on the importance of the environment within which a system is used, the present research distinguished between two types of settings, the voluntary and the mandatory. It was found that voluntary IS use typically occurs in circumstances such as online shopping or entertainment and Internet surfing. In the case of hotel employees, which are the subject area of this research, the type of system use is mandatory because employees do not have a choice when it comes to whether or not to use a system and the type of system. Mandatory system use is fundamentally different from voluntary use in terms of the measurements that are utilised to capture distinctive characteristics of each setting (Venkatesh, 1999). For

instance, in a voluntary context, the dimension of system use would have been an appropriate and sufficient measurement. Despite this, in a mandatory environment, system use is not completely suitable as individuals do not have a choice when using IS; they have to use the systems that are present in their workplace. Therefore, a dimension such as Intention to Use would be a more applicable type of measurement of IS Success in a mandatory setting (DeLone and McLean, 2003).

Another similar example is the use of social influences as metrics in IS evaluation. Venkatesh *et al.* (2003) maintain that for technology acceptance/adoption in mandatory settings, constructs related to social influence are significant, whereas in voluntary settings they are not significant. Venkatesh and Davis (2000) find that peers' influences only have a significant impact on technology acceptance in mandatory environments; therefore, metrics such as Social Norms have no effect on voluntary environments, but they become significant in mandatory environments (Venkatesh and Davis, 2000). The main reasoning behind the use of Social Norms in the current study is their appropriateness as a valid measure in environments where system use is mandatory. Research has placed added emphasis on individual, rather than organisational factors that affect technology acceptance, despite the fact that technology implementation is considered a facet of organisational change (Ward, Brown and Massey, 2005). However, a critical attribute in capturing favourable attitudes and intentions towards technology implementation centres around the social influence of peers in the organisation, and Social Norms have been employed in previous research to frame these influences

(Taylor and Todd, 1995). By consulting contemporary literature, it can be confirmed that Social Norms continue to be valid predictors of Intention to Use/Reuse in a hotel setting (Kaushik *et al.*, 2015; Ko, Pei and Tsai, 2016; Bae, Kwon and Jai, 2016).

The Integrated IS Success/Technology Adoption Model shows that if the System, Information and Service Qualities in an IS are enhanced, users will perceive those systems as trustworthy, useful, and easy to use, and they will recognise that they can obtain benefits from using the IS. This positive experience that a user will gain by using the IS should lead to greater User Satisfaction, and this, provided that Social Norms are positive about the use of the system and the External Factors are present, will ultimately result in a higher Intention to Use/Reuse the systems. That way a system can be regarded as successful and might be adopted in a quicker and uncomplicated manner. If the above factors are all fulfilled, then it can be posited that the Integrated IS Success/Technology Adoption Model will have achieved its goal of measuring the effectiveness of IS.

7.3. Contribution to Knowledge

The main ambition behind this study is to combine several components of already existing theoretical frameworks of IS evaluation and create a new mechanism/model that can be applied in the context of hospitality and can reliably measure the perceptions of the employees with regard to the technological innovations they use. It is hoped that this study is going to offer several intelligent management and industry-related recommendations, in addition to providing a genuine contribution to the pool of knowledge, in a manner that can fill an existing gap in the current literature on hotel IS evaluation and also provide practical implications to the 4 and 5-star UK hotel industry.

This thesis offers several contributions for academics and practitioners. The leading academic contribution is the Integrated IS Success/Technology Adoption Model of this study. It incorporates the most important dimensions and measurements of evaluating a system, as identified and signified by industry insiders, the hotel employees themselves. All the constructs of the model have been carefully selected in terms of their suitability, applicability and practicality by consulting the relevant literature and the perceptions of the interviewed hotel departmental managers. The latter were chosen in a manner that would allow a fair representation of each hotel department. Moreover, the departmental managers were preferred as participants in the interview process instead of line employees, as the former have significantly more experience in using IS (this is expanded on further down, in the limitations of

the study). The Model offers originality as there is no study in the literature that has combined these particular IS evaluation dimensions previously. Wixom and Todd (2005) proposed a similar model that combines IS Success and TAM elements, however, they did not include perceived benefits, trust, social norms, or external factors in their model. The UTAUT model (Venkatesh *et al.*, 2003) provides a unification of the established models on use, acceptance and adoption of technology, and even though it incorporates social influences and facilitating conditions, it does not include user satisfaction, trust, or perceived benefits. Mohammadi (2015) integrates the quality dimensions of the IS Success model with perceived usefulness and perceived ease of use from the TAM to present a model that predicts user satisfaction, intention to use and actual use. In spite of the model's explanatory power, Mohammadi (2015) overlooks the effects that perceived benefits, social norms and trust have on technology adoption in the workplace.

In the hotel context, the models that combine IS Success and TAM dimensions are very scarce. Scharl, Wober and Bauer (2004) utilise constructs of IS Success Model and TAM to construct a framework that measures hotel website effectiveness. Although their study employed hotel managers from four countries as the population sample, it measures IS Success solely by means of usage (website visits, page views, revenue and inquiries), without the inclusion of user satisfaction, trust, or any behavioural or attitudinal metrics. To put it differently, the study assumes that system use will depend exclusively on perceived ease of use and perceived usefulness, without considering the human side of adoption, more specifically the behaviours and

attitudes of system users and their predispositions to use a system. Wang *et al.* (2016) propose a technology-organisation-environment framework that measures hotel adoption of mobile technology by combining TAM and DOI elements without, however, accounting for the technical aspects of the system or the information it provides. Kim *et al.* (2008) extend the TAM by adding perceived value and information system quality as constructs in order to measure users' acceptance of hotel front office systems. The study is from a user perspective; however, it looks at front office systems only and not the whole range of IS that 4 or 5-star hotels normally use. Therefore, the results, albeit meaningful, only offer an insight into technology acceptance of front office employees and not of all hotel departments. It is no secret that even in the same hotel, some users, such as different departments, might be less enthusiastic than others to use a system (Cerpa and Verner, 2009). This reveals a chasm between different groups within the same organisation and it is only by crossing this chasm that a collective view of IS requirements and roles could emerge in order to achieve greater success in implementing IS (Dwivedi et al., 2014).

A further academic contribution of this study is the fact that it is designed by evaluating the perspective of users of the systems. Most IS evaluation studies in the hotel environment offer results based on obtaining the views of customers (for example, Morosan and Jeong, 2008; Fuchs, Schocholov and Hopken, 2009; Schrier, Erdem and Brewer, 2010; Morosan, 2012; Ayeh, 2015; Kim, 2016; Dwivedi *et al.*, 2019; Huang, Chang, Yu and Chen, 2019; Leung and Law, 2019). A few studies exist that use employee opinions as points of

reference (for example, Siguaw and Enz, 2000; Lam *et al.*, 2007; Kim *et al.*, 2008; Huh *et al.*, 2009; Ko, Lei and Tsai, 2016; Lee, Yoo, Lee and Kim, 2019; Shin, Perdue and Kang, 2019). The difference in terms of system use between customers and hotel employees is that the former use the systems voluntarily while the latter have no choice whether to use a system or not. Hence, the system needs of each group differ significantly and the measurements utilised in appraising IS Success and technology adoption also vary. Eden, Fielt and Murphy (2016) support the view that users are surprisingly under-investigated in the IS Success context. The same authors continue that while technical attributes of systems are regularly incorporated within IS success models, the influence of the users is overwhelmingly overlooked, a notion that emphasises the need for the IS discipline to improve its understanding of the users and their input towards IS evaluation.

A number of the constructs of the Integrated IS Success/Technology Adoption Model are context-dependent (with different characteristics attributed to different contexts) including System Quality, Information Quality, Perceived Benefits and Perceived Trust. Forsgren *et al.* (2016) advise that as technology advances, new system assessment characteristics emerge. They maintain that there exists a demonstrated need to constantly develop new corresponding measures and dimensions of IS evaluation in additional contexts. It is believed that this study has achieved developing, from a combination of the literature and interview findings, several constructs suitable for use in the 4 and 5-star hotel industry. By integrating traditionally established theories with the latest, up-to-date approaches and antecedents, these

constructs have been fused together to form the Integrated IS Success/Technology Adoption Model. The Model is fundamentally a combination of TAM and IS Success Models, with the addition of some dimensions, namely, Perceived Trust, Perceived Benefits, Social Norms and three external factors. TAM is a behavioural belief, attitude-based framework, while the IS Success model is object-based, based on assessing the quality of the technical, information and service attributes of a system. Thus, the Integrated IS Success/Technology Adoption Model brings together attitudes/beliefs and system characteristics to offer a more holistic approach to IS evaluation. Furthermore, through a rigorous reduction process that condensed, via the primary research, the large numbers of IS evaluation dimensions and constructs found in the literature into a set of measures appropriate for its purposes, this study presents a theoretical model that explicitly fits the context of the 4 and 5-star hotel industry in the UK.

From a methodological point of view, the thesis might not provide a novel approach, however, the manner by which secondary research was complimented by the findings of its primary counterpart presents a solid process that successfully answered the research aims and supplied a study that can find applications both in academia and the industry. The selection of qualitative research over quantitative methods also adds to the present work's contribution to knowledge. While scholars lament the lack of contextualisation in quantitative research (Johns, 2006), the IS discipline has been reproached for neglecting the IT artefact and the 'human' side of research, which views reality as a social construct (Orlikowski and Iacono, 2001). Thus, the choice of

interviews over a quantitative approach contextualises the survey instrument and brings with it an understanding of the realities of IS and its users within the hotel setting.

In addition, this study has managed to identify two previously unidentified constructs, namely the location of the network server and the location of the IS support centre team. To the best of the author's knowledge there has not been any published paper that identifies these two constructs as important measures of IS evaluation. Despite this, their value has been established twice (in each set of interviews) by the opinions of the interviewed managers who claimed that a server located nearby or on the same site as the hotel, supplemented by an IS support team of IT engineers and troubleshooting experts also located in close proximity, will provide the hotel with several benefits including improved connectivity of all online systems, direct control of the systems and a more personable service provided by the IS support centre.

It is, therefore, believed that by synthesising rigorous literature review findings with the perceptions of industry professionals in a concept framework that features never before combined dimensions, the Integrated IS Success/Technology Adoption Model extends previous adoption and IS Success research, and thereby offers a contribution to extant IS evaluation knowledge. Additionally, it fills the gap in the literature that exists due to the lack of studies on the topic of IS adoption and IS Success as defined from the perspective of users, in a 4 or 5-star hotel setting. Its originality is enhanced

by the discovery of two original IS evaluation constructs, which can be valuable tools for academics during future theoretical model formations.

Additionally, the present study offers several contributions to the 4 and 5-star hotel industry. The first of those is that the Integrated IS Success/Technology Adoption Model has incorporated eleven IS evaluation dimensions into a single framework that is adapted to the realities of IS users, more specifically departmental hotel managers of 4 or 5-star hotels. These dimensions were found by industry experts to be significant predictors of Intention to Use/Reuse an IS. The dimensions as well as their constructs can be utilised in unison or separately by hotel managers, IT managers, or even IS developers in order to evaluate any type of new IS within the 4 or 5-star hotel sector. The Model can also be used by hotels that want to fine-tune some aspects of their IS. For example, a hotel manager may be happy with how the systems perform in terms of their technical characteristics but, at the same time, he or she would like to enhance the service provided by the IS support team in times of system downtime. By consulting the Service Quality dimension within the Model, he or she will be able to find that such a task would be accelerated by increasing the responsiveness and effectiveness of the IS support centre by increasing the number of online support capabilities, introduce real-time chat facilities on the systems, or even hire an IT engineer to be on site at all times. Likewise, if a manager discovers that the information provided by the hotel's IS is not accurate or current, or that it is not reliable, he or she could refer to the Model in order to understand that such circumstances will surely affect the level of service the hotel offers and will cause dissatisfaction amongst guests, which

should prompt the manager to think about a system update or a complete system replacement. If, on the other extreme there are absolutely no problems and if an existing system fulfils and complies with the measures included in each dimension of the Model, it can be regarded as successful and effectively adopted by the hotel it is installed at. The only requirement then would be monitoring and system maintenance to ensure that all aspects of the IS are working faultlessly.

The evaluation of Information Systems is an innately complex process (Irani, 2002) and hotels face even more obstacles when trying to determine indirect IS implementation costs (Love, Irani, Ghoneim and Themistocleous, 2006). 4 and 5-star hotels in particular allocate considerable resources into IS investment, expecting a return in productivity, streamlined business transactions and competitive advantage (Petter *et al.*, 2012). According to Lee and Singh (2015), one of the challenges within the hotel industry is the disagreement on the impact of IS investment on competitive advantage. Irrespective of the fact that IS investment has grown over the years, hotel managers have difficulty selecting appropriate methods when deciding whether to invest in a particular project. The same authors maintain that potential risks and lack of accurate measurement constructs combined with ill-defined cost versus benefits assessments are the main culprits behind this indecision. There seem to be trepidations on how to effectively gauge the advantages of IS investment and how to decide on a measurement method that is most beneficial to accomplishing the targets of the hotel managers (Karadag, Cobanoglu and Dickinson, 2009). This, according to Watkins (2000)

is because a large proportion of hotels have inadequate oversight procedures in order to assess the effectiveness of their spending on Information Systems. It is here that the Integrated IS Success/Technology Adoption Model of this study can be of assistance. Since it has been developed with the 4 and 5-star hotel industry in mind, it can offer hotel managers and decision makers a platform on which to base their IS investment decisions on, as it can provide the stage on which evaluation can be conducted and the accurate measurements it so greatly requires.

Studies indicate that hotels which use IS more extensively to perform a wide range of activities attain superior e-business performance, and the latter has a significant positive effect on organisational performance (Theodosiou and Katsikea, 2012). IS adoption can be the source of benefits to hotels, including profitability, operational efficiency, User Satisfaction, and enhanced customer relationship management (Wang *et al.*, 2016). Therefore, hotels must develop a thorough understanding of the factors that shape IS adoption and its bearing on organisational performance if they are to allocate a large percentage of their budgets to invest in IS implementation. The present study can be helpful in that respect, as it has identified, combined, and contextualised the factors that explain adoption and IS Success within an ever-competitive luxury hotel industry.

Information systems implementation is costly and has a relatively low success rate (Legris *et al.*, 2003). Almost 70 years ago, the IS research community

commenced efforts to tackle this challenge and has since contributed to a better understanding of the IS implementation process and its outcomes. Initial studies focused on identifying and analysing factors that measured IS use, such as computer user satisfaction. However, this resulted in a long list of items that proved to be of little practical value (Legris *et al.*, 2003). The need for practicality made it clear that the factors had to be grouped into theoretical models by means that would facilitate a thorough assessment of IS use.

Over decades, the results of IS research were universally applied and widely accepted. The MIS (Management Information Systems) evaluation efforts from the 1950s and 1960s resulted in the development of massive databases, systems, and networks in the 1970s and 1980s (Diez and McIntosh, 2009). Consequently, a strong and successful information industry evolved based on MIS, influencing a great proportion of academic research at the time. Academics converged their efforts on identifying the environments or factors that could facilitate the integration of IS into business. In the 1980s, studies shifted to developing and testing models that could help in solely predicting IS use (Eldon, 1997). Research from the 1980s and 1990s has been filtering into the IS industry for years now and the paradigm has only started to shift from these traditional approaches of IS evaluation (by means of predicting IS use) due to the development of new technologies like artificial intelligence and cloud computing. It is due to these technologies that much of the work of IS scholars has recently changed, revolving around fresh and more inclusive ideas and approaches of evaluating a system (Botzenhardt, Li and Maedche, 2016). Notions such as evaluation of all the different stages of the lifecycle of an IS,

as opposed to just the implementation or adoption stages, have been gaining ground and novel approaches including metanalyses of existing literature reviews together with the formation of new, hybrid, theoretical models have dominated the IS community's research efforts during the last ten years. Also, studies have now moved focus towards applying extant IS evaluation approaches and expanding theoretical models to fit the demands of more demanding technologies such as mobile communications, 5G Internet connectivity, the Internet of Things, virtual and augmented reality applications among other. There has, however, been some criticism on the manner by which present theory is developed and extended, particularly when it comes to inclusivity, failure to comprehend the complexity of IS evaluation, and the context within which newly developed models can be applied.

According to some scholars (Benmoussa, Laaziri, Khoulji, Kerkeb and Abir, 2019), the IS industry has been showing signs of maturity since the turn of the century. From a pragmatic and commercial point of view, the systems and their respective evaluations became extraordinarily successful (Gan and Wang, 2017). Unfortunately, some of these IS evaluation approaches/theoretical frameworks originated from efforts with little understanding of the complexity of the problems that stem from evaluating IS. Hence, many theoretical models present steps backward, as they fail to assess the whole range of the criteria by which systems should be evaluated (Seddon, 1997). This is because quite often the criteria used are derived from only one specific perspective or theory (Cronholm and Goldkhul, 2003). The major perspective that drives the whole IS evaluation process is the approach and the accompanying strategy

undertaken. While researchers or assessors have indeed a plethora of approaches at their disposal (summative, formative, goal-based, goal-free, criteria-based), they ought to realise that each approach is fixed on examining a specific stage in IS development. For example, formative evaluation seeks to provide systematic feedback to designers and developers while summative evaluation is concerned with assessment after the implementation of the technology adoption process is completed (Walsham, 1993). This variation in approaches requires different measures to be utilised according to how an assessor wishes to act in order to perform the evaluation. Hence, it is extremely important that the approach is carefully selected in order to employ the correct measures, as the choice of wrong metrics could mean that the entire evaluation is invalid and, therefore, does not measure what it originally set out to do. As mentioned above, another equally important standpoint of IS evaluation is the strategy that a researcher adopts. While an evaluation approach might dictate how the assessor should move towards the task of evaluation, a strategy defines what to evaluate, and more precisely, what drives the evaluation. Whether using strategies where explicit organisational goals drive the evaluation, or inductive and situationally driven strategies, or even utilising a criteria-based evaluation where certain general criteria are used as an evaluation yardstick (Cronholm and Goldkuhl, 2003), researchers should select the strategy that can better attain their objectives. Dervin and Nilan (1986) identify six levels of objectives, namely engineering, input, processing, output, user and social levels, and further divides these into two broader sets, system-centred (include the first three levels) and user-centred (include the last three levels). Dervin and Nilan (1986) argue for a paradigm

change in IS evaluations approaches from system- to user-centred evaluations. They urge researchers to decide strictly between one or the other. However, Saracevic (1995) criticises this view and disputes the claim that a paradigm change from one to another orientation in evaluation is needed. He maintains that both system- and user-centred evaluations are necessary, and they should work in tandem and feed on each other to accomplish a fully comprehensive picture of IS performance.

This thesis strives to avoid presenting a narrow outlook of system evaluation and an attempt is made to provide a thorough, coherent, and inclusive procedure that fits with the objectives of the study. In fact, both system- and user-centred approaches are employed, and this is evident in the proposed Integrated IS Success/Technology Adoption Model. While the model clearly uses some system-centred dimensions like System Quality, Information Quality and Service Quality, there is also a strong focus on the user perspective, with several dimensions (all perception dimensions, Social Norms and User Satisfaction) measuring its different facets. This focus is present to ensure an all-encompassing evaluation process and to counteract the claim by Venkatesh *et al.* (2003) that a lot of studies do not account for the human factor and the intricacies involved in adopting new or existing technologies. In consequence, this study cannot be accused of monism as it accepts the duality of both system- and user-centred approaches and does not conform to the accepted principle of the 1980 and 1990s that IS evaluation should fall into one category or the other. Furthermore, this thesis supports the stance purported by Saracevic (1995) in the sense that it promotes the mutual use of

metrics and practices between system- and user-centred evaluations. Following Saracevic's viewpoint, it does not isolate the different levels of evaluation, neither does it distinguish between which level is better, but instead, it aims to break from the myopic view of limited, single-level assessments altogether, and embrace cooperative efforts and broader evaluation approaches.

Another concern and source of criticism is that a number of IS evaluation models do not distinguish which context they have been designed for and the type of use the system is undergoing (Wixom and Todd, 2005). For example, the criteria involved in evaluating a system where use is volitional differ from those where use is mandatory. A vast number of early IS studies were carried out in usage contexts in which individuals had a choice about their use of an information system. Nonetheless, during the 1980s and 1990s, the increasing trend among organisations to computerise their workplaces changed the scope of work activity. Mandatory system use was introduced when almost all mainstream industries started requiring their employees to use an information system and to do so in prescribed ways (Rawstorne, 2005). From this point onwards, workplace developments of this kind resulted in not only conceptual and theoretical, but also methodological and research validation issues for IS evaluation academics and practitioners. More specifically, within a social influence perspective, validation tests find that social norm is not significant in voluntary environments, whereas it has considerable influence in mandatory settings (Venkatesh *et al.*, 2003). In spite of this, some studies seem to have drawn conclusions about the significance of social norms without first

considering the context of the study. For instance, Chau and Hu (2001) find that the relationship between social norms and behaviour intention to use is negative and, thus, do not support that social norms would influence behaviour intention. However, their study is conducted in a voluntary setting and within such conditions, social influences are expected to have a non-significant influence. There are other studies that also report subjective norms to be non-significant. Dishaw and Strong (1999) argue that subjective norms are not crucial in understanding individual choices to use IT. Although Dishaw and Strong (1999) undertake their research in a mandatory use environment, whereby the subjects of the study are programmer analysts, their focus is on the middle and latter stages of technology implementation. Venkatesh *et al.* (2003) disputes the findings of Dishaw and Strong (1999) by advocating that social influences have a tendency to be more salient during the early stages of technology experience/adoption.

This thesis has found social norms to be an important determinant of behaviour intention, which is an anticipated outcome as the present study is pertinent to a mandatory system use environment. This is supported in the literature, not only by the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB), both including social norms as determinants of behaviour intention, but also by Mathieson (1991), who argues that human and social factors play an important role in technology adoption when the use of the system is mandatory. According to Rawstorne (2005) there is a paucity of studies in the IS literature that have addressed mandatory use within the framework of the socio–cognitive theories. Although Rawstorne's work is 15

years old, his views stand true even in the present day. Not only most research efforts in the field of IS evaluation seem to focus on voluntary use (in industries like banking, marketing, mobile telecommunications, virtual reality), of the rare papers that have addressed mandatory use (in hospitality, or the healthcare sector), most were based around the assumptions made by archetypes like the Technology Acceptance Model (Davis, 1989).

Alas, the TAM was created to predict user acceptance/adoption in a voluntary setting. Therefore, it is not suitable, on its own, for mandatory IS use environments such as hotels. It is no wonder that there are no papers on hotel IS evaluation that apply the TAM in its original form. Instead, almost all studies extend or utilise an already redefined version of the TAM to tackle mandatory IS use. It is this inability to work under such settings that has led critics to brand it as lacking heuristic value and explanatory power (Chuttur, 2009). Benbasat and Barki (2007:211) suggest that TAM "has diverted researchers' attention away from other important research issues and has created an illusion of progress in knowledge accumulation". This thesis' goal is the exact opposite, to genuinely contribute to the creation of knowledge. As a consequence, the Integrated IS Success/Technology Adoption Model proposed by this study is not based on the TAM's original and simplest form, but rather an expanded model which includes some of the TAM's elements but with the addition of other dimensions such as Perceived Benefits, Perceived Trust, Social Norms, and External Factors. The thesis has proven via its literature review that the addition of these constructs is beneficial to its inclusiveness and context.

One of the primary functions of the Integrated IS Success/Technology Adoption Model is to determine and explain a system user's intention to use or reuse a certain IS. With this in mind, the central premise of this study is to concentrate on selecting correct and accurate metrics. Therefore, in respect of organisational dynamics, IS cannot, as the TAM suggests, be considered an independent matter. On the contrary, according to research on change management (Eierman *et al.*, 1995; Okumus *et al.*, 2017), technology implementation and adoption are strongly related to organisational dynamics, and measurement outcomes are contingent on the researcher's understanding of this relationship (Scherer *et al.*, 2019). Moreover, the merit of any change process is governed by the interdependence between the technology, the organisational context, and the change model used to manage the change (Orlikowski and Hofman, 1997). This statement supports the current study's stance that it may be difficult to increase the predictive capacity of TAM if it is not integrated into a broader model that includes organisational and social factors (Legris *et al.*, 2003), such as the ones used by the Integrated IS Success/Technology Adoption Model.

It has been pointed out at the beginning of this section that recent research efforts are directed at categorising and creating typologies of IS evaluation metrics as well as expanding prevailing theoretical models to match the ever-growing requirements of emerging technologies including the Internet of Things, m-Government, and virtual/augmented reality applications among other. While this is an essential undertaking for researchers, it is equally important to identify new constructs that may potentially be utilised in

explaining adoption of the aforementioned newly developed technologies. This can be especially noticeable when observing system characteristics, and more specifically, System Quality and Information Quality measurements. For instance, in addition to the already established measurements within System Quality, such as reliability and response time, new characteristics emerge, including integration and customisation (Gable *et al.*, 2008), and interactivity (Zheng *et al.*, 2013). New Information Quality constructs coming to light include conciseness and scope for data services (Lee *et al.*, 2009), and richness for virtual communities (Zheng *et al.*, 2013).

The demonstrated need for an extensive theoretical model in the fluctuating information technology environment has been expressed by Benbasat and Barki (2007:216). They propose that researchers should redirect their attention towards exploring different constructs (such as IT artifact and design) and diverse consequences (such as adaptation and learning behaviours) in order to fully understand what influences adoption and acceptance in different IT uses. This viewpoint clearly implies that there is an inadequacy of present models in explaining adoption of upcoming technologies. It also points towards a future research opportunity that needs to be probed by both academics and practitioners; that is, to find a suitable balance between existing and novel constructs and to formulate models that include the best of both worlds. This thesis has achieved this task with the Integrated IS Success/Technology Adoption Model, due to its power to combine constructs that have been established and verified by the literature review and the primary research together with new elements (location of the network server, location of system

support services centre and its personnel) that are original and have been discovered by this study. Forsgren et al. (2016) call for researchers to continuously develop measures that can be applied in additional contexts. There are currently no studies, certainly within the hotel context, that have developed measures such as the location of the network server and the location of system support services centre and its personnel. Hence, this thesis can make valuable contributions to the literature in the hotel employee context and to other related contexts, such as those of professionals that need an IS in order to perform their job, those who work in similar dynamic settings, and those who work in an environment where the system works 24 hours a day, 7 days a week, 365 days a year, without interruptions. This mix of established and new constructs has produced a theoretical model that is capable of accurately and comprehensively evaluating all aspects of hotel IS.

Moreover, it is vital to explain the limitations of existing research surrounding the already established theoretical models of IS evaluation, which in essence form the foundations of the Integrated IS Success/Technology Adoption Model. As discussed previously, most theoretical models that emerge from IS literature are primarily based on the TAM or the IS Success Model. At its very basic level, the TAM essentially measures how perceived measures of usefulness and ease of use influence attitudes to use and actual use of a system. The IS Success Model, on the other hand, effectively looks into how technical system characteristics affect user satisfaction, and consequently, intention to use and actual use of a system. However, despite their substantial contributions and stimuli for further research, both models seem to have been

over relied on in the sense that academics' intense focus on them has led to dysfunctional outcomes (Benbasat and Barki, 2007). The main problem with those outcomes is that they have constrained both models' usefulness within the everchanging IT sphere, given that researchers have been unable to provide systematic means for expanding and adapting these core models. Furthermore, efforts to expand the models have not been based on solid and universally accepted foundations but have rather been more of a 'patch up' solution, resulting in theoretical chaos (Benbasat and Barki, 2007). Indeed, most studies concentrate on Perceived Usefulness and Perceived Ease of Use (TAM), as well as User Satisfaction (IS Success Model), and revolve around theories that endeavour to find antecedents for these dimensions, with insufficient focus on exploring system use or intentions to use. Benbasat and Zmud (1999) agree that while postulating the relationships between the constructs of both models is a relatively easy task, visualising the tangible effect of system and information characteristics on other TAM and IS Success factors is far more complicated. The abundance of published material that more or less replicates the IS Success Model's and TAM's original concept includes the same recurring construct additions such as job relevance, image, result demonstrability, computer anxiety, playfulness, and external control perceptions. This repeated overreliance on the same constructs can be seen as a barrier to effectively extending the models backwards towards IS, implementation and design components, leading to research that is unable to provide actionable results and limiting academia's knowledge of what actually makes a system useful (Orlikowski and Iacono, 2001). A further detrimental outcome of this overdependence is that it also focuses on predicting a single

behaviour theorised in a constricted fashion. More specifically, system use (or intention to use/reuse in the case of this thesis) has traditionally been applied and defined as a narrow, one-dimensional concept based on an amount or a frequency of website visits or clicks. Such a simplistic view has blinded researchers to other salient user behaviours, as sole emphasis is given to the amount or level of system use, in place of engaging in conceptualising how constructs might differentially affect other behaviours such as intention to reuse the system (after using it for the first time) (Doll and Torkzadeh, 1988).

It is fairly rare to find a model that is based on a solid amalgamation of these two prevalent schools of thought. Notable exceptions are the work of Wixom and Todd (2005) and Zaied (2012). The former, by means of a theoretical model, successfully demonstrate how system and information constructs IS Success Model) have an impact on perceived ease of use and perceived usefulness (TAM), which in turn have a bearing on attitudes and intentions to use a system. By also producing a theoretical model, the latter manage to show that system characteristics (IS Success Model), through the mediums of management support, training and user involvement, influence perceived ease of use and perceived usefulness (TAM). They also establish that these dimensions are linked to user satisfaction (IS Success Model), behavioural intentions and, subsequently, actual system use. The Integrated IS Success/Technology Adoption Model proposed by this thesis goes one step further, by not only combining elements from the IS Success Model (System Quality, Information Quality, Service Quality, User Satisfaction) and TAM (Perceived Usefulness, Perceived Ease of Use) but also by the additions of

other constructs like Perceived Trust (Pavlou, 2003), Perceived Benefits (Fearon and Phelp, 1998), and Social Norms (Fishbein and Ajzen, 1975). It is hoped that this thesis succeeds in redirecting IS Success and IT acceptance research towards potentially more fruitful avenues and away from the traditional, oversupplied IS Success and TAM research streams.

7.4. Research Limitations

As is the case with all research projects, this thesis is not without its limitations. That is not to say they limited the study *per se*, but without realistic perimeters its aims would not have been accomplished. A prime example of a limitation is the challenges associated with data collection. The process of persuading the interviewees to participate and confirming their availability was extremely time-consuming. There are several reasons behind this: the reluctance to take part was exacerbated by the busy schedules of the hotel managers and their disinclination to attend the interview in their free time. To make matters worse, some managers confirmed their attendance but had to reschedule a number of times due to work commitments. Resulting from these complications and in order to prevent further delays, it was decided that fourteen managers would be interviewed. In order to enhance the quality of the research and to obtain adequate results, both in terms of quantity and quality, the hotel managers were interviewed twice. In terms of continuity, there was only a minor issue during the data collection process: a front office manager who was interviewed during the first set of interviews relocated to Dubai and was thereafter not available for further interviewing. This person was, however, replaced by a colleague working in a comparable service department, a concierge manager.

The low number of participants might also be considered a limitation. If the setbacks in the data collection were not present the author would have ideally liked to conduct to more interviews, potentially with a second food and beverage manager (one was already interviewed) and an operations manager.

It was felt that this would have enhanced the research even further and would present a better departmental representation. That said, all departments of a hotel were already represented by the fourteen interviewees, and by the end of the second round of interviews saturation had taken place as themes kept being repeated and no new opinions or ideas were being generated. As far as the number of interviewees is concerned, fourteen is a sufficient total, as Guest, Bunce and Johnson (2006) and Adler and Adler (2012) have shown that a sample size between 12 and 60 experts is adequate when surveying a homogenous group, such as the hotel managers.

Despite the fact that the sample size in this thesis is not a problem as such given the realisation of data saturation, a criticism often ascribed to small sample qualitative research is the limited generalisability of results. As with similar studies, the present work is based on qualitative research and might be the subject of criticism, as it can be argued that the viewpoints of the hotel managers perhaps do not produce generalisable enough results. However, in its defence, one of the functions of this research is to assess the perceptions of the hotel managers with respect to IS evaluation approaches and criteria, and to develop a theoretical model based on these perceptions. The present study does not make claims that the Integrated IS Success/Technology Adoption Model can be used in a different context than the hotel industry, nor that it can be employed to evaluate IS from hotels other than 4 or 5-star. In other words, claims are made about the Model's applicability within its specific context rather than its generalisability. According to Szarycz (2009) a number of qualitative studies face the problem of being imposed with the positivistic

yardstick of generalisability, which is more of a hindrance than the actual limited generalisability of their results. Giving consideration to other methods and techniques such as testing the Integrated IS Success/Technology Adoption Model by using quantitative research approaches would strengthen its generalisability, but this is a task left for future researchers.

The fact that only hotel managers, as opposed to all types of hotel employees, were interviewed can too be perceived as a limiting factor of this study. Although interviewing all levels of employees within a hotel would have perhaps enriched the sample representativeness, the decision to solely collect the standpoints of hotel managers was made based on two criteria. Firstly, it is within reason to expect hotel managers to have used IS longer and more extensively than entry level employees or supervisors. The reason for this is that they have spent more time working within hospitality in order to ascent to their current position; thus, they have had far more exposure and experience of using IS than other employees. This is verified by the profiles of the interviewees (Table 5.3), where the most experienced manager, the general manager, had been involved in hospitality for 22 years, and the least experienced manager had six years' service within the hotel industry. Secondly, the managerial nature of their role entails that they had to use a wider range of systems in comparison to other employees, and also the actual use of the systems was more comprehensive. For example, a line employee such as a receptionist or a waiter might use IS in order to perform basic tasks like check in, check out, taking an order, receiving payment, or making a reservation. Managers would do the above tasks in addition to generating

reports, amending guest bills, adding notes onto guest profiles, and viewing reservations or table plans. Along the same lines, while a line employee would exclusively use a PMS (Property Management System) or a POS (Point of Sale) system, a manager would also work on payroll, inventory, customer relationship management, or financial reporting system. As the focus of this study is to present an evaluation model founded on the perceptions of IS users, it was considered a better avenue to collect these perceptions from users that use the systems more regularly and to their full effect rather than users with basic knowledge of the functions of the system. Besides, it is doubtful whether line employees would have been familiar with the breadth of IS evaluation dimensions, and even more so with the subthemes within those dimensions. Additionally, there were great reservations about whether line employees would, due to their limited system expertise, be able to discuss in depth about system use, trust, and perceived benefits from utilising the systems.

A further limitation that can be potentially attributed to this study is the restrictions in the distribution of the sample across all regions of the UK. The present work can be questioned with regard to why the sample was selected from Manchester and no travel took place in order to achieve full coverage of the UK. As explained in the Methodology chapter, the researcher lives and works full-time in Manchester. This presented constraints relating to how far and how often the researcher could travel. Apart from the obvious time and financial drawbacks associated with frequent travel, the dynamic nature of hotel work meant that scheduled interviews could have been cancelled by the

participants at the very last minute due to work obligations on their part, rendering the travel and effort made by the researcher pointless. In spite of the above, the decision to persevere with Manchester was taken consciously, because it was felt that as a sample it provides a truly reliable representation of the population. Featuring 49 hotels that fall within the 4 and 5-star rating and being the third most-visited city in the UK after London and Edinburgh, Manchester is a thriving destination where the hospitality industry is flourishing, and new hotels open constantly. It is for the above reasons that Manchester was selected as the sample city of this thesis.

7.5. Recommendations

This section makes use of the study's outcomes to develop practical recommendations for the 4 and 5-star hotel industry and the practitioners working within it, like hotel managers, IT managers, IS developers, and IS users. Opportunities for further research are also explored.

7.5.1. Recommendations for the 4 and 5-star UK Hotel Industry

The outcomes of the study pave the way for presenting a number of recommendations to the 4 and 5-star UK hotel industry. The vast majority of these recommendations revolve around the IS Success/Technology Adoption Model and the dimensions and constructs that form it.

One of the principles behind the composition and function of the IS Success/Technology Adoption Model is that by enhancing the quality dimensions (System, Information, Service Quality), an IS becomes useful, easy to use and trustworthy for users. Thus, both users and hotel managers can see palpable benefits form the use of the system and they can discuss positively about the system or promote its features to other colleagues. This results in users being satisfied by the use of the system and managers being satisfied as operations run uninterruptedly and efficiently. Therefore, given that the hotel provides adequate training, time and resources for its employees to

acquire knowledge about the systems and how to use them to their full capacity, both parties (hotel employees and managers) should form an intention to use these systems, and if the systems keep working without issues this intention can be sustained in the future.

The challenge for the hotel manager or the IS developer then is, as suggested above, to enhance the dimensions of the IS Success/Technology Adoption Model, and there are a number of ways in which to achieve this. For instance, System Quality can be improved by enabling users to access systems in a swift manner, without reliability or speed impediments, and this can be achieved by a simple maintenance programme or scheduled automatic updates to the systems. The IS should also work flexibly and be accessible by all platforms, offering seamless connectivity to mobile users and social media interaction. Another example would be for hotels to actively seek frequent feedback from their employees in order to record their opinions on current system use and elements that could be improved on. Equally, hotels should also employ the services of IT experts to physically visit the property in order to determine the status of the current systems and whether upgrades or changes are desirable and necessary.

Given the current state of affairs in the online transactions arena and the fear of cybercrime and fraud increasing by the day, a further area of great magnitude that 4 and 5-star UK hotels simply must not overlook is system safety and security. As a consequence, it is extremely important that the

system offers safe log in options for hotel employees and secure transactions for hotel guests. This is one of the most important measures in System Quality, given that in today's climate the risk of deceit is increasingly growing, and the number of hackers is rising almost concurrently with the number of online users. As a result, guests are more cautious than ever when using their credit cards to pay for hotel services such as accommodation and food. A system that can guarantee the facilitation of secure transactions for the benefit of hotel guests will go a long way towards building trust and loyalty. Another recommendation is the need for systems that offer complete, accurate and relevant information that is easy to understand and regularly updated (Information Quality). This can allow hotel employees to work quicker and accomplish their daily jobs easily (Perceived Ease of Use).

Another focus area for hotels to consider should be for systems to not only be technically unflawed but complemented by the accompanying IT infrastructure and technical support (Service Quality). Therefore, it has to be ensured that emergency lines, helpdesks, support service call centres, as well as online support help are well maintained, fully manned and available 24/7 in order to assist hotel employees when problems such as system inactivity, lost connectivity and troubleshooting arise. The need for systems that produce accurate and understandable reports should also be highlighted (Perceived Usefulness), while IS should simplify operations and enhance the overall performance of hotel employees (User Satisfaction).

Moreover, hotels should make sure that IT training is accentuated and accelerated. Several hotel managers argue that IT training is an added unnecessary cost that can be avoided since employees can train on the job. This position, however, is not endorsed by this study as training provision is regarded as indispensable not only for the self-confidence and performance of employees but also for the reputation of the hotel. No hotel guest likes to be served by an untrained person, whether that is a receptionist or a bar person; yet most people will not blame the individual but rather the hotel he/she is employed by for the lack of training. Hotels should also offer the necessary resources and time for employees to develop their skills. Seminars and online tutorials should be made available so that staff are not left behind when new technologies are adopted by the hotel and when new training material becomes available. All the above should be supplemented by top managerial support and effective communication. It is not sufficient for general managers to be aware of or merely support training programmes or new IT investments. They need to be communicated from the top to the bottom of the organisational structure to make certain that all employees are cognizant of the direction the hotel is following.

A further recommendation for hotel managers is to strive to place the network server and the IS support team on property as such a move is projected to deliver a number of benefits for the hotel and its employees. With the network server located onsite the hotel manager(s) can be in direct control of the system and can reset it or reprogram it directly whenever desired or when connectivity problems surface, without the need for middlemen. Having an IT

support team on property might see an escalation in wage costs but this can be offset by the advantages of having a personalised service available directly and immediately. If the systems ‘go down’ the onsite IT engineer can attend to the problem straightaway without the need for telephone calls that can only cause delays.

It is also recommended that managers of hotels follow the latest advancements in Information Technology closely and take advantage of new developments in software in order to be prepared to equip their hotels with technological innovations and appropriate customer solutions. Additionally, they should regularly monitor the IS of the hotel and those of competitors so as to be aware of what the standards in the market are when it comes to IT investment.

7.5.2. Recommendations for Future Research

This section identifies opportunities for future research. As an overall assessment, it is believed that this thesis has successfully addressed its objectives and has generated useful and solid conclusions. The main limitations of the study have already been reported, and had they not been present, perhaps a more generalisable research could have been produced. This would potentially involve the use of a larger sample in order to achieve greater representation and a wider variety of opinions. However, since

saturation was reached by the current sample, the increase in the sample size should be organised by future research through conducting interviews across all regions of the UK. Another idea for future research would be that the study is carried out cross-culturally, for instance in the UK and USA, or Southeast Asia. It is recognised that contextual factors that affect technology-related behaviour vary from one country to another (Gretzel, Kang and Lee, 2008). Moreover, cultural background affects service expectations, attitudes towards system use and Intention to Use as well as technology acceptance as a whole (Donthu and Yoo, 1998).

A further possible avenue for future research would be the addition of quantitative research. This would make the data collection a two-stage process whereby the dimensions of the IS Success/Technology Adoption Model would have been identified by the literature review and the interviewed hotel managers and subsequently tested by a questionnaire distributed amongst line employees. This would enable a mixed methods approach and would ensure, by statistical analyses, that the IS Success/Technology Adoption Model and its dimensions truly represent the context of the 4 and 5-star hotels.

One other suggestion for future research would be to conduct a simultaneous comparable study to the current one but in the context of 2 or 3-star hotels. The realities associated with this sector, and in particular the level of investment and the expectations of the users could have produced different

results that could have added more generalisability to the present study. Along these lines, it would also be interesting to research privately owned hotels or rural/countryside hotels to determine if and how the results would differ with the present work. A further alternative path for future research would be to adjust the moderating and demographic factors, such as the hotel size and its style (newly built versus traditional or listed buildings) in order to discover how different IT architecture settings can be applied according to the demands set by the layout of each property, and the profile of the interviewees (age, years of experience), as these are expected to have an effect on technical competencies and the levels of system adoption by each category of users.

This study presents an integrated model of technology adoption and IS Success that combines dimensions from the TAM, IS Success model, and other elements. The IS Success/Technology Adoption Model extends previous research in that the combination of dimensions employed has never been used before and can, therefore, be utilised as a basis for future research. Recent studies provide evidence that new measurements emerge, in particular for System Quality and Information Quality. For the former, examples include mobile platform sophistication and integration (Alsabawy, Cater-Steel and Soar, 2016), interactivity (Zheng *et al.*, 2013), and perceived personalisation (Morosan, 2018). For Information Quality, new measures include conciseness (Grudzien and Hamrol, 2016), scope for mobile data services (Lee *et al.*, 2009), and richness (Zheng *et al.*, 2013). Therefore, there is a tendency and a simultaneous need for a continuous development of corresponding measures of IS Success and technology adoption (Forsgren *et al.*, 2016). New

innovations in technology such as mobile communications, contactless and NFC (Near Field Communication) payments, as well as virtual reality and biometric technologies such as fingerprint identification and retinal scans have all been used in the 4 and 5-star hotel industry to various levels. As these technologies are still in their infant stage as far as research and development are concerned, a constant re-evaluation and expansion of the current knowledge base is absolutely vital in order for the research community to make progress in these fields. Furthermore, the emergence of new technologies such as 5G and the Internet of Things may render some IS evaluation measurements such as speed, response time, and connectivity to name a few, obsolete. This realisation further stresses the need for academics to revisit the current IS evaluation models and approaches and enrich them in order to update the extant literature in line with the latest advancements.

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APPENDICES

Appendix 1: Interview Questions (1st Set of Interviews)

My name is Efstathios Georgiadis and I am studying for a Doctor of Philosophy degree at Manchester Metropolitan University. I am conducting interviews with departmental managers across the 4star full-service hotel sector. I appreciate the fact that you have agreed to participate in the interview and would like to take this opportunity to thank you for your time. The interview should take approximately one hour. If at any time throughout the interview process you wish to stop, take a break, or do not feel comfortable to answer a question, please feel free to notify me.

Although it is my intention to tape record this interview, I can reassure you that the recording will not be listened by no-one apart from me, at home, in order to make notes. I feel that this way I can give you my undivided attention rather than constantly pause the interview in order to note down everything you tell me. Despite this, if you do not wish to be recorded, please inform me know and I will write down your answers. When I transcribe this interview, I will not disclose your name or any names you refer to; to guarantee anonymity, I will assign pseudonyms.

The purpose of this interview is to analyse your assessment of the Information Systems and their use in your workplace. Another goal is to evaluate your perceptions with regards to existing and future Information Systems strategies as well as to explore potential employee/organisational benefits resulting from these strategies.

To start our dialogue, I would like to ask you a few introductory questions that will pave the way for the full interview:

- First, please state your name and the nature of your role/job?
- What types of Information Systems or software do you regularly use to manage your daily tasks?

- Do you use these Information Systems on a daily basis? If so, how much time, on average, do you spend every day using these systems?
- How important is it to have these Information Systems at work?

1. From your experience in using the systems in your workplace, what do you think are the most important aspects relating to a system's characteristics and performance? Are there any features you would like to add/remove from the current system in order to improve its overall quality?

2. Have you had IT training prior to using the Information Systems in the hotel? How important was this training for your current role? Do you consider yourself to be an expert or a moderately skilled user of these systems?

3. What can you tell me about your perceptions, with reference to IT performance and training, of the Information Systems and software applications at work? Do you feel that these systems are easy or difficult to be trained on? How do you handle people who refuse to accept change?

4. If known to you, could you please describe the process/steps by which the company manages the purchase/replacement of hardware and software products? How do the company and senior management support these types of actions? How do hotel employees benefit from this support?

5. What can you tell me about any recent additions or modifications to the hotel's IT infrastructure? In your opinion, which department benefited the most? Where the employees for or against such additions/modifications?

6. Could you please explain the hands-on support and training programme you use to ensure departmental utilisation of IT

infrastructure? Do you feel that your department is superior, equal or inferior in adopting IT?

7. Could you please tell me about a situation in which you were involved with one of the following: troubleshooting procedure, system failure, system backup or failure recovery? What did you do? Was there online help or any call centres you could ring? If so, were they helpful?

8. Do you know of any processes/updates that the company has implemented to improve system/network security? What were the repercussions for your department? Are such transitions effortless for your team or do they face difficulties?

9. In which manner does the hotel offer you the necessary facilitating conditions (such as for example resources and time), so that you and your team can use the Information Systems to their full capacity? Would you rather have more people or more systems in your department? Please explain.

10. How do you keep yourself updated with technology, considering that technology today is enhanced almost every day? Are there any applications that you know of and would like to see at your department?

Appendix 2: Interview Questions (2nd Set of Interviews)

My name is Efstathios Georgiadis and I am studying for a Doctor of Philosophy degree at Manchester Metropolitan University. I am conducting interviews with departmental managers across the 4star full-service hotel sector. I appreciate the fact that you have agreed to participate in the interview and would like to take this opportunity to thank you for your time. The interview should take approximately half an hour. If at any time throughout the interview process you wish to stop, take a break, or do not feel comfortable to answer a question, please feel free to notify me.

Although it is my intention to tape record this interview, I can reassure you that the recording will not be listened by no-one apart from me, at home, in order to make notes. I feel that this way I can give you my undivided attention rather than constantly pause the interview in order to note down everything you tell me. Despite this, if you do not wish to be recorded, please inform me and I will write down your answers. When I transcribe this interview, I will not disclose your name or any names you refer to; to guarantee anonymity, I will assign pseudonyms.

The purpose of this interview is to analyse your views on different Information Systems evaluation frameworks/models, drawing attention to organisational benefits. More plainly, I would like to understand the manner in which you would evaluate your hotel's Information Systems if you were given a group of pre-set assessment criteria. In addition, I would be interested to find out about your perceptions with regards to any potential employee/organisational benefits that might arise from your evaluation.

To start our dialogue, I would like to ask you a few introductory questions that will facilitate the transition to the full interview:

- First, please state your name and the nature of your role/job?
- How important is it to have Information Systems at work?
- Do you see any organisational or employee benefits associated with the use of these systems at work?

1. One of the most widely used criteria of Information Systems evaluation is System Quality, which refers to the quality or performance of the system and determines whether or not the system is accessible, responsive, flexible, and reliable. In your opinion, how crucial are these characteristics for a system to perform well?

2. In the same context (System Quality), what is your view on system safety and security of transactions? Do these attributes represent something you would like to see as a feature in the systems at your workplace?

3. What about a system's design? How important is it for a system to offer playfulness and a sense of enjoyment for the user, while incorporating good graphics?

4. Do you agree with the notion that a system with excellent technical characteristics may not always be fully successful/effective if the information it handles is of inferior quality? Please explain why

5. Would you say that information-related factors such as accuracy, ease of understanding, relevance, currency, and completeness, enhance or undermine the quality of information a system provides?

6. Do you believe that the systems in your workplace should feature dynamic and personalised content, whereby the information varies, and the system projects a sense of individuality? Do you feel that individualised content is something that can be easily built into the Information Systems used by hotel employees?

7. How do you understand the term Service Quality in the context of Information Systems?

8. How effectively would the hotel operate in times of troubleshooting if its Information Systems did not offer online support or services like helpdesks and call centres?

9. Would you feel more comfortable using the system in your workplace if its interfaces maintained a recognisable corporate logo or a standard company colour (also known as skin)?

10. How do you perceive system usefulness? What attributes would you associate with a useful system?

11. What do you look for in an easy to use system?

12. Can you identify any employee or organisational benefits that are the result of system use at your workplace?

13. How do the systems you use help you enrich your experience and acquire new knowledge about the hotel you work for?

14. To what extent do you trust the Information Systems at your hotel? Do you feel there is room for improvement?

15. Would you prefer a large network server based, for example, at the company's headquarters or a smaller-scale server located on property?

16. What can you tell me about the overall performance of the system and the general experience of using it daily?

17. Within the hotel setting, is there a relationship between an employee's satisfaction of using a system and his/her attitude/intention to reuse it, given that employees had a choice in the matter?

18. Let us talk more about the attitudes and behaviours of employees: how much is your attitude/behaviour to use a system influenced by your colleagues' beliefs about those systems?

19. Would you recommend the system you currently use to colleagues from other hotels and would you talk positively about its online capabilities?

20. If the use of systems was not compulsory as part of your employment, would you choose to use the current systems in the future?

Appendix 3: Example of Interview Transcript (1st set of Interviews)

Interviewee:

Food and Beverage Manager

Speakers:

EG (Efstathios Georgiadis)

F&B Manager (Food and Beverage Manager)

Transcript:

EG: "The purpose of this interview is to analyse your assessment of the Information Systems and their use in our workplace. Another goal is to evaluate your perceptions with regards to existing and future Information Systems strategies as well as to explore potential employee organisational benefits resulting from these strategies. To start our dialogue, I would like to ask you a few introductory questions that will pave the way for the full interview. First, what is the nature of your role/job?"

F&B Manager: "I am the Food and Beverage manager at the hotel, so I look after all aspects of restaurant, bar, conference and banqueting and manage the team within that"

EG: "What types of Information Systems or software do you regularly use to manage your daily tasks?"

F&B Manager: "The main systems I use are Delphi, which is the Sales team system- where they create function sheets for any events that we have going on in the hotel- so on a daily basis we need to check that to make sure that our staffing levels are correct for the functions that are coming in, to check what functions we have and the times. I also use Bluecube, which is the

clocking in and out system, to manage the rota and to ensure that associates are clocking in and out correctly and therefore get paid correctly. I use Opera, which tells me about the house count information, so it will give me guest details, room numbers, how many people we have in house at any one time, and how many guests we have on a dinner inclusive package for example. I also use Marriott Global Source, which is the Marriott Intranet, so it basically has in there anything you might ever need to know about Marriott, and you can use it as a source of reference or if you just need to find some information or if you are not sure about how to do something. There are plenty of links there to other systems such as for example the LQA (Lodging Quality Assurance) website, which is where we look at the survey responses from our guest satisfaction survey and it gives us our scores and information on how we are doing from a guest perspective. There are also links to myHR, which is a system used for managerial review processes"

EG: "How much time would you say you spend on average using those systems daily?"

F&B Manager: "In reality, probably one to two hours every day, all combined"

EG: "How important is it to have these Information Systems at work?"

F&B Manager: "Extremely, the LQA website for example, tells us what our guests are thinking about us so in order to be able to improve our service, improve what we offer, improve how we staff things, we need to know what the guests are telling us. The Marriott Global Source basically gives us daily updates of what is going on within Marriott itself as a company, that is our forum for finding out what is going on and what we need to update or change. Bluecube obviously being a payroll system is incredibly important because that is about our associates' livelihoods at the end of the day, if we make mistakes over there it affects peoples' pay"

EG: “Thanks, so I am now going to proceed to the main questions of the interview. From your experience of using the systems in your workplace, what do you think are the most important aspects relating to a system’s characteristics or performance? For example, if a system is reliable or if a system responds quickly to what you ask of it or perhaps a combination?”

F&B Manager: “The most important characteristic as far as I am concerned is that it is user-friendly, that it is easy, that you go onto it and in theory it should be able to tell you what you need to do next, it should prompt you where you are going next. Speed is also a key factor for me because I am not office-based, generally if come into the office to do some work I soon need to be back in the restaurant or bar area and therefore I need to be able to do my task and get back out, so definitely speed is an issue. But, as I said user-friendly is more important, the fact that I can go in there and can navigate my way around the system without having to look too deeply into it or if we have new starters that they can be trained on the system quite easily, so it should be logical and easy to navigate round”

EG: “Thanks. So, just to follow up on this question, would there be any features that you would like to perhaps add or remove from the current system in order to improve its overall quality?”

F&B Manager: “I am generally happy with most of the systems. Delphi has little prompts for example, so if you are not sure what an item is you can hover over it and the system will bring up a box to tell you what this item is, so that is a navigational tool which works really well. Micros (system used by Food & Beverage to record all bar/restaurant transactions) also has a prompt box on top of the screen so every time you have done a transaction if the computer stalls for any reason, if you look at that top box it tells you what information it is asking for next, so you then know how to respond. Those kind of systems work really well, however I find that Marriott Global Source can be quite complicated at times, when you put something in the search box you do get all sorts of stuff up and have to sort of troll around quite a lot of information

before you get what you need. This happens because there is an immense amount of information stored in that system”

EG: “My second question is: have you had IT training prior to using the Information Systems in the hotel, and if so, how important was this training to your current role?”

F&B Manager: “Just in school really, but I grew up in an age where the emphasis was becoming very important on computer and IT skills so I was in the last era, if you like, of people, for example when I was in primary school computers where not really that important but by the time I got to secondary school it was a key thing on the curriculum- you had to know about it and you had to have a basic level of understanding on a computer and you had to take that further to do it at a GSCE level. I think the generation before me did not have that much emphasis (on IT skills and training) and the generation since me have much more of an emphasis. So, I had a basic understanding.

EG: “Do you consider yourself to be an expert or a moderately skilled user of the systems that you use?”

F&B Manager: “I would say that now I am leaning towards expert because I have been using those systems for five to ten years on varying degrees. But when I first joined the company, I was probably just moderate in terms of my IT knowledge”

EG: “During the first steps of your career, did you find it easy to train on and learn the system or did you face any specific difficulties?”

F&B Manager: “No, I think it was easy enough, it was quite logical”

EG: “The next question I would like to ask is: what can you tell me about your perceptions with regards to IT performance and training of the Information Systems and software applications at work? For example, do you feel that these systems are easy or difficult to be trained on? We have touched on this previously with regards to yourself, but what about your team, do you feel that the systems enable them to train quickly?”

F&B Manager: “I would say they (the systems) are generally easy to use. They are process-driven so as long as you guide your team with the process it is quite easy to train. It is like with most things, it is practice, is it not? I think you would probably get quite a different answer from somebody who is maybe office-based because if you are using the systems on a constant basis, eight hours a day, they are very easy to learn. Because my team are on the floor and they just rush in the office for maybe 20 minutes and then go back on the floor it is slightly harder for them to learn because they do not use these systems constantly. But most of the Marriott systems are quite straightforward, quite logical, and so quite easy to use/train”

EG: “Within your team, how do you handle people that refuse to accept change or who resist change? By change I mean training on these systems- is it a matter of just persevering with the training or is there a different strategy?”

F&B Manager: “To be honest it is just persevering with the training because with most of these systems there is no choice, we have to use them in order to be able to do our jobs properly, so the people who are more resilient to work with the system train quicker and better. I have an example of this from within our team; one of our supervisors has come from a generation before me and does not use a computer and does not really get involved with IT and therefore getting that person trained on the systems has been quite difficult because they just do not want to and they will avoid it at all costs, asking other supervisors to do the tasks for them. As a result, I have had to be quite stern with them and to be stern with the other supervisors as well, saying to them not to complete the tasks for this person- they have to learn how to do it themselves and I just explained to them that everybody always has an element

of the job that they like less than other, but it is still part of their responsibilities as a supervisor, so it has to be done”

EG: “Ok, thank you. Let’s change the subject: if known to you, could you please describe the process or steps by which the company manages the purchase or replacement of hardware or software products?”

F&B Manager: “From my knowledge, I am not sure what they do in terms of purchasing, I would presume that they do some sort of bulk deal across multiple properties because that is the way it comes across when they do the rollout, they have the one IT gentleman who is responsible for installing the software/hardware in multiple properties. In terms of replacement, I have been with the company for nine years now and there have been two general IT replacements within that time, so we had new computers, we had an upgrade across all properties in the north of England which I presume extended to the south as well, that was about five years ago. Then, just this year we had another upgrade”

EG: “During those processes that you mentioned, for example replacements of IT products how did the company or senior management support these types of actions? Do they encourage you and your team to spend more time training on/learning the systems, is there any online training tools?”

F&B Manager: “Yes, there were three specific upgrades that I remember being heavily involved with: there was the Micros upgrade, when they did that, they actually took all the F&B managers and gave them a two-day training course on how to use the system, one-to-one training which worked for that aspect. I know that when they upgraded from Fidelio to Opera (PMS) there was a four-hour online course that we all had to complete on our own which gave us a foundation, and then we all went and did a three-hour group training session in a room that was set up with lots of computers. The Opera training session that was online stayed there for a good three-four months so that we could refer to it whenever needed. So the management were quite keen to help with

that transition. When we installed Bluecube as a system, that was a massive operation, because that was not just a computer system, it was the whole clocking in and out system for associates. As part of that rollout certain representatives among us were taken down to London for a training session, and when they returned back to the hotels they were nominated as the Bluecube 'Champions' if you like, they were responsible for to relay the information to all hotel associates and sign off/complete in-house training and be on hand during the months that followed for associates to ask questions and guidance. Marriott are pretty good in those types of situations and they will usually have an expert to whom you can refer to or contact"

EG: "I assume that throughout the whole process, cascading from the system being installed to the heads of department like yourself being trained on it, it all comes down to the employees and they do benefit from that type of support, do they not? The more you can support them and since they know they have an online support tool, the more confident they become in using the systems, don't they?"

F&B Manager: "Definitely, I think it is like a safety blanket really; it is all about knowing that there is something that you can refer back to if you are not sure"

EG: "What can you tell me about any recent additions or modifications to the hotel's IT infrastructure? In your opinion, which department benefited the most and were the employees for or against such modifications/additions?"

F&B Manager: "The best example here would be the Opera upgrade from Fidelio; it was a little while ago but in terms of a big system impact for hotel operations this is the one that stands out. The Front Office team definitely benefited from that one because they now (with the new system) have much more information at their fingertips. Although, when Opera was launched it was a big change for them, now it is very much second nature and most of the associates now do not even know what Fidelio was, they just know Opera.

This upgrade also benefited the rest of the hotel because it is such an easy system to use”

EG: “Could you please explain the hands-on support or training programme you use to ensure departmental utilisation of IT infrastructure. Saying that, do you feel that your department is superior, equal or inferior in adopting IT compared to other departments?”

F&B Manager: “The hands-on training programme that we use is basically just one-on-one training for all our IT systems, because as previously mentioned we are all floor-based rather than office-based. As a team, anything that we need to be doing on a daily basis is a case of, when for example a new supervisor or associate joins the department, we will go through one-on-one training, we have navigational sheets that we give for them to keep and follow, and what I would then generally do is have them perform the tasks with me or another manager who can watch or guide them, but they are always free to follow the navigational sheets, which are always kept in the office and thus they can refer to them. Finally, it is just a case of practice and when it gets to a point when they feel comfortable, we will have a period of letting them repeat the process daily, so they get into the habit of doing it and a routine. In terms of whether we are superior, equal or inferior in IT adoption, as a general trend, people who join F&B departments are not usually very keen on using computerised systems. We do what we have to do, everybody in the department has a sound IT knowledge, so I would probably say we are equal, but it is not something that is the main part of our jobs”

EG: “That is completely understandable I think, as long as employees are confident and have knowledge of what they are doing, then that is sufficient. Could you please tell me about a situation in which you were involved with troubleshooting procedures, system backup or failure recovery?”

F&B Manager: “This is an issue that happens every now and then: the Micros system which is used for bar and restaurant associates to charge guest bills

to their room accounts has to communicate with Opera system in order for the charges to appear on the bill, and there are times when the interface between the two systems goes down. So, it is quite a difficult situation to handle because you need to access the main server computer and see what you can do to restart the interfaces. There are not many people within the hotel that are really trained to utilise the interfaces and consequently the main server does frighten a lot of people. I personally usually try and teach myself to handle certain elements of systems like that but there are still parts where you have to seek further help. There is a system support line that you can ring anytime that is usually really helpful and they will work on your problem remotely and then ring you back when they have a solution. We also have the WebEx system, where the people on the other end of the phone may ask you to dial in to a WebEx conference, which means they can access the system remotely, and talk you through a few procedures via this and make sure that whatever you need is fixed or altered. They always issue a log number as well and follow up to ensure that the issue has been resolved"

EG: "Thank you. The next question is relevant to system or network security. Do you know of any processes that the company has implemented to improve system/network security? What were the repercussions for your department?"

F&B Manager: "I do not personally know of any security systems that have been implemented as such on the actual PCs, however I am certain that there are and I am sure that the person responsible for the hotel's IT could definitely talk you through the actual different network security processes. One thing that Marriott are really keen to cover is information security and therefore there is online training regarding the use of data and what you do with that type of information. Obviously as hoteliers, we are privy to some sensitive information such as guest addresses, credit card numbers and things like that. So, all associates that do have access to a computer have to undergo this training and it is all about what information you can or cannot give out or what information should or should not be shredded. So, Marriott are very much on top of security on that respect but I do not know specifically about computers"

EG: “In which manner does the hotel offer you the necessary facilitating conditions such as resources or time so that you and your team can use the Information Systems to their full capacity? In other words, do you feel that, as a department you have ample time to train on the systems in place and would you rather have more systems or more people in order to operate better?”

F&B Manager: “Being in Food & Beverage I would say that there is not enough time to complete all information tasks as necessary, but again this is because we have to be on the floor, and we cannot have a computer behind the bar. I think that probably the Front Office team for example, would have a different answer because they always have access to a computer. Hence, from my perspective, another person is always useful so I would prefer people rather than systems, but we do get by and we certainly do everything that we need to with regard to computer systems; however, we do not necessarily get enough time to get the most out of them”

EG: “Ok, the final question of the interview: as a head of department, how do you keep yourself updated with technology considering that it is enhanced and updated almost every day? Are there any applications that you know of and would like to see at your department?”

F&B Manager: “Marriott Global Source keep us updated constantly, there have a little blog there that gets reorganised every day, or LCA (Lodging Quality Assurance) for example, has a ‘tip of the day’ so every time you visit it will give you another piece of information about how to maybe navigate around the system or something that you did not know before. Delphi also does that; it tells you about something in more detail that you had previously known regarding how to get the most out of the system. However, Marriott Global Source is the place to keep you up to date because it updates constantly and there is always new information on there. I do not think that there are any additional applications that I would like to see in my department, maybe an online booking system for the restaurant facility, but realistically we have everything we need. I would not mind to see some of the system combined so for example we have Oracle which is a holiday and sickness system and then

we have Bluecube, the timecard system, it would be more succinct for them to be together, but other than that everything else is satisfactory”

EG: “So, that question concludes the interview. I would like to reiterate that all the answers that you have given me will be dealt with discreetly and unobtrusively and also to confirm again that your anonymity is guaranteed. Thank you very much for your time”

F&B Manager: “No problem, thank you”

Appendix 4: Example of Interview Transcript (2nd set of Interviews)

Interviewee:

Concierge Manager

Speakers:

EG (Efstathios Georgiadis)

CON Manager (Concierge Manager)

Transcript:

EG: “The purpose of this interview is to analyse your views on different Information Systems, evaluation frameworks or models drawing attention to organisational benefits. More plainly I would like to understand the manner in which you would evaluate your Hotel’s Information Systems if you were given a group of pre-set assessment criteria. In addition, I would be interested to find out about your perception with regards to any potential employee or organisational benefits that might arise from your evaluation. So, to start our dialogue if I could just ask a few introductory questions that would facilitate the transition to the full interview”

EG: “Please state the nature of your role”

CON Manager: “I am the Concierge Manager”

EG: “How important do you feel is it to have these Information Systems at work?”

CON Manager: “The Information Systems that we work with are very important in order to facilitate the guests’ arrival, departure and experiences while they are here. Without that information (provided by the systems) we would not be

able to find out, especially for return guests, what their favourite items of food are, or what their personal favourite rooms are, or any other idiosyncrasies that they might have throughout their stay”

EG: “Ok, thank you very much. Do you see any organisational or employee benefits associated with the use of those systems?”

CON Manager: “Similar to the last question, it is very important for all employees/associates to have that information at their fingertips in order to facilitate or improve the customer service that we give to the guests”

EG: “So basically, if the systems work in a good way and the employees know how to use them, then that would reflect upon the guest, resulting in a better overall customer service?”

CON Manager: “Absolutely, it improves the customer service on our end, yes”

EG: “Ok thanks, so I am going to proceed to the main interview now, the first question: one of the most widely used criteria of Information Systems Evaluation is System Quality which refers to the quality or performance of the system and determines whether or not the system, for example, is accessible, responsive, flexible and reliable. In your opinion, how crucial are these characteristics for a system to perform well?”

CON Manager: “Well, I think all the characteristics that you mentioned are vitally important, especially with the work that we do in Concierge, whereby we need that information at our fingertips, and we need it very, very quickly. For example, if we have a guest waiting that needs information quickly; we need to access correct information very quickly in order to give that guest the accurate answers they need. Thereby, what this reflects on, is that the guest will be pleased and we will receive less negative feedback from the guest, which ultimately cuts down the number of complaints that I as a manager receive”

EG: “Ok, thank you. So, question number two: in the same context of System Quality (the system characteristics) what is your view on systems safety and security of transactions? Do these attributes represent something you would like to see as a feature in the systems at the work-place?”

CON Manager: “Well, I think there has to be security within any kind of system that contains personal knowledge of guests’ sensitive information-obviously we are bound by the Data Protection Act-so therefore we have to be very careful security-wise, as to who or when we use that information”

EG: “Absolutely, that is why our systems have to incorporate facilities that will ensure that this information remains confidential, especially credit card details?”

CON Manager: “Absolutely, yes”

EG: “What about the system’s design? How important is for a system to offer playfulness and a sense of enjoyment for the user while incorporating good graphics?”

CON Manager: “I think playfulness on the system with regards to the hotel industry does not carry as much importance, certainly very little importance in fact, in comparison with good graphics. If we got good graphics your brain reacts much better to what is written down and your brain will facilitate and manufacture better that information, in a way that you wish it to be manufactured, or give, again, the best customer service that you can”

EG: “Do you agree with the notion that a system with excellent technical characteristics may not always be fully successful or effective if the information it handles is of inferior quality? Please explain why”

CON Manager: “Yes, I think that the information that we obtain from the system has to be accurate. If it is inaccurate then we are passing on incorrect

information to our guests, thereby increasing the risk of getting complaints, so therefore the more accurate it is the more accurate the information that we can give to the guest, which is vitally important”

EG: “Thank you. Would you say that information related factors such as accuracy, ease of understanding, relevance, the currency and completeness of the information; do these characteristics enhance or undermine the quality of information a system provides?”

CON Manager: “I think all of these attributes of information enhance the business. As I said, the more accurate the information is… it is absolutely imperative that we can give correct information and pass that on to our guests. The clarity as well, the information needs to be up to date, so that we can advise the guests accordingly- there is no point in us looking at a train timetable from 2009 when all the trains are now running at different times. So, accuracy and up to date is imperative”

EG: “Do you believe that the systems in your work-place should feature dynamic and personalised content whereby the information varies, and the system projects the sense of individuality? And do you feel that individual’s content is something that can be easily built into the Information Systems used by hotel employees?

CON Manager: “I think an individual-based system is very important, although this is a multi-property company throughout the world, each building has its own individual characteristics, so on the website it is individualised, plus the information that we retrieve from our systems means that for any returning guest we can find out exactly where they have been staying, what their little fore boils are, what their favourites are, even to the extent to what rate they were given last time they stayed. So, in that respect it can become very individualistic to the guest and also adds a personal touch to the information we can lay hands on”

EG: “Ok, thank you. Let us move to the next question: how do you understand the term Service Quality in the context of information systems?”

CON Manager: “The Service Quality that we receive is mainly from three different sources: one is from the main system that we use, which offers a call centre. Should they not be able to help I presume they would send out a computer engineer. Secondly, for those relating to the Internet, obviously the same situation applies; and thirdly, which reflects upon the guest, is when they cannot connect to the Internet in their rooms. In this case, we have a dedicated call number, a dedicated call service number that we phone to get that fixed. Without these the whole operation would be extremely difficult, without being able to obtain information with regards to the guests that are coming in, which may impact on security as well”

EG: “Ok, thank you very much. How effectively would the hotel operate in times of troubleshooting if its information systems did not offer what you mentioned: online support or services like help desks and call centres?

CON Manager: “It would be extremely difficult. I think very few associates/employees are actually computer engineer trained, so the whole situation could be extremely difficult in accessing any kind of information whatsoever. Therefore, it is vitally important to have these call centres to hand”

EG: “Yes, I mean as you said, employees or even managers are trained on the system, how to operate the system, not how to troubleshoot or how to fix a failure in the system…”

CON Manager: “Absolutely”

EG: “Ok, thank you very much. Let us move to a different topic: would you feel more comfortable using the system in your workplace if interfaces maintained

a recognisable corporate logo or a standard company colour which is also known as skin”

CON Manager: “I think it would probably be a bit disconcerting to begin with (if a new logo or skin was to be introduced). You might even get a bit of a surprise, but as with any kind of change you would think that if this was a permanent change you would probably get used to it”

EG: “I agree with what you said, however, if these changes were to happen once every two weeks then it would not be really ideal, would it?”

CON Manager: “No that would be very disconcerting, I think. You have to maintain a momentum, in particular on the skin as you refer to it as”

EG: “Ok, thank you. How do you perceive system usefulness and what attributes would you associate with a useful system?”

CON Manager: “I think any system has to be useful in as much as it has got to be accurate, it has got to give the correct information most importantly, but also it has to assist whoever you are finding information for”

EG: “Any attributes that would associate with a useful system?”

Manager7B: “Yes, it needs to be quick and efficient, and it needs to have a speedy response: there is no point you asking it a question and it needs five minutes for an answer; the guest needs that information now, so speed is of the essence”

EG: “Great, thanks. What about an easy to use system, what do you look for in an easy to use system?”

CON Manager: “Again, in an easy system I need to be able to literally get to where I need to be in the quickest possible way. Personally, I find that the easiest way to get there is by being given hints as to what buttons to press and where to go in order to obtain that information, the quickest and easiest way to do it”

EG: “So as you go along, the system kind of drives towards what you need to do”

CON Manager: “Yes, it gives me hints to where it is going to lead me”

EG: “Ok, thank you. Do you think you can identify any employ or organisational benefits that are the result of a system used at your work-place?”

CON Manager: “Certainly the associate/employee benefit would be the fact that the more time they are using a particular system in order to obtain information, the more experienced they are going to become on that system, and therefore the more efficient they are going to become on that system”

EG: “From a general point of view, how do the systems you use help you enrich your experience and acquire new knowledge about the hotel you work for?”

CON Manager: “Again, what we need is the tools to do the trade, so the information that we obtain has to be accurate, that assists not only the employee/associate but also the guests who are waiting for that information: they going to want it quickly, accurately and expediently, so the quicker we can get that to the guest, the better”

EG: “What happens when it comes to trust? To what extent do you trust the Information Systems at your hotel? Do you feel there is a room for improvement?”

CON Manager: “I think as far as they go, the information that we have on the systems is accurate as far as anything barring human error can go. So all the information that we hold, personal details as well as credit card details have to be secure, so this is obviously a major factor within the system, that it must be secure for failure to breach the Data Protection Act”

EG: “Ok, thank you. The next question is relevant to where the network server is located and how this affects the hotel: would you prefer a large network server based for example at the hotel’s headquarters or a small-scale server located on property?”

CON Manager: “As far as where the server is located, it is very important with regards to if it was somewhere a long way away and you solely rely on one particular engineer who may not be that familiar with your particular server, then I think it is lacking in the expertise that he may be able to give. Whereas, if the server is onsite, being looked after a particular hands-on engineer, then he would have a far more, almost a more personal view of that server itself and would be able to provide a far better service”

EG: “I agree with you here, because it is all about specialised knowledge with servers and networks: the more you know about an individual server, even though they might be the same model, for example, the more you know about the specifics of a server or a property, the better service you are going to provide as an engineer, correct?”

CON Manager: “Absolutely, I would agree”

EG: “Ok. What can you tell me about the overall performance of the system and the general experience of using it daily?”

CON Manager: “The general experience of it is that it is a very good system, the information that we obtain from it is accurate, informative, so therefore it is

enhancing the guest experience when we can find information guests need. We actually get good feedback from the guests, so therefore their stay has been enhanced and therefore the guests' perceptions of their whole experience here is being enhanced"

EG: "Within the hotel setting is there a relationship between an employee satisfaction of using a system and his/her attitude or intention to re-use it given that employees had a choice in that matter?"

CON Manager: "Within our industry I personally do not have a choice of which system I use. The system I use is the hotel system; therefore, I am obliged to use that system. However, if there was a choice to be had, I would continue to use the same system. Also, to differentiate between that and to enhance the profile of the Concierge and my employees/associates I would also use different systems in order to attain information. There are certain systems that I will continue to use because I enjoy using those systems and they can give me the information that I need, and those are in a choice situation"

EG: "Ok, thank you. Let us talk more about the attitudes and behaviours of employees. How much is your attitude/behaviour to use a system influenced by your colleague's beliefs about those systems?"

CON Manager: "Everybody I work with has a belief that the system we use is efficient and accurate and also secure, so therefore the common thought is that it is a very good system to work with. I certainly never had any negative feedback or any negative thoughts with regards to it"

EG: "But would you recommend the system you currently use to colleagues from other hotels. And would you talk positively about its online capabilities?"

CON Manager: “Absolutely, I would recommend the system. It is an efficient and secure system and I believe that other hotels are using it as well. So, it is a very commonly used and a well thought-after system”

EG: “I suppose the reason it is used across the industry is because of its online capabilities, is it not?”

CON Manager: “Absolutely, and the security it offers as well”

EG: “Ok, thank you. And the last question of the interview: if the use of systems was not compulsory as part of our employment would you still choose to use the current systems you have in the future?”

CON Manager: “I think I would use it on a voluntary basis because the system is so informative, accurate and secure. So, yes, I would recommend it be used across the industry, which I believe it already is”

EG: “Ok, thank you very much. So, that concludes the interview. Thank you very much for your time. Just to remind you again, all the information you have given me will be anonymous and I will assign pseudonyms for it.”

CON Manager: “My pleasure”

Appendix 5: Letter for permission from Hotel General Managers

To whom it may concern:

Dear Sir/Madam,

I, _(your name)_____, General Manager of __(your hotel)_____, officially state that I grant permission for the initiation of a PhD research project that will be conducted by Efstathios Georgiadis and carried out in the premises of the aforementioned hotel. I am aware that the focus of this research study will be on Information Systems and their evaluation, and that it will involve interviews with department managers from within our hotel.

Yours Sincerely

(Your signature)

Appendix 6: Interview Participation Letter

Dear Sir/Madam,

I am a PhD researcher at the Manchester Metropolitan University. As part of my research project, I am conducting a series of interviews with hotel department managers across 4-star properties in Manchester. The focus is to determine the perceptions of the interviewees with regards to Information Systems evaluation and its dimensions in order to develop a theoretical model based on those opinions.

Your hotel has been selected as one of the sample hotels invited to participate in this research and, therefore, I would appreciate your kind participation. Each interview will take between 60-90 minutes and questions about the hotel's Information Systems, their performance and your assessment of their operation have been scheduled. Within the interview questions, several aspects of your employees' performance will also be discussed with you. The results of the research will be delivered to you in the future and a meeting can be arranged after the project's completion to discuss these. Please note that your answers will be treated confidentially and will not be used for any purpose other than the scientific research.

I would appreciate your response to participate in this research and would be grateful if you could inform me about a suitable time to conduct the interviews.

Thank you in advance for your cooperation.