Robotics, Artificial Intelligence and Service Automation in Hotel Service Process Design: Can Customer Dominant Logic Provide Improved Value?

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Abstract

The lack of focus on the customers' ecosystem and service technology (Robotics, AI and Service Automation: RAISA) in current Service Process Design (SPD) models prompted this research, the principal **aim** of which is to create a refined model (incorporating Customer Dominant Logic; CDL) to better purposefully design-in rapidly evolving service technology.

This thesis uses a literature review to provide an outline of the use of RAISA in hotel SPD and contrasts the current situation with the future potential through an updating of service design methodologies. This base understanding is tested through a **multiple case study** approach, where the incidental versus predetermined use of technologies is more fully explored.

The **key findings** identify:

- the central role of the customer in the adoption of RAISA and the realisation of its true value;
- that the Critical Success Factors for the adoption of RAISA need to be balanced between Customers, Employees and Business stakeholder groups for its implementation to be successful;
- the acceptance that RAISA technologies are central to the future of service design;
- a recognition of the possibility for the continuing development of a focused, personalised customer's world via a multidimensional, multifactorial 'golden' profile accessible to individual organisations, but drawn from many.

The principal **contribution** to research is the development of a novel matrix-based SPD model that incorporates the vision of CDL with the benefits of integrating RAISA technology across the entire customer journey (including 'pre-history' and 'future' stages) and the intentional selection of human, RAISA or 'blended' service providers at each service interaction.

Future Research should (1) refine the new SPD model via a 'mixed' focus group of hotel customers and industry practitioners; (2) Investigate employees' attitudes to the

integration of RAISA technologies by contrasting their initial fears of implementation with actual outcomes; (3) a longitudinal comparative study of the impact of technology on service encounters and customer satisfaction, pre and post implementation.

Contents

List of Figures

List of Tables

Abbreviations

AI	Artificial Intelligence
AR	Augmented Reality
ASP	Automated Social Presence
CDL	Customer Dominant Logic
GDL	Goods Dominant Logic
HSP	Human Social Presence
IT	Information Technology
MINDS	The Management and Interaction Design for Service
MSD	Multilevel Service Design
PDL	Product Dominant Logic
RAISA	Robotics, Artificial Intelligence, Service Automation
SB	Service Blueprint
SD4VN	Service Design for Value Networks
SDL	Service Dominant Logic
SEB	Service Experience Blueprint
SL	Service Logic
SM	Service Management
SPD	Service Process Design
VR	Virtual Reality

Definitions

Automated Social Presence (ASP)

"We refer to Automated Social Presence as the extent to which machines (e.g., robots) make consumers feel that they are in the company of another social entity" (Van Doorn *et al.* 2017, p. 44)

Service

"Service is an activity – a process – which involves the treatment of a customer (or user) or something belonging to them, where the customer performs some of the activity, i.e. the steps in the service process." (Johnston and Kong 2011, p. 7)

Service Design

"From an operations perspective, service design can be defined as the specification of the detailed structure, infrastructure, and integration content of a service operations strategy." (Patrício *et al.* 2008, p. 320)

Service Blueprinting

"A service blueprint is essentially a detailed planning and diagnostic document that depicts the service events and processes as a flowchart – a 'map' of intersecting paths. In essence, a blueprint represents, in diagrammatic form, the various processes that constitute the entire service system, and the interrelationships among the individual processes." (Kandampully 2007, p. 149)

Service Experience Blueprinting (SEB)

"Service Experience Blueprinting enables integrated design of the mutli-interface service, leveraging each channel's advantages to enhance overall customer experience." (Patrício *et al.* 2008, p. 321)

Service Encounter 2.0

They consider this to encompass "any customer-company interaction that results from a service system that is comprised of interrelated technologies (either company- or

customer-owned), human actors, (employees and customers), physical/digital environments and company/customer processes." (Larivière *et al.* 2017, p. 239)

Service Robot

Service robots are "technology that can perform physical tasks, operate autonomously without needing instruction, and are directed by computers without help from people" (Colby *et al.* 2016)

Smart Technologies

Smart technologies are "tools (comprising information, software and hardware) that can enable customer and frontline employee learning from frontline interactions that coproduce value" (Marinova *et al.* 2017, p. 29)

Digital Native

"Digital natives are defined as individuals born after 1980, who were raised in an environment in which they were surrounded by technology and who possess technological skills different from those possessed by the members of the prior generation" (Akçayır *et al.* 2016, p. 435)

Customer Dominant Logic (CDL)

"A view that positions the customer in the center, rather than the service, the service provider/producer or the interaction or the system. . . This approach differs from traditional notions of customer orientation by shifting the viewpoint: instead of focusing on what companies are doing to create services that customers will prefer, . . . that the focus should be on what customers are doing with services and service to accomplish their own goals" (Heinonen *et al.* 2010, p. 534)

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Author's declaration

This thesis is submitted in fulfilment of the requirements for the degree of Master's by Research at the Bournemouth University, United Kingdom. I declare that this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that this thesis has not been previously or concurrently submitted, either in whole or in part, for any other qualification at Bournemouth University or other institutions.

Chapter 1. Introduction

1.1 Context

The **contemporary challenges** faced by the UK hotel industry are legion; difficulties in recruiting and retaining staff (People1st 2015, Kim *et al.* 2019, Bowen and Morosan 2018), which may be intensified by BREXIT (British Hospitality Association 2017); sourcing sufficient customer service skills (People1st 2016, People1st 2015); poor productivity (Jones 1999, Kim *et al.* 2019, People1st 2015); high operating costs (People1st 2016, Peterson 2011); language barriers (People1st 2016, Bowen and Morosan 2018) and a growing desire for greater efficiency (People1st 2013) plus differentiated customer experience (Peterson 2011) from today's consumers. This situation has been exacerbated by the industry's historically slow adoption of technology (Law *et al.* 2014, Connolly and Haley 2008, Han and tom Dieck 2019, Bilgihan and Nejad 2015, Law *et al.* 2019), the growing volumes of available consumer data (Bowen and Morosan 2018) and their lack of integration in service processes, despite the potential of technology to address some of these systemic challenges (Bowen and Morosan 2018).

Service Process Design (SPD) **models**, exemplified by Service Blueprinting (Bitner *et al.* 2008), have tended to focus upon the company rather than the customer and have offered a 'one size fits all' approach with little or no regard to the integration of technology at each touch point, despite its increasing prevalence in the service encounter. This lack of customer focus in current service design models, coupled with the challenges of new service technology, prompt the need for research. **Robotics, Artificial Intelligence and Service Automation** (RAISA), whilst currently relatively sparingly used in hotel service delivery, will revolutionise service in the future (Tussyadiah 2020b) and potentially deliver many benefits: higher productivity, personalisation, deeper customer relationships, self-learning and greater innovation. This will not be without tensions: the changing role and status that technology introduces to the workplace; customers' readiness to be served by RAISA; and the need to find the 'right' balance in varying contexts between humans and RAISA when designing service delivery. The lack of focus on the customer, and their entire ecosystem in experiencing service, has more recently been recognized by the shift in thinking; the concept of **Customer Dominant Logic** (CDL) (Heinonen *et al.* 2010). Part of the

solution to this dilemma rests within the challenge: technology (RAISA) can deliver solutions to the existing and emerging service needs of diverse customers in hotels (Neuhofer *et al.* 2015).

The topic of this thesis falls under the wider discipline of Service Operations Management, defined as: “the activities, decisions and responsibilities of operations managers in service organisations. It is concerned with providing services, and value, to customers and users, ensuring they get the right experiences and the desired outcomes. It involves understanding the needs of the customers, managing the service processes, ensuring the organisation’s objectives are met, while also paying attention to the continual improvement of the services” (Johnston *et al.* 2012, p. 12).

This thesis concentrates on the use of RAISA in hotel SPD and contrasts the current situation with its future potential, as the pace of current technological innovation outstrips that of recent developments in SPD; the gap is constantly widening. **This thesis proposes** that given the contemporary challenges of the sector and the apparent multitude of benefits that RAISA can provide; its adoption is going to be of greater value in the future. Customers are key to this as intelligent automation as it puts them at the centre of the value creation process. The 'base case' rests with current SPD models, which are reviewed and 'sense-checked' via the example of 'Service Blueprinting'. Its strengths and weaknesses are discussed, and limitations used to highlight the inadequacies of current SPD models. As RAISA adoption has been sporadic and largely experimental, no service design model has been specifically developed to integrate this technology into service processes, similarly none focuses fully on the customers world, over the company lens. The present applications of RAISA in service delivery is contrasted with its future integration with attention given to the need for 'catch-up', and its use in a more pre-determined way. How RAISA will ultimately change the 'shape of service' is addressed with its implications and its 'success' might be judged. Finally, and perhaps most importantly, the value CDL may provide as a foundation to develop a new service design model that incorporates RAISA, is discussed. These ideas are tested against 'best practice case studies', and resulting in, a series of conclusions and recommendations.

The **Coronavirus pandemic** of early 2020 has led to a period of government-imposed lockdown in the UK, amongst other countries, with many hotel businesses shuttered or operating to very small customer bases of key workers or long-stay residents, which poses further grave challenges to the sector. At the time of writing, hotel operators are formulating plans to re-open with customer and employee safety of paramount importance (Emmanueilli *et al.* 2020, Buhalis 2020). Whilst they try to imagine new or adapted business models, customer concerns suggest an expectation of enhanced levels of cleanliness and hygiene upon re-opening (Krishnan *et al.* 2020) with social distancing measures in place, and with clear communications to help build trust (Berg *et al.* 2020, Partridge 2020). These requirements are leading managers to consider service design through reducing physical touchpoints (Webrezpro 2020, Emmanueilli *et al.* 2020, Mintel 2020, Partridge 2020), minimising customer-employee interactions and decreasing service capacity (*e.g.* in restaurants with fewer tables occupied and with bedrooms removed from inventory for periods between stays (Pflum 2020, Partridge 2020)), whilst at the same time increasing cleaning and hygiene routines and standards (Buhalis 2020, Hardiman 2020). The development of these 'new normal' operating models, or at least a choice between these and more traditional ones, coupled with an increasing acceptance of the need for a rapid adoption of technology (Tussyadiah 2020a, Ivanov *et al.* 2020b, Buhalis 2020), reinforce the urgent contemporary relevance of this thesis, both in terms of the adoption of new technologies and their future application (Seyitoğlu and Ivanov 2020, Ivanov *et al.* 2020b, Mintel 2020, Hardiman 2020), but also through the proposed new service design model to aid their integration. Due to the emergence of the pandemic at the end of the research period, relevant conclusions are drawn in Chapter Seven, but are not discussed in detail throughout.

1.2 Aim and Research Questions

Both current SPD models and the implementation of RAISA in hotel service processes have shortcomings. This thesis contributes to the rapidly growing stream of research that is establishing a better understanding of how RAISA is being adopted in hospitality organisations (Ivanov *et al.* 2018b, Ivanov *et al.* 2019), but importantly, this research is pioneering in its focus on the implications for service design of greater RAISA adoption, particularly the incorporation of the customers entire ecosystem and the deliberate

planning for the integration of the service technology within designed customer journeys. The principal **aim** is to create a refined model (incorporating CDL) to better purposefully design-in rapidly evolving service technology.

Specifically, the study is driven by four primary research questions:

1. What are the gaps resulting from the slower progress in SPD compared to the development of service technology?
2. How will RAISA be utilised in the Service Process of the future?
3. What are the implications and critical success factors for the Guest/Employee/Business stakeholders in the integration of RAISA technology into the Service Process?
4. In what way(s) can CDL provide improved value to the successful implementation of RAISA in hotels and help address the gaps identified above?

These topics of enquiry will be explored through a variety of means which are outlined in Section 1.3.

The aim and research questions have been focused by the researcher's previous 20 years of professional experience culminating in seven years as a hotel General Manager. In particular, this experience has enhanced both the effectiveness of the interviews with senior level executives that are critical to the case study methodology and also honed the practicalities of the design of the customer journey that impacts of the major stakeholder groups and therefore the implications and critical success factors of RAISA adoption within hotels.

1.3 Method

Research question one will be addressed through the systematic literature review and discussion in Chapters Two and Three, the approach for which is outlined in Section 2.1. Using the literature review, research question two will be discussed and a series of predictions and forecasts made in Section 3.3. A cost benefit analysis is then conducted to address research question three which is summarised in Table 2.4 and a further framework developed for the successful implementation of RAISA into hotel service design

summarised in Table 6.1. Research question four is explored in Chapter Six with a new model proposed in Figure 6.2. The primary research detailed in Chapter Four using a case study methodology will also help to address each of these research questions, with conclusions drawn in Chapter Seven.

Despite the growing interest in the application of RAISA within the hotel industry, the literature covering this topic is relatively sparse and conceptual in nature (Ivanov *et al.* 2019, Murphy *et al.* 2019, Tussyadiah 2020b), and no precedence has been set in terms of methodological tools to investigate this area empirically. To some extent this is a result of the contemporary and evolving nature of this subject, but this may also be due to the low diffusion of RAISA in the industry and the high costs of conducting laboratory experiments (Ivanov *et al.* 2019). However, Yin (2003) suggests that when research is focused on exploratory issues like 'how', or 'when', and, when the research focus involves examining contemporary events as opposed to historical ones, the qualitative case study method is both appropriate and preferred (see Chapter Four).

1.4 Structure

Chapter Two introduces the theory and literature that frame the concept of SPD, primarily defining the tools and models already in existence that help academics and practitioners to undertake service design. A critical analysis of the evolution of these tools follows and it then focuses on Service Blueprinting as a preferred method. A critical analysis of the lack of progress in Service Blueprinting follows, and it is within the identified limitations and weaknesses of this model that the lack of focus on the customer over that of the company and, indeed, a clear way to denote technology into it, which highlights the need for further research, that this thesis will partially address.

The chapter proceeds to introduce and define the new technologies under the heading of RAISA and considers their use in the hotel service journey. It identifies the current sporadic and largely experimental use of these new technologies, considers a cost-benefit analysis of their application and explores how customers respond to and interact with them. In particular, it identifies the ways in which this technology will revolutionise service and the benefits it will bring: higher productivity, personalisation, deeper customer relationships,

self-learning and greater innovation. This is balanced with considerations towards the following: the tensions the changing role and status of technology introduces, customers readiness to be served by RAISA and the need to find the 'right' balance in varying contexts between humans and RAISA when designing service delivery. The third section of the chapter focuses on CDL, a shift in thinking from the traditional viewpoint of customer orientation where the firm is creating services that customers might prefer, to one where customers are the central focus and use the services to accomplish their own goals.

Chapter Three considers the contemporary service design challenges that occur due to the increasing prevalence and reliance on technology in the service encounter. The chapter then discusses the critical success factors for the future integration of RAISA in hotels and their future predicated uses in the hotel customer journey coming years. It is this current change in practice and the predicted rapid adoption and proliferation of its future use that requires urgent additional research in the Service Design area, i.e. as to how these should best be integrated into future service design. It is the lack of customer focus in current service deign models, as previously identified, coupled with the challenges of new service technology, that further prompt the need for research and, crucially, a new service design model to be developed using CDL to add value, which will be proposed in Chapter Six

Chapter Four outlines the research methodology used in the study, and its structure and application which are seen as critical to producing valid results. An overview, critical analysis and justification of the multiple case study methodology is provided and details the specific methods and techniques used are explained.

Chapter Five presents a series of best practice case studies where RAISA has been used in the service process with significant focus also given to the customers and their ecosystem, and the findings from the study. Despite the absence of strong evidence of intentional service design, current adoption of RAISA is pronounced, specifically across the pre and during hospitality touchpoints, though the post-stay touchpoint has been neglected. The planned adoption of RAISA looks equally strong across more touchpoints (including one intentionally at the post-stay stage being included). Critical success factors for the adoption of RAISA were balanced between the three pillars of Guest, Employees and Business.

Finally, there was wide ranging evidence of greater customer orientation being driven through the adoption of RAISA by emphasis on personalisation and ease-of-use.

It is due in part to this customer orientation evidence, that **Chapter Six** proposes a new Service Blueprinting model that illustrates how RAISA can facilitate the application of aspects of the emerging area of CDL of Service to hotel SPD, thereby using CDL as a vehicle to link the practical to the theoretical areas discussed in Chapters Two and Three. This new Service Blueprinting model incorporates an identification of whether it is best to employ RAISA, human, or a combination of each in order to provide service at each distinct touch point. It also incorporates elements of CDL is proposed. The model is then tested through a series of exemplars. It also incorporates elements of CDL to help forward knowledge in the area of SPD. This chapter also develops a further conceptual contribution: an implementation process for RAISA into hotel service delivery using a design thinking approach.

The concluding chapter, **Chapter Seven,** draws together all the previous chapters' discussions, and highlights the contribution of this thesis to current knowledge by providing a new service design matrix model, the application of CDL to hotels, and the application of the current use of RAISA to SPD. A contextualisation to the Coronavirus pandemic is then presented stressing the urgent contemporary relevance of the thesis both in terms of the likely adoption of new technologies and additional roles these may play, but also through the proposed new service design model to aid their integration. Finally, it prioritises areas of future research in each of the following three groups: those that affect the business (the hotel), its employees and the guests. These include empirically testing the proposed model with a group of hotel guests and also industry practitioners, a cost-benefit analysis of RAISA adoption and reviewing the attitudes of customers and employees to the adoption of RAISA in the service process.

1.5 Contributions

The principal **contributions** this research makes is the development of a novel matrix-based SPD model that incorporates the vision of CDL with the benefits of integrating RAISA technology. More specifically, the model: (1) is the first to incorporate fully the customers'

and providers' worlds; (2) allows the intentional consideration of human, RAISA or 'blended' service providers at each service interaction to be chosen (via a key); (3) is the first to expand the customer journey to include 'history' and 'future' stages, and the channels for related and other activities and experiences. Through using the model and its novel key, service providers, practitioners and academics are able to design new service processes that take into account both the providers' point of view, but, importantly, also now draw from the (dominant) customers' point of view too.

Chapter 2. Literature Review

2.1 Introduction

The purpose of a systematic literature review is to create awareness, understanding, and appreciation of the research that has preceded this thesis. It summarises the current state of knowledge of the chosen topic shedding light on the problem at hand, giving valuable insight on how best to approach it and what some of the limitations might be. It serves as the theoretical foundation and pivot point for developing a deeper understanding of the knowledge base. The theoretical underpinnings and empirical research on SPD, RAISA and CDL span multiple disciplines; this thesis concentrates on four bodies of literature: service management; service marketing; hospitality management; and service technology. This literature review sets this study within its current academic context.

This study is to determine if CDL Provide can provide improved value when RAISA are integrated into hotel SPD. The literature review in this Chapter will present three areas of emphasis: SPD (Section 2.2); RAISA (Section 2.3) and CDL (Section 2.4), each drawing from the disciplines above and clarifying the current degree of understanding of each area from the current literature, identifying the weaknesses and signposting the opportunities for further research.

Section 2.2 introduces the theory that frames the concept of SPD, defining the current tools and models that help academics and practitioners to undertake service design. A critical analysis of the evolution of these models follows with particular focus on SB as a preferred method. Its limitations are identified, despite its widespread use. Section 2.3 examines the existing research specifically relating to RAISA and hotels: the current adoption of Service Automation, AI and Robotics and their benefits. A cost benefit analysis is drawn prior to a concluding overview of the literature touching on reactions to and acceptance/trust of RAISA. Introducing a new perspective on the roles of customers and firms in creating value by focusing on a more customer-based approach, Heinonen *et al.* (2010) propose CDL. As a relatively new approach, there is a limited literature base (Heinonen *et al.* 2013b, Heinonen and Strandvik 2015) and a lack of application of CDL both generally and specifically to the

Hotel Industry as Section 2.4 discusses. Brief conclusions, key weaknesses and research directions are summarised in Section 2.5.

2.2 Service Process Design

Service Process Design (SPD) "describes and prescribes the procedures to be followed and how staff will use or interact with other resources such as materials or equipment in order to deliver the service concept" (Johnston *et al.* 2012, p. 193). Therefore, within this thesis, this term will be used to describe the various elements and considerations that go into designing the customer journey, and the design of each customer - firm touch point.

The evolution of 'service research', originally analysed by Heinonen *et al.* (2013a) and Dorsch *et al.* (2014), is now richly diverse (Benoit *et al.* 2017). Service design has emerged as a new field within this area and incorporates innovative methods and tools (Fisk *et al.* 2018). SPD, focusing on systematically designing service through tangible forms, was advocated and pioneered by (Shostack 1982a, Shostack 1984) amongst others, when she promoted the benefits of using a SB in service design and analysis (Kandampully 2007). Patrício *et al.* (2008) classify this process-orientated service design method as stemming from service management in their discussion of the various service design methods, propose the Service Experience Blueprint (SEB) as an improvement on the SB as it attempts to incorporate technology-enabled multi-interface services into service design. This concept was further developed by Patrício *et al.* (2011), who contributed a new interdisciplinary service design method: Multilevel Service Design (MSD) that integrates both the co-creative nature of customer experiences with experience integration from the imagining of the service concept through the design of the service system and service encounter. Two further models have since been developed: the Management and Interaction Design for Service (MINDS) method (Teixeira *et al.* 2017) and Service Design for Value Networks (SD4VN) method (Patrício *et al.* 2018), and these, along with their precursors, are critiqued in a model charting the evolution of service design methods in Table 2.1 with directions for future development identified.

2.2.1 Service Process Design Models

There is a plethora of operational and theoretical tools that have been developed to help both design and assess the effectiveness of the service process and these are detailed below.

- **Customer Journey Mapping** (Johnston *et al.* 2012, Shaw and Ivens 2002, Zomerdijk and Voss 2010) – is the process of charting the series of touch points that customers encounter during a service or series of services.
- **Walk-Through Audits** (Johnston *et al.* 2012, Fitzsimmons and Fitzsimmons 1994) – a mechansim that can be adopted to help evaluate and improve the delivery of the service and therefore, the customer's experience of the service. This is typically carried out by staff, managers or mystery guests posing as customers and completing an audit based on a checklist of questions that guide the 'customers' evaluation of the service they experience.
- **Emotion Mapping** (Johnston *et al.* 2012) - a simple but powerful extension of customer journey mapping that attempts to capture cutomer emotions (both positive and negative) at each stage of their journey and ultimately allows the organisation to evaluate and ammend them as appropriate.
- **Customer Experience Analysis** (Johnston *et al.* 2012) – builds on both the walk-through audit and the emotion mapping. It incoporates the service concept, the customer experience, the touchpoints of the customer's journey along with an assessment of each touchpoint including the messages and emotions felt by the customer. Again, this can be used as a tool to allow organisations to assess the customer's multidimensional experience of the service and help improve it.
- **Flowcharts** (Kandampully 2007) – portray a visual representation of a system. They illustrate the chronology of events in the delivery of a service and can link these with departments, people and support services involved. Flowcharts can be developed and employed at various levels: charts for each service, charts for entire departments and also these various charts can be amalgamated to generate an overall SB.
- **Service Blueprinting (SB)** (Shostack 1982a, Shostack 1984, Shostack 1987) – represents in diagramatic and chronological form, the various processes that make up the entire service system and the inter-relationships between those processes. It allows the

organisation to visualise, organise and manipulate the entire service system. This service design tool will be explored in greater detail below.

- **Service Experience Blueprint (SEB)** (Patrício *et al.* 2008) – was proposed as an improvement to the SB in an attempt to begin to incorporate technology-enabled multi-interface services into service design. The mutlidisciplinary method, which focuses the design of multi-interface services, attempts to capitlise on each channel's advantages, to maximise the overall customer's experience.
- **Multilevel Service Design (MSD) method** (Patrício *et al.* 2011) – this method enables design at three hierarchical levels: defining the organisations service concept, designing the organisation's service systems and designing each individual service encounter. The three levels represent: value offerings in the customer's context, options that the firm can offer and how they are combined, and how each invidiual interaction occurs in practice.
- **The Management and Interaction Design for Service (MINDS) method** (Teixeira *et al.* 2017) – is structured using the same three levels as MSD. It integrates and leverages both management and interaction design perspectives to curate technology-enabled services. The management perspective is focused on creating new value propositions and enhancing the customer experience through multiple interfaces and support processes. The interaction design perspective builds on the technology aspect and the customer's interaction with it.
- **Service Design for Value Networks (SD4VN)** method (Patrício *et al.* 2018) – designs services as enablers of many-to-many value co-creating interactions among network actors. The method offers a process and a set of models to enable understanding of network actors' activities, interactions, and goals and then design the service to facilitate these network interactions with balanced centricity as a goal.

2.2.2 Critical Analysis of the Evolution of Service Process Design Models

Of the above tools and models, it is the SB and its offshoots that are critical, and their evolution is summarised in Table 2.1 and analysed below, prior to an in-depth exploration of Service Blueprinting as a preferred base model.

The growing infusion of technology into service provisions and the creation of multi-interface systems in many organisations sparked a new SPD model: **Service Experience Blueprint (SEB)**; (Patrício *et al.* 2008) which captured the service-centred paradigm. This step change in thinking came after a long pause in theoretical contributions since Service Blueprinting was first introduced by Shostack (1982a). The new model addressed some of the weaknesses of the earlier method but also exemplified the lack of progress in service experience design versus technology-driven service innovations (Patrício *et al.* 2008). The SEB model provided for superior design for the multi-interface mix and the creation of increased value for customers through the specialised use of humans and/or technology at specific interfaces.

The **Multi-level Service Design (MSD)** model (Patrício *et al.* 2011) was developed to tackle the increasing complexity of service systems (combinations of people, technology and other resources) and the problems these have generated: *e.g.* integration of design at each level into the overall system and ensuring each level is in synergy with the next. The new model allowed service offering development at three hierarchical levels (service concept, service system and service encounter). This holistic approach aimed to deliver higher levels of customer experience. It also aimed to broaden the design space beyond the organisation's boundaries to consider better customers being able to co-create value through combining service offerings from multiple organisations.

The Management and Interaction Design for Service (MINDS) (Teixeira *et al.* 2017) was created to fill the gap in service design methodologies that facilitate cross-disciplinary frameworks to support the design of technology-enabled services and, ultimately, deliver seamless customer service. The MINDS model builds on the three-level framework used in MSD and integrates it with an Interaction Design Prospective to enable value co-creation across multiple interfaces and actors. Whilst the model makes technology more visible, orchestrates interfaces, integrates network partners and integrates backstage processes (a weakness of SEB; Patrício *et al.* (2008)), it does not take into account the new challenges posed by the Internet of Things or Context Aware Systems; a key challenge for this thesis (see below).

Finally, the **Service Design for Value Networks (SD4VN)** approach (Patrício *et al.* 2018) shifts the focus onto the challenge of designing complex network level services that address co-creation through value networks (addressing a key weakness in the MSD model; Patrício *et al.* (2011)). Through a three-stage process the model supports the design of the service beyond the direct provision and dyadic interactions between customers and service providers to enable many-to-many value co-creating interactions among multiple actors, whilst balancing each actor's goals and potential conflicts. The weakness of the model is in its complexity and the need for strong facilitation in its application as a design method.

Table 2.1: A critical analysis of the evolution of service design models

Service Design Model	**Service Blueprinting**	**Service Experience Blueprint**	**Multilevel Service Design**	**The Management and Interaction Design for Service**	**Service Design for Value Networks**
Acronym	SB	SEB	MSD	MINDS	SD4VN
Year first developed	1982	2008	2011	2017	2018
Authors	G. Lynn Shostack	Lia Patricio Raymond P. Fisk Joao Falcao e Cunha	Lia Patricio Raymond P. Fisk Joao Falcao e Cunha Larry Constantine	Jorge Grenha Teixeira Lia Patricio Ko-Hsun Huang Raymond P. Fisk Leonel Nobrega Larry Constantine	Lia Patricio Nelson Figueiredo de Pinho Jorge Grenha Teixeira Raymond P. Fisk
Key References	Shostack (1982a) Shostack (1984) Shostack (1987) Bitner *et al.* (2008)	Patrício *et al.* (2008)	Patrício *et al.* (2011)	Teixeira *et al.* (2017)	Patrício *et al.* (2018)
Methods Used	**Service Process Design Method** Time-motion engineering PERT / GANTT charting Computer system and software design → Service Blueprint	**Multidisciplinary Method for Designing Multi -Interface Service Experiences** Service Management Interaction Design Software engineering → Service Experience Design	**Interdisciplinary Service Design Method** New Service Development Interaction Design Service Design → Multi-level Service Design	**Design Science Research Approach** Management Perspective Models Interaction Design Perspective Models → Management and Interaction Design for Service	**Design Science Research Approach** Value Networks Service Design → Service Design for Value Networks

Identified problems to be overcome	Lack of a systematic method for service design (and control) that captures the customer's relationship to, and interaction with, services	• Growing infusion of technology in service provisions • Service offerings evolving into multi-interface systems • Increasing importance of service experiences adding value to an organisation due to the 'new' service-centred paradigm Lack of progress in service experience design versus technology-driven service innovations	• Growing complexity of service systems at all levels: – customer level (using multiple organisations) – organisation level (offering multiple service interfaces) – at individual service encounter level (each interface is a subsystem) • Designing these complex service systems requires a holistic approach • Need to integrate each level of the system into an overall service design Need to address new issues emanating from multi-channel service design	• More integration is needed to leverage the role of technology for service innovation is needed and to enable seamless customer service Service design lacks integrated, cross-disciplinary models and frameworks that could support the design of technology-enabled services	• Increasingly complex service environments • The need to move beyond supporting dyadic interactions to address value networks • Challenges to create network level services The need for balanced centricity: allowing different actors to reach their goals (and interdependent interactions) in a balanced way
Type of technology in exemplar(s)	None considered – passing mention of mechanical service provision *e.g.* ATMs	Internet Interface	Internet Interface	• Set-top box/tablet/smartphone • App/web portal	Electronic Health Records Interface
Premise of value co-creation	None considered – touches on involving customers in evaluating the design of a service system	Recognises the 'new' service-centred paradigm that value is co-created by customers through service interaction	Awareness that customers can co-create value by combining service offerings from multiple organisations and therefore the need to broaden the design space beyond the organisation's boundaries	Derived from enabling value co-creation across multiple interfaces and actors and seamless customer service. The richer view of context surrounding in-service provision also aids perceptions of value propositions	Value is co-created through webs of interactions between provider networks and customer networks. This method designs services as enablers of many-to-many value co-creating interactions among networks' actors

Level of complexity	**Simple** Accessible to all members of an organisation and its customers	**Medium** Three stages: • Assessment of service experience for different service activities • Service design at the multi-interface level • Service design at each individual service interface level	**Complex** MSD enables service offering development at three hierarchical levels: • Service concept • Service system • Service encounter	**Complex** • MSDs three levels are used: – Service concept – Service system – Service encounter and then integrated with • Interaction Design Perspective Models	**Complex** Three stages: • Mapping the value network • Understanding multiple actor experiences and interactions • Designing the value network service concept and service architecture
Key strengths	• Allowing organisations to visualise, organise and manipulate the entire service system • Allowing systematic evaluation of the service and failure points to be identified	• Allows for better design of the multi-interface mix • Creates more value for customers and firm by facilitating specialisation between humans versus technology	• Enables integrated design of service offerings at different levels • Highlights new levels of customer experience given the holistic view its multi-level approach provides	• Makes technology more visible • Better orchestration of interfaces • Better integration with backstage processes • Better integration with network partners	• Supports the design of the service beyond direct provision and dyadic interactions between customers and service providers to enable many-to-many value co-creating interactions among multiple actors • Offers an approach to pursue balanced centricity by carefully examining actor goals and potential conflicts
Key weaknesses	• The person-to-person mapping of a service blueprint does not address technology infusion of new services • Does not accommodate the co-creative nature of customer experience	• Only tested in one sector and an using one interface (internet) • Interaction perspective not incorporated into backstage processes • Does not consider the interrelationship of service interface design and human resource management	• Further research is needed to develop a richer conceptualisation of value constellation experience components and drivers • It does not consider how to design services that recognise value creation through customer-to-customer interactions • It only designs one service at a time	• Not optimised as the best possible combination of methods and models • Does not take into account new challenges posed by Internet of Things / Context aware systems	• Demanding on time and resources of the network actors who are required for continuous collaboration – project scope is key • Requires strong involvement of a project leader • Conflicts and power issues may arise when designing at the network level

Source: Author's own

2.2.3 Service Blueprinting

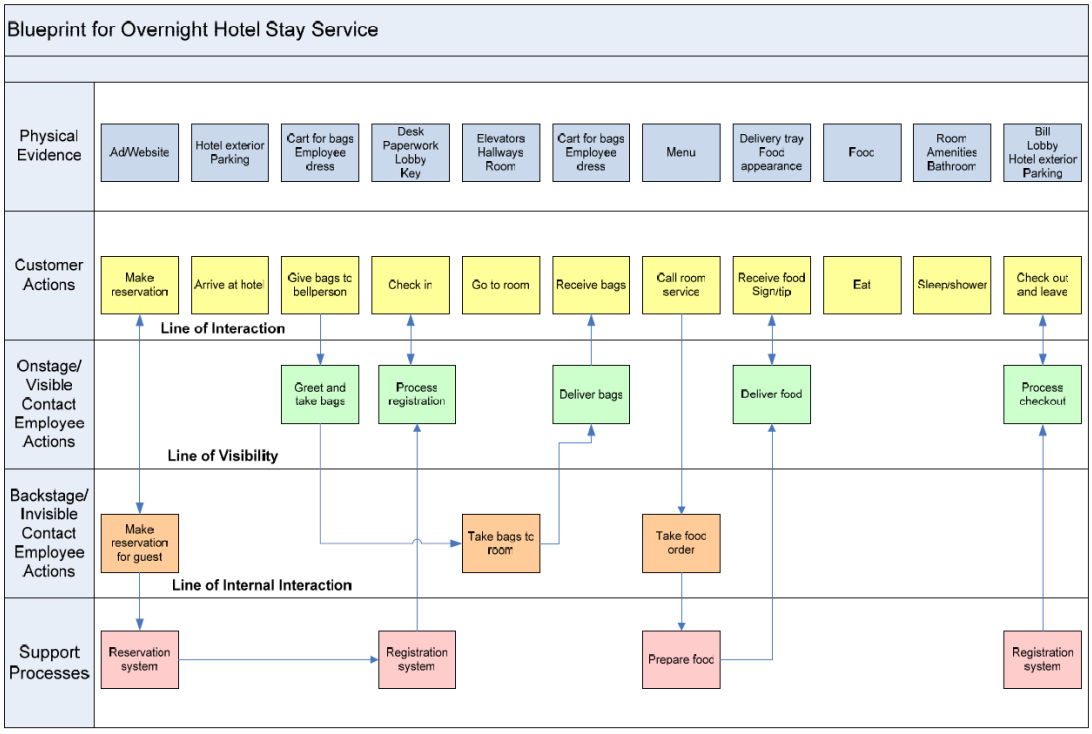
Service Blueprinting was introduced by Shostack (1982b), Shostack (1984) and developed by additional research (e.g. Shostack 1987, Bitner *et al.* 2008, Patrício *et al.* 2008) making it the best-documented SPD tool (Teixeira *et al.* 2017). Given this, the SB is adopted in this thesis as a preferred method of SPD using the evolved model by Bitner *et al.* (2008).

SBs are in their very nature customer-focused, allowing organisations to visualise the service processes, the touchpoints (between the customer and the firm), and the physical evidence the customer witnesses whilst experiencing the service. SBs also separate what the customer sees, from what they do not (onstage and backstage activities), whilst documenting and connecting the behind-the-scenes actions and underlying support processes required to deliver the service. These five **component parts of a typical SB** are illustrated in Figure 2.1. 'Customer Actions' include all the steps taken by the customer during the service delivery process. They are of paramount importance to the blueprint and are ordered chronologically from left to right across the top of the model. 'Onstage/Visible Contacts Employee Actions' are the next component, detailing each touchpoint or interaction between the customer and the organisation. These encounters occur across the line of interaction, and, each time the line is crossed (customers interact with service employees), a moment of truth occurs. 'Backstage/Invisible Contact Employee Actions' are separated from the onstage actions by the line of visibility*, i.e.* the customer cannot physically see them. These actions involve both non-visible interaction (*e.g*. telephone calls) and those actions taken by onstage employees behind-the-scenes to prepare to serve guests. 'Support Processes' form the base segment of the blueprint and are segregated from the contact employees by the line of internal interaction. These are actions taken by non-contact employees in support of delivering the service (*e.g*. cooking a meal in a restaurant). Finally, the 'Physical Evidence' for each customer action is plotted across the very top of the blueprint. These are tangible cues that customers are exposed to at each touchpoint.

A **conceptual example of a SB** for a one-night stay in a hotel populates the model's framework in Figure 2.1. It is considered to be conceptual as it only displays the main steps in the process; additional boxes could be added to denote underlying steps in more detail.

This example clearly shows the chronological actions of hotel customers running from left to right in yellow boxes, from the initial reservation being made through to the customer checking out and leaving the hotel at the end of their stay. Where the customer interacts with either an onstage (or indeed a backstage) contact employees, these touchpoints (moments of truth) are shown using directional flow arrows between the customer action and the employee action. Examples include the two-way interaction with a non-visible reservations agent to make the booking (backstage – denoted in orange) and the two-way interaction with a visible receptionist to check in (onstage – denoted in green), which occurs over the line of interaction. Both of these example touchpoints also rely on support processes (coloured pink), which are again linked with further directional flow arrows between the contact employee and the process with the reservation system facilitating the reservation being created and the registration system recording the customer's checked-in status. Finally, there is considerable and clear physical evidence at each stage in the customer journey illustrated in blue at the very top of the blueprint. The hotel exterior and car park are good examples of tangible physical evidence available to the customer at the arrival stage of their customer journey.

Figure 2.1: Conceptual Service Blueprint for an overnight stay in a hotel



Source: Bitner *et al.* (2008)

Having explored the SB theoretically from a SPD standpoint, it is worth noting that the versatility and flexibility of the model allows other uses, at both strategic and operational levels, including: the evaluation of existing services (Kandampully 2007); the identification of the cause of recurrent service problems (Kandampully 2007); as an approach and platform for service innovation (Bitner *et al.* 2008); to recognise the potential for other market opportunities (Shostack 1984); for clarifying competitive positioning through mapping dual processes to identify key service quality gaps (Shostack 1984, Shostack 1987, Bitner *et al.* 2008) and in market research to design 'ideal' service experiences (Bitner *et al.* 2008). A **critical analysis** of the model identifies advantages and limitations.

In theory at least, some of the **advantages** of Service Blueprinting include:

- *the unrelenting customer focused nature of the technique* (Bitner *et al.* 2008)
- *allowing organisations to visualise, organise and manipulate the entire service system* (Kandampully 2007) *or design a detailed refinement of a single step in the process* (Bitner *et al.* 2008)
- *allowing the structural components of the service to be identified* (Kandampully 2007) *and illuminate and connect the underlying support processes that drive and support customer focused service execution* (Bitner *et al.* 2008)
- *allowing the organisation to decide how service is offered functionally* (Kandampully 2007)
- *promoting a conscious decision to be made at each moment of truth on what customers see and which employees should be in contact with them* (Bitner *et al.* 2008)
- *allowing an organisation to test a prototype service, refine it and reduce the time and inefficency of not having done so* (Shostack 1984, Shostack 1982a)
- *allowing systematic evaluation of the service and failure points to be identified and the remedial action necessary to improve them determined* (Kandampully 2007, Bitner *et al.* 2008, Shostack 1984)
- *the simplicity and accessibility of model to all members of an organisation* (Bitner *et al.* 2008) *and its customers* (Shostack 1987)
- *providing an overview of the entire service systems to facilitate each individual employee's/department's understanding of the role they play in the provision of the service (Bitner et al. 2008)*

- *providing a permanent benchmark against which execution can be measured (Shostack 1982a)*

Despite the many upsides that Service Blueprinting promises to deliver, given that service research has moved on significantly since its inception (*e.g.* the way value is created: co-creation and the infusion of technology in service) and for due balance, the **limitations** should also be properly considered. These include the following:

- *focused on analysing an individual service system* (Heinonen *et al.* 2010)
- *completed from the organisations point of view, assigning the customer a passive role and having an incomplete understanding of what the customer 'does' with the service* (Heinonen *et al.* 2010, Heinonen *et al.* 2013b)
- *the person-to-person mapping of a SB does not address technology infusion of new services* (Patrício *et al.* 2008)
- *offers no support for designing the service concept* (Patrício *et al.* 2011)
- *does not accommodate the co-creative nature of customer experience* (Patrício *et al.* 2011)
- *does not address the multi-channel nature of new services* (Patrício *et al.* 2008)
- *does not consider the customer's historic use, wider related activities and experiences and how these relate to the service process in question* (Heinonen *et al.* 2010)
- *may be driven by specific service encounter needs or resource efficiences* (Fisk *et al.* 2018)
- *works best when allowing the organisation to offer standardised solutions to customers* (Kostopoulos *et al.* 2012)
- *can fail if consumer's preferences and potential behaviours are not incorporated* (Kostopoulos *et al.* 2012)

It is this lack of focus on the customers' ecosystem and representation of the customer's direct interaction with technology in the service encounter that are key to the focus of this thesis. Indeed, the critical analysis above, suggests that there is not yet an appropriate SPD model that facilitates the adoption of RAISA technologies into the service process, despite more recent models being purposefully designed to incorporate technology into the service process. Whilst various aspects of value co-creation have also been considered and, indeed,

developed in the more recent models, none goes as far as to consider the customers' entire ecosystem (specifically expanding the customer journey to include 'history' and 'future' stages, and also considering related and other activities and experiences the customer has had), as exemplified by CDL, as part of its framework. A third limitation of the more recent SPD models is in their complexity and the difficulty stakeholders have to access them easily without facilitation. These three limitations present an opportunity for a new SPD model to be developed, which this thesis will do in Section 6.3. This technology, now prevalent in the service encounter, is reviewed in the next sub-section.

2.3 Robotics, AI and Service Automation

Artificial Intelligence (AI) is a broad church which encompasses many subfields. Russell and Norvig (2010) discuss definitions of AI covering thought processes, reasoning, behaviour and also rationality: *i.e.* a system that does the right thing, given what it knows. Accenture (2018) defines AI as a collection of multiple technologies that range from machine learning to natural language processing that facilitate machines to sense, comprehend, act and ultimately learn. For this research, the term is used in an umbrella to capture the many technologies that are being used, or at least trialled, in service delivery including service automation, robotics, chatbots and automated social presence amongst others. This aligns with the approach taken by Ivanov *et al.* (2017) where they coin the acronym **RAISA** (abbreviating Robotics, Artificial Intelligence and Service Automation) in their rapidly growing body of work on this subject. This thesis also adopts RAISA.

Whilst Tussyadiah (2020b) has completed a review of research into automation in tourism, Ivanov *et al.* (2019) provided a **systematic literature review** of robotics in travel, tourism and hospitality. They cite publications dating from 1993, but with a clear majority being published from 2010 onwards and the focus shifting from initial engineering-led themes, to conceptual papers from 2015 onwards, when the researchers begin to contribute, in earnest, on various aspects of the application of robots to hospitality and tourism settings. From this review, they segment the existing literature into seven research domains: robot; human (customer and employee); tourist company; robot manufacturers; servicescape; external environment; and education (Ivanov *et al.* 2019). Tussyadiah's (2020b) review concurs highlighting that whilst tourism researchers have started to show interest in the

areas of RAISA, their publications are largely descriptive of current adoption and potential future applications and impacts. She notes the small number of empirical studies to date, in part limited by the scant adoption of RAISA in tourism and hospitality thus far and also provides suggested future research directions.

The topics covered within each domain are wide ranging, but include: where AI has been adopted in the hospitality and tourism industries (Ivanov *et al.* 2017, López *et al.* 2013, Rodriguez-Lizundia *et al.* 2015); a cost-benefit analysis of this adoption (Ivanov and Webster 2017a); consumer attitudes towards the appropriateness of using AI in hospitality (Ivanov *et al.* 2018b, Ivanov and Webster 2019a, Ivanov *et al.* 2018a, Ivanov and Webster 2019b); consumer reactions to different robot designs (Tussyadiah and Park 2018, Bartneck *et al.* 2009a, Bartneck *et al.* 2009b, Pinillos *et al.* 2016); designing robot friendly hospitality facilities (Ivanov and Webster 2017b); consideration as to how to best integrate the use of AI in restaurants (Eksiri and Kimura 2015); and a conceptualisation of the future of tourism firms incorporating AI (Lofaro 2017).

Despite the plentiful potential advantages of the application of **RAISA** in the hotel industry (Table 2.4), there is still a limited literature-based research profile for its use in the hotel industry (Murphy *et al.* 2016, Ivanov and Webster 2017a, Ivanov *et al.* 2017). Indeed, Ivanov *et al.* (2019) found only 25 papers (19% of the total) in their systematic literature review of progress of robotics in hospitality and tourism that relate to hotels. Within this literature it is suggested that further research should be undertaken, including, but not limited to: how RAISA will fit into the public's minds with regards to acceptability of new technologies; and how companies can investigate ways to incorporate (and implement) the new technologies into their operations. Tuomi *et al.* (2019, p. 1) summarise these specific research opportunities eloquently: "…deciding where, when, and how a new technology should be introduced, as well as understanding what its impacts might be for the individual, organisation and the industry." *This theme is central to this thesis and will be further explored in Section 6.2.*

Within this **literature review**, a narrower focus is adopted by examining the existing research that covers topics specifically relating to RAISA and hotels. Following the logic of Ivanov *et al.* (2017) the current adoption of Service Automation, AI and Robotics and their

benefits, a cost benefit analysis is drawn, prior to a concluding overview of the literature touching on reactions to and acceptance/trust of RAISA. Central to this is a discussion on how best to design service systems that incorporate RAISA and integrate these new technologies into them. These new technologies that fall under the heading of RAISA have been defined and introduced in the Definitions Section (p.11).

2.3.1 Examples of RAISA in Hotels

Specific examples of **service automation** in hotels first appeared in 2008 (Kasavana 2008) and initially included the use of self-service kiosks to facilitate check in/out processes without involving front desk staff (Kim and Qu 2014, CitizenM 2018, Ball *et al.* 2011, Collins and Cobanoglu 2017). This was extended to allow guests to perform the same functions using their mobile devices in order to improve convenience and service speed (Berezina 2015, Collins and Cobanoglu 2017). Expansion of this theme allowed the integration of mobile service ordering into the guest service experience, facilitating real time communication/ordering/placing requests to guests devices (Trejos 2015). Indeed, the Coronavirus pandemic has led to widespread suggestion of increasingly contactless customer journeys with mobile check-in and check-out a principal focus (Pflum 2020, Krishnan *et al.* 2020). Ivanov *et al.* (2017) suggest potential future uses of service automation could include full-service automation and in 2018, the first unmanned hotel, the Flyzoo Hotel, was brought into operation by Alibaba (Law *et al.* 2019).

There are a relatively limited number of examples of **Artificial Intelligence** being deployed in the hotel environment, although one hotel has adopted iris scanning technology *in lieu* of a key card entry system to access its top suite (Harler 2008) and facial recognition has been used for the same purpose after a digital image of the guest face is recorded at check-in (Rajesh 2015). Other hotels have introduced voice-activated virtual assistant technology into their rooms in a desire to deepen guest engagement that will allow new ways for guests to access services and amenities during their stay (Carrara 2018) with Tussyadiah and Miller (2019) seeing these as a new opportunity for interventions through ‘nudging’. AI is also being used in the form of chatbots to provide concierge services in some hotel chains both pre-stay and during the guests stay (Jones 2019, Tussyadiah 2020b). An example of

one such chatbot, Edward, is the focus on one of the Best Practice Case Studies, discussed in Section 5.2.4.

Examples of the use of **robots** are better integrated across different operating departments despite not yet being widely adopted. The most famous and prolific use of robotics in a hotel is perhaps at the Henn-na Hotel in Japan, which is classed as the first robot-staffed hotel (Rajesh 2015). In striving for 'ultimate efficiency' it has adopted robotic front desk staff, porters, in-room assistants, vacuum cleaners and a robotic arm operating the luggage storage room (Ivanov and Webster 2019b). Other examples include robot 'Botlrs', developed to deliver room service with capabilities of navigating the hotel, guests and using the elevator (Crook 2014, Tung and Law 2017); bellboy hotel assistants/robots (López *et al.* 2013, Rodriguez-Lizundia *et al.* 2015); in-room robot companions and pervasive agents (Tussyadiah 2020b) and robotic concierges powered by artificial intelligence with the ability to answer routine guest questions and learn/adapt from them in order to improve future answers (Hilton 2016, Rodriguez-Lizundia *et al.* 2015, Euromonitor 2018b, López *et al.* 2013, Makadia 2018, Tussyadiah 2020b). During the Coronavirus pandemic robots have also been deployed to sanitise hotel bedrooms and public areas (Glusac 2020, Palmer 2020), deliver food and drinks (Krishnan *et al.* 2020), and facilitate physical distancing too (Ivanov *et al.* 2020a).

A summary of potential **RAISA adoption during the Hotel Customer Journey** is presented in Table 2.2. Through adapting the work of Lukanova and Ilieva, 2019 and expanding the Guest Cycle to include the principal steps in the Customer Journey charted in Figure 2.1 (Bitner *et al*, 2008), the potential for the adoption of RAISA technologies is illustrated at each step by technology type. This demonstrates diverse opportunities for RAISA adoption across all steps of the Customer Journey and by technology type. From this model of potential adoption opportunities, some **current examples of RAISA adoption in hotels** are listed in Table 2.3. The alphabetical key used links the specific examples of RAISA technologies to the customer journey steps previously charted in Table 2.2.

Table 2.2: RAISA Adoption during hotel customer journey

Guest Cycle		**Pre-arrival**		**Arrival**				**Stay**				**Departure**		**Assessment**	
Customer Journey		Information Gathering	Booking	Arrival / Welcome	Give bags	Check-in	Go to Room / Receive bags	Order Room Service	Receive Food	Information Provision	Sleep / Shower / Use Room	Pay Bill	Check out / Leave	Provide Feedback to Hotel Directly	Provide Feedback on Social Hubs
Hotel Function		Marketing / Guest Services	Reser-vations	Doorman	Luggage Porter	Front Desk	Luggage Porter	Room Service	Kitchen / Room Service	Concierge	House-keeping	Front Desk	Front Desk / Doorman	Guest Services	Guest Services
Potential for RAISA Adoption		**High**	**High**	**Low**	**High**	**High**	**High**	**High**	**Medium**	**Medium**	**Medium**	**High**	**Medium**	**High**	**High**
Potential Type of Adoption	**Robots**			Bellboy Robots	Porter Robots / Industrial Robots (Luggage Storage Arm)	Front Desk Robots	Porter Robots / Ride-on Auto-nomous Vehicles		Industrial Robots (Kitchen) / Delivery Robots **A**	Concierge Robots **B**	Vacuum Cleaning Robots / Room Assistant Robots	Front Desk Robots	Porter Robots		
	Artificial Intelligence	AI Search Platform **D** / Chatbots	AI Search Platform **D** / Chatbots					Chatbots / Voice-Activated Virtual Assistants		Chatbots **C**	Voice-Activated Virtual Assistants		Travel Assistant	AI Platform **E**	Interactive Social Hubs **F** / AI Platform
	Service Automation	Virtual Reality **H**	Mobile Check-in **G**			Digital Kiosks **I** / Room Key Dispensers	Smart-phone Room Keys **J** / Non-stop check-in	In-room Smart Technol-ogies **K**			In-room Smart Technol-ogies **K**	Express Check-out / Digital Kiosks **I**			

Source: Authors own adapted from Lukanova and Ilieva (2019) and annotated with an alphabetical key to Table 2.3

Table 2.3: Current Examples of RAISA adoption in Hotels

Type of Technology	Example	Hotel Property/Group	Implementation Date	Customer Journey Step See Table 2.1	Link to Further Information
Robots	**Robot staffed hotel** – service staff is made up of robots	Henn-na Hotel, Sasebo, Nagasaki	2015	Various	https://www.hennnahotel.com/en/concept/
	Botlr - **Butler Robot** – deliver items to guest rooms	Aloft, Starwood	2014	Receive Food **A**	https://www.businessinsider.com/savioke-robot-hotel-cupertino-2016-8?r=US&IR=T
	Connie – **Concierge Robot**	Hilton Worldwide	March 2016	Information Provision **B**	https://newsroom.hilton.com/corporate/news/hilton-and-ibm-pilot-connie-the-worlds-first-watsonenabled-hotel-concierge
Artificial Intelligence	Rose – resident mischief maker and digital concierge (**Chatbot**)	Cosmopolitan Hotel, Las Vegas	January 2017	Information Provision **C**	https://www.cosmopolitanlasvegas.com/rose
	Edward – **Chatbot**	Edwardian Hotels, UK	May 2016	Information Provision **C**	https://www.youtube.com/watch?v=G8wPldZR78w **Case Study 4**
	MoodMatch – a **search engine** for travel experiences that doesn't require a pre-selected destination	Accor Hotels Group	April 2017	Information Gathering/Booking **D**	https://press.accor.com/%e2%80%8bmoodmatch-accorhotels-com-and-travelsify-offer-internet-users-a-new-way-of-finding-the-hotel-that-suits-them-best/?lang=en
	AI Powered Website – AI enabled website and app	Cheval Residences	August 2018	Information Gathering/Booking **D**	https://www.chevalcollection.com/blog/cheval-residences-continues-to-be-at-the-forefront-of-technology-with-new-ai-enabled-website-and-app/ **Case Study 3**
	AI Metis Platform – customer review platform – amalgamating feedback from multiple channels	Dorchester Collection	February 2016	Provide Feedback **E**	https://www.hospitalityandcateringnews.com/2016/02/dorchester-collection-leads-way-guest-experience/
	Social Hub - a social app that links with users LinkedIn accounts to match strangers on professional or personal interests whilst staying in a hotel	Marriott	2013	Provide Feedback **F**	https://www.fastcompany.com/3031562/marriott-and-mit-reinvent-the-hotel-lobby-as-a-social-hub

Service Automation 	**Smart Hotel** – everything is controlled by your smartphone	KViSmart Hotel, Budapest	Unknown	Various	https://www.kvihotelbudapest.com/
	Mobile app – allows guests to search, book and manager their reservations and reward points	Hilton	Unknown	Booking **G**	https://www3.hilton.com/en/about/hilton/mobile.html
	Mobile app – various features including allowing guests to choose a floor, view and size of room	Hotel Schani Wien, Austria	Unknown	Booking **G**	https://www.hotelschani.com/en/philosophy/smart/
	BestwesternTV – YouTube Channel where potential customers can see bedrooms, the lobby and all amenities through **VR** technology	Best Western	September 2016	Information Gathering **H**	https://www.bestwestern.com/en_US/about/press-media/2016-press-releases/bw-launches-vr-tours.html
	VR Experience Films	Spanish Cotton House, Barcelona	January 2017	Information Gathering **H**	https://www.hospitalitynet.org/news/4080553.html
	Digital Kiosks – allow for fast check-in and check-out	CitizenM	2008	Check-in/Pay Bill **I**	https://www.citizenm.com/company/about-citizenm **Case Study 1**
	Digital Kiosks – positioned at the airport to allow guests to check in before arrival at the hotel resort	Hilton Hawaiian Village Beach Resort and Spa	Unknown	Check-in/Pay Bill **I**	https://www.hiltonhawaiianvillage.com/tips-for-a-perfect-stay
	Keyless entry system through mobile app	Starwood Hotels and Resorts	November 2014	Luggage Porter **J**	https://hospitalitytech.com/starwood-expands-spg-keyless-locations-and-functionality
	Mobile enabled room key technology including other areas such as fitness centre, executive floors, elevators etc.	Hilton Worldwide	July 2017 (UK)	Luggage Porter **J**	https://hiltonhonors3.hilton.com/en/hhonors-mobile-app/digital-key.html
	In-room Tablet – allows guests to control room features, order room service and request spa services	Peninsula Hotels	April 2017	Order Room Service/Sleep/ Shower/Use Room **K**	https://hospitalitytech.com/peninsula-hotels-uses-room-tablets-personalize-guest-experience
	In-room Tablet – to control the room ambient settings	CitizenM	2008	Order Room Service/Sleep/ Shower/Use Room **K**	https://www.citizenm.com/company/about-citizenm **Case Study 1**

Source: Authors Own

2.3.2 Cost-Benefit Analysis

Whilst there are to be a plethora of benefits to the adoption of RAISA within hotels, that also address some of the time old challenges inherent in the industry and those presented by the Coronavirus pandemic (Section 1.1), implementation has both drawbacks and benefits (Ivanov and Webster 2017a, Tussyadiah 2020b). Indeed, this topic can be highly divisive; on one side it is seen as a silver bullet solving a number of challenges, but on the other, it forms the necessary evil, threatening jobs and creating cold, impersonal guest experiences (Tolentino 2019). Indeed, Huang and Rust (2018) suggest the service and technology literature tends to focus on the positives of AI usage, whilst the economic literature on the (negative) effect of AI on jobs. Indeed, the Coronavirus pandemic may also have a more lasting effect on the perceived values of RAISA outweighing the anticipated downsides (Howard and Borenstein 2020). Whilst the literature suggests companies should undertake a thorough review of the pros and cons of RAISA implementation both from a financial and non-financial point of view prior to adoption (Ivanov *et al.* 2020a), few studies have tested this empirically to date (Kuo *et al.* 2017, Ivanov *et al.* 2020a). Therefore, a further **cost-benefit analysis** of adoption is still required in this area, *which the research in this thesis will address to some extent in the following paragraphs* (summarised in Table 2.4).

Table 2.4: Cost benefit analysis of RAISA Adoption

BUSINESS	
Benefits	**Costs**
Aid challenges around staff recruitment and retention and support for the variation in demand (Kim *et al.* 2019)	Increase in financial costs include acquisition costs of the new technology, installation costs, maintenance costs, software update costs, costs for potentially adapting the premises to facilitate robot's mobility, cost for hiring (new) specialist personnel and the costs of staff training (Ivanov and Webster 2017a, Brych 2017, Collins and Cobanoglu 2017)
Expand service capacity (always on) (Ivanov and Webster 2017a, Brych 2017)	Increase in negative publicity (Ivanov and Webster 2017a)
Improve operational processes (Ivanov *et al.* 2017, Ivanov and Webster 2017a)	Resistance of customers (Ivanov and Webster 2017a, Kiersz 2019)
Improve service recovery (Bitner *et al.* 2000)	Resistance of employees (Ivanov and Webster 2017a)
Increase efficiency (Rajesh 2015, Ivanov *et al.* 2017, Kuo *et al.* 2017)	Lack creativity and a personal approach (Ivanov 2017)
Increase positive marketing outcomes (Kuo *et al.* 2017)	Do not yet have the ability to work without human supervision(Ivanov 2017)
Increase productivity (Taylor 2019, Ivanov *et al.* 2017, Huang and Rust 2018, Marinova *et al.* 2017)	Need structured situations in which to operate (Ivanov 2017)
Increase sales (Ivanov and Webster 2017a, Hafner and Limbachia 2018, Naik and Daptardar 2019)	
Increase self-learning and innovation (Rajesh 2015, Huang and Rust 2018) through data collection (Tuomi *et al.* 2020d)	
Influence desired behaviour including nudging to save resources (Tussyadiah and Miller 2019)	
Optimise costs (Ivanov and Webster 2017a, Naik and Daptardar 2019, Ivanov *et al.* 2020b)	
Reducing errors (Kiersz 2019) and provide consistent product quality (Ivanov 2017)	
Reduce labour costs (Rajesh 2015, Grewal *et al.* 2017, Brych 2017, Ivanov *et al.* 2017, Collins and Cobanoglu 2017, Kuo *et al.* 2017)	
Improve competitiveness (Ivanov 2017)	
Ensure the biosecurity of travellers (Ivanov *et al.* 2020b)	

GUEST	
Benefits	**Costs**
Creation of new customer experience (Ivanov and Webster 2017a)	Decrease or loss of personal interaction (Collins and Cobanoglu 2017, Bitner *et al.* 2000, Tussyadiah 2020b)
Greater depth of customer relationships (Hilton 2016, Grewal *et al.* 2017)	Inability to predict and therefore program every scenario leaving times when humans will still be required and may interact/respond at a slower speed (Brych 2017)
Greater empowerment with more information (Hilton 2016, Grewal *et al.* 2017)	Increase in concerns over customer privacy and confidentiality of information (Bitner *et al.* 2000, Tussyadiah *et al.* 2019, Lu *et al.* 2019a, Lu *et al.* 2019b)
Greater personalisation (Hilton 2016, Bitner *et al.* 2000, Tussyadiah and Miller 2020)	
Increase in comfort, convenience and savings (Tussyadiah 2020b)	
Increase in consistency of product quality (Ivanov *et al.* 2017, Collins and Cobanoglu 2017)	
Increase in control of their experience as service delivery process transferred to customers (Grewal *et al.* 2017, Ivanov *et al.* 2017, Ivanov and Webster 2017a, Van Doorn *et al.* 2017)	
Increase in fun and enjoyment in the interactions (Collins and Cobanoglu 2017, Kuo *et al.* 2017), may increase satisfaction (Lin and Hsieh 2006), are a novel sight (Tuomi *et al.* 2020d) and may even cause spontaneous delight (Bitner *et al.* 2000)	
Reduced waiting times (Collins and Cobanoglu 2017, Naik and Daptardar 2019)	
Service available/delivered in multiple languages (Ivanov and Webster 2017a, Brych 2017, Naik and Daptardar 2019)	

STAFF / EMPLOYEES	
Benefits	**Costs**
Decrease in long and unsociable shifts (such as during the night), where robots may do this without sacrificing the quality of their work (Collins and Cobanoglu 2017)	Accommodation and food services industry sectors the most susceptible of all to automation (Chui 2016)
Freeing up of employees time from physical, tedious and repetitive tasks (Ivanov and Webster 2017a, Mintel 2019b, Tolentino 2019, Collins and Cobanoglu 2017, McKendrick 2018)	Differential effects on women and part-time workers (Collinson 2019, Brussevich *et al.* 2018)
Increase meaningful, higher level, creative, customer service and revenue generating activities (Ivanov and Webster 2017a, Mintel 2019b, Tolentino 2019, Collins and Cobanoglu 2017, McKendrick 2018)	This is predicted to hit lower-skilled workers, living in poor areas, hardest and increase income equality (Taylor 2019)
Less pressure and a better work environment (Ivanov and Webster 2017a, Mintel 2019b, Tolentino 2019, Collins and Cobanoglu 2017, McKendrick 2018)	Increase redeployment, job enlargement or re-training and ultimately job loss (Kiersz 2019)
Mitigation of labour shortages (Ivanov *et al.* 2019, Kuo *et al.* 2017)	

Source: Authors Own

In theory at least, one of the many **benefits** RAISA will provide is vast opportunities for hotels to improve their operational processes (Ivanov *et al.* 2017, Ivanov and Webster 2017a).

These **benefits to the business itself** and its internal processes may include: *greater efficiency* (Rajesh 2015, Ivanov *et al.* 2017, Kuo *et al.* 2017); *increased productivity* (Taylor 2019, Ivanov *et al.* 2017, Huang and Rust 2018, Marinova *et al.* 2017) , possibly to help with the variation in demand inherent in the industry and the challenges around recruitment and retention cited as being two of the key determinants of poor productivity in tourism by Kim *et al.* (2019); *reduction in errors* (Kiersz 2019); in order to *provide consistent product quality* (Ivanov 2017); the *expansion of their service capacity* (Ivanov and Webster 2017a) and therefore being *always on* (Brych 2017); a *positive contribution to sales* (Ivanov and Webster 2017a, Hafner and Limbachia 2018, Naik and Daptardar 2019) *and marketing outcomes* (Kuo *et al.* 2017); *the optimisation of their costs* (Ivanov and Webster 2017a, Naik and Daptardar 2019) and more specifically, a *reduction in labour costs* (Rajesh 2015, Grewal *et al.* 2017, Brych 2017, Ivanov *et al.* 2017, Collins and Cobanoglu 2017); *self-learning and greater innovation* (Rajesh 2015, Huang and Rust 2018) through data collection (Tuomi *et al.* 2020d); *desired behaviour influencing* – pro-environmental behaviour nudging in an attempt to save resources (Tussyadiah and Miller 2019); *improved service recovery* (Bitner *et al.* 2000) and *improved competitiveness* (Ivanov 2017). Whilst there are a great number of (potential) benefits identified in the conceptual research, they have not yet been tested empirically and the literature does not yet identify how businesses should maximise these collective benefits. *These are suggested as a Future Research direction in Section 7.4.*

The **benefits applicable to the hotel guests** may include: *greater control* of their experience as some of the service delivery process is transferred to customers (Grewal *et al.* 2017, Ivanov *et al.* 2017, Ivanov and Webster 2017a, Van Doorn *et al.* 2017); *reduced waiting times* (Collins and Cobanoglu 2017, Naik and Daptardar 2019); *greater personalisation* (Hilton 2016, Bitner *et al.* 2000, Tussyadiah and Miller 2020); *greater empower*ment with more information (Hilton 2016, Grewal *et al.* 2017); *deeper customer relationships* (Hilton 2016, Grewal *et al.* 2017); experiencing *greater consistency of product quality* (Ivanov *et al.* 2017, Collins and Cobanoglu 2017); *service being available/delivered in multiple languages* (Ivanov and Webster 2017a, Brych 2017, Naik and Daptardar 2019); greater *comfort,*

convenience and savings (Tussyadiah 2020b) and that the technology itself may *create customer experience* (Ivanov and Webster 2017a); *induce fun and enjoyment in the interactions* (Collins and Cobanoglu 2017, Kuo *et al.* 2017), *increase satisfaction* (Lin and Hsieh 2006), are a *novel sight* (Tuomi *et al.* 2020d) and even *spontaneous delight* (Bitner *et al.* 2000). These guest related benefits are most often considered in the literature from the organisations perspective and do not fully consider the *complete customer heuristic, a central theme to this thesis*. Some may also be short-lived, either within individual customer journeys, or, as adoption becomes more widespread.

The **benefits having a knock-on effect to team members** may include: the *mitigation of labour shortages* (Ivanov *et al.* 2019, Kuo *et al.* 2017) and possibly *working less long and unsociable shifts* (such as during the night), where robots may do this without sacrificing the quality of their work (Collins and Cobanoglu 2017). These lead to less pressure and a better work environment, *freeing up employees time* from physical, tedious and repetitive tasks to enhance their performance/productivity on more meaningful, higher level, creative, customer service and revenue generating activities: 'decent work' (Ivanov and Webster 2017a, Mintel 2019b, Tolentino 2019, Collins and Cobanoglu 2017, McKendrick 2018, Tuomi *et al.* 2020a). These themes identified in the literature largely assume changes to current employees work models and not a more radical re-designing of service processes and, indeed, job roles as RAISA increasingly penetrates service provision. This may in part be due to the moral and ethical considerations required in widescale redeployment of employees.

Despite the many upsides that RAISA promises to deliver, given that it is hotly debated in the popular media (Fast and Horvitz 2017) and for due balance, the **costs** or downsides should also be properly considered. Primarily of note here, is that in this review at least, there are many fewer costs, than benefits.

These **costs to the business itself** will include the following: the myriad *financial costs* (Ivanov and Webster 2017a, Brych 2017, Collins and Cobanoglu 2017); related to acquisition of the new technology, installation, maintenance, software updates, adapting the premises to facilitate the robot's mobility, hiring (new) specialist personnel and staff training (Ivanov and Webster 2017a). The *resistance of employees* may be a further

downside to the company (Ivanov and Webster 2017a); along with the *resistance of customers* (Ivanov and Webster 2017a, Kiersz 2019) and the potential for *negative publicity* over possible job losses for example (Ivanov and Webster 2017a). Further costs include *a lack of creativity and personal approach* (Ivanov 2017); *the lack of ability to work without human supervision* (Ivanov 2017) and *the need for structured situations in which to operate* (Ivanov 2017). The balance of these costs is difficult to predict accurately given the sporadic and experimental nature of adoption to date – purposeful and preconceived plans will help minimise additional costs of this technology in the future. Whilst there is an assumption in the literature thus far of negative employee sentiment, this is yet to be tested empirically and is a *suggested Future Research Direction in Section 7.4*.

The **drawbacks applicable to the hotel guests** may include: a *lack/loss of personal interaction in their service experience*s (Collins and Cobanoglu 2017, Bitner *et al.* 2000, Tussyadiah 2020b); concerns over customer privacy and confidentiality of information (Bitner *et al.* 2000, Tussyadiah *et al.* 2019, Lu *et al.* 2019a, Lu *et al.* 2019b) and *not being able to predict and therefore program every scenario,* leaving times when humans will still be required and may interact/respond at a slower speed (Brych 2017). This area of the literature also requires further development. The what, where and how questions relating to implementation can be further investigated and the part age and demographics play on these better understood.

The **costs having a knock-on effect to team members** may include: *redeployment*, job enlargement or re-training and ultimately *losing their jobs* through redundancy (Kiersz 2019). This is predicted to hit lower skilled workers, living in poor areas hardest and increase income equality (Taylor 2019). Women and part-time workers will be especially affected (Collinson 2019, Brussevich *et al.* 2018), because they form a significant part of the accommodation and food services industry sectors, which are the most susceptible to automation (Chui 2016). Whilst the literature in this area is at an early stage of development, the Macro situation and its challenges (*e.g.* birth rate decline and the challenges of recruiting for hospitality – Section 1.1), cannot be ignored. For example, the potential increase in people's leisure time may also increase the demand for hotel stays and thus exacerbate existing challenges.

2.3.3 Customers Reactions to RAISA

Whilst taking into consideration the potential costs and benefits of the adoption of RAISA in hotel service processes, and the need to find the 'right' balance, **consumer attitudes towards the appropriateness of its incorporation**, and where it is most/least appropriate across operations, has also been investigated in a series of papers (Ivanov *et al.* 2018a, Ivanov *et al.* 2018b, Ivanov and Webster 2019b, Ivanov and Webster 2019a). These papers broadly observe that the highest rates of acceptance by respondents to the three studies include activities such as information provision, availability, pricing, payment, cleaning common areas, garbage collection, luggage carrying and the delivery of items such as laundry, linen and towels. The areas considered the least appropriate for RAISA application were babysitting, hairdressing, dancing with guests and massage. They suggest that the tasks with high acceptability (information provision and housekeeping) stem from respondents already being used to self-service kiosks (information provision) or are considered to be dull, dirty or dangerous (housekeeping). The tasks where respondents would need to subordinate their bodies to RAISA were deemed least acceptable (massages, babysitting and hairdressing). Recent market research from Mintel (2019a) further corroborates these findings in their report on Eating Out: the decision-making process where they home in on the potential for RAISA and robots in restaurants. All of these studies are of particular relevance to this thesis and more specifically where customers may be most (and least) comfortable interacting with RAISA, as adopted in the hotel service process. The understanding of what/where/how RAISA should be designed into service systems is a leading question in much contemporary research (Webster and Ivanov 2020, Belanche *et al.* 2020, Tuomi *et al.* 2020b) and *will be touched up on later in section 6.2.*

Whilst Ivanov *et al.* (2017) claim that "as a rare and innovative technology, robots may wow hotel guests and stimulate customer delight", Ivanov and Webster (2017) acknowledge that the adoption of these technologies relies in part on the customers' readiness and willingness to be served by robots. As a relatively novel area in the hospitality domain, other scholars have investigated these ideas further with concern over **how consumers will see, respond to and interact with RAISA:** *i.e.* human-robot interactions (HRI) in order to guarantee future successful widespread adoption of these technologies (Tung and Law 2017). Tussyadiah and Park (2018) conducted two studies aimed at understanding

consumer responses to the characteristics (anthropomorphism, animacy, likeability, perceived intelligence, and perceived security) of two different robots in hotel service settings (reception and room service); they found that perceived safety, human characteristics, functionality and perceived intelligence were all important characteristics in determining adoption intention of hotel service robots. This builds upon earlier work by Bartneck *et al.* (2009a) and Bartneck *et al.* (2009b) acknowledging that the adoption of service robots changes the nature of the service experience and the success of service robots depends on the satisfaction of their users. Rodriguez-Lizundia *et al.* (2015) also undertook a study that analysed the aspects of the robots' design and behaviour that were relevant to user engagement and comfort using a service robot in a hotel setting. They focused on proxemics (users' proximity to the robot), duration and interaction effectiveness against robot design and behaviour factors: embodiment, status and who initiated the communication. They found that comfort being close to the robot varied by age; users maintained a higher interaction distance from a robot than a touchscreen, embodiment engages users in longer interactions and interaction time increases when robots initiate the dialogue. Rodriguez-Lizundia *et al.* (2015) research fed into a rare study (Pinillos *et al.* 2016) of the prolonged interactions with robots in a hotel setting to look, in part, at improving robot performance through assessment feedback. Some of the concerns of human interaction with AI are also confirmed in research by Euromonitor (2017), which states that customers still prefer to engage with humans rather than AI during a trip, with 56% not at all comfortable with seeking advice and assistance from AI. Trust and a preference for interacting with humans were the major barriers to acceptance. Other literature in human-robot interactions has also emphasised the critical role of trust in influencing acceptance and usage of technology (Tussyadiah *et al.* 2020).

Tussyadiah *et al.* (2020) investigated **trust in intelligent robots** in hospitality and tourism, its user-related antecedents and its effects on trusting intention; this research was instigated by the expansion of robots to include socially driven interactions with humans and therefore the role of human-robot trust becoming more prominent in influencing the overall acceptance and usage of autonomous technology. They found trust in intelligent robots is influenced by positive attitudes towards technology and propensity to trust technology more generally. The physical forms of the robots did not affect trust in this study. Tussyadiah *et al.* (2020) researched trust in relation to intelligent service robots. The

results were similar, finding that trusting beliefs had a significant effect on trusting intention and robot form having no effect on trusting intention. Multifaceted trust in tourism service robots has also been investigated by Park (2020) where across two studies, trust in service robots was explored in the contexts of restaurants and accommodation. Whilst these studies do not explore robot design, they note the importance of robot performance on trust and secondary dimensions such as risk and structural assurance playing a part in intention to use the robots. Key to this study were robot design; the environment in which consumers interface with the robots; and company communication: carefully crafted marketing messages to avoid negative perceptions and matching physical forms of robots to their intended functions. Whilst a majority of the research to date on trust focuses on the customer lens, Simon *et al.* (2020) have investigated this from the employee viewpoint too. The coronavirus pandemic may also help increase trust in RAISA, especially if its helps preserve our health and wellbeing (Howard and Borenstein 2020).

Research has demonstrated the important role of service robots in **engaging consumers on a social level**, further influencing their experiences (Van Doorn *et al.* 2017). They proposed the idea of 'automated social presence' (introduced earlier on in the Definitions section, see p.11), the notion of how much machines (robots) can engender the feeling that a human consumer is in the company of another social entity. This is seen of growing importance as technology further infuses service interactions and with a hypothesis that future service experience satisfaction will be differentiated by the extent to which the technology can engage consumers on a social level.

Building on the concept of Automated Social Presence (Van Doorn *et al.* 2017), Tussyadiah and Miller (2019) investigated the effectiveness of using different intentional agents (virtual assistant vs. robot) and social feedback (presence vs. absence of feedback) on **pro-environmental behaviour intention** of hotel guests. They found no direct significant effects of the type of intelligent agents and presence or absence of social feedback on guests' pro-environmental behaviour intention. However, they did find positive interaction effect between social feedback being given by virtual assistants.

When focusing specifically on the **servicescape** research in a recent comprehensive review, Ivanov *et al.* (2019, p. 504) define the servicescape domain as "the spaces and processes

designed/provided or maintained/managed/augmented by tourism and hospitality organizations in which hospitality and tourism services are (co-)created and consumed, and in which robots, consumers, employees and sometimes the general public encounter each other". Yet the use of RAISA has received scant attention and little research has been focused on the domain, most likely due to the limited adoption in business to date. Indeed, Murphy *et al.* (2019) state that many tourism businesses fail to make the most of the available technology. Ivanov *et al.* (2019) highlight only three papers that recognise the need for adjustments in the servicescape, that go beyond the physical environment, in order to accommodate robots better. These include the drafting of SBs to identify best suited tasks to robots (Osawa *et al.* 2017) and, indeed, to maximise their benefits (Bowen and Morosan 2018); the reengineering of service processes (Ivanov and Webster 2017a) and the possibility of robots to help catalyse service innovation (Primawati 2018). Ivanov *et al.* (2019) recognise sub-themes to this domain including *changes in the servicescape due to robot use* (Papathanassis 2017, Huang and Lu 2017, Kaushal *et al.* 2016, Claveau and Force 2017), *active adjustments or re-imaginings to workflow* (Pransky 2016, Navarro *et al.* 2015) and *servicescape and the robotic friendliness of tourism/hospitality facilities* (Ivanov and Webster 2017b). It is the adjustment to workflow within the servicescape, beyond the physical (Osawa *et al.* 2017, Ivanov *et al.* 2018b, Primawati 2018), *that is most relevant to this thesis* in order to ensure employees and RAISA can augment the future service experiences co-created within them. This concept of co-creation is further explored in Section 2.4.

2.4 Customer Dominant Logic

The recently proposed concept of **Customer Dominant Logic** (CDL) refers to "a view that positions the customer in the center, rather than the service, the service provider/producer or the interaction or the system" (Heinonen *et al.* 2010, p. 534). It therefore attempts to shift the viewpoint from traditional ideas of customer orientation where the firm is creating services that customers might prefer, to one where customers are the central focus and use the services to accomplish their own goals. This differs from SDL where the services are seen as processes, and value creation is collaborative between service providers and their customers: co-creation (Vargo and Lusch 2004). In a later paper, Heinonen and Strandvik (2015, p. 477) go on to describe CDL as "a managerial approach based on conceptualization

and realization of how the provider participates in customer value formation and simultaneously earns money. Focused on customer uniqueness. This pinpoints the need to understand customer logic to create appropriate, profitable business processes and designs". *It is this definition that this thesis will adopt.*

2.4.1 Different Service Perspectives

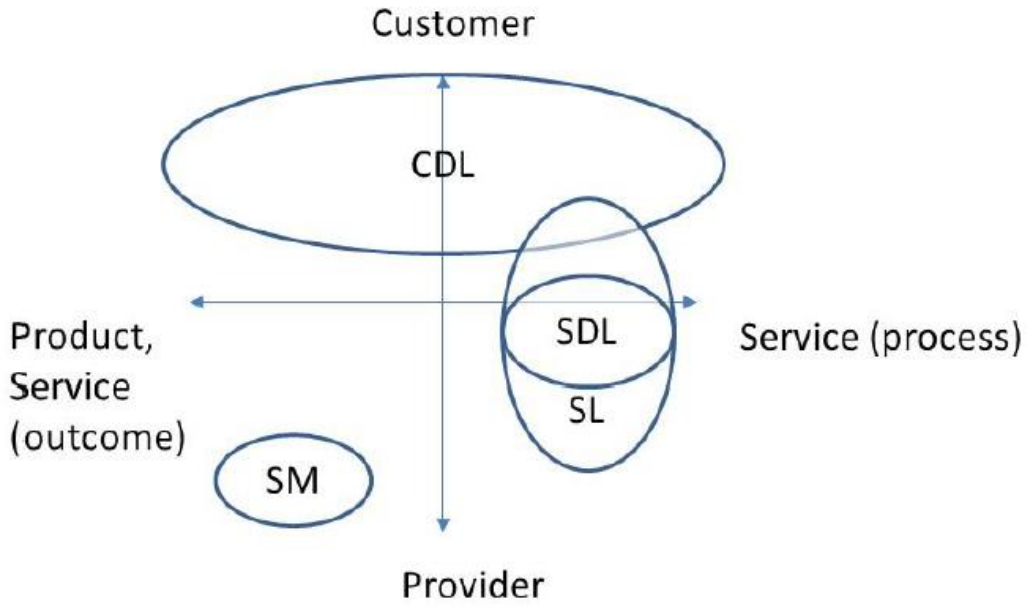
Service perspectives, differentiating 'products' and 'services' were first debated in the 1970s leading to the rise of the field of Service Management (Fisk *et al.* 1993). Due to significant advances in technology, customers can now actively define consumption value and indeed play a substantial role in value proposition and value co-creation (Cheung and To 2016). Due to this development, Vargo and Lusch (2004) proposed that companies should shift from a historic goods-dominant logic (where the value is seen to be manufactured or created within the organisation) to a more service-dominant logic (SDL). They indicated that service-dominant logic considers services as processes and the locus of value creation is collaborative between the service providers and the customers. Later, Service Logic emphasized the interaction between the provider and the customer (Grönroos and Gummerus 2014). Whilst this topic has been well criticised and often reconceptualised in academic debate (Heinonen *et al.* 2010), through a desire to address a truly customer dominant logic and understand how value emerges for customers through service providers interactions in their activities and tasks, Heinonen *et al.* (2010) forwarded their concept of CDL. The key differences between CDL and the former (provider-dominant) logics are listed below:

- The starting point is the customers ecosystem and not the service company (Heinonen *et al.* 2013b)
- Emphasizes the primacy of the customer (Heinonen *et al.* 2013b)
- Customer orientated not production orientated (Cheung and To 2016)
- Customer no longer plays a passive role but controls the value creation (Heinonen *et al.* 2010)
- Considers value in the context of the customers' lifeworld (Tynan *et al.* 2014)
- Places focus on what customers are doing with the services to accomplish their own goals (Heinonen *et al.* 2010)

- Stresses the need for the company to consider all aspects of the customers world including their goals, tasks and reasoning: understanding their subjective logic (Heinonen and Strandvik 2015)
- Considers the customers' invisible and mental actions (Heinonen *et al.* 2010)

This evolution in thinking is charted on the axis in Figure 2.2, where the offering focus is plotted left to right and the actor focus from top to bottom. The traditional approach of Goods Dominant/Service Management in the left-hand base corner, the evolution to Service Logic and SDL on the central right-hand side and finally CDL across the entire top.

Figure 2.2: Characteristics of the offering and actor focus



Source: (Heinonen and Strandvik 2015, p. 474)

This lack of focus on the customer, and their entire ecosystem in existing service models: Goods Dominant Logic, Service Logic and Service Dominant Logic, triggered the shift in thinking by Heinonen *et al.* (2010) that created the concept of CDL. This has been further developed in later papers (Heinonen *et al.* 2013b, Heinonen and Strandvik 2015) and there is an increasing acceptance amongst academics and practitioners that value is created by customers, for customers (Bowen 2016).

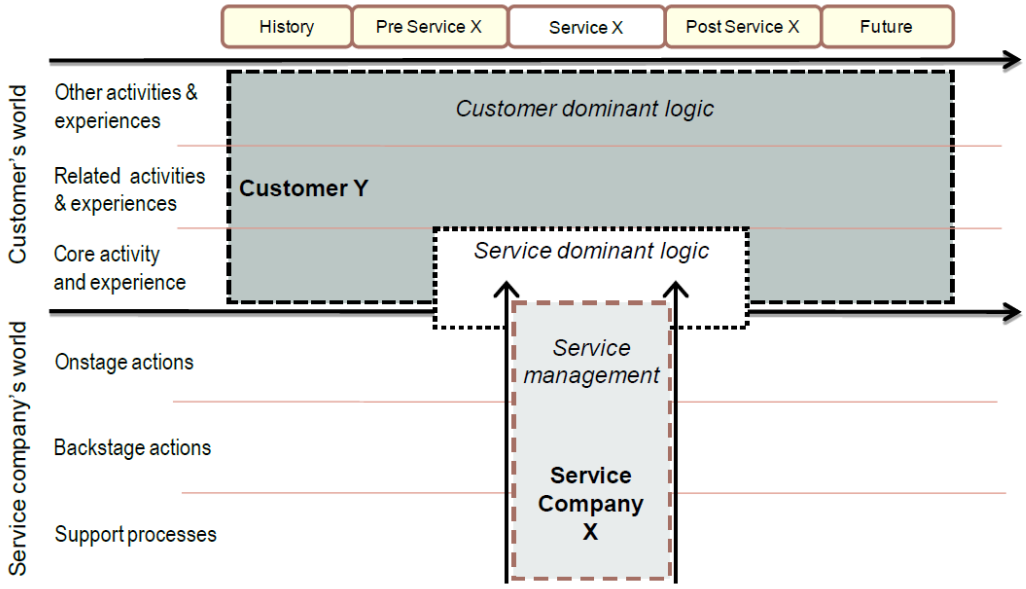
CDL is a new way of thinking about the complex relationships between organisations and their customers (Heinonen and Strandvik 2015). It adopts a customer focused approach to understanding the nature of value from within the customers' own world. It is grounded in understanding customers' lives and how the organisations service or product offerings can embed in their lives (Heinonen and Strandvik 2015).

Given this new wave of thinking, there is only a small pool of literature on the topic to date with few empirical studies (Cheung and To 2016, Tynan *et al.* 2014) and only one paper applying this logic to Tourism specifically (Rihova *et al.* 2018). However, this section will summarise this evolution in thinking from a provider's lens to a more customer dominant one plus highlight the need to revise the 'tools' needed for understanding the customer (Heinonen *et al.* 2010) and indeed how value is formed in their world (Heinonen *et al.* 2013b). It is through greater awareness of this value formation process that companies may gain insight into service design (Heinonen and Strandvik 2015), *which is of particular relevance to this thesis.*

2.4.2 Modelling Customer Dominant Logic

This new CDL is represented in the upper half of Figure 2.3 where SDL and SM are also partially plotted, showing their narrower and more provider-focused approach over a shorter chronology of the service experience. CDL is representative of the customers' world which encompasses not only the core activity/experience, but also that of 'related' and 'other' experiences and over a longer time period, recognising that no customer ever uses a service in a vacuum (Heinonen *et al.* 2010). The centre portion of the lower half of the diagram is the traditional SB zone (Figure 2.1). In Section 3.4, this figure is expanded and improved upon by Heinonen and Strandvik (2015) and shown on Figure 3.4.

Figure 2.3: Customer Dominant Logic of Service contrasted with Service Management and Service Dominant Logic



Source: Heinonen *et al.* (2010, p. 535)

Despite the promise of CDL to understand more fully the customers' world from a theoretical standpoint, Heinonen *et al.* (2013b) recognise the gap left by traditional research tools in achieving this: shifting the focus from the company to the customer and their ecosystem. Heinonen and Strandvik (2015) also advocate the creation of detailed managerial guidelines for applying CDL. Indeed, the series of papers developing this concept, all stress the importance of, and desire to enable practical implementation of the theory including service design (Heinonen *et al.* 2010, Heinonen *et al.* 2013b, Heinonen and Strandvik 2015). Indeed, Heinonen and Strandvik (2015) advocate that an awareness of the customer value formation process can provide companies essential insight into service design and innovation. In an attempt to capitalise on these opportunities, this thesis identifies the unique position hotels are in to understand, apply and leverage this logic, addressing some of the challenges identified by Heinonen *et al.* (2013b) in Section 3.4, the role RAISA may have in facilitating/automating this, and then a novel 'tool' is proposed in Section 6.3, through the development of a new conceptual SPD model (Figure 6.2).

2.5 Conclusion

The main conclusions drawn from the literature review are:

(1) Despite identifying Service Blueprinting as a particularly widely used SPD tool it has two key weaknesses: (1) the passive role it allocates to the customer, and (2) the person-to-person mapping technique does not address the technology infusion routinely within service interactions today. These prompt the need for research and a new service design model to be developed, which is proposed in Chapter Six.

(2) The lack of research in incorporating RAISA into the hospitality servicescape and the almost complete lack of consideration of how it may change service design contrasts sharply with the multitude of benefits it presents (Table 2.4). This future adoption is explored in Section 3.3.

(3) CDL is identified as a theoretical model that positions each customer at the centre of the value creation process, but currently lacks the tools to implement it practically. Given the customer's centrality to RAISA adoption in the value creation process and the potential opportunities that CDL brings to these real-world challenges it will be used as the 'glue' to integrate RAISA into hotel SPD in the future (see Section 3.4 and Chapter Six).

In conclusion, as RAISA adoption to date is sporadic and largely experimental (Section 2.3), no service design model has been specifically developed to facilitate the integration of RAISA technology into service processes or to focus principally on the customers' world, over the company lens (Section 2.2). Therefore, CDL can be used as a foundation to develop a new SPD model to add value to service design but it needs to be modified to address the customers' entire ecosystem, including direct interaction with technology, in the service encounter. *This is the new model proposed in Chapter Six.*

Chapter 3. Technology-driven Service Design Challenges

3.1 Introduction

This Chapter expands on the literature review presented in Chapter Two by discussing the contemporary service design challenges generated by the increasing prevalence and reliance on technology in the service encounter. This includes an exploration of the theoretical considerations required for technology to be harnessed in the service design process by the key stakeholders (Section 3.2). Consideration is also given to the tensions the changing role and status of technology introduces in the workplace, customers' readiness to be served by RAISA, and the need to find the right balance in varying contexts between humans and RAISA when designing service delivery. Section 3.3 hypothesises how the use of RAISA may evolve and be further integrated in hotels and their service design in the coming years. It is this change in practice and the predicted rapid adoption and proliferation of RAISA use that requires urgent additional research in the Service Design area. How best these technologies should be integrated into future service design is explored through a brief discussion as to the unique position hotels have for leveraging value from the theoretical CDL framework outlined in Section 3.4.

3.2 Technology Infusion in the Service Encounter

Whilst SPD models, such as Service Blueprinting, have been widely accepted as good practice tools for designing new, and also adapting/improving existing service processes, from 2000, there has been a **marked lack of integration of technology** in such models. Parasuraman (2000) discussed the lack of research pertaining to people's readiness to interact with self-service technology-based systems in his article proposing the Technology Readiness Index. Bitner *et al.* (2000) also highlight the absence of a technology focus in service encounter research in the same year, despite it dramatically altering such encounters in practice.

Some years later, Patrício *et al.* (2008) introducing the Service Experience Blueprint (SEB) discussed the modest progress that has been made in new service development research, and most especially in service experience design, versus the dynamics of **trends in modern**

service technology. They, amongst others, see this as one of the least understood topics in operations' research (e.g., Bitner and Brown 2006, Brown *et al.* 1994, Johnson *et al.* 2000, Menor *et al.* 2002, Tax and Stuart 1997, Bitner *et al.* 2000), stating that the integration of technology in service design is left largely unexplored and existing methods do not support this (Patrício *et al.* 2008). De Keyser *et al.* (2019) and Meyer *et al.* (2020) go further stating that there is a lack of insight into how these technologies should be implemented in service systems.

Whilst the SEB was developed as a new multidisciplinary method for designing technology-enabled multi-interface services, Patrício *et al.* (2008) suggest it needs improvement and extensions of this model in other contexts and with other new technologies. Indeed, at that time, it is unlikely the authors were considering the next wave of AI enabled technologies (examples of these are given in Section 2.3) that are now being utilised in service delivery. More recent papers such as Ostrom *et al.* (2015) continue to cite **leveraging service design and technology** to advance service as research priorities.

It is widely accepted that **future service provision** will be driven by a complex set of interactions between guests, technology and staff (Tolentino 2019). Indeed, Leung (2019) states that information technologies are changing this service paradigm. There is now an increasing reliance on technology in the service encounter (Larivière *et al.* 2017) and it has revolutionised the way in which modern services are delivered (Patrício *et al.* 2008, Neuhofer *et al.* 2014). However, largely due to the current lack of insight (De Keyser *et al.* 2019, Meyer *et al.* 2020), the future key decisions to be made are where and how to strategically integrate technology into the service process (Tolentino 2019, Neuhofer *et al.* 2012, Neuhofer *et al.* 2015), *a theme particularly central to this thesis.*

More recently the **challenges** which were initially cited by Patrício *et al.* (2008) have been discussed across the service literature (Section 2.2). They are: the need to incorporate service technology into service design models (Patrício *et al.* 2008); customers varying readiness to use technology (Larivière *et al.* 2017, Wirtz *et al.* 2018); the service employees' roles in this adoption and utilisation of technology (Bowen 2016) plus the ever increasing complexity of the interactions across a growing number of touch points between the

customer, the firm, the technology and/or the employee (Bowen 2016, Larivière *et al.* 2017).

Whilst Parasuraman (2000) recognised companies use of technology in selling to and serving customers was growing at a fast pace, more recently, Van Doorn *et al.* (2017) observed the changing nature of the interplay between customers and organisations through the radical and rapid adoption of technology in customers' service experiences; they predicted that these experiences will be enhanced through this infusion of technology in the future. In a similar vein, Keating *et al.* (2018) recognised that these technologies, including AI, have the potential to alter significantly the current nature of service and particularly the roles humans play, and noted the **tensions introduced by this identified changing role and status of technology.** Tussyadiah *et al.* (2020) also recognise the changing nature of the hospitality domain, previously characterised by intensive human contact and now adapting to potentially replacing humans with robots and that this changes not only the nature of the service experience (to include human-robot interactions) but may also lead to shift in attitudinal and behavioural outcomes from customers. Tuomi *et al.* (2020c) state that the hospitality industry is at a tipping point where they suggest RAISA is being increasingly incorporated into service encounters and that this, in turn, requires reconceptualization of hospitality management and in particular people management strategies.

This advancement of technology will have implications for both customers and employees, as previously discussed in the cost-benefit analysis presented in Section 2.3. Critical to this argument is the role of employees. There is a pressing need to reconceptualise employees' roles within the service encounter triad (Bowen 2016). This concern has been developed by Tuomi and Tussyadiah (2019) who desire to improve employees experiences through the greater adoption of technology by eliminating friction points, reducing conflict and creating more harmonious working environments, where technology performs the more mundane tasks empowering managers to focus more on employees, who, in turn, focus more on customers to the overall benefit of the hotel's business. Tuomi *et al.* (2020a) build on these arguments in developing a theoretical model to explain 'Decent Work through Automation', again focusing on the employee and improving their lot. Whilst this may initially seem

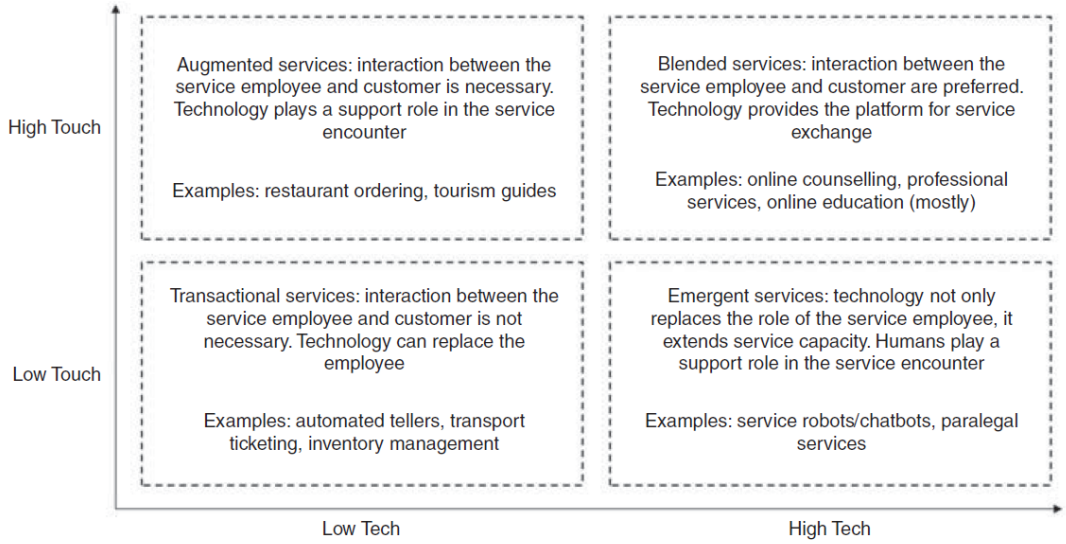
simplistic in its outlook, it does suggest positive future progress for both customers and employees.

3.2.1 Models of Technology Infusion in Service Encounters

In drawing on initial work of Bitner *et al.* (2000) on **technology infusion in service encounters**, a number of models have been proposed which are compared below.

Keating *et al.* (2018) proposed a four quadrant model illustrating the degree to which human touch (low to high) and technology (low to high tech) are central to the service encounter as illustrated by service scenarios and explanations in each quadrant (Figure 3.1). In rationalising the model, they highlight the bottom right quadrant (Emergent Services) as the area that is under-researched with these new technologies likely to transform the role of humans in the service encounter. They also predict that a majority of future service encounters will fall into this quadrant, highlighting the importance in understanding this shift and its impact on the humans involved.

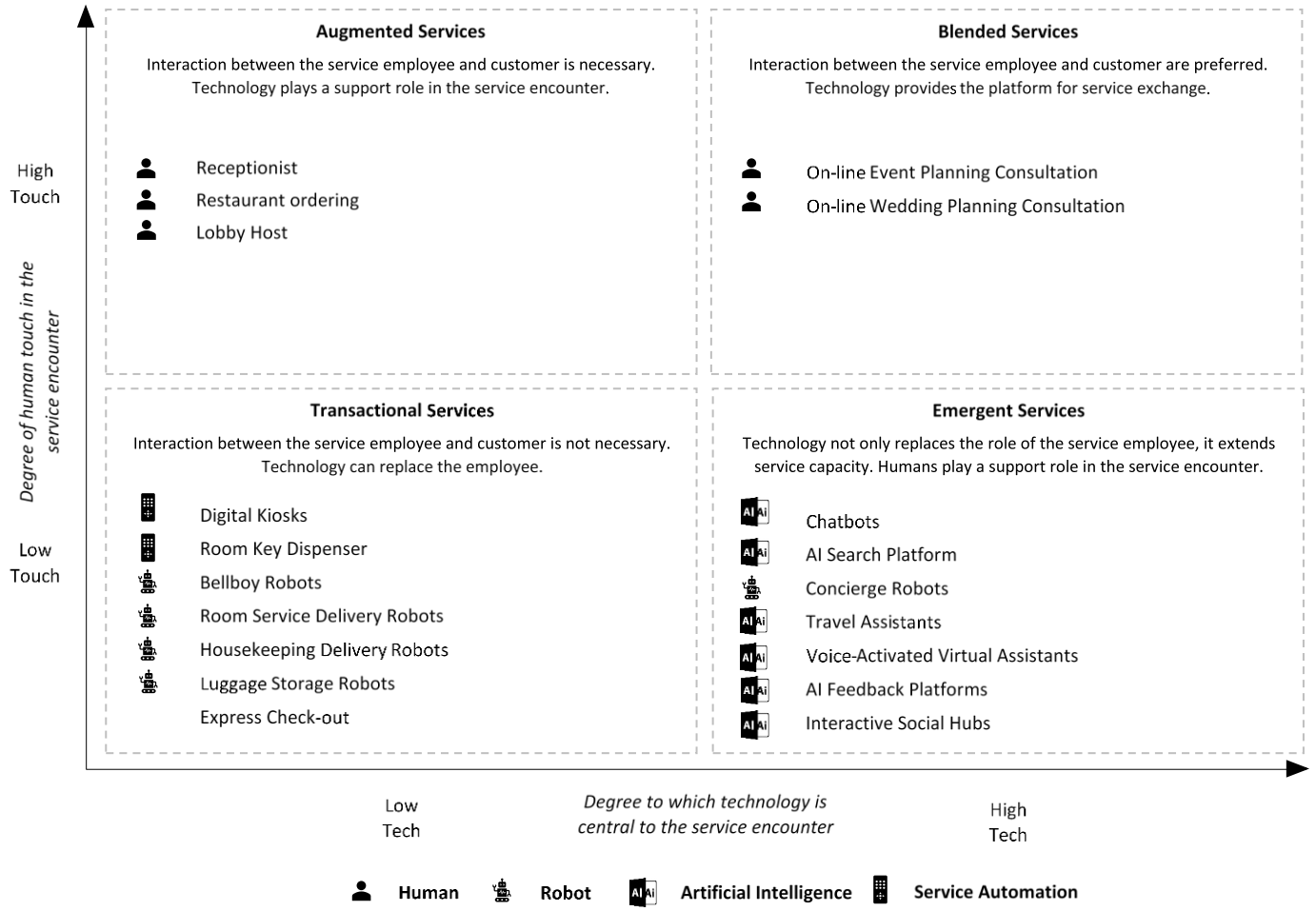
Figure 3.1: Use of technology in service encounters



Source: (Keating *et al.* 2018, p. 768)

Adopting and applying the framework proposed by Keating *et al*, 2018 (Figure 3.1), to hotels specifically, Figure 3.2 shows **RAISA Technology in Service Encounters in Hotels** plotting the degree of human touch in the service encounter (low to high touch on the vertical axis) against the degree to which technology is central to the service encounter (low to high tech on the horizontal axis). Key to note here are the abundant opportunities for Transactional and Emergent Services.

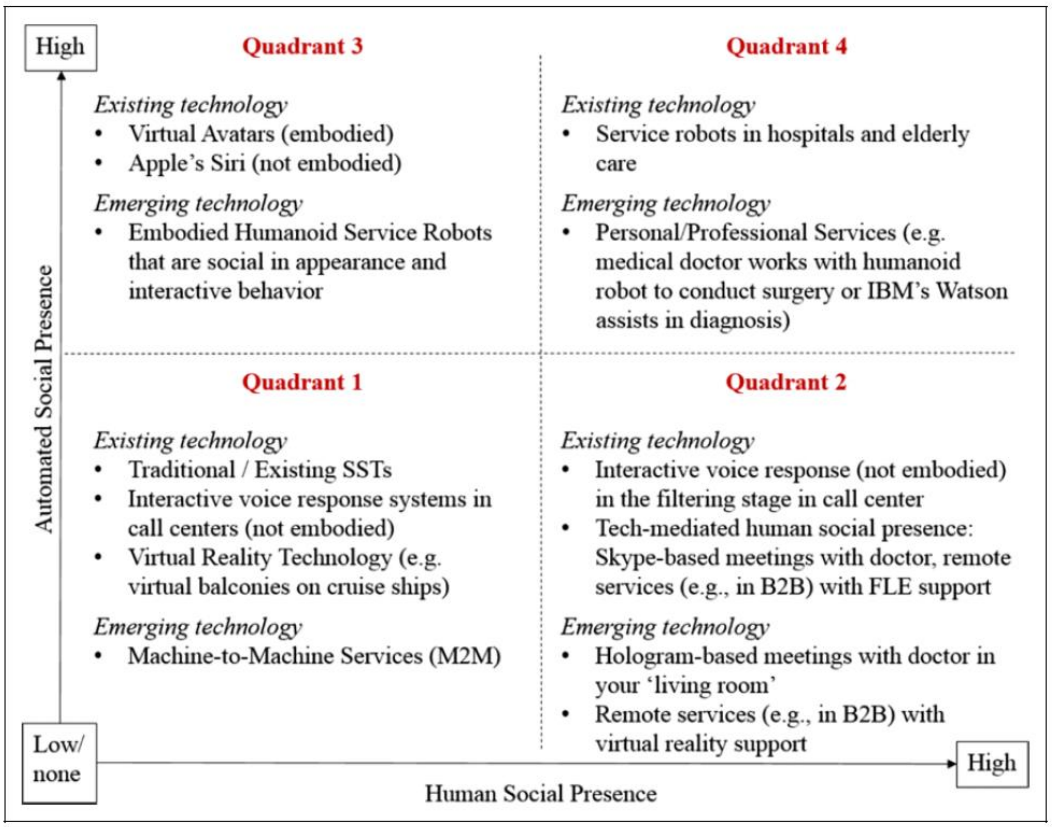
Figure 3.2: Use of RAISA technology in Hotel Service Encounters



Source: Authors own adapted from Keating *et al.* (2018)

Van Doorn *et al.* (2017) proposed a similar model (Figure 3.3) when introducing Automated Social Presence (ASP): a quadrant approach in which Human Social Presence (HSP; low to high) is plotted against Automated Social Presence (low to high). Whilst the examples given are similar between the two models, the differentiating factor in the Van Doorn *et al.* (2017) version relates to their concept of engagement of consumers on a social level. They expect this technology to truly engage customers on a social and emotional level so that both parties benefit from the collaboration. The authors note gaps in the literature for the same (bottom right) quadrant, that is high ASP, low HSP, where they focus their work. In both of these models, the authors are predicting that humans will remain part of the service process: playing support roles to this new technology (Keating *et al.* 2018) or collaborating with social robots to provide service, in environments such as hospitality (Van Doorn *et al.* 2017).

Figure 3.3: A typology of technology infusions into customers' service frontline experiences



Source: (Van Doorn *et al.* 2017, p. 45)

Wirtz *et al.* (2018) proposed a third model, which, again, shares similarities with the former two. In the same matrix format, service delivery examples are given based on the complexity of emotional (simple to complex) and cognitive (simple to complex) tasks. Similar again is the proposal here that the most complex emotional and cognitive tasks will be delivered by a collaborative human-robot team. Finally, Neuhofer *et al.* (2014) proposed an Experience Typology Matrix that links technology and co-creation, plotting the intensification of each against the other; this will be discussed further in Section 3.4.

3.2.2 Technology versus Human Endeavour

Despite headlines that predict millions of jobs being threatened by robots and automation (Collinson 2019, Taylor 2019, Kiersz 2019) it is widely accepted that tasks rather than entire jobs/roles will be automated, at least in the short term (Osawa *et al.* 2017, McKendrick 2018, Huang and Rust 2018) despite the myriad forecasts as to the (rapid) rise of adoption of these new technologies (Euromonitor 2017, Wirtz *et al.* 2018, Van Doorn *et al.* 2017, Bowen and Morosan 2018). The **Human *versus* AI debate** is already well developed (Huang and Rust 2018, Wirtz *et al.* 2018, Van Doorn *et al.* 2017).

Huang and Rust (2018) specify four ordinal and parallel types of intelligence: mechanical, analytical, intuitive and empathetic, listed in order of difficulty with which AI masters each level. They go on to address if companies should replace humans with AI in service provision (considering the nature of tasks, the nature of service and the strategic emphasis of companies) and how companies should do this (market segmentation on preference for human *vs* AI, have both provide service, have AI provide all the service, have AI enhance humans and have AI enhance human connectivity for collective intelligence). Each intelligence type is addressed through augmentation to replacement and hypotheses made in terms of total replacement or integration. *This is explored further in Chapters Five and Six culminating in a new service design model being proposed (Figure 6.2)*.

Wirtz *et al.* (2018) provided an overview and comparison of the characteristics of service robots *versus* front-line employees, considering which types of tasks AI will dominate and where humans will prevail on micro, meso and macro levels. They challenge the Huang and Rust (2018) prediction that AI will be able to perform on a comparative level to humans at,

specifically, the fourth level of intelligence: empathetic. In their various models humans always remain in some role operating both alone in some scenarios (for example in complex emotional/social but simple cognitive/analytical situations, and, low volume heterogeneous tasks) and in collaboration with AI in others (for example in complex emotional/social and complex cognitive/analytical situations, and, high volume heterogeneous tasks).

The debate between the benefits of humans *versus* AI and the ultimate **need for 'balance' (or 'blend')** in the field of hospitality, perhaps more so than other sector (due to the nature of the guest-host human to human relationship) has been well documented (Tuomi and Tussyadiah 2019, Kandampully *et al.* 2018, Ivanov *et al.* 2017, Bowen and Morosan 2018, Tussyadiah 2020a, Neuhofer *et al.* 2015). Ultimately, although increasing automation is highly likely, in the short to medium term greater attention should be paid to the redesign of jobs and business processes as opposed to job losses (McKendrick 2018); *which is the central theme to this thesis.*

McKendrick (2018) believes that jobs will be enriched and elevated by AI with the very best employment opportunities coming from roles that employ AI to link customers to the products and services they need, whilst Tuomi and Tussyadiah (2019) envisage a balance between technology and people by removing irritants but not (all) social interaction. They assert the need to provide a choice: different offerings for different situations and segments, as well as a myriad of ways of going through the actual service processes (Tuomi and Tussyadiah 2019). Bowen and Morosan (2018) support these assertions stating that future service delivery systems will be based on (market) segmentation schemes, taking into account consumers' various and gradual responses to these, principally around consumer generation (age) and the class of service of the hotel. Moreover, Neuhofer *et al.* (2015) recognised the potential risk of overuse and over visibility of technology in the service encounter and equally advocate businesses reflect on their own ideal levels for, and with, their customers.

Contemporarily, borne out of necessity during the pandemic, a paradigm shift is occurring in customers behaviour: their willingness to accept and use digital technologies, (Tussyadiah 2020a, Ivanov *et al.* 2020b, Buhalis 2020, Palmer 2020, Berg *et al.* 2020), which

has been hypothesised to continue afterwards (Baig *et al.* 2020, Emmanueilli *et al.* 2020, Howard and Borenstein 2020, Ivanov *et al.* 2020b), may lead to greater opportunity to speed up the inevitable adoption of RAISA in the service process (O'Neill 2020). *These potential future opportunities are explored in Section 3.3.*

3.3 Future Predictions for the use of RAISA in Hotel Customer Journeys

"Robots have arrived and here to stay" (Ivanov *et al*., 2017) and, indeed, in recent years there has been a widespread growth of the use of RAISA across many industries. Attitudes to AI and Automation in Travel, Euromonitor (2017) suggest that all the signs point to deeper interaction with AI and a shift towards human/machine interactions. These likely changes are applied to the potential annual added value of AI adoption to certain industry sectors, and specialist functions within them; Chui *et al.* (2018) forecast Travel as a sector and Customer Service Management as a function as examples. Tussyadiah (2020b) concurs, predicting that tourism is facing a more automated future driven by the advancements in AI and its related technologies.

Within hospitality this topic is gaining traction too. Not only in the increasing literature (see Section 2.3 for more details), but also in knowledge sharing workshops between Universities and Industry (Bournemouth University 2018, Tuomi and Tussyadiah 2019), trade journals (Walker 2018, Frary 2020), student competitions (Girdhari 2019) and, finally, industry events (Institute-of-Hospitality 2019). The COVID-19 pandemic of 2020 may also have a positive stimulus on the adoption of automation technologies by the hospitality industry when planning for a 'fresh start' in the recovery and rebuilding period after the social isolation restrictions have been lifted (Ivanov *et al.* 2020b, Tussyadiah 2020a).

In order to create a best-practice practical framework for this technology integration a series of critical success factors for its future implementation have been developed (see Section 6.2). These were curated through the examination of the tensions that the changing status of technology may create for customers and employees (Keating *et al.* 2018), including the debate between the benefits of humans *versus* RAISA and the ultimate need for 'balance' in the field of hospitality (Kandampully *et al.* 2018, Ivanov *et al.* 2017, Tuomi

and Tussyadiah 2019). A series of predictions as to where and how RAISA is likely to be incorporated into hotel customer journeys of the future follows.

3.3.1 Future Predications by Hotel Customer Journey Stage

Given that the adoption of RAISA by hotels to date is in its infancy, it seems imperative to assess the ways in which rapidly evolving RAISA may impact the service process in the **future** most, especially as it is also predicted to be equally rapidly utilised (Euromonitor 2017, Van Doorn *et al.* 2017, Wirtz *et al.* 2018, Bowen and Morosan 2018, Tussyadiah and Miller 2020). This is particularly important given that accommodation and food service is the industry sector considered to have the greatest scope for automation due to the high proportion of predictable physical work (Oracle 2017, Chui 2016). Manyika and Bughin (2018) and Chui *et al.* (2018) concur, suggesting that despite being the current slowest adopting sector of AI, the Travel sector (incorporating Hospitality) has the opportunity to reap the highest potential incremental value from it. Several sources suggest that greater adoption of AI will lead to accelerated service (Oracle 2017, Schneider 2017) that is more seamless and hassle-free (Euromonitor 2018a, Euromonitor 2018b) and allows for greater personalisation of the customer experience (Oracle 2017, Euromonitor 2018a, Peterson 2011, Schneider 2017, Seaton 2017). Indeed, Sharma (2017), asserts that hotels of the future will rely heavily on AI and robotics. Law *et al.* (2019) agree, stating that future development of the hotel industry is inseparable with data and propose the future lies in a 'data technology' age, to which it could be argued we already are. Bowen and Morosan (2018) predict that 25% of the "workforce" in 2030 will be made up of robots. It is valuable, therefore, to explore the various facets of the 'service process' in order to reveal the wealth of opportunity for AI adoption particularly in the context of the expanding 'digital world'. Indeed, a conceptual framework for successful implementation of RAISA in hotel service processes is proposed in Table 6.1.

By 2040 Euromonitor (2018a) predicts that the majority of the population will be 'digital natives' with technology affording consumers an 'anytime, anywhere', 'empowered' and 'personalised' commerce experiences that meets their predicted evolved values of 'experiencing more', in 'shorter buying times' and with 'instant gratification'. The report predicts that technology will enhance the customer experience for purchases that require

more consideration. In this **pre consumption stage** or 'try before you buy', 47% of connected customers globally will want to "see or try before buying" (Euromonitor 2018b). Han and tom Dieck (2019) build on this idea and suggest that Virtual Reality (VR) could facilitate allowing potential guests to 'feel' the normally intangible product and service of a hotel experience: its servicescape of lobbies, spas and outlets, without actually being there, before they commit to a booking; a natural extension of the marketing opportunities that websites and 360-degree tours provide today. In the report, Holiday Planning and Booking Process, Mintel (2018a) state that 39% of holidaymakers expressed interest in using VR to experience a holiday destination before they book, and Tussyadiah *et al.* (2016) confirm this potential for mass market consumption of VR experiences. Euromonitor (2017) also suggests that hotel information searches and bookings made through personal digital assistants will grow in the future. Grewal *et al.* (2017) point out that technological innovations such as these are likely to assist customers in making appropriate decisions, feeling less time pressure and have more confidence and greater satisfaction with their decisions.

As Amadeus plan to use Virtual Reality as a travel search and booking experience, allowing customers to 'walk the plane' to choose their seat (Amadeus 2017), hoteliers may do similarly with interactive bedroom floor plans to allow for personal **room allocation (Collins and Cobanoglu 2017)**. Euromonitor (2018a) discusses optimised seating in the venues of the future. Again, this could translate to hotels with guests indicating room preferences not only based on floor/view/proximity to a service, but also on what types of other guests they may be allocated close to as well; for example families may want to be close to other families to avoid the concern of early morning noise from their children playing. Sharma (2017) and Naik and Daptardar (2019) suggest that facial recognition, once on the property, may also be used to assign bedrooms based on guests' preferences, .

On **arrival** at the hotel of the future, self-driven cars will be able to park themselves (Sharma 2017). Bowen and Morosan (2018) predict autonomous cars (a type of robot) picking up guests from the airport and having the ability to perform numerous other tasks (check in; concierge recommendations and tour guide services) on the journey to add both value and engage guests creating a great first impression. Once in the hotel guests may register their biometric data in order to gain entry to the hotel, lifts, rooms *etc*. Facial

scanning may identify guests at multiple touch points, thus enabling tailored alerts based on personal information and stay history (Euromonitor 2018a). The same data may also trigger pre-configured profiles that will automatically adjust lighting, room temperature and music/television channel choice to set the desired mood for each guest on entering their room (Euromonitor 2018a, Sharma 2017, Kabadayi *et al.* 2019). Indeed, in the transport industry Locklear (2019) reports that a leading car manufacturer, Kia, is preparing for future autonomous cars that can adapt their interiors based on the passengers emotional state through the use of AI. The system personalises the cabin interior taking into account all five senses. Euromonitor (2017) predicts further application for 'mood tracking' across varying touch points, including arriving at a hotel reception.

Once in their allocated **room**, guests may also be able to adjust the lighting/music through voice activation/recognition software (Oracle 2017, Kabadayi *et al.* 2019). When discussing Hiltons' proposed Connected Room, Mintel (2018b) accept such functions but suggest customised pictures may also be able to be displayed in guests rooms of the future, to which Kabadayi *et al.* (2019) concur. Leonidis *et al.* (2013) propose that through an ambient ecosystem a series of non-invasive technologies in their proposed 'intelligent hotel room' will deliver intelligent and personalised 'time using' services (*i.e.* the intelligent room constantly monitors the environment and those within it and uses the information to anticipate guests needs by controlling the technology, thus saving them time) to the occupants and improve the quality of existing services. Neuhofer *et al.* (2014) also note the essential customer-centric co-created experience this technology will afford hotels and their guests. At the time of writing this thesis, some of these already seem dated which is perhaps testament to the difficulties in accurately predicting the rate of future of technology development and use. Kabadayi *et al.* (2019) suggest similar ideas including a robot butler unpacking and ironing; room temperature and mattress firmness being adjusted to body weight; and preferences ahead of anticipated arrival as advised automatically by mobile phone. When discussing the home of the future, Euromonitor (2018a) predict connected mirrors in bedrooms will serve as personal stylists (and as social sharing tools), which could give recommendations based on the guest's wardrobe, the day's weather and upcoming activities. For the environmentally conscious, the report goes on to suggest that the ability to measure energy consumption in real-time may be a feature of smart home adoption, with all these ideas easily cross-pollinating into hotel rooms. Indeed,

Tussyadiah and Miller (2019) suggest hotels that have adopted voice-activated virtual assistants in their guest rooms may use them to provide 'nudges' to guests in order to attempt to influence their resource consumption/pro-environmental behaviour through social (evaluative) feedback.

In the front hall, the future **welcome** experience will involve the choice of automated check-in (able to converse in most known languages) or human receptionist for those who have not pre-registered on their mobile phones, along with bellboy bots to deliver your luggage to your allocated bedroom (Sharma 2017). The World Economic Forums report on the Future of Jobs predicts there will be fewer employees in the workforce of the Aviation, Travel and Tourism sector in roles such as Concierges and Hotel Desk Clerks, and, Client Information and Customer Service Workers, even by 2022 (Leopold *et al.* 2018). Automated check-in and out are perhaps the most widely suggested change due to the Coronavirus Pandemic too (Webrezpro 2020, Pflum 2020). McKendrick (2018) corroborates this view and considers Concierges to be one of the top five job roles most likely to be handled by AI or machine learning in the future. Leopold *et al.* (2018) also predict that by 2022, 30% of job tasks involving communicating and interacting will be completed by machines, versus 18% in 2018. Bowen and Morosan (2018) see new service delivery systems reducing the need for a front desk but this is creating a further challenge as to how to maintain a feeling of hospitality without it.

Concierge Bots will craft individual suggestions for experiences, offering recommendations and directions potentially through wearable or implanted technology. These recommendations will very likely be derived from machine-powered AI combing through past interactions and purchase histories (Euromonitor 2018a). Bowen and Morosan (2018) concur suggesting robots will provide recommendations aligned to the user's communication habits, known preferences, decision making patterns and stated goals. Bilgihan *et al.* (2016) also see AI aiding hotels in meeting the needs of customers through the provision of tailored recommendations. The Euromonitor (2018a) report goes on to suggest that the more challenging task of finding a suitable restaurant for a group will also be made much simpler using the same 'machine', with it being able to pinpoint a perfect option for the group's collective appetite.

Hotel guests of the future may enjoy more personalised **Food and Drink** options that appeal to them with Augmented Reality (AR) capabilities facilitating new layers of information regarding dishes and drinks, such as allergens and nutritional data. Enhanced realities may allow guests to experience the 'mixed reality' of being in the kitchen or the bar and seeing/assisting the chef/mixologist in preparing their dish/drink. These possibilities are taken further by Richard Carter in Manzoori-Stamford (2019, p. 34) who is launching technology that not only allows the customer to view an AR version of their menu items at the ordering stage but also the ability to see what other tables are ordering and gift products to them, a practice they coin as "peacocking". Rather than being tied to specific location, delivery of any type of food and drink may be an option to guests anywhere within the hotel (Tuomi and Tussyadiah 2019, Dutton 2018), either by service robot (Sharma 2017, Oracle 2017) or even possibly by drones (Oracle 2017, Collins and Cobanoglu 2017) with voice recognition used to place room service orders (Euromonitor 2018a). Robots may also be used to seat guests in food and beverage outlets (Tuomi and Tussyadiah 2019). Sharma (2017) goes further in proposing that AI will remember your preferences and act on them whenever you visit the hotel. For example, a guest who always drinks a cup of Earl Grey tea at 4pm will find themselves receiving just this through an AI initiated robotic delivery.

Greater **Personalisation** may be achieved through guest identification using biometrics/facial recognition and 3D imaging. These technologies enable 'focused marketing' to guests, and they could be taken further to tailor suggestions based on health/weight (Oracle 2017, Tuomi and Tussyadiah 2019) or measure guest sentiment (Oracle 2017). Euromonitor (2018a) also introduces the idea of emotion-sensing shopping, where they suggest, through the use of facial recognition, that retailers may profile their consumers' emotional state and adjust their service style accordingly. Again, this may possibly be even more applicable in a hotel environment. Tuomi and Tussyadiah (2019) build on similar ideas suggesting that intuitive robots may deliver empathetic service in the future and may learn to give personal recommendations.

In terms of **payment and departure**, initially pre-registered digital wallets/mobile wallets could make transactions seamless and more secure (Levi 2019, Euromonitor 2018a, Euromonitor 2018b) and eventually biometrics (such as a fingerprints, iris scans or facial

recognition) will facilitate secure, ambient payments (Levi 2019) where no physical Point of Sale is required (Levi 2019); guests' accounts will be automatically debited for the products and experiences enjoyed in the hotel as they leave (Euromonitor 2018a).

Post-stay feedback in the future may be gathered verbally through voice activation/recognition software (Oracle 2017). This may be particularly important as reading reviews was rated as the 13th most popular mobile phone activity in Euromonitor International's 2017 Consumer Lifestyles Survey (Euromonitor 2019).

Further uses of AI in hotels of the future could also include cleaning (Sharma 2017, Ivanov *et al.* 2017, Naik and Daptardar 2019), laundry (Ivanov *et al.* 2017, Collins and Cobanoglu 2017), dishwashing (Ivanov *et al.* 2017), maintenance (Sharma 2017), employee management (Sharma 2017), power management (Sharma 2017, Naik and Daptardar 2019), energy monitoring (Rogerson and Sims 2012), supply chain management (Naik and Daptardar 2019) and, finally, security (Sharma 2017) with all of these contributing to possible full service automation in the future (Ivanov *et al.* 2017). These are broadly outside or invisible to the guests' journey and therefore beyond the scope of this thesis.

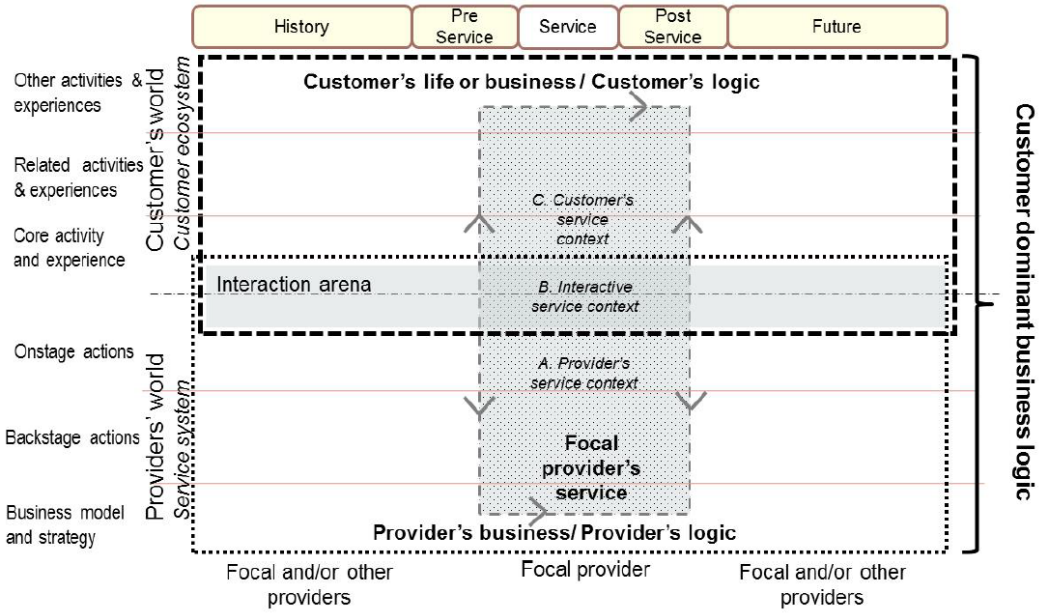
With this wealth of future potential applications of RAISA and more general service technologies, the need for them all to 'talk to each other', both inside the organisation and with key business partners, is of strategic importance. Buhalis and Leung (2018) introduce the concept of **interconnectivity and interoperability** through smart hospitality, which sums up this need and, also, the wealth of opportunities in the hospitality ecosystem. It is these opportunities that put hotels in a unique position to apply the theoretical concept of CDL which is explored below in Section 3.4.

3.4 Hotels Unique Position to Leverage Value from Customer Dominant Logic

This thesis argues that hotels are in a unique position versus all other businesses to understand better the customer's world and subjective logic, an essential element of CDL (Heinonen and Strandvik 2015). This is due to (1) the advanced warning of customer stays, (2) the intimacy of customers living in them during their stays, (3) the nature of hotel stays being a prolonged series of service interactions, and (4) the possibility of repeat stays. Using

the model of Customer Dominant Logic of Service (Figure 3.4) as a framework, this Section applies this argument to the various elements of the model: those that go beyond the traditional providers service context (and occupy the upper part of the diagram). The basis of this approach is best understood by analysing the matrix.

Figure 3.4: Customer Dominant Logic of Service



Source: Heinonen and Strandvik (2015, p. 476)

The **chronological stages of the CDL model** (History through to Future) dovetail well with the nature of hotel stays being a prolonged series of service interactions with clear 'pre-service' and 'post-service' stages (*e.g.* making a reservation and leaving a review on TripAdvisor). Hotels may also keep detailed profiles of each customer (guest history) which assists them in understanding better (some of) the 'history' of the customers' world (through their past behaviours/use/spending whilst at the hotel). This history may equally inform the 'future' of the customers' world, their likely behaviour/patterns/likely expectations. Through use of this known data, hotels can act to remain focal in their customers' worlds not only through proactive marketing but also by recognising and celebrating special occasions (whether the customer is at the hotel or not) and milestone stays for example.

The **Related Activities and Experiences** (to a hotel stay) can be numerous but crucially are often well understood by the hotel through either the booking process (*e.g*. an airport pick-up through the concierge, and therefore flight number, airport and number of passengers *etc.*) or taken details at the reservation stage to inform their own service process (*e.g.* arrival time and transport type). These related activities and experiences could also include staying at other hotels within a group or chain, with which the focus hotel has sight of and can share the data/history.

Hotels are equally in a unique position to capture details of the **Other Activities and Experiences** (of their customers') both pre-stay at the reservations stage (*e.g.* details of special occasions, previous travel destinations, *etc*.), but also, through well trained staff picking up on preferences/behaviour/details of conversations/observations and noting these during the stay (service stage).

Due to the factors outlined above and, in particular, the intimacy of customers living in hotels during their stays and the nature of these being a prolonged series of service interactions, **hotels are in a unique position to leverage value from a detailed insight in their customers' worlds** and are therefore involved in the customers' context (Heinonen and Strandvik 2015). This may include understanding of their occupation and employer, their relationships and family along with their names, ages and birthdays, dates of their special occasions, their car(s), their special needs/disabilities, personal preferences, medical and dietary requirements, habits, behaviours – the list could go on and this thesis argues, no other business type would have access/record of all these insights.

Hotels have been leveraging (at least some of) this value for many years both through long-serving staff, but also legacy property management systems that have acted as databases to retain this information. This has allowed them to create a (uniquely) rich picture of their customers from these multiple elements albeit through a keen eye to detail, manual recording and management rigour. Going forward **RAISA technologies can facilitate, automate and interconnect an even better understanding of this (customers') 'world' and therefore its integration into the design of service processes**. A 'tool' to facilitate this process was recognised as a future research area (Heinonen *et al.* 2010), Heinonen *et al.* (2013b) identified the need for a method that went beyond the focal scope of the company

to include the life and ecosystem of the customer and Heinonen and Strandvik (2015) advocated the creation of detailed managerial guidelines for applying CDL. This thesis will provide one such 'tool' through its new conceptual SPD model (Figure 6.2).

3.5 Conclusion

Despite its sporadic and largely experimental adoption to date, the use of RAISA presents significant promise for revolutionising service provision within hotels (Section 2.3), whilst, at the same time, helping to address some age-old challenges within the sector (Section 1.1). It is the future (Section 3.3), but care is needed in devising service schemes that accommodate the 'wishes' of customers with the 'fears and needs' of employees. Finding the right balance between what type, how much, and indeed where technology is deployed alongside/in place of human employees in the hotel service process is going to be crucial both now, and also in the future (Section 3.2). This will involve consideration being given to both the physical form of the servicescape but also the service design stage that precedes it, *and this is of paramount importance to this thesis*. Indeed, no service design model has been specifically developed to facilitate the integration of this RAISA technology into service processes nor one that focuses principally on the customers' world, over the company lens (Section 2.2). The critical success factors listed in Section 3.2 form a practical guide to these essential considerations and will need to be applied in differing formats to each unique organisation, depending on its own strategic service vision, target markets and proposed service delivery system. How these visions/concepts/systems ultimately allow, function and accommodate the needs and hopes of customers and employees as the infusion of these new technologies proceeds will require considerable forethought in each case. There is not a 'one solution fits all' scenario to this challenge, rather, considerable intelligent forethought is required to make the 'new hotel environment' a stimulating and enjoyable place for guests and employees alike. Therefore, CDL is identified as a theoretical foundation to develop a new SPD model to add value to service design, through the unique opportunity hotels have (Section 3.4) and the optimal situation for RAISA incorporation.

Chapter 4. Methodology

4.1 Introduction

Chapter 1 provided a brief overview of this study, the stage, context and need for such research. It also proposed four primary research questions, which are repeated here:

- What are the gaps resulting from the slower progress in SPD compared to the development of service technology?
- How will RAISA be utilised in the Service Process of the future?
- What are the implications and critical success factors for the integration of RAISA technology into the Service Process?
- In what ways can CDL provide improved value to the successful implementation of RAISA in Hotels and help address the gaps identified above?

In Chapters 2 and 3 the theoretical unpinning, frameworks and justification for this study were explored. This chapter outlines the research methodology used in the study, and its structure and application which are seen as critical to producing valid results. In Section 4.2 an overview and justification of the methodology is provided, while Section 4.3 details the specific methods and techniques used.

4.2 Methodology

Despite the growing interest in the application of RAISA within the hotel industry, the literature covering this topic is relatively sparse, and no precedence has been set in terms of methodological tools to investigate this area using empirical, quantitative methods. To some extent, this is a result of the contemporary and evolving nature of this subject. However, Yin (2003) suggests that when research is focused on exploratory issues like 'how', 'when' or explanatory questions, and, when the research focus involves examining contemporary events, as opposed to historical ones, the **qualitative case study method** is both appropriate and preferred.

The case study method is a widely utilised and, indeed, is an accepted research method in the field of technology in relation to the hotel industry, with it previously adopted by several researchers including:

- Cho (1996) investigating creating competitive advantage through IT application in the lodging industry;
- Connolly (1999) when researching IT investment decisions in the context of hotel global distribution systems; and
- Neuhofer *et al.* (2015) using a hospitality case study to review smart technologies for personalized experiences.

The case study is a qualitative research method to help understand complex phenomena in their natural settings *i.e.,* within the company context (Connolly 2005). It can play an influential role in building and advancing the body of knowledge for hospitality IT. It is also useful for studying IT trials, tribulations, and errors in the industry to learn what works, what does not, and why, and for grounding researchers so that they can focus on practicality and application rather than merely theory (Connolly 2005).

An exploratory study is a necessary first step in understanding any evolving new business area in order to start building a foundation for theory (Connolly, 2005). This thesis is no different in this regard and will be a front runner in attempting to start to apply the use of RAISA in service delivery and how this should best be designed as part of the service process.

Two conceptual contributions are made in Chapter Six: an implementation process for RAISA into hotel service delivery using a design thinking approach and a new Service Blueprinting matrix model that incorporates the ability to select whether to employ RAISA/human/or a combination at each distinct touch point in the customer journey. It also incorporates elements of CDL to help forward knowledge in the area of SPD. The matrix model is then applied to a series of four exemplars to demonstrate its versatility across customer types.

These elements of methodology have been chosen in order to develop and understand further the current practices and applicability of any new conceptual developments.

4.2.1 Multiple Case Study

To achieve these aims the research used a multiple case study design, where four hospitality companies were selected as the subjects of enquiry to form 'Best Practice Case Studies'. For clarity, the term 'best practice' is used in a business context to denote leading industry examples that are likely to increase the success of other adopters following the lead of the initial role models (Hallencreutz and Turner 2011). The case study companies were selected based on two main criteria. Primarily, the company had to be in the hospitality sector. Secondly, the company had to represent a best practice example by providing evidence of the successful integration of RAISA into their service process. Further details of the selection criteria are outlined in Section 4.3 and the specific companies and their credentials are discussed in Section 5.2.

The focus of this study is not only to understand better the current state, but, more importantly, to predict the future role and benefits to be realised through the adoption of RAISA in service delivery and to determine how best to incorporate it in service design. Therefore, the chosen methodology focuses on practicality rather than theory through the involvement of senior level executives; attention is given to the current application of RAISA and its future adoption within their organisations and the implications for the key stakeholder groups of Guest/People/Business (Connolly 2005).

The multiple case study methodology (also known as comparative cases or a collective case study) was chosen to provide a more robust insight (Connolly 1999). Whilst each case may stand alone, it is the cross comparison and contrasting between the cases that allows for richer detail and insights to be drawn from the topic being investigated (Eisenhardt 1989). The same analysis may allow for patterns to be observed and idiosyncrasies identified (Connolly 1999). Finally, the multiple case study also lends greater credibility to the results through higher order external validity (Yin 2003). This is why this approach was adopted.

Within the context of the case study approach and in order to develop a comprehensive understanding, a selection of qualitative approaches drawing from multiple sources, was employed (Yin 2003). These methods included:

- semi-structured interviews with senior executives from each company;
- documentary material (analysis of company documents, websites, data and past interviews plus case studies);
- observations made during company site visits; and
- a systematic literature review.

These approaches yielded material from which theoretical principles were later inferred (Mitchell 2000). Given the volume of material and data collected, data reduction was required. Miles and Huberman (1994) describe this as the process that takes the written-up [interview] transcriptions and simplifies them through selection, focusing and abstracting. They suggest it may occur through a variety of means including coding, theming and summary writing. Importantly, data reduction is seen as part of the analysis and not separated from it.

For this data reduction and analysis the thematic analysis method was used (Cope 2016). The selection of four companies and multiple research methods (*i.e*., data collection and analysis techniques) generated a more holistic understanding of the hospitality firms' current adoption of RAISA in service delivery. It also provided opportunities for triangulation, validation of results and research validity (Yin 2003, Cho and Olsen 1998).

4.2.2 Analysis of Case Study Methodology

Having selected the multiple Case Study Methodology as most appropriate, the Pros and Cons of the methodology are considered and briefly applied to this study in the following paragraphs. Details of the specific methods and techniques used for this study will then be laid out in the following Section 4.3 and summarised in Table 4.1.

In theory at least, the case study methodology is a rich, investigatory approach that has some **strengths** over other techniques. It includes (1) *a holistic approach to studying events in their natural setting* (Connolly 1999, Yin 2003); the contextual setting is clearly important in this study*;* (2) *a tool strong in heuristic value* (Connolly 1999); allowing a knowledge base to be created and guide future research*;* (3) *a highly interactive and flexible design* (Eisenhardt 1989, Connolly 1999, Yin 2003); thus allowing the researcher to fine tune and modify their research as they go*;* (4) *the use of multiple sources of evidence and techniques* (Yin 2003); as discussed above a number of different sources will be employed in this study*,* and (5) *a variety of uses and application* (Yin 2003, Connolly 1999), this study will facilitate this through description, exploration, illustration and explanation of the acquired research data*.*

Conversely, it is also important to be aware of some of the **limitations** of the case study methodology in order to try and circumvent them or at least compensate for them where possible, as detailed below. These include: (1) *perceived lack of rigour* (Yin 2003) – this will be overcome through a detailed, methodical and disciplined approach and research design*; subjectivity* (Connolly 1999) – in an attempt to minimise this, the study has attempted triangulation, use of experts, multiple sources of evidence and good case study protocol (Yin 2003)*;* (3) *little basis for scientific generalisation* (Connolly 1999) – the use of a multiple case study method builds on validity here, but as this is an exploratory investigation, generalisation is not a prerequisite; and (4) *time-consuming effort and voluminous, unreadable documents* (Connolly 1999) – this challenge will be handled through disciplined management of tracking, reduction and analysis of the data at hand (Miles and Huberman 1994)*.*

4.3 Method

Details of the specific methods and techniques used for this study are laid out in this Section and summarised in Table 4.1.

Four case studies were selected based on the following criteria:

- each had to be a hospitality organisation, preferably a single hotel or chain

- the organisation had to be UK-based or have a presence here (to allow for interview access)
- it had to deploy at least one type of RAISA in its service delivery, and
- a Director or C Level executive had to be available for interview

In addition, the availability of secondary data (company documents, websites, data and past interviews plus case studies) helped determine the final choice of case study. A sample size of four cases was chosen as sufficient to develop a base of understanding from which future research relating to RAISA in SPD can be developed.

Table 4.1: Case Study Method

Stage	Step	Reference
Define and design	Conduct preliminary literature review and draft initial research questions	Section 1.1
	Complete detailed literature review	Chapter 2
	Formalise research questions	Section 1.2
	Select cases and gain agreement	Sections 4.4.1 – 4.4.4
	Design data collection protocol including interview questions	Appendix 1
Prepare, collect and analyse	Complete secondary research and prepare for each case study interview	Sections 4.4.1 – 4.4.4 Appendix 1
	Conduct case study interviews	Appendices 2 - 5
	Transcribe individual case study interviews	Appendices 2 - 5
Analyse and conclude	Conduct cross case analysis, coding and initial results	Chapter 5
	Prepare final case study results tables, figures and discussions	Chapter 5
	Draw conclusions	Section 5.4 and Chapter 7

Source: Author's own, adapted and expanded from Connolly (1999) and Yin (2003)

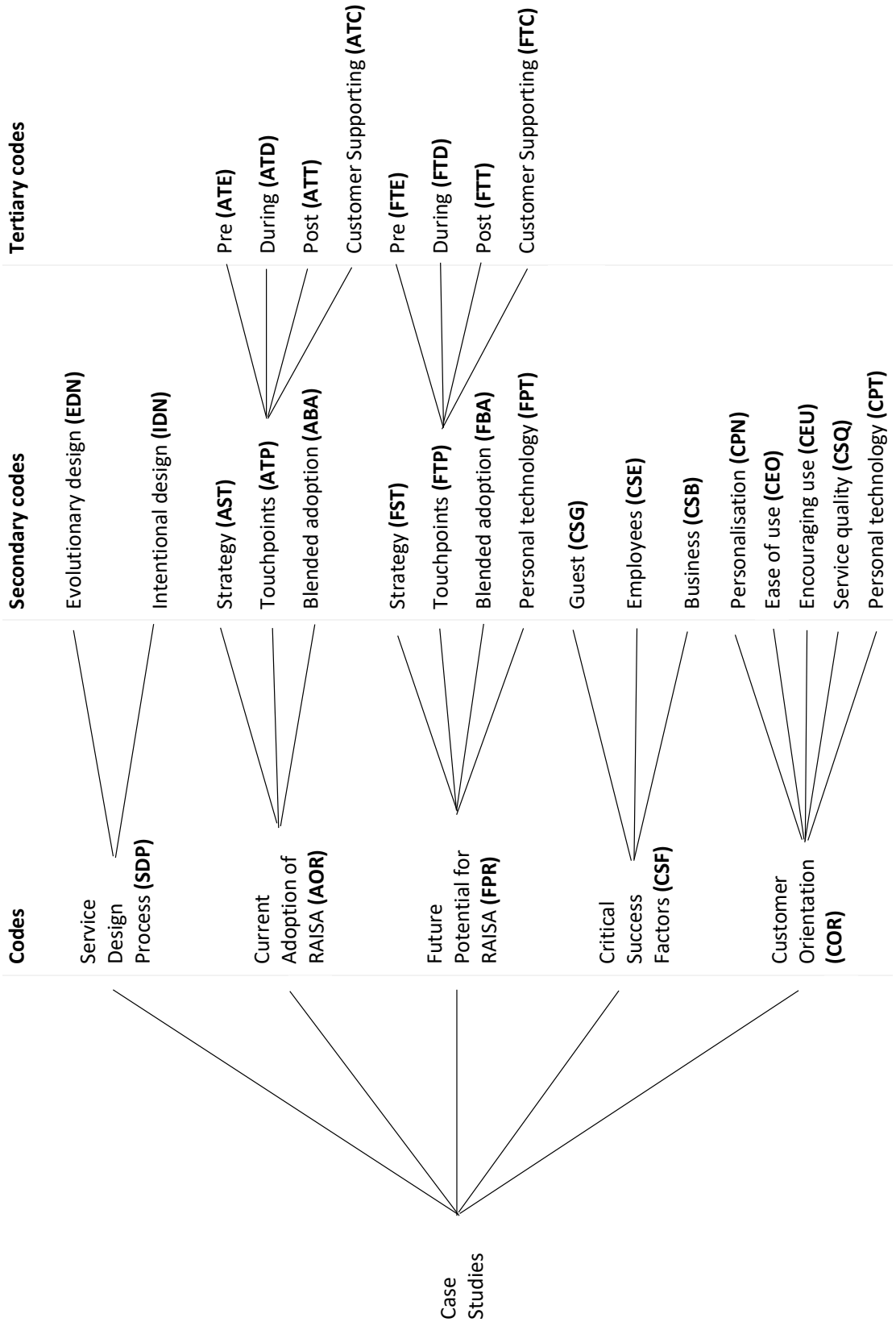
4.3.1 Case Study Interviews, Cross Case Analysis and Coding

Semi-structured interviews were chosen as the data gathering method because of its effectiveness in exploring new phenomena (Connolly 2005) and allowing the participants to share rich descriptions (Richard 2013). They also provide rich data from a limited number of cases/participants (Brewer 2000), while leaving the data up to the researcher's interpretation (Richard 2013). The researcher also has extensive experience in conducting interviews (see Section 1.2). These interviews with Directors or C Level executives aimed to evaluate how RAISA has been introduced into the service process in their businesses. In selecting the interview participants, it was key that they were up to date with current RAISA technology, and had an overarching understanding of why and how the technology had been adopted by their organisations. When studying new, emergent phenomena, Bogner and Menz (2009) stress the importance of selecting experts with relevant interpretive and procedural knowledge. All the interviews, which were conducted face-to-face and lasting approximately an hour, were recorded and transcribed using Otter transcriber software for analysis (see Appendices 2 - 5). The participants were recruited initially through their LinkedIn profiles, and then more formally by email; involvement was voluntary, and each signed a Participant Agreement Form strictly adhering to the ethics process (approval was granted ref. 27601). The same 'core questions', which were based on the literature review and research questions (see Appendix 1), were used in the four interviews, during which supplementary questions were asked in order to elaborate upon the responses of the participants.

The data collected was explored and categorised using the **thematic analysis** method (Cope 2016). Thematic analysis was chosen to allow multiple sources of information to be combined to provide an in-depth picture (Creswell and Poth 2007); to enable personal experiences to be incorporated into the study without disrupting its flow (Creswell and Poth 2007); and to formulate an overview of a subject to underpin further study (Cope 2016). Analytical codes were first drafted to reflect a theme in the data and allow deeper exploration of these topics through reducing and organising the data. The initial analytical codes stemmed from the research questions, the background literature and the interview questions. These primary analytical codes were then listed in a codebook and secondary codes developed under each one, with further tertiary codes where needed. The

secondary and tertiary codes facilitated the data being further refined and organised around sub-themes, which are illustrated in the coding map (Figure 4.1) and defined in the table of occurrences (Table 5.2). In the coding process, each transcript was read manually by the researcher multiple times to code accurately the data into themes using the analytical codes. A manual method was selected to allow the researcher to become fully conversant with the data and understand its nuances. Selective coding was used to identify responses relating solely to the topic of interest and removing unrelated responses, some of which are listed for possible future exploration (Section 5.3.7) despite not being included in the major findings in Section 5.3. This overall process allowed the refinement and development of the topic using data analysis, with results and discussion presented in Section 5.3.

Figure 4.1: Coding Map



Source: Authors own

Chapter 5. Case Study Results

5.1 Introduction

Within this Chapter, Section 5.2 introduces the chosen Case Studies. The results are then presented and discussed in Section 5.3. The key elements of definitions and the occurrences of these from the coding process are outlined in Table 5.2. Sections 5.3.1 to 5.3.6 will discuss, compare, and contrast the results of the case studies that were introduced in Section 5.2. The major findings from the case study interviews are then summarised in Table 5.3. A list of other factors not included in the major findings follows detailing points of interest unique to certain cases that will not be addressed in the conclusions but, importantly, may warrant future study are summarised in Section 5.3.7. Following this discussion of the results, brief conclusions from the case study interviews are drawn in Section 5.4. Further overall conclusions of the entire study will be made in Section 7.2 plus the limitations noted in Section 7.3 respectively.

5.2 Case Study Profiles

Prior to the discussion of the results in Section 5.3, a brief introduction to each of the four case study organisations is provided, detailing the key RAISA they adopt, and the Senior Executives interviewed. It is interesting to note that different forms of RAISA are deployed at various stages in the service process across the organisations as summarised in Table 5.1.

5.2.1 Case Study 1: **CitizenM**

Case Study 1 is a disruptive brand that has successfully challenged the traditional hotel model. The chain opened its first hotel in 2008 and now has 20 hotels across Europe, America and Asia with a further 15 under development. Central to its mission has been the aim to offer affordable luxury to today's modern traveller in the big cities of the world. Technology has played a central part to this, with the promise of high-speed self-service check-in and out and a 'MoodPad' that allows guests to control the entire ambience of their rooms (CitizenM 2019). Incorporated in 2015, CitizenM Holding B.V. is the global ultimate owner of the corporate group (Orbis 2019, "BvD ID n° NL64870138").

Anonymised details of the Interviewees are provided in Table 5.1.

5.2.2 Case Study 2: **McDonald's**

Case Study 2 is an international fast food retailer. Founded in 1955 and first incorporated in 1964, McDonald's Corporation operates and franchises McDonald's restaurants. It is currently the world's largest chain of hamburger fast food restaurants, serving over 64 million customers in 33,000 restaurants across 118 countries each day (Orbis 2019, "BvD ID n° US362361282"). Their 2018 annual company report, the Velocity Growth Plan which is already in place, is driven by three accelerators: Experience of the Future, Digital, and Delivery. These accelerators each have technology at their heart, including the promotion of customer use of self-service kiosks, a global app and digital menu boards (McDonald's 2019). In 2019, McDonald's acquired Dynamic Yield, a digital start up leader in personalisation and decision logic technology whose technology they are using in their stores, specifically to optimise digital menus, and also Apprente, an early stage leader in voice technology that they were trialling in their test restaurants (Financial Times 2019).

Anonymised details of the Interviewee are provided in Table 5.1.

5.2.3 Case Study 3: **Cheval Collection**

Case Study 3 is a luxury service apartment operator in London, UK. Having opened its first apartments in 1981, it now operates 512 apartments over 8 properties with a focus on exceptional service and quality. Central to this focus is the collection's approach to having an in-house team to manage every element of its operations, its investment in technology and expertise in technical services. The new technology the Collection is using includes an AI-enabled booking engine and integrated guest app (Cheval Collection 2019). The introduction of this technology led to the group being nominated for the Best Use of Technology award at the Catey Awards in 2019 (Criton 2019).

Anonymised details of the Interviewees are provided in Table 5.1.

5.2.4 Case Study 4: **Edwardian Hotels**

Case Study 4 is a collection of individual hotels in the UK. Incorporated in 2006, it operates Radisson Edwardian Blu hotels, which range in size and scope and cater to a diverse range of guests (Orbis 2019, "BvD ID n° GB05986673"). Today, privately owned, Edwardian Hotels London operates Radisson Blu Edwardian hotels in London, Heathrow and Manchester, the May Fair Hotel London and a fast-growing range of distinctive restaurant, bar and spa brands. The brand claims central pillars of innovation, service and a culture where all employees are hosts, and boasts a number of awards including several for Information Technology, centred on their 'Virtual Host, Edward': an automated, intelligent text-based interaction service (Edwardian Hotels London 2019).

Anonymised details of the Interviewee are provided in Table 5.1.

Table 5.1: Case Study Overview

Case Study	**Hospitality Organisation Type**	**Type of RAISA adopted**	**Stage in Service Process**	**Interviewee(s)**
1	Hotels	Service Automation	Check In In Room Check Out	1 – Group Operations role (Male) 2 – Area Manager role (Female)
2	Fast Food Restaurants	Service Automation	Ordering	3 – Global Technology role (Male)
3	Serviced Apartments	AI	Booking Pre stay and throughout entire process	4 – C Level Operations role (Male) 5 – Senior Marketing role (Male) 6 – Senior IT role (Male)
4	Hotels	AI	Pre stay and throughout entire process	7 – Group IT Directors role (Male)

Source: Authors Own

5.3 Results Discussion

Table 5.2: Table of Code Definitions and Occurrences

Primary code	Definition	Secondary code	Definition	Tertiary code	Definition	Possible Occurrences	Actual Occurrences
Service Design Process **(SDP)**	The design of operational processes that interface between the customer and the organisation.	Evolutionary design **(EDN)**	Service processes that have evolved rather than being intentionally designed			4	4
		Intentional design **(IDN)**	Service processes that have been intentionally and proactively designed			4	2
Current Adoption of RAISA **(AOR)**	The use of RAISA by an organisation in its service process	Strategy **(AST)**	The strategy driving the adoption of RAISA			4	4
		Touchpoints **(ATP)**	The direct interfaces between the customer and organisation where RAISA is currently adopted in the service process	Pre **(ATE)**	The pre-stay interfaces (pre arrival at the organisation) where RAISA is adopted	4	4
				During **(ATD)**	The during stay interfaces (from arrival to departure from the organisation) where RAISA is adopted	4	4
				Post **(ATT)**	The post-stay interfaces (following departure from the organisation) where RAISA is adopted	4	0
				Customer supporting **(ATC)**	RAISA adopted in supporting functions that are not directly at the customer interface	4	3
		Blended adoption **(ABA)**	RAISA adoption that involves a combination of both the technology and human involvement in the service provision			4	4

Primary code	Definition	Secondary code	Definition	Tertiary code	Definition	Possible Occurrences	Actual Occurrences
Future potential for RAISA **(FPR)**	The future planned use of RAISA by an organisation in its service process	Strategy **(FST)**	The driving decisions behind the future planned adoption of RAISA			4	4
		Touchpoints **(FTP)**	The direct interfaces between the customer and organisation where RAISA is planned to be adopted in the future service process	Pre **(FTE)**	The pre-stay interfaces (pre arrival at the organisation) where RAISA is planned to be adopted in the future service process	4	3
				During **(FTD)**	The during stay interfaces (from arrival to departure from the organisation) where RAISA is planned to be adopted in the future service process	4	4
				Post **(FTT)**	The post-stay interfaces (following departure from the organisation) where RAISA is planned to be adopted in the future service process	4	1
				Customer supporting **(FTS)**	RAISA that is planned to be adopted in supporting functions that are not directly at the customer interface	4	2
		Blended adoption **(FBA)**	Future planned RAISA adoption that involves a combination of both the technology and human involvement in the service provision			4	4
		Personal technology **(FPT)**	A hardware device that is owned by the user (employee or customer), typically a smart 'phone			4	3

Primary code	Definition	Secondary code	Definition	Tertiary code	Definition	Possible Occurrences	Actual Occurrences
Critical Success Factors **(CSF)**	A crucial component to an organisation in achieving a certain goal	Guest **(CSG)**	A crucial guest related component to an organisation in achieving a certain goal			4	4
		Employees **(CSE)**	A crucial employee related component to an organisation in achieving a certain goal			4	4
		Business **(CSB)**	A crucial overall business or financially related component to an organisation in achieving a certain goal			4	4
Customer Orientation **(COR)**	An emphasis on the customer and their world in designing and delivering service	Personalisation **(CPN)**	A specific initiative that facilitates the service to be individually tailored to the customer			4	4
		Ease of use **(CEO)**	A focus on the simplicity of the use of the RAISA technology by the customer			4	4
		Encouraging use **(CSU)**	An intentional action to increase the likelihood of adoption of the RAISA technology by the customer			4	3
		Service quality **(CSQ)**	A specific initiative that aims to increase the quality of overall provision to customers			4	4
		Personal technology **(CPT)**	A hardware device that is owned by the customer, typically a smart-'phone			4	3

5.3.1 Service Design Process

This section deals with the Service Design Process and, specifically, evidence relating to evolutionary design and intentional design. Whilst there is evidence across all the case study interviews for evolutionary design in the service process when introducing RAISA, only two interviews cited intentional (re-)design of their service processes, when incorporating it (see Table 5.2). The summarised major findings in this category are presented in Table 5.3 and discussed further below.

The **evolutionary design** evidence stems from a variety of starting points: customer behaviour in response to text message confirmations (Case Study 4), a management idea being developed (Case Study 3) and local experimentation in a territory (France) of a global company (Case Study 2). Conversely, in Case Study 1, an agile approach was adopted where the organisation planned to learn through how the RAISA was actually used and the data that supported that.

> *"But we should also be clear and agile in our approach and the implementation of that part. As opposed to what hospitality seeks to do is we only do it when it's fully formed and polished and understood. Actually, to be able to play with this and be much more agile in your approach is far more how we need to operate and do what we're doing"* (Appendix 2, Lines 444-448).

Company culture may well play a part in the approach taken in Case Study 1 and the willingness to innovate in Case Studies 2 and 4; in Case Study 2 in the specific territory and in Case Study 4 with technology in general.

Whilst **intentional design** is mentioned in two case studies, one interview (Case Study 3) stated that they would use a more logic-based model for any future endeavour, not that they had actually done so.

> *"So I guess the answer is, probably initially no. But yes, for any future endeavour. . . Yeah, probably be logical based on any kind of feedback that we can collect"* (Appendix 4, Lines 261-265).

Case Study 2 provided the only evidence of intentional design being used when adopting RAISA into the service experience. This included consideration of the whole customer journey and utilised tools such as an electronic model to emulate pinch points and friction points; innovation centres (that facilitate pilot tests) and, ultimately, servicescape redesign.

> *"we have an electronic model we've used for years. So you can start to emulate where the pinch point, where the friction points are. Three bases such like we have in Romania, Lille and Illinois and innovation centres have big warehouse, the full kitchens in there. We bring in crew, members of the public, both to run transactions . . . Or we can bring customers in and get their feedback on things like test or experience . . . We do a lot of pilots"* (Appendix 3, Lines 155-161).

The more intentional approach taken by the organisation in Case Study 2 is most likely due to its size, resources and the need to minimise the potential risks associated with such a step change.

It appears that the adoption of intentional SPD has been largely sporadic to date, and preference given to experimental approaches to implementing RAISA in service processes. However, some of the case studies show an appetite for a more formal methodology, although this would need to encourage an evolutionary and flexible approach to design style. These research outcomes contribute to the ongoing academic debate of the incorporation of technology into SPD models that are accessible for professional practice. It also points to further research on the factors that influence practitioner take up of SPD models, and the need for more intentional approaches, as the complexity of SPD increases with further technology adoption.

5.3.2 Adoption of RAISA

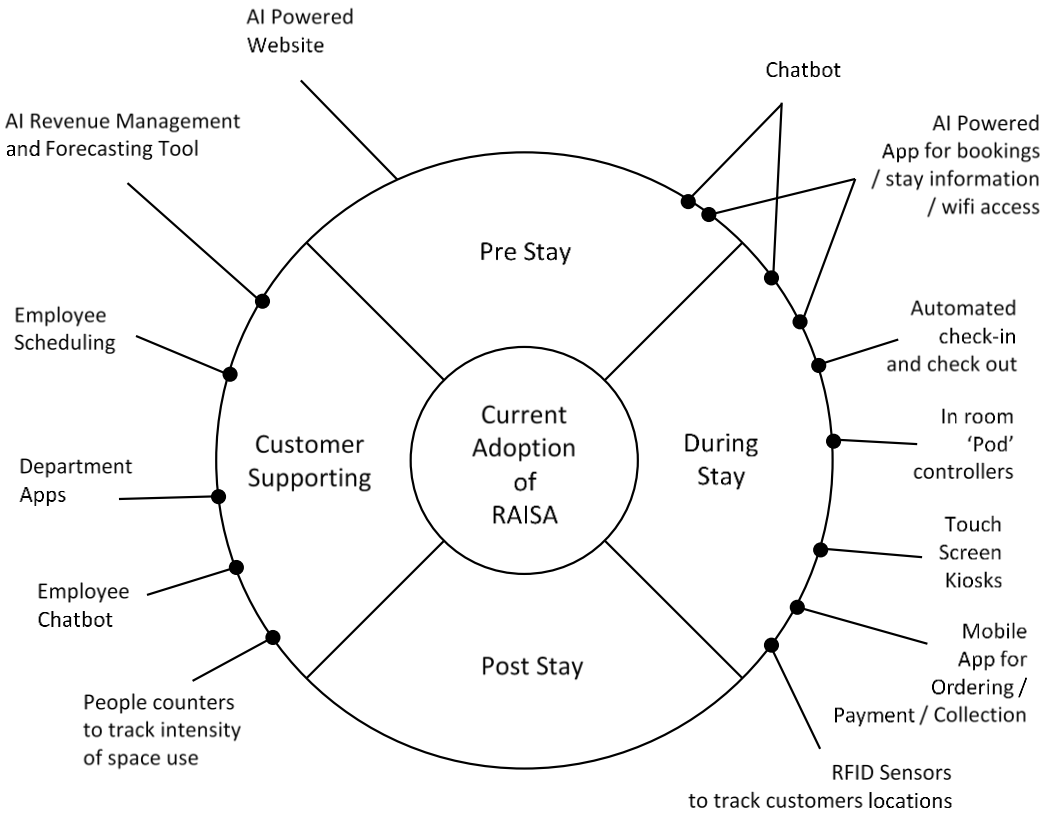
The following section covers the underlying strategies relating to the adoption of RAISA and the customer journey touchpoints where it has been adopted, and in what guise.

There was a range of **strategies** underpinning the adoption of RAISA across the case study organisations including: increased operational complexity; labour

costs/availability/shortages; a desire to empower guests; to enable employees to add greater value to the business (through allowing them more time with guests and employing technology to take care of the processes); to combat a decline in direct bookings; and to migrate some content on-line. These strategies demonstrate a balance of drivers for adoption across the guest, employee and business pillars.

Figure 5.1 illustrates the current adoption of RAISA across all the case study organisations and plots at which stages of the service process it is utilised (pre, during, post and supporting), whereas Table 5.3 details the types of RAISA used by the organisations. As illustrated in Figure 5.1 and by the charted occurrences in Table 5.2, **the key observation is that whilst there is universal adoption of RAISA in the pre and during touchpoints of the customer journey, no organisation is yet adopting RAISA in the post-stay stage.**

Figure 5.1: Current adoption of RAISA across the case study organisations



Source: Authors Own

The customer facing RAISA adopted in the pre and during stages tends to relate to information provision (Websites, Chatbots and Apps), booking/ordering (Websites, Touch Screen Kiosks, Apps), registering (Automated Check-In and Check-Out) and locating customers (RFID Sensors). A majority of these adoption **touchpoints** concur with research on adoption of robots and service automation by Ivanov *et al.* (2017). Whilst the customer supporting RAISA (Department Apps, Employee Chatbot) also provides information, it is particularly useful for forecasting (AI Revenue Management Forecasting Tool), scheduling (Employee Scheduling) and tracking use intensity (People Counters). All of the organisations also cited situations where **Blended Adoption** occurs, either through the provision of choice to the customer, or employees facilitating/encouraging customer use of the RAISA.

The absence of evidence at the post-service stage suggests an, as yet, unexplored opportunity for the organisations, which could include soliciting customer feedback, offering re-booking and the ability to access billing information post stay. This coupled with the limited evidence of adoption in the pre-service stage suggests that organisations can do more to infiltrate their customers' 'worlds' both before and after the traditional service experience and reap further potential for co-creation (see also Neuhofer *et al.* 2014), and Chapter Six.

Whilst this shows that **customers are key to the adoption of intelligent automation and, indeed, play a central role in the value creation process**, this is currently limited to parts of the entire customer journey. Therefore, the possibility for further value creation is recognised, if the full customer ecosystem is given systemic consideration as part of planned adoption of RAISA.

5.3.3 Future Potential for RAISA

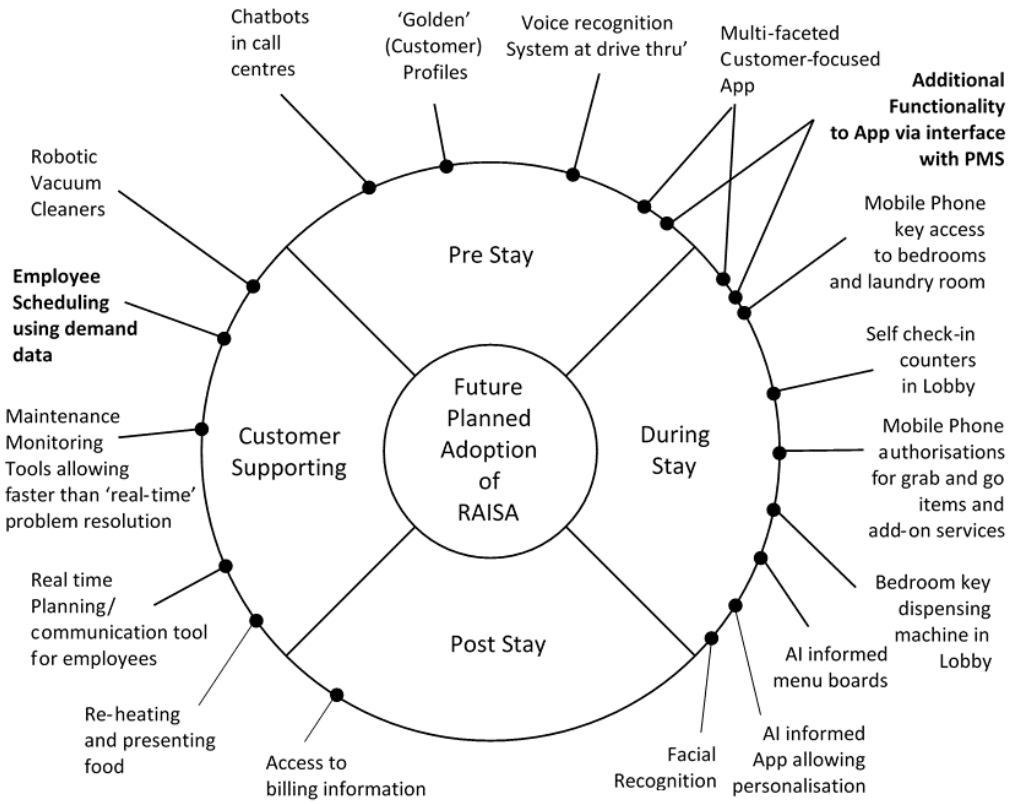
This section explores the future planned potential of RAISA, the strategies that underpin it, and the customer touchpoints where it is forecast to be used and in what forms.

As with the current adoption of RAISA, there was also a range of **strategies** underpinning its future potential across the case study organisations. These included: customisation of information; continued development of technology to allow greater empowerment to

customers and employees; investment in new operating systems to allow greater linkage between systems; greater data optimisation and operating in a smarter way (proactively and efficiently). Equally, these strategies demonstrate a balance of drivers for adoption across the guest, employee and business pillars. However, they show a greater interdependence in delivering superior service quality with coupled 'wins' for the employees and business too; this will be discussed further in Section 5.3.5.

In a similar format to Figure 5.1, Figure 5.2 illustrates the planned adoption of RAISA across all of the case study organisations and plots at which stages of the service process it is forecast to be used (pre, during, post and supporting). Table 5.3 also details this by organisation. As with current adoption, the results suggest future adoption is planned most significantly across the pre and during **touchpoints** of the customer journey, but with one organisation also planning a post-stay RAISA customer service touchpoint.

Figure 5.2: Future planned adoption of RAISA across the case study organisations



Source: Authors Own

It is also important to distinguish which exiting technologies with planned additional functionality, and those which are truly new. Indeed, only the two in emboldened text on Figure 5.2 are existing with planned enhancements (added functionality), all others are new.

Overall, the results (see Figure 5.2) suggest much greater future planned adoption, than current adoption (when comparing to Figure 5.1), particularly in the pre and during service touchpoints. Evidence collected also suggests greater sophistication and functionality being added to some of the RAISA currently adopted in the future plans (Apps and Employee Scheduling for example). The results also demonstrate **a wider range of technologies planned to be adopted** including chatbots, voice recognition, a range of functionalities to be made available through guests' mobile phones, facial recognition, robots and various intelligent monitoring tools. There was also wide-ranging evidence across the Case Studies for future planned **blended adoption** and a move to put the technology in the hands of the guests – a plan that tallies with the research of Neuhofer *et al.* (2015) on Smart technologies for personalized experiences.

Interesting here is the variation between the organisations in their future adoption plans. The organisation in Case Study 1 appear to be making comprehensive considerations and inroads into the possibilities RAISA provides, whereas the organisation in Case Study 4 seem to have very limited stated plans despite their claim to be veterans at technological innovation. The organisation behind Case Study 2 have purchased subsidiaries (see Section 5.2.2) to allow them to deliver on their plans which they are currently piloting. Finally, the future aspirations in Case Study 3 felt less well considered and more like a series of potential ideas than a solid blueprint.

Whilst there are significant plans to adopt further beneficial RAISA processes, these are either evolutionary (building on existing technologies), or sporadic (additional functional technologies not intended as part of a larger system) implementations. However, neither shows in-depth consideration of how the customers' world may maximise the value creation process throughout the entire customer journey, through intentional SPD. The increasing focus of blended service provision with the **intention to empower customers through their own personal technology**, shows a growing maturity and tendency towards

more complex implementations for SPD, again reinforcing the need for greater intentional planning/design tools.

5.3.4 Critical Success Factors

The critical success factors (as defined in Table 5.2) underpinning the successful integration of RAISA into the service process is explored below, using the three hospitality business pillars of Guest, Employees and the overall Business, in the following section.

The Critical Success Factors relating to the **guest** tend to focus on the speed of service, the accuracy of delivery and accessibility of service in some cases too. Three of the case studies mentioned (increasing) speed of service, particularly at check-in but also in order to provide faster than real time customer service (Case Study 1 see Table 5.3). This aspiration of providing faster than real time customer service through remote monitoring tools and connected systems, ties into the ideas of Smartness and Ambient Intelligence in tourism as it is in real-time, data driven, customer centric and enhancing customer experience, as proposed by Buhalis (2019).

> *"So we can really start to use sort of monitoring tools and reconfigure the setting of that part. We see ourselves moving to a sort of faster than real time customer service where the guests never knew they had a problem in the first place"* (Appendix 2, Lines 74-77).

Accuracy was also deemed as a key factor in two cases (2 and 4). Accessibility of service was considered important in Case Study 2 in terms of facilitating use but also in Case Study 4 in removing language and other barriers for foreign and disabled guests. This aim also ties into research on smartness increasing inclusiveness and accessibility (Michopoulou and Buhalis 2013) and design for service inclusion (Fisk *et al.* 2018).

Employee-related Critical Success Factors principally included being encouraged/allowed time to deliver (better) hospitality, through being more visible/available in the public areas (and needing the right skillset to deliver on this). Efficiency and accountability was a second theme identified, both in terms of processes and employees: the use of labour being one

(Case Studies 1, 2 and 4), and the accountability of employees to the business (Case Studies 3 and 4) and of the technology to employees (Case Study 2). This theme of efficiency concurs with research by Tuomi *et al.* (2020a) where they identify it being the biggest driver as to why companies automate. Finally, Case Study 4 also cited the desire for the workplace to be fun for their employees.

> "*So what happens is, there is more visibility, there is more accountability for everyone"* (Appendix 5, Lines 458-459).

The Critical Success Factors that affect the overarching **business** all included 'Data' as the most pertinent key point. Whilst all the organisations mentioned data, there was major frustration that the current myriad data in the businesses across different operating systems wasn't easily accessible and more so that this represented lost potential to improve processes and, ultimately, customer service. This critical success factor also ties into the concept of interconnectivity and interoperability in reengineering data in processes to enhance [customer] experience (Buhalis 2019, Buhalis and Leung 2018).

> *"all that information, or data you can have, but how do you aggregate that? And where does that sit? And how do you connect those parts, so that they're ultimately imprinted back to the guest?"* (Appendix 2, Lines 34-37).

Other factors included financially driven ones: more efficient use of labour (Case Study 1), the consistency of add-on sales being offered (Case Study 2), driving direct bookings to increase margin (Case Study 3) and, finally, increasing average spend (Case Study 4).

The CSFs considered by the vast majority of stakeholders are largely pragmatic and efficiency based, with the principal focus being the company, rather than the customers. An **intentional service design approach**, which considers the less 'pedestrian factors' of the customer experience is necessary to maximise the value to customers of greater RAISA implementation, by moving the current focus from purely process driven factors to the emotional realm of 'true hospitality', and exceeding customer expectations.

5.3.5 Customer Orientation

Once again there is strong evidence collected of Customer Orientation factors across all case study organisations with Table 5.2 illustrating 3 of the 5 sub codes: Personalisation, Ease of Use, and Service Quality, having occurrences in all Case Studies and the remaining 2 sub codes showing occurrences in three out of the four interviews: Encouraging Use and Personal Technology. The summarised findings are again listed by organisation in Table 5.3.

In terms of **Personalisation**, evidence and planned initiates varied from the idea of 'golden profiles', to providing choice in the customer journey (*i.e.* how you order, what your order: adapting menu items, how you pay, choosing your own bedroom allocation *etc*.), to personalising customer welcome amenities. It was clear in all cases that it is the technology either allowing for or facilitating this personalisation in many instances. This again dovetails to past research undertaken by Neuhofer *et al.* (2015). The 'golden profile' aspiration discussed in Case Study 1 (and below) has parallels to research being conducted on Personal Data Management by Lu *et al.* (2019b). They propose a similar idea: an all-in-one user-centric framework that covers personal preference management, value enhancement balanced by privacy risk trade-offs and behavioural nudging, all of which is personalised to and in the full control of the user, independent of the service provider. This is also similar to past research on personalized experiences (Neuhofer *et al.* 2015) who argue that customers are generally willing to share personal information if it leads to better service being provided. In further research they see customers as being interactive, involved and sharing information through technology to co-create better service experiences for themselves (Neuhofer *et al.* 2013).

> *"how we can have a guest own their own data more, and ensuring that we stay up to date, because it is in the best interest to stay up to date, as opposed to trying to match different components in different places. So really trying to create some golden profiles on that basis . . . to get into a world of prediction and tailoring content from product to specific people . . . So that's, that's, that's a core area of what AI focuses on. And I think that and that's really customer facing"* (Appendix 2, Lines 52-60).

All organisations seemed to have grasped the importance of focusing on the **Ease of Use** of RAISA technology if its introduction and use are to be successful. Critical aims included removing friction from (Case Study 1) and improving the ease (Case Studies 3 and 4) of the customer journey and making them more fun for the customer too (Case Study 4). A necessary adjunct to this 'push' is to **Encourage the Use** of RAISA through intentional actions. Evidence of these was most pronounced in Case Study 3, where they planned to provide exclusive content and offers through their App to do so. Other organisations aimed to encourage use through dedicated staff on hand to ensure customers are comfortable with the technology (Case Study 2) and, in Case Study 4, evidence showed increased use due to the removal of the language barrier by ordering Room Service through the chatbot. A move towards the use of customers **Personal Technology** centred around the idea of them being able to control/facilitate content and room features using their own devices (Case Studies 1 and 3). The other key theme here was in relation to the choice of how to access services (Case Studies 2 and 4).

> **"***So our strategy is to continue to develop technologies that we put in the hands of our guests . . . they are in control"* (Appendix 5, Lines 343-344).

Finally, specific initiatives that aimed to increase **Service Quality** concentrated on (human) employees being freed up to spend more time with guests (both in person and on the 'phone), be more visible (front of house) and provide more genuine hospitality/better customer service in doing so. This also ties in with the concept of decent work through increasing automation (Tuomi *et al.* 2020a). Case Study 4 also touched on the idea of customers feeling more empowered.

> *"let's mobilise our employees, as in, let's keep our employees out there in the public areas as much as possible, and push the information to them"* (Appendix 5, Lines 81-82).

The key here is the possibility for **continuing development and exploration of the nature of the customers' world** that is unrelated to any single organisation, and exists as a multidimensional, multifactorial 'golden' profile accessible to a single organisation, but not created by one, to facilitate the provision of truly customer focused, personalised service.

Table 5.3: Major Findings

Link to Research Question	Category of Major Findings	Case Study 1	Case Study 2	Case Study 3	Case Study 4
1	**Service Design Process**	Agile approach to implementation and adoption; will learn through how it is actually used and the data around that	Local experimentation Consideration of whole customer journey Electronic model to emulate pinch points and friction points Innovation centres Pilot tests Servicescape redesign	Evolutionary based on management idea; no purposeful design Would use a logic - based model for any future endeavour	Evolutionary design based on customer behaviour Departmental involvement in Frequently Asked Questions to inform initial design
1	**Current Adoption of RAISA**	Automated Check in/out In Room 'Pod' Controllers People counters to track intensity of space use AI revenue management and forecasting tool Employee scheduling	Touch screen ordering kiosks Mobile app RFID sensors to track customers locations	AI powered website AI powered app	Chatbot Departmental Apps Employee focused Chatbot
2	**Future Potential of RAISA**	Multi-faceted customer focused App Facial Recognition Chatbots in Call Centres 'Golden' customer profiles Employee scheduling using demand data Maintenance Monitoring tools allowing faster than real time problem resolution Real time planning/communication tool for employees Reheating and presenting food	Voice Recognition systems at Drive Thru's AI Informed Menu Boards AI informed App allowing personalisation	Additional functionality to App via interface with PMS Mobile Phone Key Access to Bedrooms and Laundry Room Self Check-In counters in lobby Mobile Phone Authorisation for grab and go items and add-on services Robotic Vacuum Cleaners	Mobile Phone Key Access to Bedrooms Bedroom Key Dispensing Machine in Lobby

Link to Research Question	Category of Major Findings	Case Study 1	Case Study 2	Case Study 3	Case Study 4
3	**Critical Success Factors for the integration of RAISA into the service process**	Speed of Check In Ability to use Data to ultimately imprint it back to the customers Ability to predict and tailor content from product to specific customers Provide faster than real-time customer service through intelligent monitoring Allow employees to actually deliver hospitality Remove friction from the customer journey Provide greater/more useful information to the customer More efficient use of labour Automate simple repetitive tasks Use technology to manage tasks	Speed of service Accuracy of orders Comfort of guests using the technology Having the right staff, appropriately dressed, with the right hospitality skills to assist customers with using the technology Reliability of the technology in the eyes of the employees Area managers/field consultants to support franchisees with additional technology focus Consistency of add-on-sales being offered Business continuation Data	Greater accountability of employees Data Drive direct bookings to website to increase margins	Raise the Bar of Service Continue to allow employees (hosts) to engage with guests Faster and more accurate check-in Remove language barrier/increased accessibility of services to disabled guests Keep employees in the public areas/lobby as much as possible and push information to them Workplace to be fun Greater visibility and accountability of employees Make processes as efficient and effective as possible Data Increased average spend
4	**Customer orientation facilitated by RAISA integration**	Facilitate the use of 'golden' customer profiles for ease of use and greater personalisation Empower employees to actually deliver hospitality/create a better customer experience Remove friction from the customer journey Allow customer to use their own personal technology to stream content and control room features	Innovation around touchpoints and providing customers with choice of how to order and pay; in their own time Customisation of orders (personalisation) Guest Service Leads to ensure customers are comfortable with the technology Guest Service Leads in the public areas to reinforce hospitality	Improve the ease of the customer experience Encourage use of the app by offering exclusive content/offers upon it Allow customers to use their own personal technology to stream content and other actions	Allowing customers to choose their own room; personalisation Personalisation of customer welcome amenities Customer empowerment and provision of choice of how services are accessed Increasing the accessibility of services (language and disability) Making things easier for the customers (and more fun) Focusing employees on improving customer service (in the lobby and on the 'phone) Allowing customers more time

5.3.6 Results Comparison of Adoption/Proposed Adoption versus Webster and Ivanov's Global Study

Here the results of this study are illustrated (Table 5.4) alongside the key findings of the global study conducted by Webster and Ivanov (2020) that investigated the perceived appropriateness of robot use in the implementation of different tasks by travel, tourism and hospitality companies. In Table 5.4 below the relevant activities and tasks related to hotels (35/80 of the tasks from the entire study) are charted in functional groupings (left hand column) along with their perceived appropriateness ratings, using a seven point scale, where 1 represented 'extremely inappropriate' and 7 was 'extremely appropriate' (centre left column) again from the study. Where evidence was collected in the case studies of current or future planned adoption from this thesis, the relevant activity/task is then checked with an 'X' (centre right and right-hand columns, respectively). It is important to note that whilst the global study investigated robots specifically, this thesis has a broader remit looking at RAISA more generally.

This comparison shows a gap between expectation/perception as outlined in the global study and reality/applications within the case studies with evidence being collected of 11/35 tasks currently having RAISA adopted to facilitate them, and three additional tasks planned to have, totalling 14/35. The tasks where RAISA has been adopted are either information provision or booking/ordering related. However, few of those tasks with the very highest perceived appropriateness have had RAISA adopted to complete them, or indeed plan to have. These are all physical actions/tasks that would require a physical robot to conduct them. Noteworthy, this does not correlate with the available technology and its current capabilities as outlined in Table 2.3, which illustrates organisations already utilising robots in hotels. Therefore, it can be argued that this gap represents a theoretical problem with managerial confidence/understanding of how/where to adopt robots in their service process, and not a practical one relating to the availability or capability of the technology.

Table 5.4: Comparison of the perceived appropriateness of robots completing hotel activities/tasks with the current and future planned adoption of RAISA across case studies

Hotel Activity/Task	Seven Point Scale Rating on Perceived Appropriateness of the use of Service Robots (Webster and Ivanov 2020)	Current Adoption of RAISA across Case Studies (Fig 5.1)	Planned Future Adoption of RAISA across Case Studies (Fig 5.2)
Common Activities (mentioning hotels)			
Cleaning common area of the hotel	5.71		X
Luggage carrying in hotels	5.67		
Luggage storage in hotels	5.60		
Providing information about facilities of the hotel	5.56	X	X
Processing credit card and debit card payments	5.37	X	X
Booking hotel accommodation	5.22	X	X
Concierge services	5.15	X	X
Welcoming guests	4.42		
Hotel Reception			
Check-out	5.07	X	X
Guiding to the room	4.88		
Check-in	4.88	X	X
Housekeeping			
Delivering ready laundry	5.64		
Delivering new towels, linen, etc.	5.54		
Laundry service	5.54		
Taking customer orders for new towels, linen, etc.	5.51	X	X
Taking customer orders for laundry	5.44	X	X
Ironing service	5.24		
Cleaning the room	5.18		X
Restaurants, Food and Beverages			
Taking orders for room service	5.38	X	X
Cleaning the table	5.20		
Delivering food and drinks in rooms service	5.16		
Providing information about the menu	5.14	X	X
Taking orders in the restaurant	4.97	X	X
Guiding guests to tables in the restaurant	4.84		
Serving food in the restaurant	4.54		
Serving drinks in the restaurant/bar	4.52		
Making drinks (coffee, tea, cocktails) in the restaurant/bar	4.52		
Cooking food	3.76		X
Additional Services in Hotels			
Playing games with the guests	4.37		
Entertaining the guests	4.35		
Provision of very short 1-2 hour workshops to guests	4.05		
Massages	3.73		
Dancing with guests	3.36		
Hairdressing	3.12		
Babysitting	2.61		

Source: Authors own using Webster and Ivanov (2020)

5.3.7 Additional Findings

A list of other factors not included in the major findings follows below detailing points of interest unique to certain cases that will not be addressed in the conclusions, but importantly, may warrant future study:

- The dexterity required in certain roles and how easily this can be automated
- The current RAISA technologies that are planned to have enhanced future functionality, versus those that are not
- How company culture affects adoption (and successful intergration) of RAISA
- The acceptance of using facial recognition in service operations

5.4 Conclusion

In conclusion, evidence across all themes has been collected from the full range of case study organisations (see Table 5.2). The gap in intentional service design evidence was expected, at least from the literature review, reinforcing that Service Design has **not** kept up with the pace of RAISA implementation, further showing the need for a new, flexible SPD model.

The current adoption of RAISA is significant, specifically across the pre and during touchpoints, but the post-stay touchpoint lacks positive evidence from these case studies at least (Figure 5.1). Whilst the central role of the customer in the adoption of RAISA in creating value is recognised, the possibility of further value creation if the entire customer journey were given greater intentional consideration has not yet been fully grasped.

The future planned adoption of RAISA looks strong with significant enhancement (versus current adoption) across more touchpoints (including one intention at the post-stay stage, for this see Figure 5.2). Again, these plans don't suggest an in-depth consideration of how the customers' worlds may maximise value creation process throughout the entire customer journey, through intentional SPD. They do, however, suggest a growing complexity to service provision.

Critical success factors for the adoption of RAISA were balanced between the three pillars of Guest, Employees and Business. These are largely pragmatic and efficiency based and highlight the principal focus being on the business and not the customer, posing the question as to how these perspectives might be shifted into the realm of 'true hospitality' which focuses on exceeding customers' expectations.

There is wide ranging evidence of greater customer orientation being driven through the adoption of RAISA through personalisation, but also ease-of-use. Key here is the possibility for continuing development and exploration of the nature of the customers' world that is unrelated to any single organisation, and exists as a multidimensional, multifactorial 'golden' profile that is accessible to a single organisation, but not created by one, to facilitate the provision of truly customer focused, personalised service.

Finally, despite the growing role the customer in the value creation process, the gaps evidenced in the intentional service design process and some of the customer journey touchpoints, most notably the post-stay stage, further highlight the need for greater attention to be paid to evolving current service design techniques to consider fully the 'customers' world' and, the growing complexities of the service process, all of which Chapter Six will address.

Chapter 6. Conceptual Development towards a refined SPD Model

6.1 Introduction

This chapter develops two conceptual contributions: an implementation process for RAISA into hotel service delivery using a design thinking approach (Table 6.1) and a new SPD matrix model (Figure 6.2) that incorporates both CDL and the ability to select whether to employ RAISA/human/or a combination at each distinct touch point in the customer journey. The model demonstrates how RAISA technologies can facilitate the application of aspects of the emerging area of CDL of Service to hotel SPD, thereby using CDL as a vehicle to link the theoretical areas and their gaps identified in Chapters Two and Three.

6.2 Development of a RAISA Implementation Process

In an attempt to draw the preceding discussions together, particularly relating to the '**how**' of what/where/how RAISA should be adopted, **a process for successful implementation of RAISA in hotel service design** is proposed in Table 6.1, building on previous attempts (Oracle 2017, Ivanov and Webster 2017a, Tuomi and Tussyadiah 2019, Tolentino 2019, Bowen and Morosan 2018) but using a design thinking approach advocated by Brown (2008), Patrício *et al.* (2018); Table 6.1. The table presents a chronological sequence for implementation and is sub-divided into distinct stages of a design thinking framework. Indeed, whilst Kuo *et al.* (2017) recognise the potential of the hospitality industry to implement service robots, Bitner *et al.* (2000) see this implementation stage as the most challenging aspect of technology infusion into service encounters.

Distinct to the proposed model (Table 6.1) is its advocacy of a **balanced and inclusive approach to all stakeholders** across the entire implementation cycle: not only from the company's lens (as is traditionally the case), but its customers, employees and suppliers/technology providers. From a CDL perspective, the consideration of the customers' likely experience of other contemporary technology platforms, is also taken into account. This differs from the existing literature, where other implementation frameworks such as that proposed by Belanche *et al.* (2020) who recognise the complexity of this topic and approach it from a practical standpoint, and consider multiple factors in service robot implementation (robot design; customer features and service encounter characteristics),

but fail to consider the employee perspective almost entirely. This is in contrast to Kuo *et al.* (2017), who advocate new organisational structures and management for implementing such technology; Xu *et al.* (2020) who discuss the culture leaders must engender for successful integration of robots; Tuomi *et al.* (2020a) who consider how work may be designed and tasks allocated for optimal human-robot cooperation as part of a responsible adoption of automation approach, focusing on employees; Simon *et al.* (2020) who investigate the impact of integrating non-human service providers into frontline hospitality teams with a focus on trust; and Ivanov *et al.* (2020a), who seek a management perspective on the use of robots in hotels.

Interestingly, the Belanche *et al.* (2020) model does consider the service encounter characteristics, the '**where**' in the what/where/how RAISA should be adopted. Their model goes beyond the global study conducted by Webster and Ivanov (2020), who primarily focused on the customers' perceived appropriateness of robot use in different tasks (see Table 5.4), to consider the '**what**' to some degree too: specifically, the robot design and how this complements the customer features and service encounter characteristics. Tuomi *et al.* (2020d) concur in their assertion to set a strategic service vision regarding implementation. Building on the '**where**', Ivanov *et al.* (2018b) advocate that hotel managers would be wise to introduce RAISA where customers are least resistant to it.

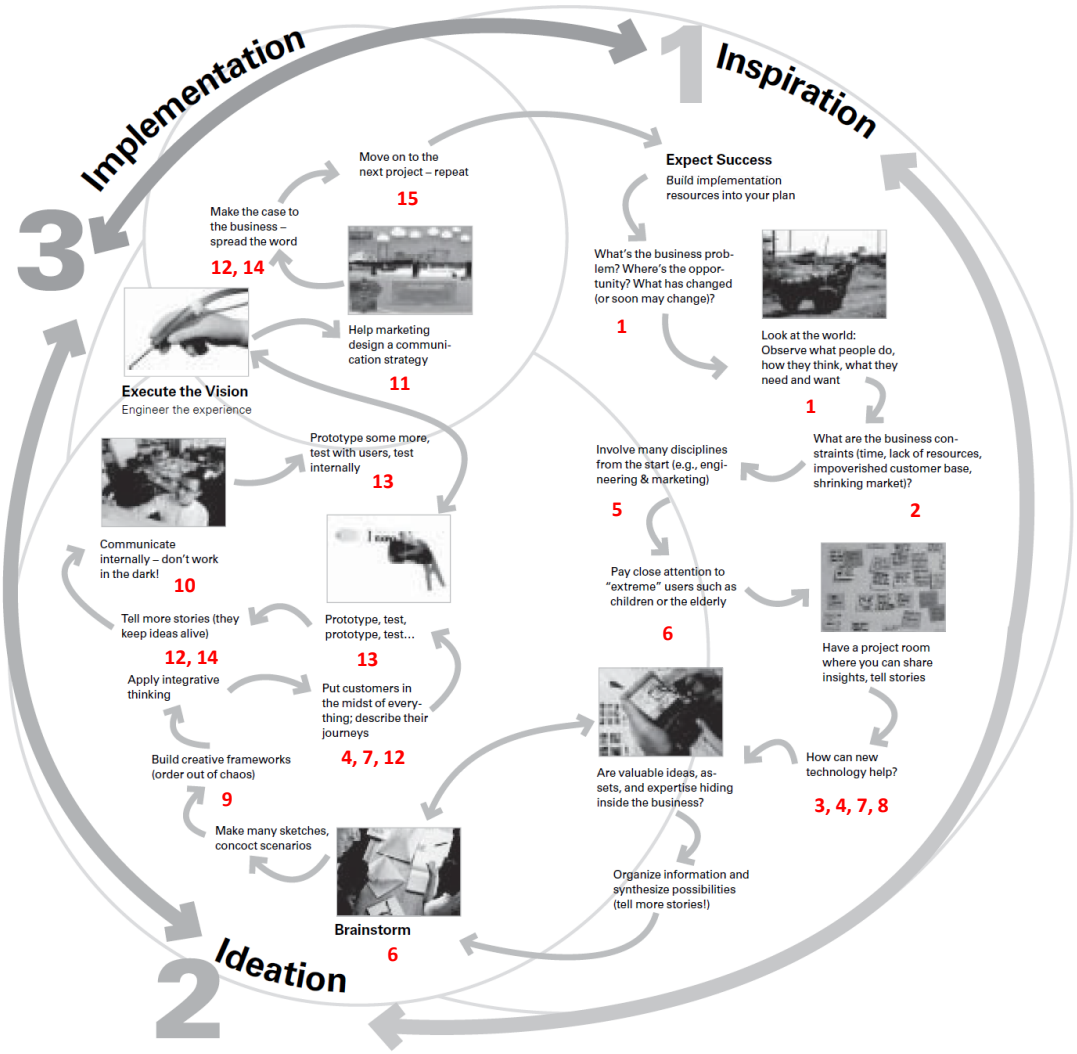
Despite this research and the apparent willingness of customers' and managers to adopt RAISA in at least some parts of the service process, researchers highlight the need for **balance** between human and RAISA delivered service (see Section 3.2.2), in the (responsible) integration of intelligent automation, especially in hospitality where they see the human contact as central to expectations and tradition (Ivanov *et al.* 2018b, Tussyadiah 2020a, Tuomi *et al.* 2020a). To test this idea of balance, Webster and Ivanov (2020) empirically investigated preferences towards human employees-robots ratio finding a greater preference for human service in bars and restaurants than hotels (in general) and room service specifically. Going beyond the model proposed in Table 6.1, the '**how**' is further considered in the new SPD model outlined in Figure 6.2, which encourages the service designer to consider balance (the '**what**') at each step of the customer journey (the '**where**'). It is discussed in more detail in Section 6.3.

Table 6.1: A process for successful implementation of RAISA in hotel service design

Exploration	Understanding the experiences of multiple actors and their contexts	1. Analyse the existing service process and consider which tasks may be best automated; these may involve the steps where human employees do not add value, where there is potential for friction, and where there are unnecessary wait points. Consider where automated systems are able to integrate seamlessly with the service environment and address tasks that are critical to service delivery
		2. Consider the cost-benefits of adoption comprehensively with varying stakeholders
Ideation	Generating and developing ideas that may lead to solutions	3. Select the potential AI solutions that fit the needs and profile of the company (and its strategic service vision) most closely
		4. Revisit and reconsider the overall balance and ease of use of the service process between those steps that are automated *versus* those delivered by human touch, or where a blended approach may enhance service further; is this balance right for the company, its culture, team members and its guest type(s)?
		5. Partner with AI providers to develop the best possible solutions, involving them early on in the process
Reflection	Designing the service offering and reflecting through prototyping and testing	6. Redesign the service process to incorporate the automated stages – ensure customers and employees are involved in this stage and can critique proposals. Has inclusivity been considered?
		7. Design new interfaces that are attractive to entire segments of users to facilitate good first impressions and positive emotions
		8. Consider likely customer use of other contemporary platforms and tailor design to complement these in order to stimulate heuristics
		9. Document the service process changes in the relevant employee inductions, training, handbooks and Standard Operating Procedures
		10. Involve, inform and re-train team members to use the new technology to its maximum affect whilst considering their fears and potential resistance to change; focus on enhancing their roles (and increased potential time to spend with customers) rather than substitution/cost-cutting
		11. Develop a marketing and communications plan to inform all affected stakeholders of these changes including different customer segments, partners/suppliers and employees
		12. Introduce/explain/educate and possibly incentivise customers to use the new technology, whilst addressing any key fears (such as security concerns)
		13. Pilot new systems to help increase the likelihood of successful adoption – consider the contemplating, exploring, using and talking about systems' framework
Implementation	Charting the path to market	14. Carefully manage the transitional phase, particularly considering potential team member and customer resistance and the impact cultural differences may have too
		15. Monitor and evaluate the effectiveness and response to the new technology from the various stakeholder groups using various means and continually improve/evolve these as necessary

Source: Authors own, using a design thinking approach (Brown 2008, Patrício *et al.* 2018)

Figure 6.1: Design Thinking Cycle



Source: Brown (2008) annotated with numerical key (in red) related to Table 6.1

6.3 Development of a Revised Model for Service Process Design

Figure 6.2 is intended to contribute a new matrix model that facilitates a service design process, which incorporates fully the customers' and providers' worlds and also allows the choice of human, RAISA or 'blended' service providers at each service interaction. This model combines and enhances those covered by the earlier Service Blueprinting (Bitner *et al.* 2008) and CDL models (Heinonen *et al.* 2010, Heinonen and Strandvik 2015).

The model is divided top-to-base into two 'worlds': the customers' world (this is the traditional CDL zone) and the providers' world (the traditional SB zone). Where these overlap, in the dark grey area (the interaction area) the customer is directly interacting (and connecting) with the provider.

The model is also divided left-to-right into five distinct time zones: history, pre-service, service, post-service, and future. The history and future zones (previously excluded from traditional SBs) allow consideration to be given to customers' experiences from both the focal service provider and other service providers. These may well take place outside the providers' world and outside any interaction they have with the customer. The pre-service, service and post-service zones (shaded in light grey) focus solely on the specific service process provided by the focal provider to the customer (and would have been included on traditional SBs).

Using the model and its key denoting 'Human', 'RAISA' and 'Blended' service providers, practitioners and academics are able to design new service processes that take into account not only the providers' point of view but also draw from the (dominant) customers' perspective too. A series of simple scenarios, developed by the author, are used as exemplars in Figures 6.3 – 6.6 and described below; these are illustrations of the model being used in hotel SPD as follows:

- a business guest arriving after an overnight long-haul flight;
- a couple celebrating a birthday;
- a family group staying with two young children; and
- an elderly couple with accessibility needs

Figure 6.2: Customer Dominant Logic Informed Service Blueprint incorporating RAISA service providers

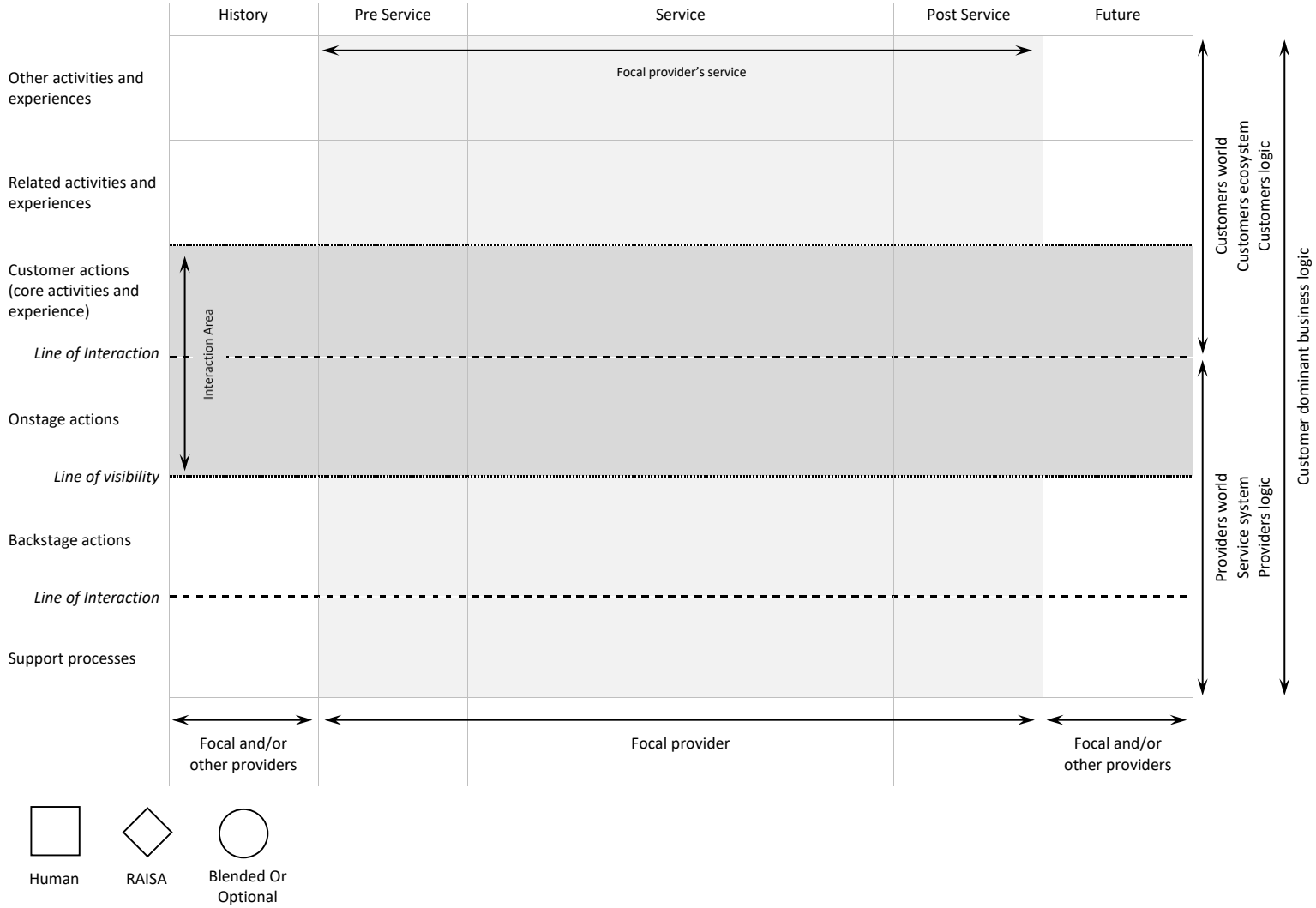


Figure 6.3 shows a simplified version of part of the customer journey for a business guest arriving at a hotel after an overnight long-haul flight. The guest's personal preferences, loyalty history and the preferences of the company he/she is working for are available to the hotel in advance (possibly through the customers golden profile; see 5.3.5 above, Neuhofer *et al.* (2013), Neuhofer *et al.* (2015) and Lu *et al.* (2019b)). Once the booking is made, these are linked up to the booking in the registration system. The interconnected and interoperable nature of the business partner systems (Buhalis and Leung 2018) also allows the hotel to be informed of the guest's flight and taxi bookings, which help streamline room readiness on arrival (especially given the early arrival time). The guest checks-in to the hotel in advance (en-route) using the hotel's app and is greeted on arrival by an expectant member of staff who has the room key ready and offers a luggage service robot to escort the guest to his/her room. The remainder of the guest's stay involves a rich mix of human, service robot and chatbot enabled service through to check out, again, using the hotel's app. Post stay, the same app requests feedback from the guest, and this, along with the data from the entire stay is recorded via a feedback loop back on to the guest's personal preferences and loyalty history. A similar two-way flow of information throughout the customer journey, using engagement platforms is modelled by Neuhofer *et al.* (2013).

Figure 6.4 illustrates a simplified version of part of the customer journey of a couple checking in to a hotel to celebrate a birthday. Whilst these guests have stayed before (prompting the welcome back greeting upon check-in) and the hotel has their guest history and has indeed marketed to them, which has prompted this stay, there is no awareness of the birthday being celebrated ahead of the stay. Interesting in this case is how the request for flowers to celebrate the guest's partner's birthday allows this special occasion to be noted and the hotel's internal interoperable and interconnected system (Buhalis and Leung 2018) to cascade this as an alert to the various operating departments who, in turn, can act on this and recognise the occasion through a personalised amenity and, in turn, at breakfast and check out. Finally, this important date will also be recorded through the feedback loop on the guests' preference history.

Figure 6.3: A business guest arriving after an overnight long-haul flight (Exemplar 1)

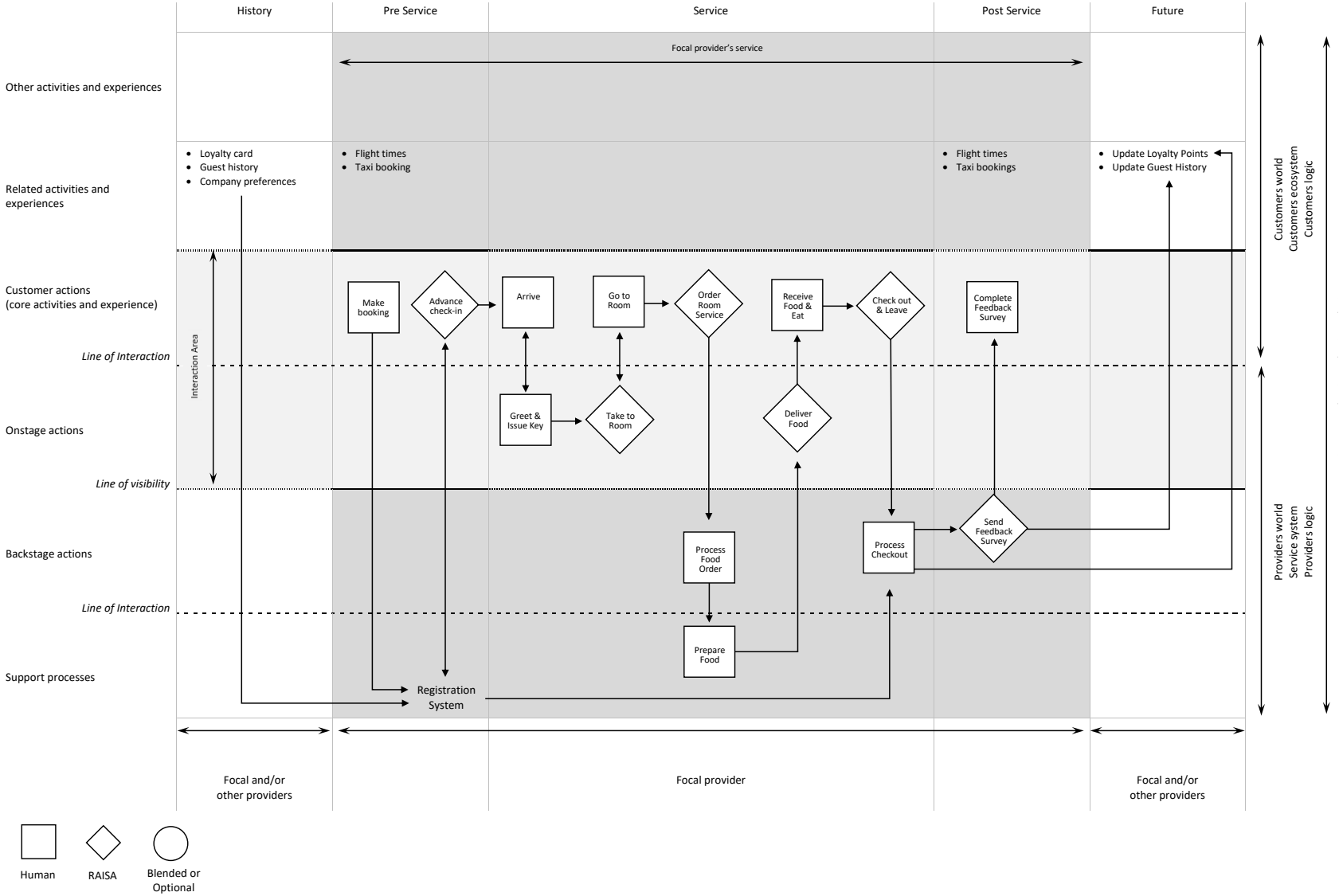


Figure 6.4: A couple celebrating a birthday (Exemplar 2)

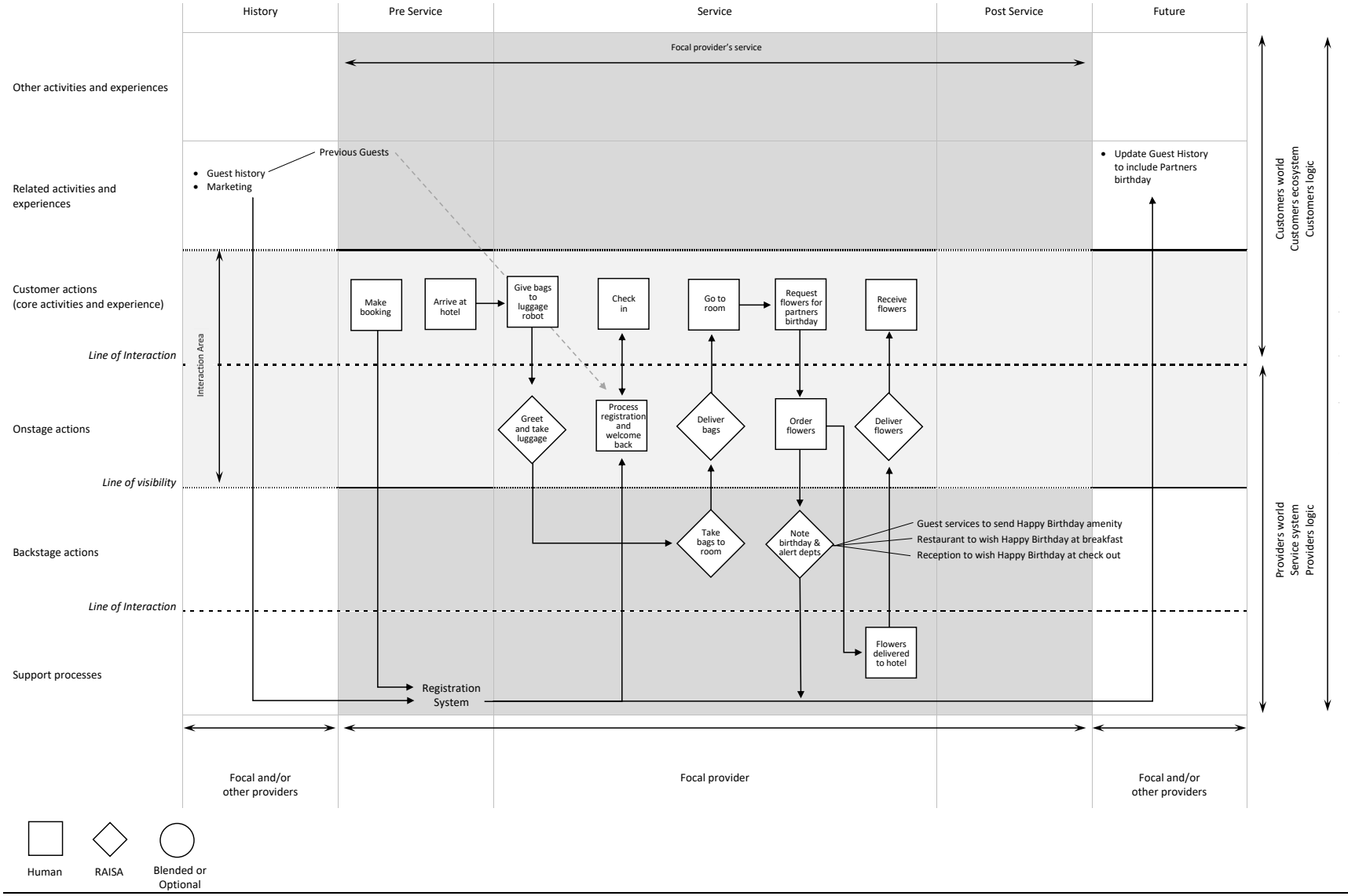


Figure 6.5: A family group staying with two young children (Exemplar 3)

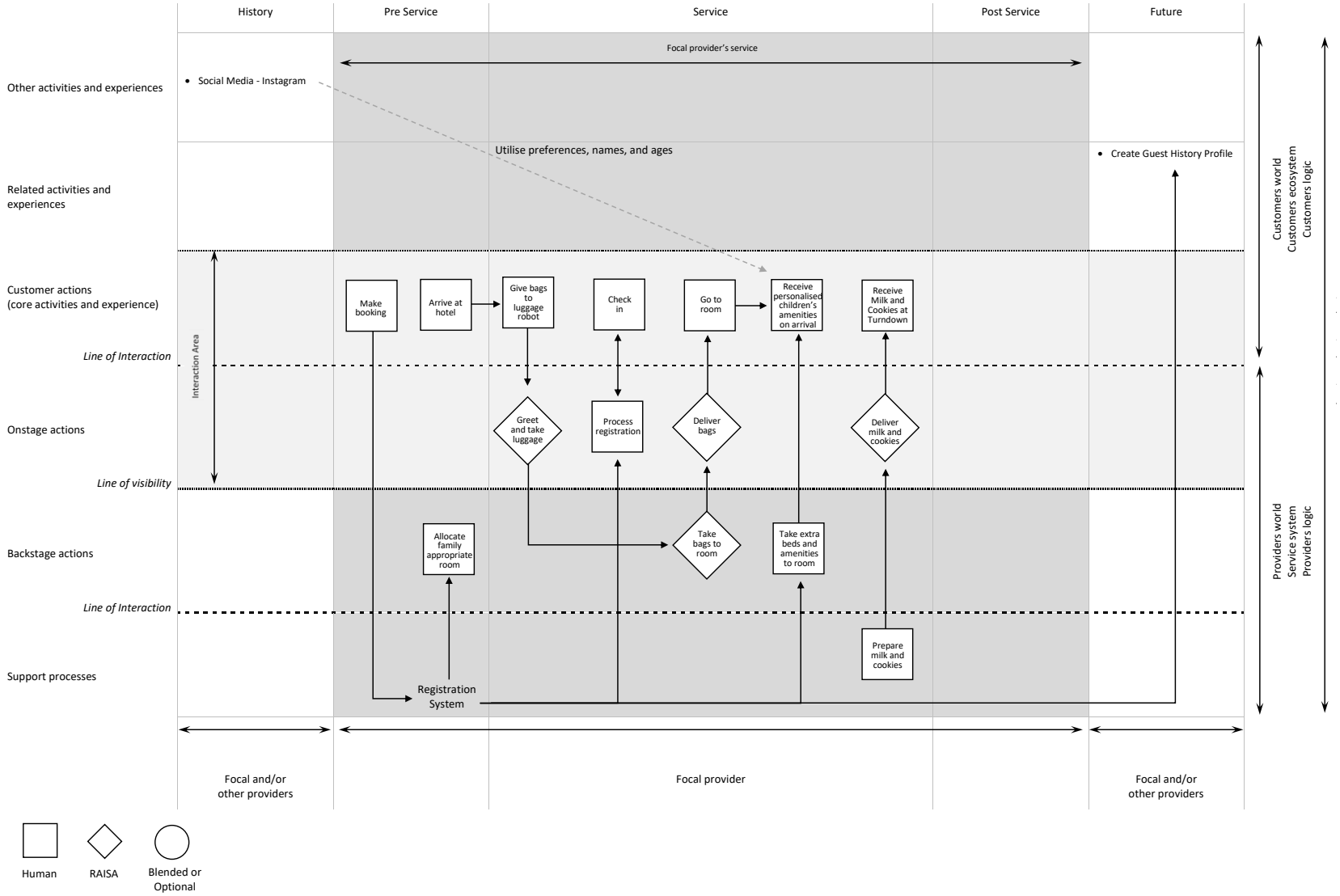


Figure 6.6: An elderly couple with accessibility needs (Exemplar 4)

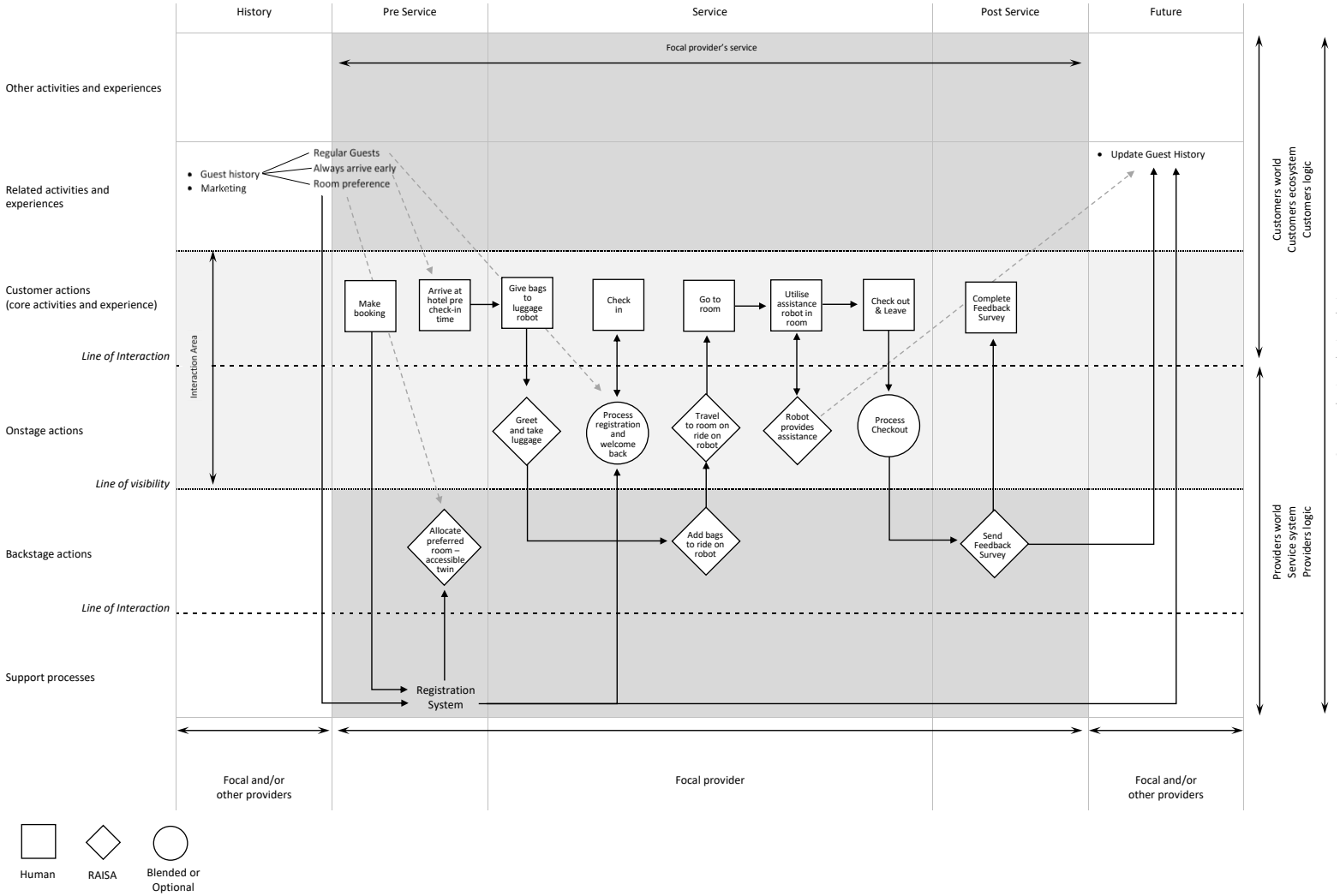


Figure 6.5 plots a simplified version of part of the customer journey of a family group staying at a hotel with two young children. Key to this example is that the family group haven't stayed at the hotel before, but despite this, through using their public social media profiles/posts, the hotel (or its system!) is able to personalise the family's stay by providing age-appropriate, named children's amenities on arrival and later have a service robot programmed to deliver milk and cookies to the children at turndown. These ideas are similar to those proposed by Buhalis and Sinarta (2019) when discussing real-time service enablers using external enablers, tracking social media; the difference here is that this can be done pro-actively ahead of arrival and not necessarily in real-time.

Figure 6.6 represents a simplified version of the customer journey of an elderly couple with accessibility needs staying in a hotel. These are regular guests to the hotel and receive its marketing. As the hotel knows the guests well, it understands through their personal preferences that they will always arrive early (and their room will be ready) and like to stay in the same, accessible twin room (which again will always be allocated at the booking stage). On this theme, Lu *et al.* (2019b), provide a case study where leisure travellers have a 'medical certificate' signifying their need for 'special assistance' through their personal data preferences. Whilst these elderly guests choose in the most part to interact with humans during their journey, they enjoy the option of a ride-on robot escorting them to their room (along the lines of the autonomous mobility scooters used at Japanese airports (O'Neill 2020) or Tussyadiah's (2020b) suggestion of autonomous mobility systems such as people-moving pods and drones - perhaps the children in exemplar 3, Figure 6.5, would also like this) and are reassured by, and make good use of an in-room assistance robot during their stay. In this example post stay, the hotel app requests feedback from the guests, and this, along with the data from the entire stay (included that collected by the in-room assistance robot) is recorded via a feedback loop back on to the guests' personal preferences. This exemplar also ties in well with the research questions laid out by Fisk *et al.* (2018) both around how technology can facilitate the design of services for vulnerable consumers and also how segmentation may improve service design to better serve the needs of the same consumers with reduced capacity to use service systems based on factors such as their age.

6.4 Conclusion

In this chapter, two conceptual models have been developed. The Implementation process for RAISA into hotel service delivery (Table 6.1) expands on previous attempts in the literature but uses a novel design thinking approach which contributes a framework for practitioners to follow when implementing RAISA into their service processes. It advocates a balanced approach involving multiple stakeholders and incorporates elements of CDL through the consideration of the customers world and experience of using other similar contemporary technology. This can yield benefits and be used across other service sectors beyond hospitality too. The new Service Blueprinting matrix model (Figure 6.2) is the second conceptual contribution. It is the first SPD model to incorporate CDL and therefore the first to expand the customer journey to include 'history' and 'future' stages, and the channels for related and other activities and experiences. These force the designer to give more credence to and better understand the customers' world and likely (past) relevant experiences. It is also novel in incorporating the ability to select whether to employ RAISA/human/or a combination at each distinct touch point in the customer journey. Noteworthy is how the technology also helps facilitate the greater understanding of the customers world, both through all the service stages, but also through greater connectedness between the customer and the business. This is also tested through a series of exemplars (Figures 6.3 – 6.6) developed by the author. Again, this model has wide ranging potential to be utilised across other service sectors beyond hospitality. As these contributions are conceptual at this stage, the future research directions outlined in Section 7.4 propose ways in which they may be tested empirically.

Chapter 7. Conclusion

7.1 Introduction

Within this chapter, a series of conclusions are drawn from the study defining its outcomes, their value and contribution to knowledge along with contextualising its urgent contemporary relevance in light of the Coronavirus pandemic. Section 7.3 discusses the limitations and caveats of the study. Finally, future research directions are outlined and prioritised in Section 7.4.

7.2 Statements

In drawing conclusions, each research question is considered in turn. The contributions to knowledge from this MRes thesis will then follow.

7.2.1 Main Conclusions

Research question one (What are the gaps resulting from the slower progress in SPD compared to the development of service technology?) Both the literature review (Chapters Two and Three) and the case study evidence (Table 5.3) demonstrate that SPD lags behind the rapid current adoption of service technologies in hotels, despite their historic slow adoption of technology. These adopted technologies are currently most notable in the pre and during touchpoints of the guest journey, but not yet in the post-stay stage.

Research question two (How will RAISA be utilised in the Service Process of the future?) The series of predictions and forecasts made in Section 3.3 identified wide ranging possibilities for future integration of RAISA into the service process and this was supported by the case study evidence (Figure 5.2) with future planned adoption across all touch points of the customer journey, although the post-stay stage remains sparse. Despite these possibilities, there are myriad other factors to consider when envisaging future successful adoption; trust in, acceptability of, and willingness to work alongside RAISA all need proper consideration, and further research is required to weigh up the balance of

when/where/how in the service process RAISA is best adopted and in what blend with human employees.

Research question three (What are the implications and critical success factors for the Guest/Employee/Business stakeholder groups in the integration of RAISA technology into the Service Process?) The cost benefit analysis (Table 2.4), the framework for the successful implementation of RAISA into hotel service design (Table 6.1) and the case study evidence (Table 5.3) all suggest there are significant benefits to be realised through the adoption of RAISA across the guest, employee and overall business pillars of hospitality. In particular the Implementation process for RAISA into hotel service delivery (Table 6.1) advocates a balanced approach involving multiple stakeholders and incorporates elements of CDL. The current inability to access effectively and apply the myriad data stored in organisations is seen as the major weakness, and represented lost potential to improve processes and ultimately, customer service.

Research question four (In what ways can CDL provide improved value to the successful implementation of RAISA in Hotels and help address the gaps identified above?) The new conceptual matrix model (Figure 6.2) provides a service design process, which incorporates fully the customers' and providers' worlds and also allows the choice of human, RAISA or 'blended' service providers at each service interaction. This model combines and enhances those covered by the earlier Service Blueprinting (Bitner *et al.* 2008) and CDL models (Heinonen and Strandvik 2015, Heinonen *et al.* 2010), and presents a 'test bed' for accelerating a more holistic approach to SPD incorporating the use of RAISA technology.

The CDL concept has effectively provided the 'glue' to combine the two sub themes of this thesis to provide a roadmap for a way forward. The model allows both full consideration of the customers' world, and importantly a greater visibility of the pre and post-stay customer touchpoints, but also facilitates the plotting of which type of service provider (RAISA/human/blend) is most appropriate at each touch point in the service process.

7.2.2 Contribution to Knowledge

This research offers several novel contributions to current knowledge:

(1) It contributes a **new SPD matrix model** that incorporates fully the customers' and providers' worlds and also allows the choice of human, RAISA or 'blended' service providers at each service interaction (Figure 6.2) this model combines and enhances those covered by the earlier Service Blueprinting (Shostack 1982a) and CDL models (Heinonen *et al.* 2010, Heinonen and Strandvik 2015) by being the first to expand the customer journey to include 'history' and 'future' stages, and the channels for related and other activities and experiences. Through using the model and its novel key denoting 'Human', 'RAISA' and 'Blended' service providers, practitioners and academics are able to design new service processes that take into account both the providers' point of view, but, importantly, also now draw from the (dominant) customers' point of view too.

(2) The shift in thinking that led to the development of CDL is applied in this research through the new model (Figure 6.2). The 'customers' world' is more fully represented in this model, than any previous service design models and allows academics, hoteliers and service designers alike to take far greater consideration of the customers previous and related experiences and pre and post-stay activities too when designing service (note the post-stay stage of the process has been largely omitted from current and future planned adoption of RAISA to date; see Figures 5.1 and 5.2). Whilst hotels are arguably in an almost unique position to understand better the customer's world than other businesses due to the intimacy of guests living in them during their stays (Section 3.4), it is equally true that through the application of RAISA technologies this 'world' can be more fully understood and integrated into service design.

Importantly, through the new proposed model, this research provides a mechanism for not only academics but service designers and practitioners to consider and select a choice of human, RAISA or 'blended' service providers at each service interaction. Given the growing adoption of RAISA in the hotel industry, giving greater intentional consideration to its integration in the service process is key to future success. The new model facilitates this.

7.2.3 The Impact of the Coronavirus Pandemic

The government-imposed lockdowns in response to the **Coronavirus pandemic** of early 2020 left hotel businesses shuttered and resulted in the sector being one of the hardest hit (Krishnan *et al.* 2020), posing additional nascent challenges to the sector. At the time of writing this thesis, hotel operators are facing unprecedented challenges in a fast-moving situation characterised by a lack of certainty and clarity from Central Government. As they start to formulate plans for a 'new normal', an agile mindset is required to ensure the myriad and often conflicting considerations of recreating viable operations (Krishnan *et al.* 2020) that conform to new regulations around social distancing and customer concerns around hygiene, cleanliness, and reducing physical touchpoints (Webrezpro 2020, Emmanueilli *et al.* 2020, Mintel 2020, Palmer 2020, Pflum 2020, Partridge 2020). Reimagined customer journeys that are likely to contain more digital/contactless elements/options (Dalrymple and Dolan 2020, Baig *et al.* 2020, Emmanueilli *et al.* 2020) and have the customers in a more central role in the value creation process. Concurrently, a paradigm shift is occurring in customers behaviour: their willingness to accept and use digital technologies, borne out of necessity during the pandemic (Tussyadiah 2020a, Ivanov *et al.* 2020b, Buhalis 2020, Palmer 2020, Berg *et al.* 2020), but equally hypothesised to continue after (Baig *et al.* 2020, Emmanueilli *et al.* 2020, Howard and Borenstein 2020, Ivanov *et al.* 2020b), leads to greater opportunity to speed up the inevitable adoption of RAISA in the service process (O'Neill 2020). Undoubtedly this is a pivot point for the sector and a time of grave challenges but, equally, new opportunity (Pflum 2020). Indeed, the additional potential roles and benefits that RAISA can provide are particularly noteworthy (Seyitoğlu and Ivanov 2020, Ivanov *et al.* 2020b, Mintel 2020, Hardiman 2020). **This thesis identifies these possibilities but more importantly develops them into a new SPD model that facilitates their adoption, giving greater focus to the customers' world, reinforcing the relevance to the immediate situation, and, critically the hospitality industry's plans for a 'fresh start' after the social isolation restrictions have been lifted.**

7.3 Limitations

Despite its contribution, this study has limitations:

- Although four case studies with a wide range of RAISA deployed across them have been utilised, **none has yet adopted service robots**. Therefore, the results of this study cannot be generalised to incorporate the imapct of service robots specifcally. As discussed in the Methodology Section (4.2), the aim of this exploratory study was to develop a base of understanding from which future research relating to RAISA in SPD could be developed.

- A **narrow lens of opinion** from only the senior management point of view has been captured first-hand (this felt particularly prevalent in Case Study 3, where the awareness of the 'employee feeling' seemed shallow). Widening the interviewee base to employees and, indeed, customers, may have yielded richer results, but was beyond the scope of this study.

- **Survivor bias** may have influenced this study (Jones 2008) with only sucessful ongoing businesses being targeted as case studies and therefore valuable learnings from business that have failed may have been overlooked.

- Whilst a new model has been proposed (Figure 6.2), it is **conceptual in nature** and therefore stops short of informing the user (service designer) of which type of RAISA to select and at which points (where) in the service process it may be best adopted, when considering successful adoption/trust/acceptance *etc*. The future research directions (see Section 7.4) suggest the next steps for testing the model, which were beyond the scope of this study.

There are also myriad other factors that may warrant consideration in the wider context of this study that fall outside the scope of this thesis, however, some of these factors are explored as potential future research directions in Section 7.4.

7.4 Future Research

Given that the adoption of RAISA by the Hotel Industry is in its infancy and there is currently only a small base of academic literature surrounding the subject, especially in empirical form, there is a plethora of exciting future research opportunities. These are prioritised into critical and desirable categories in each of the following three groups: those that affect the business (*i.e.* the hotel), its employees and the guests.

In terms of the **Business**, the **critical** opportunities include a critique and further refinement of the matrix SPD model presented in Figure 6.2, both with a focus group of hotel customers (as co-designers) and also using a group of industry practitioners. Secondly, there is an opportunity to develop further the Cost-Benefit Analysis of RAISA in Hotels summarised in Table 2.4 through an empirical investigation with Managers; this aligns with the future research question posed by Tussyadiah (2020b, p. 8) under the Facilitating Adoption priority: "What are the drivers and barriers of organizational adoption of intelligent automation in the tourism sector?" Thirdly, the proposed process for successful implementation of RAISA in hotel service design as laid out in Table 6.1 should also be tested empirically. The final critical opportunity relates to the recurring problem cited in the literature of when/where/how RAISA should be incorporated into service operations. Again, this aligns to research questions posed by Tussyadiah (2020b) under the Designing Beneficial AI Priorities pertaining to which aspects of experiences can be enhanced by intelligent automation and determining an optimum balance between manual and fully automated provision. There is also a range of **desirable** potential research opportunities around the specific robotised/automated processes themselves: each could be compared before and after the introduction of the RAISA in relation to duration, (customer/employee) satisfaction and procedures. More generally, the following could be investigated: the factors that influence practitioner take up of SPD models; the impact of RAISA on overall perceived service quality; the company's competitiveness; operational processes within the company; and operational decision making regarding actual service delivery.

From the **Employee** perspective, **critical** opportunities for future research include investigating their attitudes towards working alongside RAISA and especially contrasting their initial fears of the implications of automation with the actual outcomes. This would

dovetail with the research question posed by Tussyadiah (2020b) in assessing the impacts of intelligent automation on individuals, including employees, and the gap in research from the perspective of employees, managers and owners identified by Ivanov *et al.* (2020a). A scale of employee willingness to work alongside RAISA could also be developed. Another opportunity once RAISA has been incorporated, may be to gauge employee's satisfaction with the technological infusion, again possibly using a longitudinal study both pre and post implementation. **Desirable** opportunities may involve 'bigger picture' issues surrounding the potential effect of increasing automation on hospitality jobs/employment. This also links to a future research question posed by Tussyadiah (2020b), looking at the social and economic impacts of automation on productivity, performance, labour market and replacement.

Finally, turning to the **Guests**, the **critical** future research opportunities include investigating customers' attitudes towards robotised/automated services in general and more specifically, their acceptance of robotisation/automation of specific activities/tasks (this is the when/where/how question above in the Business group). The impact of the technology on service encounters, customer satisfaction and loyalty could also be researched, possibly by using a longitudinal study pre and post implementation to aid comparison. Turning to **desirable** research opportunities, the perceived value in the guests' eyes, their willingness to pay for robot-delivered/automated services and at which quality level/star ratings of hotels would also provide an interesting avenue for further exploration. Finally, from a CDL perspective, future research could also try to understand better what elements of the 'customers' world' should be considered in designing new service journeys, in light of the ingress of RAISA in the hospitality realm. This would in part answer the managerial challenges listed in the future research suggested by Heinonen *et al.* (2010), relating to the implications of the customer being dominant in the process when considering amongst other factors, service design and where the (designed) experience starts and ends given the (historic) visibility of customer interactions with the organisation, to the organisation. Heinonen and Strandvik (2015) also suggest detailed managerial guidelines need to be developed for applying this dominant logic.

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Appendices

Appendix 1: Case Study Interview Questions

Where is RAISA used in the customer journey and at what customer touch points?

Do you have plans to develop the usage of RAISA in the coming years and again in what touch points in the customer journey? (Why? Drivers?)

What is your overall strategy regarding Technology/RAISA implementation?

How have you designed these in to your service? (Did you use a model? How did you choose where the tech went?)

What were the implications and CSF? (Guest/People/Business?)

What went wrong? (Service issues? Were their tensions between Humans (staff and customers) and the AI?)

Appendix 2: Case Study 1 Transcript: CitizenM

19 September 2019, London

MA: Interviewer 1

AT: Interviewer 2

INTERVIEWEE 1: Group Operations Role

INTERVIEWEE 2: Area Managers Role

MA: (recording starts mid-sentence) ..We've got like a mixture of case studies. And then we're obviously going to do something interesting for the results together, which we'll worry about down the line. And we've got like a series of 10 questions, they're all fairly simple. It's just really to get an insight into how you do things and what might come in your future. What's in the pipeline. So if we, if it's okay, we'll just run through the questions... although we might get all over the place, I'm sure. Fluid conversation structure, haha. So let's start off with.. we're interested in where you apply robotics, AI, or service automation in your customer journey. You know, what customer touch points…?

INTERVIEWEE 1: I guess the principal area that we really use AI now is from a recurring revenue management perspective. So we use AI as a forecasting tool. And I would say that really is the main area that we're... that we're using it. And the customer perspective, where we are as a business at the moment, is how we consolidate data. And I'm sure you are aware that within hospitality, that data is so fragmented, that to have real ability.. to have an understanding and be able to use that in a way, it's been fairly limited. And even as a company that's only 10, 11 years old, we really.. maybe we wish we might be further ahead than some. But we really have to work hard now on building a data warehouse and amalgamating that, and then it will allow us to start to layer some of this AI stuff over the top of it and start to move into slightly more predictive world in terms of what we're doing.

MA: And is the AI done with a partner?

INTERVIEWEE 1: It is.

MA: Great, okay.

INTERVIEWEE 1: Yeah, so, at the moment it's fairly limited in terms of capacity because we're still working on the consolidation of our databases. So really, there's an architecture exercise that we're doing, which is where we're at. So if you think about, obviously, where we've come from, where the hospitality industry has come from, which is basically been a digitalization of certain processes, but it is not the adoption of digital processes as it were, in itself.. you see the evolution and the outcome of that being something like Opera.. Where, for example, Opera becomes your bookkeeping tool, but that's never where it started from. It just needed to do that because of reconciling portfolios and processes of night audit, and guest ledgers, and that sort of stuff. And it's sort of grown up on that basis. But always where it started was, how do I make a reservation. And what we really have seen now is as you start to look at different components, whether, you know, your, your CRM function, your meeting rooms, your EPOS, and all the information centres that you get out of the bedroom, so your, you know, your locks, your TV, your temperature, all that information, or data you can have, but how do you aggregate that? And where does that sit? And how do you connect those parts, so that they're ultimately imprinted back to the guest?

MA: Sure.

INTERVIEWEE 1: Booking Channel, as well reviews, post a feedback, particularly when it's sometimes anonymized. But can you get that information, understand it more.. and so really what we've thought, what we worked on is to say, look, let's build this a ecosystem where at its heart sits a service bus. And rather than for writing integrations between different applications, so having a direct integration between the POS and the PMS or the CRM, or whatever else, is saying, actually, what we do is everything comes through a service bus. And therefore we have our own API. And that API means that building additional solutions on top of that becomes a lot easier. I think that's what we've learned a bit is how we construct that service bus and with a partner that we have in that area, as well, it wasn't.. it didn't actually end up delivering us what we really wanted. And we've had, and they've had to restructure that database in a way that gives us in ourselves access to that data. And that really is where we are at the moment, what we see is the potential

for when we get that.. that becomes huge in terms of what we can really do. And, and the other part of why what we're doing here, then is looking at how we can have a guest own their own data more, and ensuring that we stay up to date, because it is in the best interest to stay up to date, as opposed to trying to match different components in different places. So really trying to create some golden profiles on that basis and learning them from the likes of Amazon and, and accounts and how it might have been done previously with loyalty cards and stuff. For this reason, we're just playing around with that a bit to ensure that it fits and then we can really start to get into a world of prediction and tailoring content from product to specific people, something what that looks like.. I think. So that's, that's, that's a core area of what AI focuses on. And I think that and that's really customer facing.

INTERVIEWEE 1: And the other part that we need to also improve is what happens at the back of house. And we have some functionality and visibility through this dashboard of understanding what's working and what's not working. So we can see, for example, centrally out of our office in the Netherlands, if, if an iPad in the room is not working, or someone makes the room warmer, or tries to make the room warmer from their iPad, but if the message is not received by the handling unit, then the guest in themselves is going to then, okay, wait 10 minutes, 15 minutes, nothing's happened. If it gets warmer again, good. But if it doesn't an hour later, they may phone down saying "My room is not getting warmer". And what we can see is that the disconnect happened in the first instance, create an alarm and reset the air handling unit, you know, classic IT, turn it on and turn it off, turn off and turn on again, to reset it to rebuild the connection. And therefore the guest never realised that there was a fault in the first place, and the ambassador that might have been on the phone for an hour and then has to deal with a trying to fix the problem which they probably can't, maybe an hour later the guest then moves room, the guest gets taken off the floor. So we can really start to use sort of monitoring tools and reconfigure the setting of that part. We see ourselves moving to a sort of faster than real time customer service where the guests never knew they had a problem in the first place. Because we fixed it before it was identified. And I think then the third component to that, and it really is a bit more in terms of how we operate.. It is a bit about how we then start to distribute resources around around the hotel.

MA: So is that human resource, or..?

INTERVIEWEE 1: Yes, that's principally at the moment in terms of what we're looking at. So we do that both from a scheduling tool in the moment to using algorithms now to write our schedules for us based on availability, and next year, we'll start to put some demand into that as well. So we will start to integrate that solution with us. So, based on forecasts we get a better understanding of arrivals, and we can have an intelligent scheduling process that both democratises the process for the employee, but also matches that against the dynamic schedule, against demand. That means that instead of someone sat down with a piece of paper in front of a spreadsheet trying to work out how I schedule 25 people for the next month, it's done at a press of a button. So that's one area.

MA: So just to be really clear what you're saying when you talk about demand and availability, you're talking about room availability..

INTERVIEWEE 1: Yeah

MA: Thanks. And are you actually looking at what people are using in the building?

INTERVIEWEE 1: So that.. that is where we're heading to, that's what we layer it on. So we started putting people counters into certain properties to understand intensity of space use, where it is highest. And then also what we.. if we have that, for example, if we put it in the dining room, we can through the app that we will launch is tell me the same way, like say Google Maps does, tell guests to avoid this time, because it's busy. Or if you want to be able to use it, use us on that stuff. So really try and provide that information to the customer. And then the same thing, you know, if you, you know, why not take 15 minutes extra in bed, because you'll still get your breakfast at the same time as you come back down if you come down 15 minutes later. So really trying to make those recommendations and steer some of that stuff and take that from what people are really doing within transport at the moment and take that as a service as well.

INTERVIEWEE 1: Yeah, so we just.. we're really early stages of installation of that at the moment. And those principly are going in public areas at the moment. So we can start to see that and correlate that against what we're seeing against other solutions, like our tool systems and stuff.

MA: And, and it's based on..?

INTERVIEWEE 1: I think it's based on radiation that measures the density of people within a space at any given time in terms of what's going on. And that is what's starting to give us the volume. At the moment, I think there's opportunity to explore some more stuff around tracking in that area. And we.. we stayed away from facial recognition at the moment because it is clearly controversial. But we can see, you know, of course, we can see huge opportunity that exists within that area as well.

MA: Okay, that's right.

MA: And are there any other part you're also looking at?

INTERVIEWEE 1: Distribution of resources and at the moment we're focusing on front of house team members. But if you start to look at how best to deal with servicing bedrooms, so can we start to create a more efficient pattern by which our room attendants clean rooms.. at the moment, they take the trolley, they get to a floor, and you might walk from one end of the corridor to another. But if you're able to better coordinate when people are checking out or from that side of stuff, actually, you might say I can be more efficient with my use of labour and servicing rooms, than I can.. than I can if I just get my list at the beginning of my checkout. And then I wait to see, you know, when the lights are going off on.. on the roof. And that might also evolve, people moving up and down through floors, where they don't have to take that trolley.. So we, just again, are exploring that part.. how can we better utilise that resource that's navigating through that space.

MA: And in terms of guest or guests customer perspective, obviously the automated check in and check out.

INTERVIEWEE 1: Yeah.

MA: But is there any other automation or robotics, AI? Are you employing any other automation?

INTERVIEWEE 1: From a scheduling perspective, only. At the moment, I think really as a business, what we seek to do is we use technology to manage a process, and people to connect with people. So it's constantly.. it's a constant iteration on what is a process and what we can automate within our department. I think from that talk specifically in the hotel and that part, we are working at the moment on using chatbots more. And so I'd say that part. So from our... what we call citizen connect, our call centre, raised on to look at some of that stuff, and then also starting to explore some of the stuff that are simple repetitive tasks that our team are currently doing. So for example, a travel agent makes a reservation but we don't have a credit card. At the moment, we have to do something about that all we have a credit card on file, that magnet needs to then be put against the bookings. So we're exploring it means that we can use robotization in that part to pick up those simple repetitive tasks. So to do that, specific tasks opposed to job roles.

MA: Okay, yeah.

INTERVIEWEE 1: So look, I think that our model anyway, is relatively lean on people, because we're trying to avoid, we're trying to use technology to manage tasks, and free up the team members, therefore, to really do that [to deal with humans]. So we operate this hotel with 24 FTs [full-time team members] or so. And it's a 192 bedroom hotel.

INTERVIEWEE 1: So what I was thinking.. so, so to that end, it's, yeah, it's, it's already fairly lean. And where we see the intensity of labour sit is around food and beverage still, right. So it really is that process of checking and check out, I mean, one person can do it, we have these larger living rooms that we use to compensate for the bedroom, we don't see them over this revenue generating space. But when people are in here, to satisfy some expectation, you know, they want a cup of coffee, they want to, you know, to, like they would be able to do that at home to that end. And I think, then the automization of the food and beverage part is interesting for us. And within that piece, what we've sought to do recently, and we have no chefs, here we are in a reheating process, but, but it is, it is not actually, that traditional notion of a robot, assembling stuff that's replacing the hands on the arms of the person, it's using, you know, more manufacturing type of an approach to food so that we can use technology to reheat and present it in a credible way, as opposed to using the set that robotization to physically do do the task.

MA: Okay.

AT: In terms of people, I mean, you're the executive, but what's, what's been the kind of reception from the employee side, for example, for the check in and check out? So having someone move from standing at a reception desk, and dealing with a queue of people, to managing the machines effectively?

INTERVIEWEE 1: So I think that we've always.. we've always, since we started the hotel, and the concept in the 12 years ago, now, we've always had the kiosk. So there's not been a shift within our hotels. Okay. I think what you bet if I speak from a sort of slightly non veteran adopts fatality industry, and and also as a customer, I think what's pretty clear is that if you hire someone that enjoys, I mean, go back to the days of Fidelio, when you knew how many times you hit return to move through the different fields and stuff like that. I mean, is this hospitality.. It simply is not Yeah. And I think, therefore, what, what I've seen is an ability to attract people into our business that can actually deliver hospitality, as opposed to perform, you're brilliant at performing a tactical task. And it says really, where do we find people that are interested in the process, then we need to find a different job for them. Because that won't necessarily be in the hotel, because we're trying to automate all of that process. And what that does, then allows us to attract people that have no hospitality background, but quite simply just enjoy talking to people. And that.. that really helps us address that. And that's not to say we're not, we don't suffer a little bit from the war on talent and what's happening, but a smaller scale because of smaller number of people. And we're not competing on technical competency, we'll train that. We're recruiting happy people, then what you end up with is a group of people that are come into the environment as a happy person, where they are enabled or allowed to be happy people, and therefore get a sense of job satisfaction about it. And because we recognise that they are good at what they do, we give them the freedom to do it. And therefore that sense of empowerment, that connection to a broader purpose of what we do really means that we have a highly engaged audience, or bit with a relatively high industry turnover, because we have a very flat hierarchical structure. So really, growth comes with growth of the company. And often these people are not in hospitality themselves, they come here with master's degrees, because they want to learn a language or visit the city. So they are mobile citizens, they're not career hoteliers, in terms of what we're looking for..

MA: You talked about there being 25 employees. Some of the stuff I read was about them being multi-skilled ambassadors, so just does that fall into the cleaning of the rooms, as well, or is that for this kind of front of house only?

INTERVIEWEE 1: Only for the front of house part. And there's some overlap into the kitchen as well, within that space, but not the housekeeping part.

MA: And is housekeeping outsourced?

INTERVIEWEE 1: Yes. We see it as... we work on the basis of a fixed cost per room clean, but it's a very.. there, it's a variable cost based on occupancy in terms of what it, what it is. So we pay a fixed rate per room.

MA: Okay. And in terms of things like maintenance, do you do that in house? Or is that outsourced?

INTERVIEWEE 1: So we have a varying model across the portfolio. Here in the UK it is insourced. And the Netherlands is outsourced too and it's aligned more with the housekeeping provision. So as the facilities management side that we've sought to explore whether we can find efficiencies in aligning any of that.. This is what happens here. And you know, yeah, so we're just playing around with that a bit at the moment.

MA: Okay. I guess with your model, it'd be interesting to just hear about the future ideas like what do you see the applications being? For the key stakeholders, say your guests, your staff, the business, you know, the owners I guess.. What you're planning to do? What are the critical success factors of these projects that you've talked us through? And did anything you've done so far change from the initial model? Has anything gone wrong at any point? And if so, you know, what is the impact on what did you learn from that?

INTERVIEWEE 1: So I think, I think the cool part is we look at our business, we really look at three core pillars. So we look at viability, well-being and purpose. My purpose is guest satisfaction - well being is for the team, well being and the culture in our organisation and liabilities, financial performance. And all the time, what we're saying is, how do we keep

those things in line with one another, and we're caught up with constantly seeking to improve it. And what we talked about quite a lot with it with a team is that simply, you know, if you detract from one to increase another that's a, that's a, that's a zero sum game into what we're looking for. So we really have this demonstrated ability to either fix one grow one, or ideally fix one and grow two. And if you're really smart and get the, you know, get the pot, right, you grow all three, right, successful exercise. And I think technology is an example of where you can really do that. And it enables you to do that. So in itself having a very tech-led hotel, that's not our focus of what we're doing. But by using technology to facilitate it. Actually, what you can do is, free as I said, free, the free the team members up to do what they want to do: to create a better experience for the guests from efficiency and where time is precious component. And because we can then reduce a bit our headcount because processes managing that we can start to see some labour savings within that area as well in terms of what we're doing short space, better utilization of space or using that side of stuff. So that those are the sorts of things that how we would see technology isn't what it is, I think if we go back and look at where we came from, I mean, in principle, our model has not shifted from 12 years ago, 14 square metre rooms where technology is… where we seek to use technology, free people up to do that. And then retail orientated model where we take the people out of the hotel and put them in an office in the spot, with a technical competency. And here we just deliver that guest satisfaction. And of course, yeah, we've moved from Philips to working with SwissCom. And with that we went from using a bespoke Phillips room controller into a Samsung tablet, and now working with Apple tablets. So we've sought to, you know, evolve the solution. But the core of what we're doing, or the core principle of what we're doing hasn't changed. And I think the same thing is true a bit with food and beverage and that sort of stuff is we've retuned up the proposition a little bit, particularly we've moved into territories like London, like New York, like Paris, and where the product has been accepted, you know, in a sort of post 2008 world and credit crunch world with this notion of affordability, value orientation has become accepted, you know, but we just had to increase the quality in some areas a little bit to meet that value proposition because the rates are significantly different within those markets. So the core part is not.. has not changed, I think there are some things that we have perhaps been slow in. So I think we have been slow in this area about, you know, as a company, that's 12 years old, big data was not something that was new 12 years ago, maybe it was, you know, maybe it wasn't in the mainstream, and now it's in the

mainstream. But I think that if we've been smarter, we could've had a platform from the beginning that allowed us to do that. And I think our understanding of who our consumer is could have been much better from day one, than it's been so I think that would be fair advice. I think that has been a failure on our side and one we have to correct me if I'm really honest, I don't think there's, you know, we're here as a business, and we're owner operator, and that's the speed of the rollout.. that delays the speed, the rollout is the acquisition of real estate. But ultimately, we're a highly successful hotel operator that's bucking the trend of within what's happening within from a, from an approach to how me as owner operator and and and these things, and we've proven to deliver really strong returns to our stakeholders whilst maintaining industry leading guest satisfaction in terms of what it is, and, and we don't, we haven't surveyed our team. But I think we have a pretty epic culture, in terms of what we're doing or tracing is a quite a unique environment where people feel deeply connected to us and become these really strong advocates. Yeah. And I think, therefore, if you go back to those three pillars, I think we're hitting three. Okay, really well.

AT: So first, in terms of culture, have you seen any differences between different markets? So you have hotels here, you have hotels in the Netherlands, you have those in the US.. So any differences in terms of how to proceed as you're doing your expansion, or things that have gone wrong?

INTERVIEWEE 1: I think you see, I think that there are some changes, there are some variations with it. And we have to be sensitive to that. And I think, yeah, actually.. I looked after, you know, the Europe as a territory, and Eylem looks after the UK, about a year ago, as we were trying to really realise what was happening with volume and stuff, actually, with with the next wave of growth coming up sort of doing five, six hotels a year, the only way we can do this if we truly try and achieve consistency of approach. And we sort of said 80-20. And by my request, therefore, as I have a, you know, UK person, French person and a Dutch person sat around the table and throw in a Dane, and a Swiss in there, is to say I understand that there are ways that you operate within your own territory, that might be customary practice. But we cannot achieve what we need to achieve. If we do not swallow a little bit of national pride in some of this stuff, and say, am I prepared to give up a little bit about what I might normally want, because actually it is for the greater good and allows a

consistency of what we're doing. So it's finding the balance between where that sits. And that really then comes back down to the measure of what is culturally acceptable within that space, all the time, knowing that if we only do what is currently accepted change never happens. So we don't ourselves want to be at the bleeding edge of change. But we do want to be constantly innovating and moving forward to stay relevant and contemporary in what it is. And it's partly because it's who we are. And so I think that if you know to draw that down, I think it'd be really good. Look at what happens within Paris market. I would say personally, that's been my most challenging territory up to date. I think that there's a degree of complacency that we took where we thought we had the trick of how we open hotels, we thought we identified the right team members and created the right culture. And we go in and we can make it happen. And I think we got it wrong. And I think we got it wrong, because we identified and brought in some of the wrong people. And I'm unclear on why that, why that happens a bit. But I think that actually finding the right people in Paris was probably harder. And their understanding of.. I don’t want to get overly political, but their approach to socialism and what it looks like and the labour market fundamentally challenges us and actually should be aligned. But this impact their mentality of us, the people, you the, leaders, the management, there's an inherent distrust in what it is. And our model was really based on empowerment. And if you said you're free to do this, people say no, but it's not my job to do it. Because I'm only going to do it if you need to deliver this to me, so that acceptance of that has been the hardest piece. And that's not to write off the whole of Paris. There's people that can't deal with that part. But certainly, it's been much harder for those people out. And I think language is also important. So we we've taken English as the language across our business. That was easy in the Netherlands, because it's just amazing how they speak English. Of course, here in the UK, that's pretty simple, right? In Denmark, again, English is pretty well spoken, and even in Zurich, it's been okay. It's slightly been challenged in Rotterdam. But less over there. But, but, but definitely not in Amsterdam. But in Paris. Yeah, it's a, it's a real understanding of what hospitality looks like. And if I, if I'm a French person, I walk into a French hotel, and you don't speak French. And not only French. Yeah, so if you don't, it's not only that you, that you don't speak French, it's that you don't speak perfect French, so if you don't speak with a Parisian accent, you will be judged as a person and for us with our culture, what that looks like, that's pretty bad. That's, that's a little harder to take. And I think as we go into the US now we see some changes, we've had to adapt. So for example, face cloths, you know, the US, they need face

cloths, I mean, why would I not have a face cloth, but it's just not something here that we have an expectation of. So we're finding some of those subtle balances of what we do. But I think at the core, the mobile citizen is global, and that's who we're targeting. And the principle is that they travel, therefore, they are culturally aware, they're culturally accepting in terms of what it is.. they do it more and more frequently, they embrace the variation that happens outside. And there's a reassuring familiarity of what there is. And I think for the generation that we take this working in here is exactly the same part, right? They don't recognise the same sort of boundaries and borders and cultural nuances, perhaps, that some of the older generations did. And I think therefore, for us that has made it also much easier in terms of the adoption of this as a concept because these people are going wow, why didn't anyone do this before? I mean, this is so obvious. And because their context is fundamentally different.

MA: And what about Asia, I read you have some hotels in Asia as well? Because, the way you're describing Paris; power to man, and all that. How does that translate to Asia?

INTERVIEWEE 1: No, no, in essence, and I think, again, where, actually where it would go wrong is not in the team with the front line. It is in what happened with a leadership perspective. So if you take a slightly more experienced person that understands what leadership looks like, and the command and control mentality, that we see them as unenlightened, in terms of what's happening, but that' that generation, I mean, almost more in Asia people are empowered through social media, and that visibility, I mean, it's just different. And you know, even you know, even in take a country like China, and again, I'm far, far from an expert on it. But you know, where it is pretty controlled, in terms of what is there [on social media], but they also still have remarkable access to social content, just not Western social content, necessarily, in terms of what that is. And actually, you really see these guys who embraced it, and have taken it on and enjoyed it. And like I said, the only time it may go a bit wrong is, if you find a leadership team member that is a bit more assertive in directing in their approach. And then that sits at odds with who we are, but then that person just needs to go.

MA: So if you were to envision five years time, you've got the whole layout right, and you've got everything connected up. So you can see this.. what.. how do you envision the

guests' experience changing? What, what do you hope to achieve? So for example you spoke about the right way of messaging, would that be through an app or..?

INTERVIEWEE 1: So we're in the process of developing an app, we will launch that in the next month or so, that's the foundation, the platform that allows then more to happen. And that connection with the guest. So we see that we will move stuff away from our device to your device. Yeah, I think that's a critical part in terms of what happens. And that, because of that, through that communication, I think the nature of what it is that, you know, we cannot digitalize a night's sleep. So you still need a physical product and update in terms of what is, how you sleep with it. The question is, how do you remove the friction from that experience as much as possible in terms of what that looks like? And how do you layer on the experience, the human, the social connection, that makes people feel good about themselves? And I don't think.. again, you know, I think that's really where it sits. And it's an iterative process. And what happens, I think some of the biggest shifts are a bit about how we tackle issues around data and people's data. And right now, you see the companies monetizing data that I give them sort of willingly, but not knowingly, but should I just accept and give it up? And I think there's going to be a moment, like I'm a real believer, because there's a moment where I suddenly say, actually, this is my data, and I know there's money in it. And through the likes of blockchain, I will be able to control and monetize my own data. So if you want to sell my details, please go ahead. But I want a cut of it. And I think that understanding of what happens on that basis, then will be an interesting part of what we do in terms of, in terms of the play in that area. And that's a bigger understanding of trends, stuff of what I see as the start to allow to build this golden profile as well.

MA: Exactly.

INTERVIEWEE 1: Because you know, if you want to make sure that you have access to your bill your history, then then then you need to make sure that it's up to date. And I think the other part then is understanding how multifaceted your customer is. So understanding that you may stay in Citizen M America for your business or you may stay with your family, but you're still the same person. And so again, understanding that booking you know, the channel through which you book to us is irrelevant. We want to be channel agnostic,

whether you booked direct with us, or you booked through booking.com. So channel.. understanding you as a consumer. Booking.com is reluctant to give us that information. But they are accepting that we might ask you, of the guests when they're in our hotel, we have to be conscious. And we don't want to be asking that guest every time. Can we have your data? Can we have your data can we have your data. So by providing the app, which enhances the experience in the hotel, by removing friction, we believe that irrespective of channel that you sign up, that this is something that if you're a regular guest that you are going to want to engage in and show us because it enhances your stay in terms of what that looks like. And of course, respecting all the time, how we use people's data, and what that really looks like. And I think voice is going to be an interesting part, central in what that is. And I think that what.. we know we can right now control our room through Siri, or through Alexa. But we don't want to put a device in everyone's rooms because of the issues around having a microphone live in someone's bedroom and how the guests might feel. But if that's your device, then you can choose whether you want to use voice to control that side of it and have some insight into what's happening. And I think it is then that we become this conduit that allows people to tell us how they want to use us. And we need to just be able to facilitate that for people. So if it's Netflix and again, you know, difficult but if Netflix got you casting from the app onto a screen, I can't do much about that. But in principle, if I can create an opportunity by where you can take your own content from your phone and put it onto a TV then that's.. more that sort of stuff. And I think one of the trends is what happened in hospitality is it was a while ago, these are the glamorous places that you went to, that you aspire to. Now my tech experience in the hotel is worse than my tech experience at home. But then that's a problem. And we have to, we have to shift that and understand that part. And that's where things like, you know, when you walk into the hotel, and no matter what hotel you are already on, okay? Once you first connect that device, you are on the network in any hotel anywhere, because that's what happens when you get home, you don't want to go through an authentication process on that, basically, and it's constantly looking at those sorts of things that we need to be.. we need to be mindful and aware of, and why something that has been accepted by the customer is now adopted by, you know, a significant majority of our profile. If we are not able to meet that need, then we simply create dissatisfaction.

AT: I think adoption is interesting. So when you would implement any type of new technology, be that chatbots or this app, where would you roll it out first? And where would you put it up last? And kind of why? Or have there been any friction, like the Parisians, less likely to be excited about an app, and Asians more?

INTERVIEWEE 1: I think we're going to find that out in the next month or so. But so I think that.. so the kiosk for example, yes, the French are less accepting, because, “excuse me, I booked a hotel - why am I doing this for myself? What am I paying for?” Right? So yes, there is some stuff within it… So yes, if I asked that, and actually I was asked this, I was on stage with Krishna Guru Murphy. And he said, the I don't like it when I have to check myself into a hotel. And he asked me that on stage, man. So what do you do? And I said, well, you have to check yourself into a hotel. He said, you know, what am I paying you for? And I said, okay, let me ask you a question. When you go into, go to get on your aeroplane, do you enjoy going and standing in the queue so you can get taken by someone behind the counter? Now I hate it. So what do you do? Well, I download it, my boarding card on my phone. So what's the difference? Okay, so it's about changing that context, in terms of what's happening on scene and the French are a little bit more picky. Actually, the culture runs a little deeper, shall we say? They're tied to a key and want to hold on to it. More than perhaps in other places, in terms of what that is. And I think an agent, actually, the channel would be.. The actual issue we have in Asia is we are already behind the curtain. Actually, I think you see products that are ahead of what we're doing. And if we are, and we don't position ourselves actually, as a tech-led hotel. It's not really what you said, I think we discussed this, we use technology, but what we want to come across as a hotel, we want that genuine connection. But, people see us as a tech-led hotel and then position us in that way. But there are hotels right now. And of course I’m not sure how well they work, but fully robotised hotel. But that's not… for us, that is not what it’s about

INTERVIEWEE 2: I remember I think it was seven years ago, when you first opened and you did an opening with Marriott. And his reaction was something similar, I think, so how come you can run a hotel without reception. And because we see this as a barrier between guest and ambassadors. So we saw it as, this is not full service, and now he has all of these Moxy..

INTERVIEWEE 1: Yeah, the chain [Moxy Hotels by Marriott]. And that's the time. So see, and I think we you know, in how and where we choose to roll certain stuff out. Yeah, we need to pilot stuff. And I think one of the things we need to learn from and get better at is, you know, looking at new ways of working. So we don't look at hospitality industry as how to create change, we're looking at, you know, at tech, and understanding what that looks like. So, in the app, of course, in itself it is a tech. But we should also be clear and agile in our approach and the implementation of that part. As opposed to what hospitality seeks to do is we only do it when it's fully formed and polished and understood. Actually, to be able to play with this and be much more agile in your approach is far more how we need to operate and do what we're doing. And then look at, very clear, data points by which we can take that feedback, where we have a clear understanding what success looks like, but stay open minded to actually how it becomes adopted in used and learn from that, from that approach. And I think that, again, from the guest journey part, in understanding guest satisfaction is we make, we make a statement that we believe a one minute check in is a good check in. We don't get to one minute check in. But one of the things that people like most is the speed of check in. So we can set ourselves up and say great guest satisfaction is a one minute check in. But if we can now properly monitor a) what the speed of check in actually was. And in some feedback loop, find out what their level of satisfaction was about the check in, we can overlay those two things and saying actually, are our expectations of what great looks like, representative of what the guest is telling us? Because if it's not, then we got to change it and understand actually what's really important to what we're doing. So there's constant touch points and opportunities where it is not in itself invasive, but... And that's you know, the same as great service, is the waiter that comes to your table every five minutes "is everything, okay? Can I get you anything?" Fuck off. Or, as the person, the person when you're just about you finish your glass of water, and or you go to sit there and then the next glass comes in there, they understand it and they present it. For us, that's how we need to use technology to one hand to understand when we think the guests might need something and then for deliver it and also just understand humans, intuition of a human is going to be better. It is, I might argue is a great show and service will always be better than that technology part of what you're doing.

MA: Yeah. That's great.

AT: Maybe one more. So kind of how do you leverage your ambassadors to identify those barriers, all those processes that aren't adding value to the customer? Is there any like concrete steps where you have a meeting once a month, once a week? Where you go through suggestions or something? Suggestions for improvement, or anything like this? How do you tap into their knowledge? As they're the closest contact to your customers?

INTERVIEWEE 1: I think it's a really interesting question. And I think it is one that's hard to actually, to get that information. But in terms of what we do, I think we have a pretty open culture within our business where we take feedback. And we really cherish feedback in terms of what we get. And sometimes it's pretty hard to take and sometimes yet what they share, okay, within that narrow part is okay. But if I try and put that into a broader context, and therefore it's quite difficult, if those elements, that are quite difficult to adopt.. some of the stuff they're seeing within the broader context. But what are the proper channels for that? We have a feedback software, GSG, guest satisfaction guarantee, not very sophisticated in terms of what it does. But everyone is on that. And therefore, if anybody sees anything, they have the opportunity to share that with anyone in the business by which they can escalate it. So there is a channel by which they can do that. Now, how often they do that..

So we have a channel. We sit down with the team members, structurally on a monthly basis, because of how we remunerate these guys. So they get a monthly bonus, which is 20 to 30%, depending on the territory, not the salary. And therefore there is a formalised approach, meeting, every month, which is a conversation around their growth, their development, and in itself, and therefore is a platform at which we could share and change that side of stuff. And every shift there is a briefing pre and post where they will share what went well, what didn't, what were the challenges. And then in every territory, we have people that are technically competent, shall we say, or that are specialists around systems around food, beverage, and they are in the properties and should be connected with the team taking that sort of feedback on board. So we try as much as possible to deal with that part. And the other thing that we've seen is that the opportunity to be able to grow in a technical discipline that they have an interest in. So the guy that for a long time is running our social media started as an ambassador. And we thought Christ, we probably better have a social media strategy. We said "Who do we think that's good at social media idea?

Oh, Diego! Okay, Diego, go and write the social media strategy for Citizen M". Okay. And I think we're really open to, to that kind of stuff, and why someone steps forward, because that is part of also maintaining this culture of growth and staying connected to purpose in terms of what we do. But of course, the pyramid narrows pretty fast. And therefore, whether we service 19 hotels, now let's make it 25, you know, we're 500 employees into the hotel.. that's 500 different perspectives on, in terms of what we're doing and putting that stuff together. I'd love to say we're better at it, I'd really would, but I think it may be an issue token for that. And also be keen to understand how people do that really well and better, because I think that's something we can and should become better at.

INTERVIEWEE 2: So I think the other part also.. is that so we have this reverse thinking model. We start with desire, the experience, then higher up we have to have at least.. well, arising from it we need people to deliver it. And they need an optimal environment to do that, and get optimum leadership. And I think the systems and processes come after that. Of course, we know all these decisions that are made in support office, but as the general manager, you're the main conduit between what's happening in support office and the hotels, and you cascade a lot of information. And you also represent hotel operations, that is, as an area manager, I try also do that once a month. So I see our role as being very important to also be that conduit and effectively actually share how we blend new ideas into the hotel. So the decisions are made out there. And then I've also seen recently, we had a session in here for our leadership. And you see also they make so much effort to stay connected to the hotel, because they might actually come with fantastic ideas, and they actually have been working with them. And also can be strategies and it was interesting for them to hear employees' perspective and what happens if guests just check in on app and go to room right away? And it will tell like, you don't necessarily have the phone desk on the ground floor.

And I mean, again, I don't think that no one has thought about that. But it was interesting and useful for them also to hear. We tried to do this more because I think that we learned a lot of lessons.. It was during this, our director of operations.. Sorry not operations, membership, came from KLM. They also shared a funny example when they first launched the app in KLM about now you can receive a notification when gate changes, they forgot to tell the people who work at the gates, for example. So he just said, you know this why I'm

so happy to be here because we put so much effort, but we want to avoid the roadblocks that might happen here. So feedback, I think is very much appreciated at all levels. It's not top down for me but the other way around too.

MA: Thanks very much.

INTERVIEWEE 1: Did you get what you need?

AT: Yes, I think so. Do you guys have anything to add or anything you feel like we missed?

Appendix 3: Case Study 2 Transcript: McDonald's

1 July, Guildford

MA: Interviewer 1

INTERVIEWEE 3: Global Technology Role

MA: Okay, um, so basically I want start off thinking about robotics, Ai, service, automation things and where it has been used in the customer journey. And specifically, at what customer touch points. So from the research I've done, some personal experience I've been in over the weekend to have a look as well, store or restaurant, we should probably say, it obviously got things like the touchscreen stuff going on the app that's been developed. And then there's the kind of delivery option as well through UberEats. So I think, but is that where you are? At the moment? I've seen that there are other trial things going on? I think voice activated things that the drive-through would use are being tested, I think in Chicago? And the possibility that they're going to be using robots in terms of some of the operations, I think, specifically frying I think I read recently? But yeah so what I'm interested in today, is where you're using this stuff, and then where do you see it going? Or what's in the pipeline? Perhaps?

INTERVIEWEE 3: Sure. Um, yeah, I guess the investments over the past few years have been mainly in the customer journey. So the touchscreen kiosk? Yeah. We've actually played with those for about 20 odd years. It's only in the last 10 that they've really taken off. They started in France. Yeah. What made a big difference with the kiosks for us was they were treated as a piece of technology originally. Yeah. It's only when they were integrated into the customer journey we had, it was a bit like the airline industry where you have to train your customers you have to train your employees, get people comfortable with, with not too much bad press, because there's always always that pressure. Yeah. And while you're doing it, yeah. So the, you know, the kiosks have been very successful in some of the French stores, we're seeing 90 plus percent of transactions in the restaurant, go through the kiosks, okay. And we've got around 15,000 restaurants now globally with those kiosks.

INTERVIEWEE 3: As you say, delivery, it's Uber Eats in most countries, but some countries like Russia, us. Some companies start with the why. Okay, in my mind, same journey with Glovo and Foodora and then the mobile app we must deploy in 2017. So most of the innovation has been around customer touchpoints. So how to order, how to pick up, how to pay. Yeah, it's only fairly recently that we started to invest in areas around the employees. Primary driver, phase one, the restaurant complexity has gone up significantly, the days of being able to look out in the lobby through the drive through and see what your customer traffic patterns are like is gone, obviously, with all these new points of order. Yeah. Much more customization. And then there's a macro economic and political issues such as record low unemployment, trying to get people to actually work in the restaurant scene. It's not per se about labour reduction. Yeah, you just can't get the labour.

MA: Yeah, I can see that. Yeah. Yeah, sure. Okay. And so when you introduce the, the touch screens, and I know, France has happened for a long while, and maybe that was one of the first areas to have them. Was there a design behind? Were you kind of integrating the tech first and leaving America to later for example? Is it about I don't know. Geographies, willingness to try new tech, I guess to a greater risks of getting it wrong in America perhaps.

INTERVIEWEE 3: Yeah, some of it is down to that at any point in time. Companies like McDonald's - multinational companies - go through these cycles or centralization and decentralisation. France has always been a traditional country. And it's not just McDonald's, but traditionally in a country that has experimented outside the bounds of normal business. So a lot of these experiments were from the local team. Yeah, but try to that we've tried in Singapore, Australia, US. Some of it's an aptitude to innovate. Some of it is an answer to think holistically, which the French did particularly well, okay. Most of the experiments we did in places like Denver, we literally put this technology and stepped back and wondered when nothing happened. Okay. So the kiosks were primarily deployed in Europe first, because the president of Europe (McDonald's) at the time saw the utility. Yeah, so some of it, some of it stands for political support, financial prioritisation, your makeup - your customers, really. Are they used to using this particular technology? The US tend to be a bit late in adopting tech.

MA: Okay. So and the plans that you're aware of coming into the customer journey in the future? So we've mentioned things like the drive thru and robotic fries and things in terms of thinking about that customer journey, specifically, what are the drivers as to why we might do these things, you've talked about the fact that there might not be sufficient labour force to be attracted into these roles potentially, in the restaurants. But again, you know, some of the things I've read potentially, you know, relate to things like reducing of human errors through their greater ability to personalise what you're, you're buying, but what are the drivers? Why are you doing it? How's it going to affect their customer journey in a positive way going forward?

INTERVIEWEE 3: The primary driver really is about concerns around labour costs, labour, labour availability, okay. Outside of that, McDonald's a few months ago, acquired a company called Dynamic Yield. Yep. We start to integrate that into additional menu boards, and they'll be integrating things in ps4's to sell mobile app in the future. The whole push here is we're a company based on basic mass production, we've gone down the road of mass customization, a kitchen model we call made for you, which is basically that food is cooked, to order, or assembled to order. So that enables much more customization, which in some countries, like the US is important, because US is a country where you go and order steak and chips. But can you have chicken, steak, and vegetables and chips. In countries like Japan, it's very, very little, customers there are a lot more compliant, I'm sure, very little adaptation. But on the whole, there is a push to enable customers to have things more that way, which is not going to lead to more customization.

And then your ranges are also increasingly complex and it's, you know, I think most people look at McDonald's and say "how complex can it really be to run an operation on the dollar"? It is incredibly complex. Yeah. You've got companies like In and Out Burger on the West Coast of the US, which pride themselves on a very small menu item range, McDonald's has a much broader range. Yeah. Part of that is how do you effectively use the products you have, whether it's sauces or lettuce or pickles or your proteins? But then how do you enable customers to start mixing and matching those within some sort of brand guidelines? You don't want a Big Mac with fillet, you know? It just causes issues. So yes, some of it is around being able to be more agile and adapt product to customers' needs.

MA: Great. Okay. And do you see that there's more tech coming? Because when, when you think of the theory of, you know, what can you automate, how, how can you automate things, lots of what you do is low skill repetitive kind of actions in terms of thinking about the actual production. So presumably, most of that stuff, theoretically is going to be automated within time.

INTERVIEWEE 3: You know, I think anything's possible in time. But this is dealing with a construct based model. So you look at McDonald's, obviously, a huge multi-billion dollar company, but that's not really what McDonald's is. At its core it's a franchise company, assuming that your local business, your local franchisee down the road, may own one to five restaurants, having to make decisions about where to invest his or her money, whether it's in new crew uniforms, fix the same machine or buy a new grill, or invest more in technology. So it is a very capital constrained business.

It is a business based on speed too so I don't know if you ever saw the video of Flippy. On the West Coast. It just showed that when we say low skilled it is actually a very dexterous, yeah, job at the same time. So I'm not sure what you could automate. Number one is what you could automate, it's very hard to automate from a speed, accuracy, point of view, certainly is. When we look to the customer journey for things like we'll look at the whole journey. Yeah. What cues are you giving a customer when they walk into the restaurant? Or the kiosk? What is there? How do you not make them feel stupid? If they think they're not going to understand it, they're not going to use it. Where do they go afterwards? Perhaps if they want to use table service? It's a closed loop. Yeah.

With food production very similar is do you want to automate an element of your food production? And if so, is that really going to do much? Or do you want to automate the entire cycle? For instance, the cooking of hamburger meat patties from the decision? How many need to cook through to disposing of any of that aren't used? Yeah. If you don't automate that, then it's prone to human error. So if the hypothesis is we're trying to eliminate error, do you have a human in the loop? Or do you have it here? And on the live show? Okay. Fine. Okay.

MA: So the overall strategy in terms of tech and the implementation of the tech, I read in the reports it is about the experience of the future, and the digital and the delivery being these kind of three pillars of growth? Growth accelerator. So I wonder what they stand for? What goes behind those things? And you've obviously mentioned as well, the acquisition of Dynamic Yield, and what might come from that, I guess, in the future. But what is the overall strategy? Is it about needing to make sure that you've got a workforce sustainable going forward? So I guess and bringing some automation into that, the other elements, that overall strategy going forward, of why you're doing these things, or why McDonald's is going to do these things? So I guess we were talking customer journey and workforce limitations.

INTERVIEWEE 3: Yeah. From an automation point of view. Not really, I mean, I'm sure there's other potential benefits. But there's also downsides to as well. From a customer journey point of view. It's really, McDonald's, through to the 90s to the turn of the century, trained customers how to use McDonald's. Yeah, I mean, we basically, I will have a Big Mac and a happy meal. Tell me what you want. Happy? Do you want fries? So we effectively trained you. Now it's become different in terms of hospitality. It's how do you want to place the order both in terms of technical - Do you want to do it at home or during the drive thru through whatever it may be? Yeah. And then once you want to order, you should have to order in any way you want, versus us training you how to do that. Okay. But then that that leads to if you look at things like order accuracy, the more you allow personalization customization, the more you allow, or free format ordering, the more mistakes I make. Most of those mistakes, either happen in capturing the order, or the property or the presentation of the order. So the more technology can assist in some of that, the better we can do two things. One is speed of service, or improve our speed of service, improve accuracy, both of which are key metrics. Yeah. Okay.

MA: I read somewhere as well about increasing drive through capacity. Is that purely about the speed? I wasn't quite sure exactly what it meant. Yeah.

INTERVIEWEE 3: So if you look at a typical unit for US, I can't remember the exact stats but typical US restaurant do 60-70% of their trade through the drive thru. Yeah. The UK probably not far off. Okay. Anything that contributes as a point of friction for customers?

Yeah. And to work, regardless of hospitality, and personalization, the social aspect, which are all important, was a business built on volume. Yeah. And seconds in the drive thru means millions of dollars. Yeah, as a company. Sure. And customer convenience. So any way that you can reduce friction is what we're looking for. You we've tested things on the drive here, such as voice recognition systems. Yeah. So we've worked with Microsoft a while ago. So what the customers saying the crew is hearing and then it's all also being validated electronically, okay. Through to things like we need to make sure what's in the bank is accurate. Each one of those technologies has an inherent flaw, you know, overhead. Yeah. But yeah, drive through speed is pretty critical, as well as accuracy.

MA: Ok. Ok. So and in, in integrating the tech, particularly the touch screens, I guess, but the app as well, to a degree in those restaurants, what, what was the process? Like in terms of thinking about the design, the service design? Is there any? How do you go about doing something like that in a big company? Do you use a model or how is the whole thing designed

INTERVIEWEE 3: There's a few ways with the drive through, we have an electronic model we've used for years. So you can start to emulate where the pinch point, where the friction points are. Three bases such like we have in Romania, Lille and Illinois and innovation centres have big warehouse, the full kitchens in there. We bring in crew, members of the public, both to run transactions that we can pick up, many restaurant run them through the Innovation Centre, okay? Or we can bring customers in and get their feedback on things like test or experience, whatever it may be, okay. We do a lot of pilots. So a lot of what happened with kiosk in France was through innovating in the restaurant, okay? And it's lots of subtle, a lot of this is more sort of Kaizen, right? Yeah. Yeah, bang, innovation, simple things, such as, if I see a point of sale, I'm going to head towards that as a customer, because I assume that's what I'm going to order. So yeah, if you're trying to drive customers to kiosk, you made the point of sale, low profile. So they're not obvious. But if you don't want to use the kiosk the employees is still there. And signage and the such like so a lot of this is also showcasing and testing incremental innovation.

MA: I've been to different McDonald's where you say I'm in this zone, as opposed to taking a tank card and all those things, those examples of what we're talking about how it's subtly

changed, I think I've been to one where it's like, is it radio frequency? Yes. Table service as well.

INTERVIEWEE 3: Yeah, some of this is you've been with federated and franchise. So the franchise bit and the federated bit is, we've grown over time by having a lot of power to devolve to the Managing Directors and the markets. Because yeah, just like the franchisees want to be close to the customer, the community, local sales legislation, so on so forth, sometimes that leads to tension around what makes the most sense in a particular country, right. In most markets today, most countries today they're rolling out RFID. Yeah, we can pinpoint you as a customer. Yeah, I can just pick on those devices upside down, I can find you, as opposed to the zones are a much cheaper way of doing that. Or antiquated. Yeah. But I'm still sort of wandering around with a tray trying to find you as an additional customer. Yeah. Typically, as a customer, you're going to look like a meerkat, you'll be looking for your food. But it's not as it's still a point of friction. So you'll see more and more of that sort of table service. Okay.

MA: And in terms of I read the expression, guest service leaders and this whole table service language. How was that designed? Is, is it was it seemed as a conscious thing, and it has it led to, I don't know, increases in customer service.

INTERVIEWEE 3: Well, it's interesting it’s led to increases in customer satisfaction and increased employee satisfaction. I worked with a bunch of Canadian guest service leads for some demos for the press couple years ago. And it's partly learned from the airline industry, when the airline industry first introduced kiosks. No one needs them. Because you didn't know you know, they were stupid, same table. So they put employees out. Often dress different, often hired with different skills to say to a customer, hey, come over here. Let me show you how to use this. Make you feel comfortable with it. Guest experience is, very, very similar. Sort of it reinforces hospitality. But it's also about making people comfortable with technology. Sure, because there's so many different ways. I mean, the days of just going, joining the queue, getting the order, then some different ways of ordering and picking up - different places go to what's table service, where's my order? Five orders at the kiosk? I don't want to pay cash. What do I do if there’s a spider in my food? Sure. So yes, it's okay. Very deliberate. I mean, it's like any technology is just an aid. Yeah.

Out of the day. Yeah. I mean, it's, it's an age of the customer and the employees, but without the human piece, it doesn't work.

MA: And some of those roles, presumably. So it's about employee satisfaction, you know, increasing it - it's a more enriching role than what might have been there before?

INTERVIEWEE 3: Yes. Yeah.

MA: From my own observations, I took kids to one restaurant on the weekend experience it on my own (McDonald's). And it's a very different offering to what it was before. That's, you know, people coming around with balloons, the kids and stuff. And actually, the person I don't remember, it was one of these guest experiences, experience leaders, but was actually behaving in a way that was really good, you know, the observation of people waiting for orders checking back with production times, the when these things are happening, I mean, I was acutely watching it, obviously. But it was really impressive. Its hospitality on a different level.

INTERVIEWEE 3: The interesting thing is, that should have always happened. We've known for years, we've had stressed lobby hosts for years. But some of it was interesting when I was working with the Canadians and also working with the US guest experience leads. And just what a difference. A different uniform. Canadians were dressed differently to the US. We're in the traditional uniforms in the US. Okay. In Canada, it's like putting on your first suit. So it makes you feel like you're really part of the operations, the team. You feel the prestige differently.

MA: So my next question is about implications and critical success factors and thinking about the key stakeholders, maybe as people in business. And we've kind of covered some of this. So I mean, in terms of guests, we've talked about some of the benefits. You talked about having your order made for you -approach. We talked about table service, and picked up that with the touch screens, you're able to get service in different languages, which I'm guessing, again, is another potential benefit. Convenience factors. I'm interested in the tech resistance that people may have had both guests and employees, or the resistance that maybe you noticed when you've had to move into a new operating system. And yeah, the

reduction labour costs, I'm also interested in, I guess, in terms of is that through less people being employed, or where's that come from? We've talked about the error rate decreasing a little bit. And then I've read through a series of articles, all sorts of interesting stuff on the average spend going up in different regions and different bits, different bits of the business model, I guess, until terms of delivery. I read some stats saying that the delivery average spend is one and a half to two times up on overall spend in Japan with those using the app, I think it's 35% increase in average, Canada, digital money displays average paying going up. And I think US today, US Today reported that the average spend through the touch screens is higher than through a cashier. So I'm just interested in why some of it is I mean, I've got my presumptions, but I'd love to hear what you think.

INTERVIEWEE 3: There's actually some psychological studies behind these. Not within McDonald's, but yeah, yeah. If you think about the old McDonald's, we went in and joined a queue. Yeah. You fall under customer peer pressure. Yes. Get your order out. So you know, we can have 15 new offerings on the menu. You probably order a cheeseburger because that's what you know. Yeah, yeah. The eyes on.. the eyes behind you, for sure. Jesus, just hurry up already. Yeah, I get my sandwich, right. The drive thru (puts the pressure on you) even more. So I think with things like kiosk and the app you're ordering at your own leisure. Yeah, it could take you three times longer to order but it doesn't feel three times longer. Because you're in control. And because you're in control you browse the menu, because you're browsing the menu, you're probably going to try something different. Yeah. Rather than feeling under pressure to choose the same thing. Yeah. And the average checks, the average spend is an interesting one, because there's a couple of factors. One is average spend, typically at the kiosk. Every spent advocate (marker) is higher than the front counter. But there's a couple of factors behind that. One is the people who order kiosk, they typically use credit card which tends to have a higher spend, or they're going to be family groups or larger groups of people. So there's that piece, so you're naturally going to see a shift away from the front counter of the higher average check. The other piece is the suggestive sales, the browsing of the menu, finding premium products and that boosts the average check. Yeah, okay. Fine.

MA: Yeah, that makes sense. So in terms of should go back, can we go back to the resistance? Yeah. In terms of customers, and I guess employees?

INTERVIEWEE 3: Yeah, um, you know, I, I did a master's in change management and organisational development just because I think that's actually the most fun, fascinating side of technology. Another great believer in Britain, there's rarely true resistance to change. It's not that Luddite technology is bad. It's more a lack of understanding, like a comfort, like a reliability, okay. Where we see resistors with employees is typically they don't understand what this thing is. It's not making their job easier. It's not reliable. That reliability piece is massive. I mean, in a McDonald's where you're taking orders every few seconds. So if the technology is not reliable, and reliable isn't just it's working, there's no light yellow light here, people earlier on the copy that latency, no show your everyone's raving about the cloud, and we use the cloud a lot. But we don't use it for the point of sale very deliberately, because when I press the button, it better respond immediately. So the resistance from the employees is often more down to under-investment in training, or change management, or job redesign. Okay, very rarely have I ever come across anything in terms of I feel threatened that this technology is going to put me out of a job, okay. And technology in the broadest sense, you know, were the words in the restaurants years ago, the cooking meat used to be a high skilled job, believe it or not, it's too wet, low skilled and such a speed, you're cooking me the food safety implications. And it was all manual. Yeah. Now we use clamshell grills, which if you put the meat on, you pull a patent platen down, which includes both sides. That's technology. Again, that's worked well, because crew were trained on it. In the UK, when we introduce the new operating platform made for you did it in the 90s originally, and it failed, and it failed because we didn't believe in it. The crew didn't believe in it. We didn't we think we were different. So a lot of this is about the communication to get staff on board with the understanding. So in terms of the customers, I think a lot of the same applies. I wouldn't say this, the customers who come in there aren't showing resistance because they have choice. Yeah, they don't want to use the kiosks that I have to show. You see a lot of pseudo resistance in the press. Yeah, McDonald's putting crew out of jobs because they don’t have tills, which is simply not true. It's not why those kits were introduced. Same with the mobile app, it's all about choice in ordering. Just

I'm trying to think of some real cases of resisting.. I probably think that maybe there's like an age demographic to potential resistance with some of the tech. So maybe if I'm older, I'm presuming that those people are going to be more resistant to a tech, whereas the young ones are going to be well up for it if they don't actually have to speak to a human.

But I'd rather use the tech. So I don't know. But again, maybe your customer base is perhaps more skewed towards younger versus older anyway, I don't know.

MA: It really depends on which market you're in. Okay. It's a bit like the old argument about what all millennials want though?

INTERVIEWEE 3: Yeah, a few years ago, I was working in a drive through with a Microsoft CTO, and we're working with a crew kid. Kidding, he was probably 22-23 and he had two jobs. He was the breadwinner for his family. He was a millennial, he was a job security. And you sound like he wasn't going to change jobs every couple years. Yeah. I think the demographic. I don't know what the demographic overlay is, in terms of use of kiosk in the sub sites not was just done to experiment things and loyalty and data capture about you as a customer. But yeah, you know, we're, we've been a little slow there deliberately.

I think from a crew point of view, there's always been this debate. With a smoker POS, you design it's a house or pinch and zoom and all of this cool, crazy stuff? Or is it more efficient to have a nine by 10 matrix, which the crew just used to and you see a competent crew just banging away with that ensuring that their POS, I don't know what the demographic looks like, it's not something I've typically come across. So typically, in our restaurants, our average age is quite low. Sure. Not as low as people think it is. Typically in the US isn't like 26-27. Okay, in, in Japan, it's sort of mid 50s. Okay. I think what's interesting, there is less about resistance is more incidents of colour blindness in Japan and much, much higher. So having a funky screen with lots of colours to indicate status isn't going to work for most people. Okay.

MA: Yeah, that's interesting. Okay.

INTERVIEWEE 3: The other thing - there's another set of stakeholders, which are, obviously a business management of normal prices. Yeah, it's less resistance to change is more economic. Yeah. We simply cannot afford it. And you shouldn't just think of the capital investment. A lot of this technology has a long tail of investment, because if you buy it now, there's going to be that annual service cost, the service cost or whatever it may be maintenance, repair, whatever. And then there's perception. I mean, there's always this

perception that food isn't real, which is, you know, yeah. Other bullshit, but it persists. You have to be careful with things like automation about what message it sends out. Yeah, observe how you're treating your staff fruit plans for him, you know, is it real food or yeah, introduction of fresh beef in the US has done wonders fake ground, even though it's the same beef effectively.

MA: In terms of the reduction in labour costs, so where does that come from? Is it the reorganisation of who's doing what? Why you physically need people? Versus automation.

INTERVIEWEE 3: My hypothesis is we're not going to see a reduction in labour costs. Okay. We don't have often, many of our restaurants don't often have enough people to staff them fully. For well, everything they need to do. So they struggle. Yeah. And they then have to make compromises because of the struggles or recruiting wrong people. Yeah. I mean, it's not a uniquely McDonald's thing. It's just, you know, hospitality.

MA: Yeah, it's a tough industry to be in, sure. And hence the concern about people losing their jobs. It's like, there aren't enough people to do that. Anyways. It's interesting. Yeah. So it's quite unbalanced. And how they discuss these things, I think…

INTERVIEWEE 3: Oh, absolutely. I mean, it's, "could you fully automate a restaurant?" Probably, but one measurable experience would be so how do you use the people you do have in the fires? I mean, could you have a robot wandering around the lobby. Probably. But could do you that while providing an environment where you want to make people feel special, you want to interact with them? Not sure. And so you want to differentiate yourself here, getting the best people into those positions. is it's the, you know, it is important..

MA: There's quite a lot of research, I think, suggesting where the automation is going to be best. And yeah, that will come I think. Okay. Um, so I think one of these areas is thinking geographically how things are different in different regions and why they're different. And we've touched on maybe France being in an innovation side in some of the tech and why the US is further down the line. But any other points that come through and what we've discussed so far, where, I mean, you've given some examples where you talked about working with people in Canada in the US. And you've given some examples about Japan, as

well as how the colour thing might on tills work differently. But are there any other examples where you think there are really stark contrasts between the different geographies and how things have occurred so far?

INTERVIEWEE 3: Yeah, I mean, India. India, we have two record development, licensees one in South and one in North India and development. Licencing is basically a super franchisee here, who owns the rights to the brand from our partner country. So we would spend some time with the one in South India based on Mumbai. And he gave me a great overview of his p&l, which looks very different to Western p&l. So if we pitch to him, labour savings is one would you want to save labour? I mean, it's in bountiful supply. And yeah, food cost in a McDonald's in India is expensive, somewhere, you know, probably nearly twice as expensive as street food. So it seemed as if you couldn't be seen to use it as a premium. Yeah. Bad news. It's expensive. So how do you reduce commodity costs? Automation around technology, it's not a big deal to them, because then you need to send a technician and utility costs are extremely high, which then has implications one, how can you reduce utility costs to think relying on those utilities, you have to be a little bit careful, it's only of actually, you know, electricity, you know, if you owned restaurants 30 years ago, if the electricity failed, you just got the calculators out. Today, with the amount of technology integration, you close the shop.

Places like Brazil, increasingly India, massive import duties. So things like you know, as we get into automation, even today, with some of the technology we use, it's very hard to get that equipment into Brazil. And they don't necessarily have the industry to manufacture themselves, okay? Russia, but then you enter that law, or the Great Firewall of China.. Chinese are less bad, because we've got a large number of restaurants over there to amortise cost across. But then also you've got companies like Amazon, who have a presence there, Russia, we've got 400 restaurants, but Amazon, Microsoft, Google don't have a hosting presence. So things you do in the cloud, you just simply can't do in Russia.

But then if it's something we did, turn of the century, we profiled all US franchisees, if you familiar with the adoption curve, yep. You could actually map all your franchisees based on technology by behaviour, admittedly, a number of years ago, yeah, into early adopters, mass adoption, like I think you see the same across every market with slightly different mix,

so France tends to invest more in technology. US you're probably going to see a few more laggards. So there's more demands on cash. For the franchisees are probably been there longer. We get into the end of the 25 year contracts, and, actually, I don't think I really want to invest, or they may be brought up with break clause.. When Ray Kroc was running, he was like why? Why do we need technology? Yeah, he did it before. But is it a real option that they can choose not to ever do this? Or will there become a point where their hands are tied when it comes to franchisees? So at the end of the day, one of the things McDonald's does very well is we call it the a-word. Can everyone be aligned? Yeah, is what we do better than any of our competitors. That plus we have the scale, but that's it costs down. So often we will have the lowest cost that's proven solution industry. But at the end of the day, we can't spend the franchisee's money for there's a limit the end of the day, if they don't uphold brand standards, and there are some mandatory things they have to do them. They can't be published channels. Okay. But more as business people if they're not relevant to the consumer, yeah, we'll get to that restaurant fine.

MA: Okay, so I've kind of covered my there, which is great. If you've got time, I'll ask on these four questions there in a completely different Well, they're not in a completely different route, but they're going slightly off-piste what I've covered so far. It's what he's doing as part of his research, he's looking at automation, how it might fit with CSR policy overall. And I've got four questions. I've got a little bit of background to them, if that makes sense. But it's more difficult for me to add to the bone, if that makes sense.

INTERVIEWEE 3: Just for clarity, CSR, corporate social responsibility. Yeah?

MA: Yeah. So some of the background, I'll give you the background all in one go. And then I'll ask the questions. But he, he's thinking about, will automation or robotics AI, provide better, more meaningful jobs? Which is, I think it links into a UN sustainability, sustainable development goals. And, you know, and if so, how's that going to happen? And then he's got this idea. While lots and lots of people have this idea that we're taking manual labour, and we're going to end up with less manual labour when it all becomes more automated, and therefore they'll be more knowledge based or expert work. And he's interested, do you see that happening? With McDonald's? Does McDonald's support that kind of aspect? And his question, specifically, are, what is the role of business in future proofing the industry? Is

there a need or even a desire to demonstrate socially sustainable leadership? I come back and ask these again, I'll just give you the overview first, what happens when a task or job gets automated away? And basically, how might businesses support employees as the industry transitions to automation?

Well, do you want me to go back through the questions? Well, let's take one at a time. Yeah. So, I mean, his first question is, what is the role of the business in future proofing the industry?

INTERVIEWEE 3: Industry being hospitality?

MA: Yeah. Industry being hospitality or restaurants, even more specifically, I think in this case.

INTERVIEWEE 3: It's a hard question to answer, because the corporate responsibility is to make industry sustainable, competitive. I mean, that's the whole reason we do what we do is to stay with a sustainable model of hospitality in retail. So our role in some ways hasn't changed. Yeah. There's always going to be that tension between, how much you invest in future proofing versus how much you invest for today? At what point do you jump on the adoption curve? Is it dollars be leading a bleeding edge? Probably not because of the scale? Should it be leading edge? Well, yes. In some areas with things like environmental services, such like, sustainability, food traceability? You know, I think a lot of the technologies we will deploy will have to be fairly mature. Yeah. Just because we can't deploy summer 38,000 restaurants, you know, I think I'll shit. Yeah. The industry, we just deployed Betamax, and everyone's got on with VHS. Sure. But the same time we know it's a big enough thing on its own. I think what's gonna happen is they set some of the standards around. Yes. Around this. I think what we struggle with is there aren't many standards. So as you get to technology, black standards around IoT equipment, interoperability, your standards, like match them for equipment, but they're not widely adopted. So there's still a lot to be done in terms of if we're going to be truly sustainable as an industry. How much do we do within the same McDonald's? And how much do we have to do across the industry? So I think we partnered with Starbucks recently on waste reduction.

So yeah, it's bit hard to answer because it's the entire premise of businesses to say, stay profitable and sustainable. Okay. Now, the question is, what? Are we going to be the merrier?

MA: How much do you partner with Uber Eats? Who could go into the dark kitchen business in the future? Yeah. What about you, this idea of my food comes out of the dark kitchen doesn't do wonders for me. But I'm trying to take a balanced approach to it. And I'm actually organising to visit one in September because yeah, it's on and it comes up as part of our curriculum now. And I feel not as informed as I should be to be standing in front of and up with discussing it. So yeah, it's interesting isn't it. That is quite an interesting concept.

INTERVIEWEE 3: We look at the nearest we have, tourism. We've had delivery since 2008, in Middle East and Asia. And there's, they'll often be a designated restaurant and room area that does cooking, but it's still a real restaurant. Yeah, sure. You read some of that. I agree with the Balanced View, it is that lack of literal transparency. You can walk into any restaurant today, you know, if I ordered my food to be delivered, it'll be from a real kitchen.

MA: There was an interesting thing on Wired, an interesting article and dark kitchens recently. And in terms of that transparency, just as an interest in the design of the more modern restaurants, I understand that you've taken away that kind of the line of visibility into the kitchen has disappeared. I think that's right, or in the ones that I've looked at.

INTERVIEWEE 3: It depends, okay. Some of it is just physical constraints. For instance, if you go to Cambridge circus in London, yeah, the kitchens are on a different floor, okay. And there's a conveyor belt so conveyor. Sure. Transporter. Some years other restaurants have been to where they've put one was in Japan, this glass panel, you can walk down the side of the kitchen, okay, as a guest, but it's not so much hiding things. It's how to fit this stuff in the end of the day. It's a long production line. Yeah, let's see something which is more like this. Yeah. Okay.

MA: And, and how how's the balance over time changed from being more restaurant centric to being more drive through? And then has that changed the need for the back of house to be set up differently?

INTERVIEWEE 3: You know, countries like the US has always been heavily drive through. It's a cultural thing. I mean, I lived there for 10 years. I went through. We laughed when we moved over there because I'd drive through a pharmacy drive through. Stores. ATM. Yeah. We thought how lazy are people here. Within the first couple of years, we use all this. So okay. I think in the UK, it was much more heavily geared towards eating in restaurants, the high streets is changed over the years to show.

MA: Okay. So he's asking questions about a need or a desire to demonstrate socially sustainable leadership?

INTERVIEWEE 3: Yes. We have done that to a degree, Yeah, I was gonna say rights management, training and industry leading. Yeah, I mean, we, we put a lot of people through degrees. There's a lot of industry recognised certification. So we have 700 universities around the world. You'd be surprised how many of our staff are college educated. At times there are more degree folks doing degrees, or had degrees behind the counter than there were coming into the restaurant. So there's always been that. There's English under the arches we do in the US giving people English skills. You know, a lot of our franchisee model has always been the same, which is that the beauty of franchisees is that part of local community support. Local community makes investments on schools and such. You know, in today's cynical world, it seems in the wrong light, sometimes, we've got one of the world's biggest private charities as well. Outside of that sustainability, obviously, the supply chains, the other big piece, yeah. Okay. Like every company, we're looking at blockchain. Does that answer now? What was the question?

MA: Okay. And then, so looking specifically, I mean, we've talked about automation, his next question is around if you're going to automate a specific task or job, and I think we're talking about tasks or jobs generally, what happens around that? And I guess, what's the responsibilities perhaps getting out of the company, and in the bigger picture, we have

talked about this already about the difficulties in attracting sufficient labour pool and most of the restaurants etc.

INTERVIEWEE 3: So my hypothesis is, and this is my personal view about this is we're not going to see much of a change in the workforce we need. We're already asking them to multitask. Yeah. If we take the drive through as an example, just to make it really clear, I guess for me, if at the moment you go to drive through, you're placing your order the someone actually taking your order, that if that becomes done solely through voice recognition. That person as I observe is multi-skilled taking payments and orders, I think one of the windows perhaps, what is the potential that the payments will become automated as well, and then that specific role at that point, time will disappear? Or everything's theoretically possible? That's as certain as the paperless office was 20 years ago, okay. And, you know, I'm not an example of paperless but you know, your, your typical example, in my office is very simple because of how much I travel. Yeah, I'm still still paper based. So you go through a drive for eight o'clock in the morning. And to your point, you've only got one person taking orders. Yeah, potentially have two speakers. Yeah, taking payment, probably making up the happy meal boxes for the day, re-stock in the area, blah, blah, blah. So this person is doing, you have to automate an awful lot of tasks to put people out of jobs. Yes. It's only one of the tasks that that person's job involves. Yeah.

Okay. So I I'd be surprised. I mean, the more we talked about reducing labour, if you think of it in purely economic terms, the more efficient a restaurant is, the more business being put through. Yeah, the more business you put through the lower your labour percentage, yeah, if you think of it a percentage of top line sales is probably a more realistic proposal. We, you know, a lot of if I look at our competitors in the US, a lot of places our competitors are doing, okay, is well we can't service all the demand we have. You look at you know, you see a drive thru Burger King, Starbucks, when whatever it may be.

MA: Fine. Okay. So, at this stage, I guess I can summarise the question because I shall get shot if I haven't extracted some form of answer. This stage, I'm submitting that you're not seeing that jobs, potentially, are going to get automated away. It's tasks that they do. And then as there's a struggle to sufficiently staff, the restaurants, you're not seeing there being a reduction in humans at the moment?

INTERVIEWEE 3: I don't believe so. You know, there's a lot of effort going into automation, such like, this is a pretty new area. The technology itself is not new. I mean, we've had solar motors for years, we've had IoT in various guises. We bring all that together and make it sustainable, maintainable. The data you need to drive it alone is pretty complex, a level of data standardisation. So there's, it's very, very complex. Okay. What's interesting is another thing we have talked about is really the mid management services, the field consultants, the folks that are going out supporting the franchisees. If you look at people we probably do need to retool, it's going to be those individuals. Okay. Because what they're probably x restaurant managers, yeah. Man restaurants with different operating platforms, different assumptions. Everything's changing for these guys against you know, so that's kind of like an area manager, we're all affected. Okay. And that's in how they support these transitions and these kind of questions that might come up or how they're supporting people running a business. That's very different to how it would have been when they were doing it. Yeah, I think it's both. One is they're the first line of communication. So a restaurant so as you talk about resistance to change or overcoming the reluctance to change, it is very important to have them on board. Secondly, is often the reason you end up with an area manager and a role of an area managers because they did a great job of running a restaurant. Yeah. What made them successful? Isn't what makes a restaurant today successful? How do you give them tools consultant franchisee to help them build their business? Okay.

MA: His last question is about how my businesses support employees, as the industry transitions to automation.

INTERVIEWEE 3: You know, some of it is just transparency, communication. So it is going to affect someone's job, being honest about that, what are we going to do about it? If it's not good, it is going to change someone's job, be very deliberate about job redesign training. If it's going to eliminate jobs, then be very cognizant and transparent about that. Not that I believe that's where this is necessarily going. You're the firm consultant piece, probably the biggest, how do you equip people with the tools needed to consult with the restaurants, even all the way through to managing directors of a market? How they made decisions, given? If I look at the marketing department today, or in two years time versus what it's like three years ago, we've introduced digital advertising, segmented segmentation of customer populations, big data, tableau. What else, loyalty schemes, you can always make the

argument that everything made a marketing department successful in the past is fundamentally going to change, you know, the five P's or whatever it is around price promotion here, there's still that basis, but the way we make those decisions change. It completely, fundamentally changes. And the same with the restaurants. Yeah. Well, the answers can be restaurant level, unit level, or wider.

MA: His last question is about the future, what you know, how do you see the employment makeup in the future? And I guess the resources behind the marketing, potentially changing. Those kind of roles that are happening, but are there fundamental areas that you think are going to look very different in the in the restaurant the future in 10 or 20 years' time?

INTERVIEWEE 3: I will use this debate with our Chief Digital Officer at the time, but I'm not a great fan of five year visions, because three years ago, no one's predicting what, even internally. I think most of the corporate support structures will change. Yeah, and kitchen equipment, as we call it. And that's things like kitchen equipment, versus technology, different Help Desk, different teams, it's all coming together. I mean, both of those. Today, the guy who fixes the fryer probably needs a good technology background in the future to do that. Exactly. Welcome to the fixed network probably need to understand how the actuators and the fryer work. So there's probably a big change in the ecosystem, the sorts of restaurants, we talked about marketing. I'm sure there's more in finance, I mean, going to sort of SaaS platforms away from typically capital intensive projects. Yeah. The restaurants themselves. I don't know.. Obviously, there's the face around guests expressively. So the customer facing individuals in particular, there's an expectation they are more hospitable. Outside of that, I struggle to see a massive change. Other than saying that they need to be even more hospitable in the future, or they just maintain those good hospitality skills they might already have. Assuming that hospitality skills today are good, they need to maintain the show. And I don't know what more hospitable will look like. Okay. There's a check. With those fatality. There's their genuine some as Yeah, there's the old "can you train it or do you have to have it".

MA: Yeah, the empathy, isn't it? Yeah. Okay. That's great. I think I've covered for me to cover your nose. I'm sure I should be picked up. That's brilliant. Thank you very much.

Appendix 4: Case Study 3 Transcript: Cheval Residences

11 July, London

MA: Interviewer 1

AT: Interviewer 2

INTERVIEWEE 4: C Level Operations Role

INTERVIEWEE 5: Senior Marketing Role

INTERVIEWEE 6: Senior IT Role

INTERVIEWEE 4: So, the Residences have been around for like 36 years. They started off as just basically assets in London. And then, as those assets were sitting empty most of the time, they decided that they wanted to basically start making some money from them and decided to go to the apartment side. And it just grew from there. It's a mixture of seven properties; two in the City, all the rest are West End, Knightsbridge, Kensington. The newest one being Three Quays in the City, which is probably our highest tech property. The rest are very, very grand buildings with good interiors and 14 serviced apartments inside them. And then there was assets owned and managed by us. Last year, we changed the direction, we wanted to start going into management contracts and expanding the brand.

The owner's happy with his assets in London but wanted to expand the brand. And we recognise that Cheval Residences, in London they're very luxurious because he bought them as assets, they are very grand spaces, very big apartments and large spaces, which in the current sort of economic model isn't that desirable anymore because everyone it's about real estate and maximising every square foot that you can. So we created three brands, we restructured the company to allow us to manage contracts, and we created three brands. Under the Cheval collection umbrella. Cheval Residences being the very much grand dame large spaces, prime locations, 2, 3, 4 bedroom penthouses, family homes, as well as some random houses that we sort of acquire as we go along. Four or five bedroom standalone properties. Then we created Cheval Maison because we realised future investors are going to want something that's much more compact, less generous in space but still on that same level of luxury and quality which Cheval is known for.

I would say that we sort of sit on the upper level.. We're the Four Seasons of service apartment, yeah. So we could buy other sites, maybe not as prime as Knightsbridge. And next, the Tower Bridge, so to speak. And still, nevertheless, the same standards of our residents of the same level of luxury and service.

And then there was a third brand rated because we felt that the residents of Maison very much appeal to their sort of timeless, they appeal to a very refined, wealthy market, there is a market out there, as you probably understood that sense apartments is a massive growing market, and has recently started to strip hotels as an investment option of choice. Because the profit margins are better, you have a less costly staff base. And we wanted to appeal to a more youthful millennial market. So we created a third brand called my Locanda we haven't gotten here at the moment, we're really actively looking for sites, a minor can, very small apartments, they'll only be studios and one bedrooms, whereas Maison and Residences could be one bedroom, two bedroom, three bedroom. So there'll be 25 to 30 square metres as an apartment, which is quite small, compact. And then creating a generous ground floor or basement space that is very similar to we work, you can have a grab and go to the restaurant and you could help yourself to better manage a time, you could do your laundry to clean your laundry area by obtaining cool work on your Apple Mac, that type of show model, which lends itself to building the ark. Currently, the office offices Yeah, but literally we can we can we can move in splice it up upstairs quite easily into compact apartments and then do something dynamic below. So that's just sort of a bit of who we are. At the moment, we've signed a management contract in Dubai, you have probably another 20 projects in the pipeline, different locations. And again, the contract is a rolling kind of model lends itself to properties outside of London, because the smaller number the units, the larger the spaces, you need to get a lot much larger rate. Whereas if you go into Manchester, the city dictates that there's a benchmark pricing as hard to get any more than £150-£180. And therefore you need larger buildings, larger quantity of units to make profit.

MA: Right. That's really interesting. Thanks very much. So, um, I guess, should we go? Do you want to handle going through the questions, we kind of just start? So we've got we've got a series of questions that are all fairly easy and straightforward. And we can maybe just chip in and we're just in a very relaxed way.

MA: So we've obviously looked in to your operations and done some initial desk research on the app and on the website. And both are interesting to us because of the AI behind them. And I guess we just want to understand how you've tried to build that in a way you've used it in the customer journey. And why you've made those changes potentially.

INTERVIEWEE 5: Yeah, well, especially on the website side. I mean, it's area that's been driving the Netherlands introduced the the AI components, because one of the reasons we talked about is that unusually, rather than just going to a web agency and saying builds a website, we've gone to their almost like a conversion specialists. Yeah. So we've gone to them, and they build a website, which isn't that a primary specialism but they've got the resources to do that.

INTERVIEWEE 5: And so it's really the next evolution along the way. So we've had it in for about getting close to a year, I suppose. So I think still a bit unclear as to how effective it is. It was on the back call, also that I guess a good trip doesn't change consumer trend that the website originally prior to that was in decline. Volume of bookings coming direct to us your website was not was not as good as it should be. Yeah, so these are we knew we had to create something different. And we have seen great improvements. Since we launched it, we had moved to the obviously the personalization of the writing, which is obviously what people are looking for.

INTERVIEWEE 4: Everybody's trying to, you know, drive direct bookings to attempt to increase margins. And it pays off - once you get it right, we see an increase of 35 to 40% more direct to our website than a year ago. And we had a bit of prophecy that the Three Quays opened in 2014. And at the time, I think because we were moving into a model where and the West End properties, you get a lot of repeat business from some of the Middle Eastern countries, whereas this property wasn't gonna appeal to them directly. And so we sold off, I think we're lagging a bit more heavily on some of the 0TAs. But over time, we've really stripped that back to the point where now it's less than 10% of our business. Yeah, we can we can so we often turn it off in the summer, because it's just didn't exist. Don't need it. Yeah. So yeah, I guess it is that sort of direct booking.

MA: And when you talk about the personalization of the guys coming to the website and having a personalised experience, what does that mean? Well, yeah.

INTERVIEWEE 5: Yeah, what happens is how are you making it personalised, practically, to this point, it's been largely looking at their interaction with the booking engine. Okay. So if they've been looking at a particular date, then that's when they come back to the site is saying, Are you still looking for x date? Yeah. So it's been really, I think trigger them into taking one step further along the journey. But the next step, and what we've just started doing is uploading images and uploading content, which is going to be displayed based on geographic location. Um, so primarily, so let's say the US audience, they might value the longest day offers, they might value the fact that we've got a washing machine in the apartments. Yeah, I mean, it sounds silly. But yeah, if they're just browsing the site, that might not be obvious. But if it pops up as you do, you know, by the way, we've got this. Yeah. And so I think it's more just thinking about the the key markets that have bookings and saying, okay, what's going to appeal (to this market)? Is it the fact that we've got certain sports channels, or that Thanksgiving is coming up? And we've got a special package related to that. So I think it's, that's really the next step.

MA: And is that partly driven by Avvio and their intelligence from all the other people are doing this?

INTERVIEWEE 5: I'd like to think so. I mean, they're giving us some recommendations. I mean, they obviously.. we know the product, so we're driving some of the messaging based on recommendations that they've given us. What I don't know is how much of the AI is feeding in. I mean, they're not that bold, or transparent. But okay, the back end of that. So how much of that is working off data collected by their engine or whether it's data that's coming from Google that's being scraped? They need.. they use that data to keep us happy in their business, and we're paying them long as we are seeing continued growth, improved guidance (for guests), keeping us technologically fresh, and innovative, and they know that convenience will make us stay.

INTERVIEWEE 4: Yeah. It's harder for them.. in the fact that because we are much easier for them, if we were in a hotel environment, where you have bars, bars, restaurants, you have

different content, we're somewhat limited in how we can use the AI much more than than other hotel groups. Yeah, that we're still looking for ways that we can do that.

MA: Okay. Tell us a bit about the app - you've had the app since October last year?

INTERVIEWEE 6: I think we've been limited, though. Yeah. Connectivity with property management system on how much we can actually do with the app, I think it's actually going to come into fruition towards the end of this year. Yeah.

INTERVIEWEE 5: So the primary, I mean, the I think the, you know, the initial idea, of course, was to go "No one's using in room directories anymore. It's difficult to update and relatively unwieldy. So firstly, migrate all that content online. But it's not, obviously, it's not supposed to just be a copy of what's on the website. That's not useful really. But the primary function that people are interacting with is the direct messaging service, you know. So that's built into the platform. And that's been quite successful. So that's, I mean, I get alerts when people are starting conversations, and whether it's, "I want more coffee pods", or, you know, ask for a good restaurant (recommendation) or so that people are using engagement, that function. But as Gavin said, if are replacing our property management system this year, and currently, there's no link between the two. Okay, so what it doesn't do is tell you about your upcoming stage. And so there's all that functionality that we will be talking about building in the back end of this year.

MA: And how does how does it actually work? Someone's interacting, waiting for a message? Is that going through to an email? Or how does it work in operation?

INTERVIEWEE 5: So, operationally, it's the concierge teams that get the messages?

MA: So they're tasked with handling it?

INTERVIEWEE 5: Yeah. And they can either have the platform open as... on a desktop, or the app, or whichever. But it also will, if there's an email trigger, okay, so that they do get an alert. And but equally, if they're on the system is just running in the background, it will pop up again.

MA: And operationally, how's that work? Well?

INTERVIEWEE 5: Yeah. I mean, it was slightly surprising at the hotel, I'm kind of like, gosh, is it really a fantastic idea. Yeah, you guys are gonna have to memorise so much. I mean, I suppose the the primary interactions come with the Three Quays property, which is our, I suppose our biggest and more, most transient. There are fewer on the other properties. But I mean, the response time is I mean, we've got an escalation, sort of particular service. So sort of standards. Within 20 minutes, they should have an answer. It's rare that it gets escalated up to to me, which is after that turnaround, okay. And that's fine as well. I think my point is I like something (that can be) opened and then closed. Yeah, the reason I said all of our properties, and I was a user. There's something quite satisfactory about knowing it's in print. Yeah. When you when you record a request, like, can I have some more towels? And the housekeeper is going to call back at 10 minutes? Yeah, you can see that being done. And it's closed when it's closed. Yeah. Yeah. And they can I mean, there's all sorts of functionality where they can say, you know, your request is pending. And I can update the status. And again, an internal app allows us to cross sell. I like the fact that it has video guidance… but unfortunately we have very clunky files. And when you hire rent a new apartment, yeah, refrigerator, microwave them up over the video saying click here, click the put the pot in, press go. So from a user experience is much easier than reading just a bland instruction manual.

MA: And how have you encouraged people or incentivized guests to use the app; to download it and to interact with it? And so, have there been challenges with different cultures and different ages of guests?

INTERVIEWEE 5: Not that I'm aware of any. I mean, it is included, we do have, as part of the (post-stay) survey, they got a question about “Did you download the app”? And when I think.. I mean, most of the people who didn't download it, the answer is why didn't you download it? I didn't think I was going to need it. But the awareness is growing.

INTERVIEWEE 4: lot of discussions about the one that I was cutting out about was whether we just remove collateral. So they're forced to change habit we didn't really get an answer to within what the bracket and mixed age group. Yeah, there are there is still rely on paper,

we're still tempted to pull the rates down. And then like if you want information, yeah.. But the touch points are pre arrival, and some of the other websites when they arrive the Wi Fi code.. So first one side, we have the Wi Fi code. And then the concierge is obviously saying if you want to chat to us, this is a way of doing so you know, when we do promote.. on collateral in this, this collateral in room. But I think, again, where it's going to become really relevant is when we have this stay information on. Yeah, so they can look at the upcoming stay. And then one of the things as well as that we can say right, your apartment is now ready, because often we get customers arriving early. And then what.. right now they're using the messenger, majority say it's all they use already, but if we could just have the status (to pop up in messenger). And particularly Three Quays, yeah, we've been a bit more proactive and speaking to like businesses and discounts and champagne, a few deliveries and restaurant, which is only visible on our app.

INTERVIEWEE 5: Yeah, and we would suppose the focus is trying to make it as relevant and useful. Yeah. So in time, it will be more kind of relevant to incentivize people financially. Yeah I mean, I would definitely, I mean, whenever I travel, if you've got information about your stay on the call. Yeah. That's nice.

MA: And the partnerships, while I apologise but I saw on your website and fairly prominently so that you're collaborating with the kinds of Waitrose to provide a night room service. And. How, commercially.. How does that work? Because it's quite interesting, because it's quite prominent the way some of those messages are, like above your own messages.

INTERVIEWEE 4:I think obviously, there's an element of branding by association. Yeah, that would be linked with Waitrose? Yeah. Not bad for us. Of course, the big plan. Yeah. While there were luxury, restless walk down the street.

INTERVIEWEE 5: Best, I suppose. I mean, you say about our own messages. Which ones? You mean, because we're don't have our own food and beverage. So yeah.

INTERVIEWEE 4: It's another reason. At the end, we want to try and start implementing a lot to all these services. They make it real. Yeah, comparing us between hotels. Yeah, sure.

We can do room service. We can have food, you can have your shower, your massages. So there isn't much difference anymore between and we've got the better facilities.. But I mean, certainly for us, it's about the service.. we do get 10% or 5% (commission). But presumably that.. the important thing is your guests and a providing them with better service.

I mean, certainly, the delivery services are used a lot, and we track all this stuff, whether it's website or video. Yeah. We're very good at it. We collect a lot of data. And we review that data to see whether it's working, not working, or that's disappointing. I thought it'd be better to take up and then modify your strategy.

MA: Sure. Great. Okay. And going into the future, you've talked about how that might develop and the integration with the PMS and things. But do you have other plans.. do you have a strategy of where you're going with tech and particularly AI and automation and things?

INTERVIEWEE 6: I think the limitations have certainly been around our property management system, integrating into that has always been difficult. Moving on from that Q4 we will be implementing a new one. That does offer a lot more integration capabilities. So we would build on to that new PMS system moving forward. Okay.

INTERVIEWEE 5: I mean, Gavin, if you want to mention the, because of course, it's about the hardware that you can instal in, in the apartments. I mean, there's obviously the front costs there. But the new residence, we're talking about Chromecast enabled TVs, so we would be offering anything that's Chromecast enabled, you know, any Apple, your Netflix, and etc, YouTube, you would be able to cast your own content to the TV. Once again, we're looking to incorporate that into the app. So if you do want to stream your own content, download the app, and you'll be able to authorise the device to do so much more. So we moved that to the new brand, because I think we want it to be, yeah, tech, highly tech. So basically, we're looking at.. we're having conversations.. Now listen, this one worrying about whether we still put radios and sound systems into the room? Yeah. Do we need them anymore? Is it just an expense? Or can people people just be happy to stream their content on to our TV or soundbars? Do we need telephones anymore? in the rooms? Do

they get used? And certainly with the new property we will definitely try to be using the mobile phone as a key access system. Yeah, we'll have mobile self check-in counters in the lobby.

M; So with that tech focus of the younger brand, if that's the right way of saying that.. And anyway, aiming at younger people, is there a strategy that you would follow? That it'll be less labour intensive through some of that automation? And that's part of the strategy or it just comes with the fact that it's going to be more?

INTERVIEWEE 4: Doesn't the younger generation function in a different way? Yeah, I'm sort of borderline and just got my head around Apple Pay. I used to have to liquidate my wallet all the time. Whereas now I have no cash in my wallet. I'm just like that, that says the way that they behave? Yes. From my point of view, there's an added benefit, which is the lowest cost.

MA: And do you see that applying to the other teams or luxurious brands as well in time or not necessarily?

INTERVIEWEE 4: I think we have to look at it as location by location basis. Now London properties to a lesser extent, okay. Yes, I think it's, it's, it's also the country that you're moving into.. people are very tech savvy, meaning it will be much more tech orientated. In terms of personnel, we're pretty lean already. Yeah. Unless you can find some sort of robotic to clean your room to standardise..

INTERVIEWEE 6: The Alibaba Hotel in Asia...

INTERVIEWEE 4: We still operate in a market where you have to have people and provide service otherwise, that's how.. that's your differential, with which you get another hundred pounds on the rate. And it's also just the different way of doing things, they'll still be someone standing in the lobby around those machines. And if someone isn't tech savvy, they'll be like, Okay, what sort of innovation is this, the ability, or the design comes in, because we're looking at having the grab and go at the restaurant, the bar and the checking area all pretty much together. So you know, if someone is not buying a drink, they can be

supportive on the on the ground, or vice versa. So there's an element of that the guests will be able to use their phone to buy something on the grab and go and order some add-on services. Yeah, users access the laundry room, etc.

MA: So potentially, in that model, you've got a job that's maybe more enriching, because there's more elements to it, potentially happening.

INTERVIEWEE 4: Yeah.

MA: In putting the website and the app in place, did you consciously design the kind of service journey and where? Because you've talked about touch points a couple of times pre, during and after this stay, did you like consciously design it from a service point of view? Or how was it?

INTERVIEWEE 5: Yeah, I think.. I mean, it does continue to evolve. And so the criteria are actually very good at this sort of, whenever we talked about scoping. The first question back is, why do you use it. Is it because your customers have asked for that? Because you think it'd be a good idea? Okay. So that's always been the primary driver. I mean, we went, we scoped out the next set of what we would do, and I think I put a wish list together. And Judy, the director said, you know, what's your evidence for that? Yeah. I just thought it's a good idea. But sometimes, there's a bit of pushback. Yeah. So I guess the answer is, probably initially no. But yes, for any future endeavour.

MA: Okay, and it's an academic question, but would you use a model? Do you think to do that? Or would it just be from experience, and there'll be some logic to what you do?

INTERVIEWEE 5: Yeah, probably be logical based on any kind of feedback that we can collect.

MA: So in terms of.. we've talked a little bit about the implications of what you've done so far, and what the critical success factors were, I guess. And I think most of what we were able to read through the articles that I found online, in the interviews that we found, relate around what those might be for the guests and the business generically, but we weren't

able to find much about your team and people involved and how.. you've painted a rosy picture that there haven't been many pitfalls so far. But how have the people been supportive of the app, I guess, and integration and promoting it to guests, and you talked about one of the properties, being more proactive with local businesses, which then feeds into all of this, but has there been resistance of the tech or..?

INTERVIEWEE 5: I haven't encountered any. Okay, I mean, I promoted it with the head concierge. And on both.. generally, we have another system that we use called NoCross, which is quite advanced housekeeping and engineering model. And I must admit, when we launched it, we were very nervous about the fact that the housekeeper's English is not their first language, they're not highly educated.. Turns out they love it because they can monitor everything, and a switch on the phone tells them where to go and what to do, what additional requests there are. They loved it. Bizarrely, engineering, have resisted it. And you can still.. because they find it, maybe they just find it a chore. They are constantly getting alerted saying go to do this and fix that. I like it because I get to see jobs that are still open jobs, that are parking, when they shouldn't be parked. Oh, I see that the ticket took them two hours to repair a leaky sink, but in reality to take everyone from an operations point of view, it's great to show and just interface with the PMS as well. Yeah. But eventually the PMS will have that functionality, maybe less over the engineering side of housekeeping, you will probably move away from the old system altogether,

INTERVIEWEE 6: We're seeing that in PMS companies, they're trying to be, or become more of a one stop shop. So they know that they've been keeping all this data on previously, they weren't doing anything with it. Whereas now they're realising companies like to... Because they've already got this data within their databases, it doesn't take much data, one supplying all the information to these other systems. Anyway, you know, the inspected rooms, the clean rooms, the kitchen times, etc. for them to build another module on top of it, and incorporated within the PMS. And we're seeing that a lot. The new PMS system that we're going with, it just simplifies everything because otherwise everything else, the current PMS system, everything has to be additional support. And software, which requires linking to something malfunctions, okay, you go to the first person there - and it is not us. So it's costly, and takes time.

MA: And in terms of guests, how they use it (the app), has there been guests' feedback on the app as well, that's positive, negative, or..?

INTERVIEWEE 5: It's quite neutral, actually. Because the way it's structured, it's, you know, there is trying to encourage them to give some degree of feedback, but in terms of what they'd like to do, I've not actually come across any, any concrete suggestions. And where there was.. we put that in there.

AT: Cool. Well, my section is going to be relatively short. You don't do f&b, so we can talk about the future more broadly. So how do you see the future of your industry? What do you see as the biggest challenges kind of going forward? For example, in terms of Brexit, or having to implement more tech? What do you see essentially happening in the next, say, 10 years or 20 years?

INTERVIEWEE 4: The quality is certainly.., we haven't experienced difficulty in recruiting yet. But when we do we have good benefits, we do pay quite well. It's getting harder to find the right people. We sort of haven't really gone down a heavy, heavy tech route.. so with regards to the type of workforce, you're.. you're hiring from a relatively large pool, but it's still getting harder. We've implemented simple things like e-learning that you could do on your phone or on your laptop. And benefits, reward schemes... Things, mostly software that we use for from a staffing point of view. Yeah, yeah, from F&B wise, we're being asked more and more to do it. There's a nervousness.. I come from a hotel background, I hate F&B the most. It's just painful for very little profit. Once you work in service department, you think oh my god, it's so easy. Once you throw chefs and waiters and customers and expectation into the mix, it becomes a lot more painful. We will probably look to put f&b operations in but we will look to a third party to operate them. And either they can serve as the group as a whole wherever we go, or finding someone who just is very good at what they do. Yeah. Because of what your hotels, if you do have an amazing restaurant and f&b concept, it'll still be empty within a year because people distrust or just don't do this creativity, or it's just too expensive. So it's better to get someone else to come in and run it. So we're hiring a company that will design our F&B concept, bar, restaurant, from a design point of view, how to be, how to function. And then we'll pass on to the book saying this is

what you have to offer. Are you interested, we'll take 10% you do everything else, you have the rest of the staffing, you know, headache.

AT: In terms of like, okay, you're talking about software, whereby in terms of hardware, if, hypothetically, hypothetically, in the future, you had a robot that could do all of your housekeeping, for example, would that be something you'd you'd be looking at or any point?

INTERVIEWEE 4: Our CEO is obsessed by this, this robotic vacuum cleaner for guest corridors. Yeah. I'm going to just do it with one of our properties just to get them happen. Absolutely, if technology can help us, yeah, it's just hard because they're such three dimensional spaces that require human beings. I have yet to see something coming market that is.. that can do that.

AT: Yeah.

INTERVIEWEE 4: Research and money needs to go into developing something like that. Yeah, yeah. And you're always fearful about tech tech failure, because obviously, the malfunctions, the timeline to get it back up and running.. remember when Cumberland opened? Not the recent one. There's so much tech into the room that literally within two months, it was all malfunctioning. And I think there was an article in the paper saying that they couldn't sell 40% of their room stock. This isn't like a 900 bedroom property. Because the causes of the clothes, the TV go on.

INTERVIEWEE 4: Lines was the same. I think the big tech companies like the Alibaba example, you know, the Googles of the world, Google's seeing a big drive from them in hospitality. Certainly, with regards to online comments, and reviews, and so forth. So the more and more those guys start focusing on hotels, I think you will slowly start to see automation, but it will be by themselves in terms of development. Yeah, I think Google is almost covering everything from holidays, to flights, to cars to whatever you want to pick. I just need a hotel now. Yeah. And we're quite fortunate, because I think so many, it's very sporadic in our industry, and everyone is trying.

INTERVIEWEE 6: So many legacy systems, it's only just now taken to the cloud. Yeah. I mean, GPS. So as we know, as the products are constantly being replaced, yeah, so we launched things in Three Quays five years ago, which are now redundant, but we didn't even think about it then. It's only been five years, and at a huge cost. So investors are very sceptical about tech, because we're having to replace all the radios in Three Quays, because they're not Wi Fi enabled. You can't plug in your phone anymore, because of the old iPhone or the new iPhone. There's nothing wrong with them. They look nice and all, they're just redundant.

INTERVIEWEE 5: I mean, operationally that's becoming more challenging, I think there's almost an argument that some of the distribution functions would make, you know, sort of job ID potentially redundant and trim in 10 years. Yeah. Because you will see you turn over you just say, Well, we've got X amount to spend, stick it all into Google, and they make the decisions for you. And it goes through the reservations team, and then you think Well, yeah, but everybody's trying to do it. Because then I, we talked about it, we didn't go with it at the time. But there's another AI company come with a name that will test different subject lines and emails. And so, you know, once the computers get so knowledgeable, and then they'll target based on, you know, with American spellings and the way that American might speak.

INTERVIEWEE 6: Yeah, you're seeing a lot of new trials in the market. I think these days where they were attempting to replace jobs roles with automation and robotics, the new restaurant in Boston, the Asian one, I think there's one person to take cash, everything else is robots. And you can order via an app and it cooks the meal. And it puts through, and then it comes out on the belt. There's no people. So yeah, exactly. I think that you will see more and more in the future.

INTERVIEWEE 4: Yet for hospitality, and our level of hospitality. So long, yeah. It's like they're paying the premium for service. And I don't think there will be a point where people are going to resist even when the technology could potentially exist at that function. People will say no, because you pay extra for the human. Yeah, yeah. So I don't think you can completely eliminate the workforce.

AT: Yeah, okay. Interesting. So when, if, okay, it might be relevant to you guys, by thinking of McDonald's, for example, and then trying to automate their kitchen. And once they do that, effectively putting people out of jobs - how do you feel about that? What do you.. Where do you see the responsibility of business, especially the big business like McDonald's or Starbucks or any of these in kind of future proofing the industry? So then helping those employees that are effectively put out of job transition to a new role, or to a new skill set? Do you see that?

INTERVIEWEE 6: I think it's going to create a trend. I mean, you're certainly going to need more maintenance engineers, if everything is automated by robotics in the kitchen. Yeah. Without a doubt. So I think, you know, will be you won't have people flipping burgers in the back anymore, you will see a more a higher demand for other services within the same, you know, if not, the industry, certainly within the mechanics of keeping it all up and going. Certainly IT skills and automation skills, cloud services, and so forth. So I think it's going to become more reliant on all of that, you know, if their workforces currently are safer, call IT 10 people, once you automate thousand restaurants, you're going to need, you know, certainly a lot more than 10 people looking after the machinery and so forth. In terms of automation, and moving things online, obviously comes a huge security risk as well. Right. So we went to an interesting seminar with our CEO. I did not so long ago, and our insurance that was held by our insurance company, and their cyber security team two years ago consisted of 20 or 30 people, it's now 600 strong. So, you know, companies such as McDonald's, as they move to a more online mode, their security firms are going to have to expand as well. So I think it's up to companies to start creating a demand for those areas. You know, where they're going to have a shortfall and people flipping burgers and so forth.

INTERVIEWEE 4: It's fun. I mean, I remember two years ago, I was on a ship and they had a robotic bar. Announcing the launch the first red bar in London with a robotic pint maker? Yeah, it's coming. Yeah, yeah, definitely.

AT: What about then in terms of academia, so we're kind of in the business of educating the future workforce. So what kind of skills should we be teaching our students? Because I guess often we, we talk about machines taking over routine, repetitive, systematic work,

and then kind of creative and the jobs that require empathy, staying with humans. So how do you see that? What else do you see as the future skills of hospitality?

INTERVIEWEE 4: I think it's pretty much as you said, I think the the higher level of tech and tech understanding are needed more and more, not just from them in the marketing but in the service side, as well. And we find that we were struggling a little bit because we have people that have been with the company for a long time. And we're moving forward, great leaps now. And we find that we're recording more and more frustration, because they didn't grab that technology. And I think I just say that they'll always be an element of interaction, confidence, you know.

INTERVIEWEE 5: It's funny that it's becoming less and less, and you see these articles about the younger generation being slightly more socially inept, because they do it less.. more happens behind closed chat rooms or emails or screens, or they're less likely to pick up the phone and send a message.

MA: So I was interested in how guests from different geographical backgrounds, and the different ages of guests, how the conversations we've had may differ with those different demographics in your guests, potentially. So I don't know what with the the website, the personalization, you've talked about the potential that you know, certain geographies, and they gave an example at the workshop, we were into that guests coming from the States having an ad with a really powerful shower, on the front page of the website was a key thing for converting more bookings. But do you see.. are you guys pandering.. is that the wrong word? But you know, are you filtering things in two different geographies and different age groups in your strategy?

INTERVIEWEE 5: Geography? Yes. Age groups no.

MA: But I guess the third brand you've talked about is more aimed at the younger demographic.

INTERVIEWEE 4: Yeah, and also, a lot, as I said, I was thinking about not being very tech in Dubai.. we will be because you have recognised that the general market there is quite tech

savvy. Yeah. Geography is relevant. Yeah. And we will tell you that that residents will still follow uniform brand standards. But if we know that the end user has a greater affinity, the reason we haven't taken the directors out of London is because the majority of, I guess our older generation, maybe in five years' time, we have a younger generation, we will pull the guest directories out, and just put everything online. And so yeah, it's relevant, and timely. Mine the candour will certainly be will be having to keep ourselves abreast all the time. We may do one network, we're designing one now. And will one of the two years' time. But the second one has to be on this. There's more going on a moment. Yes. And then it will be totally different again, because tech will advance much more. So we are now in the game of keeping ahead. Yeah. And it's about.. it's about having these sort of meetings and meeting with specialists to just get a feeling of what.. what's happening and what's coming. And what's, what's going to be part of fiction.

INTERVIEWEE 5: Yeah, man. I think you mentioned the whole Brexit thing. Just in terms of talent, acquisition and recruitment. I mean, the biggest.. the problem, of course, with Brexit, is that we have to import people to work in the service industry, because it's not valued as a, you know, as an industry by the homegrown. So I mean, that's really the challenge as far as I'm concerned, is, is making it clear that it's not just about looking back, it's actually it's about designing IT systems, and being really creative about you know, working with AI and it's a really exciting industry. But that's the good thing is that's the less siloed industry. It's all about being a jack of all trades, master of none. So you're not just in it. You're not just in your operations. Yeah. You get, you get stuck into everything.

MA: That's great. Thank you so much.

INTERVIEWEE 4: You're welcome.

INTERVIEWEE 5: Yeah, that's pretty good.

INTERVIEWEE 4: Yeah. So what's your view? So you said you're working on a degree in this as the..

AT: Yes, so this is primarily for Mark's study. I've kind of finished this stage of my study already. But of course, it's all feeding to my study as well.

MA: So we're both so we're both doing research degree on his PhD mine's a masters of research. So they will be put together as thesis which will go..

Appendix 5: Case Study 4 Transcript: Edwardian Hotels

22 July, Guildford

MA: Interviewer 1

AT: Interviewer 2

INTERVIEWEE 7: Information Technology Directors Role

AT: Let's sign the contract.

MA: Yep, yep. So and also, we have an agreement form, which basically is just talking through what I've just said. So I've got the title of the project here, which is an exploratory investigation into the use of AI in hotel service process design. And what we're asking you to do is just basically agree that we can record this, and we might quote some of what you say in our research.

AT: Very standard. Yeah. Basically, every time the university does research, we have to do this. Yeah. So that we, as a company, tick all the boxes.

INTERVIEWEE 7: Really?

MA: Yep.. Yeah, just so if you can indicate your happy to, and I'm not going to use your real name, so it doesn't really matter..

MA: The 22nd of July.

INTERVIEWEE 7: So here, you said, you're not going to use my real name. So I agree. Yeah.

MA: Great. Thanks. There's one for you to keep too.

AT: Thanks very much. Thank you. Sorry about the paper.

MA: So, um, I think I've explained really briefly on an email that some time ago, so probably just to kind of reiterate that we're both doing research degrees. And we're both looking at hospitality, generally. One of us hotels specifically, and the other one restaurants specifically. And we're both looking at different elements of how we might go about using greater levels of automation, robots, and artificial intelligence in the process of looking at customers. And so we have slightly different focuses, and my focus is, is looking very much at the customer journey, and how we can go about about best automating or adding those technologies into that customer journey. And trying to use some case studies looking at what best practice is, or has been today so far, where it has been adopted. And do you want to explain yours..?

AT: Yeah, so mine's basically the same thing, but looking at the impacts on employment. And there's a layer of kind of cultural comparison as well. So what's going to happen in Japan, the US and the UK, those are kind of three cultural areas that I'm looking at.

MA: And so what we've got, if it's okay by you, is just a series of broad questions. And we're hoping to just have a relaxed conversation, basically. And the questions are there to give us some steering if we need it. We're probably not brilliant at sticking to this, I'm gonna go off because I'm just a bit of a hotel geek.. Anyway, so I'm just interested, but I'll try and keep to the, the script a little bit. And in preparing for today, we've read what's in the public domain, that's easy to get to on the first few, you know, few 10s of pages of Google, I guess, in terms of what's out there in terms of interviews that have happened already with you. There's lots of stuff around the launch, I think, maybe the first anniversary, and I think there's less more recently, based on what I found anyway..

INTERVIEWEE 7: Actually, there's been much more over the last two years, because that's when it's really gotten interest.

MA: Right. Okay, well, great, then. So hopefully, we're going to discover much more today. But hopefully, we've got a bit of a broad background understanding. So should we start off just really, we're interested, obviously, there's, there's Edward, which I guess is the main focus of us being here today. But I also read that prior to it, you'd kind of tried to automate

some of the high volume processes and things so we're, I think we're interested in that as well. If it's relevant.

INTERVIEWEE 7: Those discussions are the most relevant, I think. For me Edward is just the cherry.

MA: Okay. Yeah. Okay, yeah.

INTERVIEWEE 7: So it all started with a strategy for improvement. So several years ago, we decided as a company, we want to raise the bar of our service. So the next thing was okay, so how do we go about it? First of all, it has to be measurable. So as a company, monthly, we will be measured and judged based on our cash results. So we put that at the top of our strategy, whatever we do, has to lead to some good results. And then we sort of go "How do we achieve that? What will happen? Who gives us this this money"? That would be our guests. So what do we have to do with our guests? Well, we have to look at their journey. And make sure that we engage them through every step of the journey. So how do we engage our guests? Well, because we are in hospitality, the main touchpoint with our guests is our employees, they're the ones who are the hosts that will engage our guests. So then we said, okay, well, before we start looking at the guests, we need to engage the employees. How do we do that? Then we looked, "Okay, what do employees do?" Well, every employee has got a role in either serving the guests directly, or serving another employee who serves the guests. Yeah. So then we said, okay, then what they do, what is that? Well, that's the processes we have in place. So then we said, okay, because every department has to say what they are going to do in this strategy. It said, Well, obviously, we will look at these processes, how we serve our guests, and how we serve each other? What can we do to make those processes as efficient and effective as possible? Okay, so the next question is, well, for the process of making your employee to be most efficient and effective, number one, you need to be able to know who our guests are. And number two, they need to be freed to spend as much time with those guests as possible, rather than sitting in offices behind desks, etc. So to know who our guests are.. We've got a large hotel, hundreds of guests checking in checking out etc; you need data. Data, normally in hotels, it's available in the PMS. PMS systems are transactional systems, you know, and not very good BI tools. They're not even very good reporting tools. So to know who is arriving today,

who are the VIPs, who's checking out, who's coming back after having complained before etc. The staff have to print bundles, and bundles of paper reports. And so they spend most of their time behind the computer printing reports, copying reports, distributing them between the various departments. It's not a very efficient way of getting to know who our guests are. Because when you get a report like that, and you're running a department at the same time, housekeeping or whatever, you haven't got the time to go through that name by name and cross check with other books. So you have the arrivals list, and then you have quotes from somewhere else like the previous feedback list? Yeah. It's impossible. So the first thing we said, okay, let's mobilise our employees, as in, let's keep the our employees out there in the public areas as much as possible, and push the information to them. The relevant, actionable information. So if you want to know who is arriving to the hotel, today, you have got the information in a mobile device, you can click on it. And behind that there is some intelligence that tells you exactly what you need to know about that guest. So last time, this guest stayed here and complained that there isn't a better variety of bread. So if you are in F&B just go and see just the points you need to focus on. Okay, you know, housekeeping. Last time, this guy stayed here he asked for feather pillows. And so you know it and can put it in the room in advance.

INTERVIEWEE 7: So that's what we put in place a few years ago now. And it became second nature, everybody uses a mobile app. And we have so far developed just over 30 mobile apps, because every department in our team has got at least one as part of their tooling to do their job. It became second nature to our employees. We saw that it improved. From the bottom up. Better employee engagement, better guest engagement. And you can see that in the employee survey results, you can see that in the guest survey results. And you can see it in the cash flow, you can see our average room rate increasing year on year. And so, then we said, okay, can we do something similar for our guests as well. And naturally, again, within teams, we said let's do the same, let's make things easier for our guests. Let's give them some empowerment like we gave our employees; let's empower them as well, through making the journey a little bit easier and giving them alternatives to the traditional journey. You book, you need some information, you have to go and do a lot of search on the web. Or pick up the phone and ask questions. And then you have to come to the hotel, queue up at the desk to check in, and so on.. I think you have to check out and while you're staying in the hotel, if you need anything, you have to pick up the phone and ask room

service for towels, etc, etc. So let's concentrate on that. How can we give them another way of doing that? And where it's gonna be faster, more accurate, and not compulsory. So we said, okay, let's look at checking in online. Airlines have done it. Most of us who are comfortable with technology now we wouldn't want to waste our time when get to the airport to check in - we check in online. So let's make that available to that segment of our guests who want to do that. So we enabled online check in. In hospitality online check in, true online check in, is very difficult. That's why hardly any hotel groups do it, and even when they do, it's not true. My check in is somebody behind the scenes, allocating the rooms and finishing the check in in the PMS. But we didn't do that because remember, we don't want to create more work for our employees either. So we created a check in engine.. we enabled our guests to select the specific room from a floor plan. That was very important to us; without it, there is no point - it's just fill in the form. And that was extremely successful, people love the idea of selecting a specific room. We put the floor map on top of Google Maps so they can see where they are within the hotel, but also the surroundings. And obviously online check out as well. There's nothing worse than if you have to catch a plane or whatever, you come down and there is a big group checking out.. So we we did that. Started in 2015 and gradually, it was like 10% of our guests were using it and then gradually it increased to 20% and now is about 36% or something who check in and check out online. That's huge traffic away from the desks. We applied the Six Sigma methodology, you're probably familiar with it, in analysing the process and looking at waste and one thing that I love is looking at the non value adding systems.If there is a long line you have to queue up and go and check in - that process is not adding value to the guest, to the employee or to their interaction because it's mechanical. The person looks at the queue so they are not in a mode to be hospitable they just want to reduce the number of people in the queue. So we can eliminate that and have more employees in the lobby rather than standing behind the desks.

INTERVIEWEE 7: So that worked really well. Now, the next thing is, which we were not expecting actually but this is the beauty of these kind of things: you try something, one thing leads to another.. is that those who are more inclined to use the technology, to use the online check in etc. started sending, replying to the initial message to invite them to check in online and requesting information and services. And of course the story, I don't know if you have read it somewhere, stop me if it's something you've heard before..

MA: No, no, it's fine. It's great.

INTERVIEWEE 7: So the beauty of that is we did this in 2016 and immediately from day one we started.. I started getting these requests.. It was not a monitored mobile number to send out the SMS with a link to check in online. And suddenly because I was, you know I was doing the coding myself so I'm constantly working on improving the online check in etc. And I see messages coming through to that original number that we used to send the SMS and it was constant: "Can I have extra towels in my room? What's the address of the hotel? Do you have car parking?" So that shows that frustration that I had as a traveller whenever I want information about a hotel where you know I'm too lazy to keep searching the web and then I go to a website and it is very difficult to find the information that you want and you spend so much time searching, or you pick up the phone.. I don't like making phone calls, there are other people like that as well and a big percentage wants to just ask the question via a digital interface.. So initially I started to reply to those text messages, you know, I think I learned so much about our hotel, more than, than I did in 22 years.

INTERVIEWEE 7: But then it got out of hand, you know it's, we're talking hundreds a day. And that got us thinking, what if we had a system that can understand those requests, interpret them, and then decide "this is a request for information", "this is a request for service", and act accordingly. And that's how we came up with Edward. But also we decided that Edward should be able to answer as many of those questions as possible - again there's no point in just saying to employees answer this question. So we gave Edward access to all the databases we have in our hotel; we started with the PMS where everything coordinates. So, I guess most of the questions are "is breakfast included", "has the payment come through".. So with APIs we developed to the PMS it (Edward) is able to go and find that information and answer the question and when a guest says can you deliver extra towels to my room.. Now, luckily we have already developed all those mobile apps that the staff use for housekeeping etc., so now Edward can talk to those apps and Edward with location services etc knows, you know, who is the nearest employee to that guest on that floor etc and say "go deliver extra towels to this room". It has access to the employee timesheets etc and is able to see who's working, who's not working, who's on duty and tell with access to information about the HR system is able to see who has got more experience to handle a particular request rather than somebody who still a trainee.. And so it was a hit

overnight, people love it. And we again, so the usage increased gradually. And I looked the other day.. had a presentation and looked at the past 12 months. And found that in all of our hotels, it has it has received 28,800 requests from 99 countries and in 59 languages. So it's also motivating.. Am I still on question one?

MA: Don't worry, you're talking about stuff across all of them, carry on.

INTERVIEWEE 7: Yeah, so. So that's for the guests, why they like it. Number one, it enables them to improve the journey. So we have noticed when we started letting Edward make contact with our guests three days before their arrival, not necessarily after they check in but three days before their arrival. The usage started increasing because people started interacting with Edward and they're still in Australia and asking questions that they probably were putting off until later, thinking that they probably have to go online, have to search etc. "How far is Buckingham Palace from the hotel?" While Edward has all that data? It gives them the answer within three seconds but it also gives them a link, and with a click and shows the routing on Google Maps from the hotel to Buckingham Palace. It's enabled them to know things like "what's the nearest car park" and "how much does it cost per night" so they can prepare for their stay better. It enables them to attend to things later too - we have got a guest and we want to go out for dinner, etc. What would you recommend? So Edward obviously recommends our restaurants and our other hotels around that one, and gives the menu online. But also asking concierge to give some recommendations. So here, this is something that initially we wanted Edward to do. But we thought let's not talk about employment etc. Let's not infringe too much from what other employees love to do, like the concierge: he loves to give recommendations about restaurants etc. So we left that with them so that there is that connection, you know, recommend this and by the way, when you check in my name is Johnny just ask for me and I'll be happy to help.

MA: And are they sending out recommendation or response still back through the SMS system?

INTERVIEWEE 7: Yeah, yeah. And the guest is expecting that because that connection is (already) formed, somebody who is thousands of miles away already knows John.. he knows who to talk to when they arrive, etc. So it made life easier for our guests. It made it

more fun as well. You have no idea of the fun they have with Edward late at night.. They are in the bar. And anyway, there are things I wouldn't go into. But it gets quite funny. Okay, sometimes then they love, as you know, they love having fun, they kind of try and see what's he going to answer, etc. So in the meantime, we are also learning things about our guests that we didn't know before. So the first thing we learned back in 2016, is that a large percentage of our guests, if not, most of our guests don't know that the booking includes breakfast or lunch. And you know, we do promotions and stuff, and we are including breakfast as a promotion, and then we are doing it and then people don't even know that it is included. So how effective is that? So you get other departments, marketing etc start thinking differently, are we doing something wrong? Should we change our communication, etc. It also showed us, you know, new opportunities. So, we discovered through Edward that most of our guests in hotels that had the spa treatment rooms, etc. didn't even know the service was there, let alone, you know, enquire about it. So through Edward, checking in real time, the availability in the spa treatments, massages, etc and then informing our guests between this time and this time we have some availability, suddenly we saw the awareness increase.. and in revenue, in that particular area, increasing.

INTERVIEWEE 7: We have got guests, we discovered guests who didn't want to order room service because of the language barrier. Because you know, they, they're too embarrassed to speak on the phone, whatever. But for Edward, that speaks their language. They were then free to start ordering room service. And one, you know, beautiful thing that happened here. And again, I was sitting doing some more coding and I see a message from guests to Edward saying thank you so much for this, Edward. Because for the first time, I can actually interact with reception housekeeping and more importantly all the room service. Because I'm deaf. I can't do that by phone. So either I don't do it or have to go down to reception with a piece of paper and say this is what I want etc. So that that alone for me was worth all the work and investment.

MA: May I ask when you're pushing messages regarding maybe the spa and treatments and things? It is it done on who's physically in the hotel? Or is it just done by who's checked in at that point in time?

INTERVIEWEE 7: It's who is physically in the hotel. Okay, started with that. Yeah. And then because it's a learning system, yeah. It graduate, they start developing some algorithms, right. Okay. There is no point in sending someone like me that message, because I'm not interested in a massage or whatever. So if I have also things like if I've sent you this message before, and you ignored it, and the second time, even though they said and then it looks at various things, like if you are attending a conference and you have got you can see from the other database, that you're actually in a conference. You're not gonna leave and go get a massage.

MA: Or maybe some might..

INTERVIEWEE 7: Yeah, haha. But so yeah, so it's learning from all these things.. because as it's growing its learning.

MA: Has there been any resistance from those kind of unsolicited, you know, kind of upsell messages that people don't want? Can they opt out?

INTERVIEWEE 7: Okay, so out of 12 hotels I probably see one a day. Okay. And that's because.. this is where you have to look at the psychology of messaging. So Edward establishes a connection well in advance. It's almost like there is that trust that is being built that this is like another employee, you know, who's here to help you. And it only will give you one of those messages during your stay, okay. It's not "Hello, book our restaurants". It's usually "Hi, you know, by the way, just to let you know, yeah". You know, it's not formal or forced. And it's also.. it's more personalised. Yeah. Than the standard message.

MA: And did I read that it might be kind of like breakfast is going to be really busy between x and y..?

INTERVIEWEE 7: Yeah, absolutely. Yeah. So that was.. that helped us a lot.

AT: Can I ask a quick question about the kind of.. from the employee side of things, when you implemented Edward, or the technologies before, was there any resistance from employees through that transition? Or was everyone just..

INTERVIEWEE 7: There's always an impact when technology happens/. But in our case, minimal, because we have been using technology to improve processes for more than 20 years. Remember, in 1997, we were automating stuff that people were doing that were cumbersome manual processes, like a report that p&l reports at the end of the month, it takes one person three days to comply by copying data from this system, put it in an Excel copy and data process the Potomac sale, you know, and then merge this with that. And we said, okay, this is an intelligent accountant. Why is he wasting his time, three days, doing, copy, paste, copy, paste, copy, paste, and when we could automate it, so we automated that. We created a system that pulls data from him, that does exactly what that person does. And it became 30 seconds versus the three days. And it's still with that same employee who just presses the button when he's ready, and it takes 30 seconds. Obviously, that person would be a bit worried at first. Well, I can tell you, I still talk to that person every day, you know, in the office, he is sitting not far from me and is still there 20 years later. Because we introduced technology to enable people to spend more time adding value to the company, rather than reducing just labour.

AT: Exactly. Yeah. Okay.

INTERVIEWEE 7: So yes, there sorry. To answer your question, there was a little bit of resistance. Because this is a type of technology is very difficult to understand. To start with, most people still don't know what the hell is this AI, etc. They think it's some scary thing, whatever feature is the thing. And also at first when you are being told by system going to go deliver extra towels, whatever, some people probably didn't take it seriously. Some people think that my boss needs to tell me to do something (not a system). But that didn't last very long, because they said people are used to technology then we spent more time explaining and, and where it's really cemented all that for all employees, and we introduce Edward for employees. So now, employees use Edward like the guests for all their HR related questions. You know, how, where do I get my, whatever, payslip? Where do I get my uniform changed? What food is in the canteen today? How do I apply for holiday leave,

etc. And then Edward gives them the answers in seconds. And suddenly, it became, you know, like, to find out what my holiday balance was, I had to either go and ask my manager to check for me, or if I had access to a system, and most of our employees don't sit behind us their rooms, etc. They want to find out that information they have to actually during that break, whatever, go and ask the head of department to check for them. Now, they just asked it with another one says your holiday balances, whatever, eight days? Yeah. So as they used it, they understood it.

AT: Was there any training behind that? Like, these are the types of questions you can interact with, or that it all just kind of snowballed. They were interacting with it. And it all led..

INTERVIEWEE 7: Exactly, okay. Because the way.. the approach we took is that no one trained anybody on how to use social media, Pinterest.. They learn as they go, and suddenly, you know, you got your, your grandmother is using Facebook, whatever. Therefore, you just have to make it intuitive, especially with Edward, where you just ask, you just typed the question. You don't have to learn menus, etc. And if Edward doesn't have the answer, because it doesn't have access to data, or it doesn't understand the question,

AT: Or it hasn't seen the question before?

INTERVIEWEE 7: Exactly. Then Edward will know who to ask, who goes to the HR representative in that particular issue, and that person gives the answer. And then Edward learns how to answer the question next time. So it's just gradual. So now.. When we started with Edward when we launched in 2016, it could answer 60 different topics. Today, last time I checked it it's over 1600. It's amazing.

MA: And you gave us a number, the number of guests across the companies that have used Edward. But what do you know roughly? What percentage is that are choosing to use Edward?

INTERVIEWEE 7: Just over 30%.

MA: Okay, fine. Okay. Yeah. Okay. And the guests that don't choose to interact with Edward or use it, are they still getting that initial prompt from three days before their stay?

INTERVIEWEE 7: Yeah, I think, which is fairly sure. But everybody receives it. Providing this is another thing. If you're doing hospitality, you must know the initial booking and the information in it. And the accuracy of the information is very crucial to us. And it's very rare that we get all the information. So we have done a lot of work in the background, with our reservations team, on our websites, with the online travel agents, etc. to try and improve that initial information at the very least a mobile number. Yeah, or an email address, so that we can establish that connection. So if we have one of those two, at least, it's correct, then we contact.

MA: Okay. And is there any kind of incentivization towards guests to get them to use it or is it a pure choice?

INTERVIEWEE 7: Choice.

MA: Okay, fine. Okay. Happy so far?

AT: Yeah, sure. Move on.

MA: So where do you see things going from here? What plans did… do you have specific plans that you're able or willing to share with us? And if not an end? If you do? And if you don't? Have you got some predictions of way you think things might go with your company? Or, more generally, in the industry, thinking specifically around the adoption of robots and AI and service automation?

AT: And perhaps, yeah, from both of our sides, so from the customer and the employer side.

MA: Yeah.

INTERVIEWEE 7: I think there is.. I have been travelling around now since 2016. Going around the world in conferences, and I see a lot of talk about what can be done, which should be done. But in reality, I don't see much being done. Yeah. I think hospitality in general, is very reluctant to invest in technology. And everybody seems to be waiting for someone else to do it and see if it works. Yeah. And then. Sure, so if a big hospitality brand does something, and it works, then everybody else starts to follow. Slowly, yeah, behind. So I think we will continue to see a few experiments here and there, robots, AI, etc. But it's probably going to take a little bit longer than you would think in other sectors. Of course there will be things that take off very quickly, but ultimately, they will be high in hospitality, because the guests are increasingly, the local leaders type of technicians. And that number is the growing generation. Yeah. You know, is that particular generation starting to travel more and more? Yeah. So I think it's, it's happening, but it's going to happen a bit slower than, unfortunately, we would like it to.. The robots thing, I think there's a lot of work still to be done there. There are hotels that have tried it, and then you have to get off voice devices, a lot of hotels have tried, but there is still the trust element of it. You don't want something listening in your room. So our strategy is to continue to develop technologies that we put in the hands of our guests and employees, they are in control.

INTERVIEWEE 7: So I have SMS to, to communicate with AI. But if I choose not to communicates, I don't have to stop it from listening to me, it's not spying on me - I can just ignore it. I can download the Edward app, if I don't want to use SMS, I've got the app, I can use it, or I can delete it, remove it from my thing. So I have no infringement on my privacy. Especially that's it - I initiate the requests, I asked for the information. Rather than something is listening and say, now I think you need this down. So. So I think that's the future. And also for the employees. As I explained before, we have got the growing generation of employees who want first of all the workplace to be fun. They are a generation of touchscreens, everyone has said that printing paper will vanish, of course, but the PMS, POS etc, technology is not catching up fast enough. So we have to have this thing that bridges the gap between the employees who grow up using apps and now chats, etc. And the providers of the technology that have given us stupid user interfaces, click to printer reports and export to PDF, etc. So yeah, I see that continuing to, to increase. We have seen that initially when we were doing the app for the housekeeping so they can clean the room instead of coming down. So the housekeeping office every morning went off and

got a paper list of the rooms that they have to clean. The question was asked, when are we going to organise training? And we said, Look, we don't need training, you will see they're going to, you're going to show them the app, they're going to click on it and they're going to figure out what to do straight away. The (head of) housekeepers, who's additionally a bit older, said we need to organise training. And then one of those housekeepers called and said, Look, you should forget the training. They don't need. Trying to train this girl. I showed her that; she took it from me. And she went, Oh, this is good. She said she knew how to use it better than her..

MA: Certain things, like I guess some of the quirky things that have been used or are being used is like, I didn't know, people using their mobiles as the key for the room. You know, maybe robots delivering certain things to the rooms. Are those things that you don't think in the short term that your company will adopt?

INTERVIEWEE 7: Well, I don't think we want to at the moment, we have no plans on having robot delivery. For the mobile opening doors, that's something we are definitely exploring. Okay. We are at the moment training ourselves on how to develop that code. And once we have that.. the chance to look at it and see, first of all, is it secure? For our guests? Yeah. Once we are confident it is, again, it's something we will offer our guests as another way of accessing their room. It's all about choices. Sure. Not just one way of doing it. Yeah. It saves a little bit of waiting time for the key to be had. It saves that employee a little bit of time, you know, going into the system. Putting it in there. Why not? Yeah. Okay.

MA: So someone.. Just to understand the process at the moment; someone that has checked in online, that when they arrive, I think in your videos, they go to the concierge to collect the key that they've already prepared for them?

INTERVIEWEE 7: Yeah, okay, fine. Yeah. Okay. Um, we're also exploring at the moment, we developed a, like, the key dispensing, okay, machine, you know, we just launched it in one of our tests to see whether people will use it again, basically will come with the confirmation that you showed them out to consumers. Yeah, actually go and scan it. Okay, machine time, that will give you the key. Okay, so we try that. Okay.

MA: So, when you think.. because if I understand, right, the the initial things you did developing the apps were that were all for your employees, they were employee facing things as opposed to customer facing things. And Edward is for the online check in initially, and then that would have been the first kind of customer facing technologies. When you design obviously you have your big vision of you know, the great service and things. But did you think about the specific touch points that you would enhance or address? And when you when you were designing those initial questions that it could answer and things, where did that come from? Was it like a word from the hotel? Staff? So is that from all of the departments?

INTERVIEWEE 7: Yes, we went to each department and asked them to please give us the (most frequently asked) question. Okay. However, you never get a complete list. Squeeze their minds and to know the department, they came up with 60. Yeah. Okay. So then we use those sixty as our base "themes", okay, and the topics varied from fetching particular information, to requesting service, etc. And then we let the system continue to grow. Yeah.

MA: And I saw on the video that you have on the website, about Edward again, that I think the ability I guess it's called profiles or preferences/profiles for guests. And they give the example that when you get informed using that tablet or whatever of your preferences is that I'm assuming the staff have ability to add to someone's profile, but is Edward adding to their profile as well?

INTERVIEWEE 7: Okay, not only adding, but also analysing information every day. Yeah. And from time to time, some of the needs, but just behind the scenes saying, okay, these guests asked for extra pillows when they stayed with us in Manchester. And then when they stayed with us in Heathrow, the girls wanted extra pillows. And they are coming to blooms ministry Street tomorrow. Yeah, housekeeping. Please put extra pillows down. Okay, so they don't have to ask again. Yeah. It makes it delightful for the guests. Yeah, and those extra pieces are in there already. But also, it enables the staff to better prepare for that task rather than wait for the, yeah, the requests.

MA: Yeah. Okay. And are all those profiles stored in the PMS? Or is it another piece of software that you've created that links with the PMS?

INTERVIEWEE 7: Both. Okay, so we have got a data warehouse. Yeah. The data warehouse, we've had since 2000. And, and that data warehouse is kept therefore, you know, to consolidate the information about the guest. So in this we strip out all personal information, like the address etc. We only leave the information we need to know about; how many times do you stay there. So things like that everyone has access to is the food and drink consumption from the restaurant. So it knows based on the consumption, that it's very likely that your favourite meal is whatever, ribeye steak, and your favourite drink is Grolsch.

INTERVIEWEE 7: With that, the system is able to say okay, guest relations, this guest has stayed with us three times, you're going to consider this person as a VIP. But don't put.. The usual VIP gets a bottle of red wine, but because this guest has never used.. has never had red wine, how about a bucket with a few bottles of Grolsch? Nice, yeah? So it's something you'd never seen done by other big hotels. Because there isn't that attention to small details like that. Okay, so that's what the system enables us to do.

MA: And I guess, critical success factors, you've talked about lots of the, the benefits of the system, I think, to the guest, to the people, on your business already. And I mean, I picked up a couple of things; I picked up on them and maybe haven't followed up so far with that there was one interview or one piece suggested that people might have been more willing to let me know of their dissatisfactions or their complaints because they weren't announced at face to face, I'm guessing it takes away the confrontation. And the increase of things we've read was about lots and lots of positive guests feedback. You've talked about benefits to the business, talks about benefits to the to the staff as well. But are there things that have gone wrong? I mean, you talked about some attention to the staff, although I think the culture of the company facilitated the success to integrate from how you described, but yeah, what things haven't gone so well for guest, people, business? And have there been tensions between the staff of the guests and the system at any any point?

INTERVIEWEE 7: You probably won't believe me, but I honestly can't think of any tensions, okay. Probably it’s because we started on this journey 20 years ago. Yeah. Yeah, using technology as an enabler for better work and better experiences. Now, the worst case I can think of it’s football night, guests say fuck off to Edward. But I can't think of anything else..

Only thing is.. Edward is not is just like, say, a guest relations person. You're the guest, you asked for extra towels, for instance, that would check the system you're staying in the hotel at the moment, you're not asking me in advance, please, sure. So you need that now, that would send a message to housekeeping say deliver extra towels. This traditionally would have been done by phone. And yes, even with the phone, we had a system where the person who takes the call to call us to go to you know, like a switchboard operator, whatever will get in the system. And until housekeeping, there was no visibility outside. That's three, three people to see whether you have really delivered the towels and how long it took you to deliver those items. Now that is.. So on one hand initially, you hated the process, because the process was measuring, yeah, your performance.

INTERVIEWEE 7: Now, the guests are much more satisfied because things are happening (quicker). Because within say 15 minutes, Edward starts escalating that request to the next team member, the head of department and ultimately to the GM, even if they are a leader. So what happens is there is more visibility, there is more accountability for everyone. And naturally, what happens is everyone starts to improve their process. So on one hand, we created efficiencies for them in other areas is that you don't have to have a phone call and then you didn't quite get what customer services were telling you when they called us. So you pick up the phone, you call the guest in the room? And “just let me clarify”. That is gone, because you had the verbatim request from the guests giving exactly what they want you to do. So that's the only bit that created some initial tension. Yeah. Bit of we are under pressure. And then gradually, no, actually things are for the better.

MA: And has, has all the efficiencies lead to being able to have less staff in certain areas or at certain times or in certain roles, because I get that... you’re hoping or you're achieving the staff being able to spend more time with guests and understanding their guests’ needs, being maybe (more) in front of house areas and things. But has all this efficiency led to you needing less people to do certain things or tasks?

INTERVIEWEE 7: Well, in our case, you could say we could have had less people, except in our case as you know, what we have done is instead of having less people, we had the same people doing bit more. Value added, as in, you know, feel free to chat with the guests for more than what the call centre says - the average length of call when you go to book in is

three minutes. We don't worry about that. You have more time. Yeah, really be a host. Okay. And that was, honestly, that was our aim: Please become a host. Not people who just function as administrators, just deleting stuff they can as quickly as they can.

AT: So, I mean, it's, I know, tracking certain aspects of the guests is difficult, maybe the country of origin and things are easier. But in terms of age profile and country of origin and the different hotels. Are there any fluctuations in usage that you see from the profile of the guests and using Edward?

INTERVIEWEE 7: There isn't.. so out of those 30 something percent, probably less than 50% we get the updated information. Okay. It's, you don't get that? Yeah. So out of that. We did some analysis just to see if there is a pattern. Yeah. And we passed it on, and what I found is that initially, the initial adoption, those first 10%, whatever tended to be people in their 20s to mid 30s. Young. And then that, while people over the age in between much smaller percentage, but what happens as the word goes around as TripAdvisor started filling up with comments about it. The other age groups, yeah, then start and end. And so you find that the those there is. Some download immediately go and download the app. Yeah, it was the app instead of the SMS. That Yeah, age group show. The others stick a bit longer with the SMS. Yeah. Maybe in the default state. And finally they download the app. Yeah. So slow to catch. But they talk more than the other... And texts are much longer and better to understand because they have good, or better, spelling.

MA: And any inclination on male female split?

AT: And what about the complaint behaviour? Did you see anything similar there? So a certain type of customer from a certain culture, for example, based on what language they use, when they interact with Edward were more inclined to complain to Edward rather than through a person? Or a certain age group or gender or anything at all?

INTERVIEWEE 7: No, we haven't looked at that data, we haven't segmented it. Yeah. I mean, there aren't a lot of.. enough complaints. Yeah, to, you know, to, to start analysing, seeing, you know, we have got the old.. on a daily basis, for instance, people who just checked in. And are not happy with it. Oh, can I have another room? And what you find is,

and it's.. Believe me, it's now that I have been travelling so much I know, it's unique to our hotels, we accommodate almost every time. So then it says, I've asked the team to look for available options, and then somebody will know and can then contact the guests and find them another room. We have got the old cheeky “Oh, can you include breakfast for me for free? Or can I have a free upgrade”, you know, you get that a few times out of the thousands of guests staying with us. Or you get things like, you know, there was drilling very early this morning and it woke me up. So nothing consistent that would say, okay, we need to focus on this and see who is complaining. You know, I know from just the top of my head, you know, not, you know, a can’t say it’s scientific, but just from scanning through the day. It's mainly British who complain, and they feel more confident to put their complaint in (text through Edward). It works in writing. And it's mainly probably leisure. Because they, that leisure stay is much more important to them, because they're probably staying only once a year or whatever. They want it to be absolutely perfect. So there is a bit of noise, whatever, they will make that complaint. Yeah. Yeah, so I couldn't tell you about men, women, unless I look at the data. If I find more stuff later on, I will let you know.

MA: Okay. You okay?

AT: I'm okay, I have a few.. couple of quick questions regarding employment. So from what I gather is that your view of implementing technology is very much making the employees’ lives better. Yeah, you want to take the boring stuff, sitting at the computer filling in forms, and make them interact with guests, because that makes the guests happier, and makes the business better, as well. So the question is, have you seen this have any impact on on employee turnover? Or loyalty?

INTERVIEWEE 7: Like I mentioned before, the feedback and the employee surveys, yeah, it has had an impact on that. It's also what we discovered is it's, it's like, happy employees make happy guests. Happy guests make happy employees as well, because there is that interaction. Have you ever worked in hotels? Right, now, it's not easy. When you have to interact with guests that have different moods.. it’s not easy. When you have to serve someone there are certain things out of your control, like 100 people turn up to check in, big queue from delayed flight, airport, for instance, suddenly, doesn't matter. If you have got 50 receptionists, they're still going to be somebody waiting in the queue. So that's out

of control of the guests out of control of the employees. And that creates a bit of tension. So anything that we can do to lessen those opportunities for people delays, for misinformation, etc, the more we increase that happiness level, in guests, as well as in employees is something that also affects the hospitality employees. Another thing that prevents employees from being happy, and hospitable etc, is lack of confidence, that lack of confidence sometimes comes from the lack of information. So you asked me a question that I don't have the answer to. So I'm worried about that. So I try to avoid you, avoid eye contact with you so that you don't ask me. Because I've only been here for two months. I don't know the answer. Now, we have got.. you asked me what time is breakfast, and I work in housekeeping. Don't worry about it. I'll go to Edward and say I mean, just find out for you, Edward. What time is breakfast? Yeah, it's so everybody feels more empowered. Yeah.

AT: Right. Then the final question is maybe a bit boring. And maybe you get asked this a lot. But what about Brexit? Have you seen an impact on Brexit, unemployment? And how do you feel or see it impacting in the coming years?

INTERVIEWEE 7: I think it's natural. Yes, there will be impacts. Yeah, there will be. Because hospitality is.. especially in our case in London. There is, you know, naturally employees from all over the world, but mainly from Europe, you know, and the we have seen signs of some EU employees already worried about the future. So they leave already. They're not waiting for the Brexit outcome. And in you know.. yes, it will have the effect. It's having an effect already. Yeah. And it will have an effect on hospitality. In my opinion. Yeah.

AT: Do you think you might have to recruit more locally, to kind of mitigate..

INTERVIEWEE 7: I just advertise. Yeah. And whoever turns out, you get the best. Yeah. You just get the best employees for the job. I, you know, I run it. I advertise for a position. I just advertise as a job description, advertise, and I wait to see what comes. The majority of the applicants are from the EU, I have no control over that. I haven't deliberately said I won't mention the EU. And that's just what you know what comes through. So then, you know, you, you test those people and their skills, etc. The best person for the job gets it.

AT: Right. Thank you very much. Thank you.

INTERVIEWEE 7: Thank you. You're welcome. I hope it helps.

AT: It does, it was very helpful.

INTERVIEWEE 7: Another thing came up again. People ordering room service, with Edward. We found analysing our data for now, over three years. The average check in hotel is higher with people ordering via Edward done by phone. And in one hotel it'is double of the phone orders. So on average, increased sales.

MA: What's the hypothesis of why?

INTERVIEWEE 7: So we did a bit of analysis on that and actually asked a few guests. Number one is you have more time? Yeah. You don't feel under pressure to like, Mark what you want to call in. Number two. We have the freedom to indulge. And then there's also the language barrier. So it's easier to order on an app and then by phone, sometimes you don't even know what something is called. Yeah, I don't see in many ways. I don't know what it's called in English. Yeah. Just don't ask for it. So that's.. and also the way people are becoming much better reading stuff on an interactive menu where they can search. So you search for a chicken and see how many different chicken dishes there are.

MA: Great. Thank you very much.

INTERVIEWEE 7: You're very welcome.