University of Bedfordshire

Title: Influence of big-data based digital media on spiritual goal strivings and well-being: a media richness theory perspective

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INFLUENCE OF BIG-DATA BASED DIGITAL MEDIA ON SPIRITUAL GOAL STRIVINGS AND WELL-BEING: A MEDIA RICHNESS THEORY PERSPECTIVE

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By

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March 2018

Declaration Page

I, Shantha Lakshmi Belavadi Nagaraja Swamy declare that all the work presented in this thesis are my own and has been generated by me as the result of my own original research.

Title of thesis: Influence of Big-Data based digital media on Spiritual Goal Strivings and Well-Being: A Media Richness Theory Perspective

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
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INFLUENCE OF BIG-DATA BASED DIGITAL MEDIA ON SPIRITUAL GOAL STRIVINGS AND WELL-BEING: A MEDIA RICHNESS THEORY PERSPECTIVE

Shantha Lakshmi Belavadi Nagaraja Swamy

ABSTRACT

Big-Data characteristics and spirituality are seldom discussed together in the context of assistances provided by big-data based digital media on spiritual goal strivings (SGS). This study's main aim is to investigate the significance of this relationship between big-data based digital media characteristics and SGS outcomes, and its impact on well-being. A theoretical integrated framework was developed underpinned by Media Richness Theory (MRT) to capture the influence of big-data based digital media characteristics on SGS outcomes.

The research design of this epistemological study adopted positivism type of scientific enquiry; employing a deductive approach confining under quantitative research methods and used survey data collection technique. Non-probability self-selection sampling was used and a total of 987 valid responses were analysed by applying statistical tests and techniques following rigorous statistical Structural Equation Modelling (SEM) techniques using IBM AMOS.

The results revealed the existence of significant relationship between the big-data based digital media characteristics and SGS outcomes. The study also reveals that digital media characteristics influences successes in SGS outcomes where certain aspects of digital media characteristics are shown to assist SGS towards accomplishments while some have shown to cause hindrances for SGS to be accomplished. The results also confirmed that success in SGS accomplishments increased vitality aspect of well-being. This information is vital for decision making, implementing and planning for various spiritual stakeholders mainly spiritual seekers, spiritual organisations and user experience (UX) - user interface (UI) designers of big-data based digital media developers.

With this knowledge contribution, the stakeholders are able to make informed decisions and look for efficient strategies that would provide effective, reliable and sustainable assistances towards SGS accomplishments. The study provides theoretical contribution to the body of IS literature with an integrated and extended MRT conceptual framework providing the foundation for exploring the extended MRT instrument for future studies in similar thematic contexts by other researchers.

Further, this study's empirically validated evidence provides practical contribution in its effort to spiritual stakeholders with the confidence to adopt and develop effective strategies to implement big-data based digital systems in organisations with selective configuring and tuning to utilise the accelerating aspects of the medium for effective SGS accomplishments. UX and UI stakeholders will benefit significantly to be able to design and develop digital systems supporting SGS based on a deeper understanding of the certain factors from this study which indicates significant influence on SGS and to look for effective strategies in their development phase to accommodate the revealed concerns and assistances that would provide efficient, consistent and sustainable spiritual goal outcomes.

Overall the findings in this study provide optimistic future for utilising the assistances provided by big-data based digital media capabilities for SGS accomplishments. Overall statistical results reveal that the advantages of assistances provided towards SGS outcomes outweighed the disadvantages of hindrances towards SGS outcomes.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS AND DESCRIPTIONS

Abbreviations	Terms
AGFI	Adjusted Goodness-Of-Fit Index
AMOS	Analysis of Moment Structures
ASV	Average Shared Squared Variance
AVE	Average Variance Extracted
BTS	Barlett's test of Sphericity
CET	Channel Expansion Theory
CFA	Confirmatory Factor Analysis
CFI	comparative fit index
CR	Composite reliability
EFA	Exploratory Factor Analysis
GFI	Goodness of fit index
ICT	Information Communication Technologies
IS	Information Systems
KMO	Kaiser-Meyer-Olkin
MI	Modification Indices
MIS	Management Information Systems
MRT	Media Richness Theory
MSV	Maximum Shared Squared Variance
NFI	Normed Fit Index
NNFI	Non-Normed Fit Index
PCNFI	Parsimony Comparative Fit Index
PMR	Perceived Media Richness
PNFI	Parsimony Normed Fit Index
PRT	Perceived Real-Time Presence
PUob	Perceived Unobtrusiveness
RMSEA	Root mean square error of approximation
SEM	Structural Equational Modelling

SGS	Spiritual Goal Strivings	
SIP	Social Information Perspectives	
SIT	Social Influence Theory	
SPSS	Statistical Package for the Social Sciences	
SQRT	Square Root	
SRMR	Standardized root mean residual	
TAM	Technology Assessment Model	
TLI	Tucker-Lewis index	
UGT	User Gratification Theory	
UI	User experience designers	
UX	User interface designers	
V	Vitality	
VE	Variance Extracted	
VIF	Variable Inflation Factor	
VWB	Vitality Well-Being	
WB	Well-Being	

LIST OF TERMS AND DEFINITIONS

Terms	Definitions
Big Data	Big-Data is defined with respect to its data characteristics as 3 Vs. Volume, Velocity and Variety by Gartner (Douglas 2012; Zikopoulos et al. 2011; Kaisler et al. 2013).
Digital media	Digital media represents to a medium or channel (like a tunnel) for interacting digitalized content. This digital media capacity can vary from handling simple data forms (as in case of conventional media) to handling complex data forms (as in case of newer/modern media).
Big-data based digital media	It refers to digital media that involves handling data that is too complex and massive (Volume) for conventional technologies or structures to address effectively, involves data that is too diverse (Variety) and fast changing (Velocity) (Stonebraker, 2013). Examples of big-data based digital media includes computers, tablets, smart phones and other ICTs like live TV – connected by network technologies like 3G, 4G Wi-Fi etc. (Jung 2014; Shih et al. 2011; Shotsberger & Vetter 2000; Drew 2003)
Users access to big-data 3V characteristics	This study is concerned with user's perceptions of assistances provided by digital media which particularly involves handling big-data 3V characteristics. Users in the study are common public who normally use moderate amounts of data via digital media. (Please see Appendix A for visual representation of how normal users interact with big-data using supporting digital media). In short, this study deals with digital media that can handle simple data forms to complex data forms characterized by 3 Vs. of big-data.
Big-data based Digital media capabilities	The term 'big-data based digital media capabilities' in this study is referred to medium or channel's capabilities to handle complex data forms of 3V characteristics. Examples of big-data based digital media capabilities would include digital

	media abilities to engage user and their interactive partner in real- time interaction, abilities to support various data types, abilities to support discreet interactions etc. Overall providing digital media users with higher degree of 'media richness' as defined in MRT related media studies where greater the media capabilities - media is considered 'richer' (Dennis & Valacich 1999b).
Digital media capabilities	'Digital media capabilities' is referred to medium or channel's capabilities to handle digitalized content. This involves capabilities of the medium which vary to support digitalized content from handling simple digital data forms like digitalized text, audio, video, apps and games, electronic books etc.to complex handling complex data forms which includes simple digital data forms in combination with access to internet, web, higher computing and storage power and also includes handling complex data forms of 3V characteristics
Convergent validity tests	These are referred to tests that are performed on measurement items to ensure that they relate to the measuring construct only, and does not any other constructs in the model.
Discriminant validity tests	These are referred to tests performed on items to confirm that the items in the constructs measures its intended construct completely and does not measure any other constructs in the model (Straub 1989).
Information richness	This is referred to the information transmitted in the media which has the ability to reduce uncertainty and change understanding within a timeframe (Palvia et al. 2011; Otondo et al. 2008; Daft, Lengel & Treviño 1987).
Interactive tasks / Interactive goals	These are referred to interactive tasks that individuals typically strive to do in everyday life via digital media. It is usually comprised of recurrent objectives that describes as individuals' intentional activities pursued towards a particular goal outcome (van Dierendonck et al. 2009; Emmons 1999; Emmons et al. 1998a; Little 1993).
Media Richness	'Media Richness' is referred to objective media capability

	characteristics (Daft & Lengel 1986) that facilitates interaction elements that are considered important for accomplishing interactive tasks successfully (Dennis & Valacich 1999b; Carlson & Zmud 1999; Daft & Lengel 1983). Greater the media capabilities - media is considered 'richer' (Dennis & Valacich 1999b).
Modern interactive systems	This term is sometimes used in this thesis and is referred to digital media in this study.
Multivariate outliers	These are referred to cases in the data set that do not fit the standard correlation patterns as seen by other cases in the same data set.
Scale reliability	Reliability of the scale is referred to the consistency and accuracy in reproducibility aspect of the measurement instrument (Kerlinger 1980)
Strive	'Strive' in this study is defined as making attempts to move from current state towards some desired reference value.
Personal strivings	Personal strivings are referred to individual's tasks or goals that individuals typically strive to do in everyday life (van Dierendonck et al. 2009; Emmons 1999; Little 1993). These are personalised goals and is usually comprised of recurrent objectives that can describe a person's intentional activities pursued towards a particular outcome (Emmons et al. 1998b).
Spirituality	This is defined as a process of recognizing the significance of orienting one's own strivings towards something non-material but sacred (referred to the divine power such as god, supreme-being and ultimate-reality) that is larger than or beyond themselves, with a deeper acknowledgement to the Higher power (Emmons et al. 1998a; Martin & Carlson 1988).
Spiritual strivings	'Spiritual strivings ' are defined as a class of personal strivings having a greater sense of purpose, meaning and value to an individual (Park et al. 2005a; Emmons 1999; Pargament & Park 1995; Worthington Jr et al. 1996; Koenig 1997; Zinnbauer et al. 1997; Martin & Carlson 1988).
Spiritual Goal Strivings	These are referred to tasks performed to accomplish a goal

(SGS in general)	where the goals are oriented towards the sacred, and are concerned with ultimate purpose; ethics; commitment to seek the divine in daily experience; committed to meaningful life and purpose- any tasks performed towards these goals are all referred to as SGS. SGS may contain both religious and humanistic themes along with personalised expressions of spiritual concerns (Emmons et al. 1998b).
Spiritual Striving Categories (SGS in study)	SGS are categorized into, knowledge, feelings, and practice to capture the manifestation of spirituality in strivings (Emmons et al. 1998a; Glock & Stark 1965).
	Personal goal strivings are classed spiritual when they seem to reflect in:
	(1) Increasing one's knowledge of the Higher power (for example – Individuals personal strivings aimed towards gaining knowledge of their holy book (e.g.: Bible, Gita, nature etc.); individuals seeking for the ultimate purpose of their life);
	(2) Maintaining and developing relationship with the Higher power in daily life (e.g.: individuals seeking to see god in all, tuning to the Higher power throughout the day, and individuals aiming to increase their faith in the Higher power);
	(3) Exercising spiritual beliefs or attempting to live fully in daily life (e.g.: Individuals trying not be judgmental, being witness to others, individuals aiming to live in peace, and striving to forgive oneself and others to experience peace, treating others with compassion etc.) (Mahoney et al. 2005; Pargament & Mahoney 2005; Emmons 1999; Emmons et al. 1998b).
Tasks	'Tasks' are referred to fundamental processes that are necessary to carry out a goal and not the entire goal itself. (Media related theories have used 'task' as the fundamental element for developing the theories and testing them (Mennecke et al. 2000; Suh 1999; Rice 1992; Zigurs & Buckland 1998; Alan R Dennis & Kinney 1998b; Daft & Lengel 1986). 'Tasks' in personal strivings studies are referred to goals that individuals typically strive to do in everyday life (van Dierendonck et al. 2009; Emmons 1999; Little 1993).

Real-time presence	The 'real-time presence' construct incorporates the situational element of a task, a need for urgency and immediacy of feedback.
Unobtrusiveness	The 'unobtrusiveness' construct is defined as the extent to which an interactive unit in a system becomes physically invisible but subtly existent everywhere (Karaiskos & Καραΐσκος 2009). It is the degree to which the interactive unit in a system is unseen both cognitively and physically to other interactive units when using the system (Karaiskos & Καραΐσκος 2009).
Vitality	Vitality is a measure of feeling very alive with full of energy (Ryan & Frederick 1997).

INTRODUCTION

THE THESIS STRUCTURE

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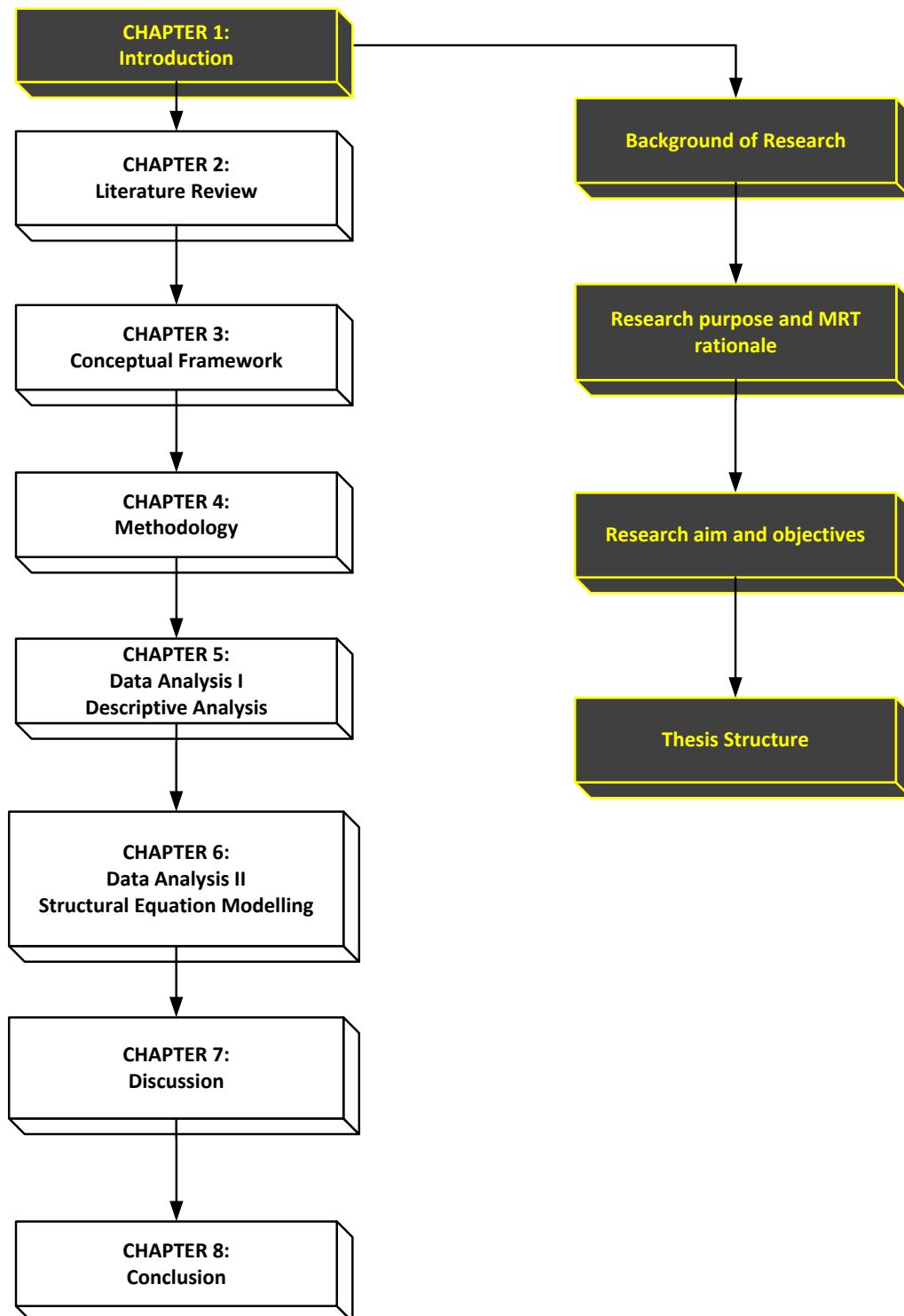
Source*: Adapted to this study from* (Kamarullzaman 2006)

1   Chapter One: Introduction

1.1   Background of Research

Integration of media technologies and digital devices for interactions are evolving continuously for communication, entertainment and information exchange (Ahn & Shin 2013). This has enabled the breakthrough of big-data making ubiquitous interactions possible for the common public (Atzori et al. 2010)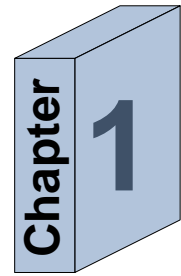. Big-data is defined with respect to its 3V data characteristics Volume, Velocity and Variety by Gartner (Douglas 2012; Zikopoulos et al. 2011; Kaisler et al. 2013). This study pays particular attention to the characteristics of big-data based digital media and argues that such digital media have rich capabilities and is able to influence everyday interactive tasks of personal strivings. These digital capabilities bring in a sea change in the way interactive tasks are performed, that is, it represents transformation in individuals everyday tasks about how, when, where and what they can do.

'Digital media' are referred to medium or channel (like a tunnel) for interacting digitalized content.   Digital media capacity can vary from handling simple data (as in case of conventional media) to handling complex data forms. They have varying capabilities to support digitalized content which are referred to as 'Digital media capabilities' and involves handling simple digital data forms like digitalized text, audio, video, apps and games, electronic books etc.to complex handling complex data forms which is in combination with access to internet, web, higher computing and storage power and also includes handling complex data forms of 3V characteristics. (Please see Appendix A for visual representation of how normal users use with Big-data 3V via digital media).

The term 'Digital media' can be easily misunderstood with conventional digital media types as it varies from conventional types in its ability to handle simple data forms to complex data forms, which is characterized by handling data that is too massive (Volume) for conventional technologies or structures to address effectively, involves data that is too diverse (Variety) and fast changing (Velocity) (Stonebraker, 2013).   Examples of diverse capabilities of such digital media would include to support digitalized content from handling simple digital data forms like digitalized text, audio, video, apps and games, images, electronic books etc.to handling complex data forms like engaging user in real- time interaction, live streaming, social networking via modern ICTs like smartphones, laptops, tablets, live TV (streaming live activities) - connected by network technologies like 3G, 4G, Wi-Fi and cloud computing (Jung 2014; Shih et al. 2011; Shotsberger & Vetter 2000; Drew 2003).   To summarize big-data based digital media provides users with higher degree of 'media richness' as defined in media related studies where greater the media capabilities - media is considered 'richer' (Dennis & Valacich 1999b).

This definition is in line with Daft and Lengel's (1986) Media Richness Theory (MRT) which is one of the most widely used theories in media studies, where greater the media capabilities - 'media' is considered to be 'richer' (Dennis & Valacich 1999b) and 'media richness' is referred to objective media capability characteristics (Daft & Lengel 1986) that facilitates interaction elements, that are considered important for accomplishing interactive tasks successfully (Dennis & Valacich 1999b; Carlson & Zmud 1999; Daft & Lengel 1983).

This study is concerned with understanding the influence of 'digital media' richness which is defined as medium which incorporates diverse gathering of capabilities includes handling big-data 3V characteristics so as to facilitate interaction elements with higher degree of media richness experience for accomplishing everyday interactive tasks.

For more than two decades individuals and organisations have been increasingly exposed to wide-ranging capabilities of digital media. This exposure has been shaping several areas of life such as paying utility bills, shopping, connecting to friends, voting, government operations and praying to name a few (Normandeau 2013; Schroeck et al. 2012). This increased exposure has resulted in efficient ways of performing various interactive tasks for learning, creating and sharing information. Interactive tasks or interactive goals in this study are referred to tasks that individuals typically strive (making attempts) to do in everyday life. It is usually comprised of recurrent objectives that describes individuals' intentional activities pursued towards a particular goal outcome (van Dierendonck et al. 2009; Emmons 1999; Emmons et al. 1998a; Little 1993). Authors like Emmons (1999) and Little (1993) have referred to individual's tasks that individuals typically strive to do in everyday life as 'personal goal strivings' (van Dierendonck et al. 2009; Emmons 1999; Little 1993).

This research focuses on 'spiritual strivings ' which are defined as a class of personal strivings having a greater sense of purpose, meaning and value to the individual (Park et al. 2005a; Emmons 1999; Pargament & Park 1995; Worthington Jr et al. 1996; Koenig 1997; Zinnbauer et al. 1997; Martin & Carlson 1988). Scholars have found that the spiritual strivings do find its manifestation in personal goal strivings in one form or another (Park et

al. 2005a; Emmons et al. 1998a; Emmons 1986). 'Spirituality' in this study is defined as the process of recognising the importance of orienting an individual's strivings towards something non-material but sacred (referred to divine power such as God, Supreme-Being or Ultimate-Reality)   that is larger than or beyond him/herself, with a deeper acknowledgement to the Higher power (Emmons et al. 1998a; Martin & Carlson 1988).

The unique requirements of the spiritual audience are unintentionally influenced by the entry of digital media into our daily lives by changing the approach towards spiritual practices. For example individuals' preference to access dedicated spiritual websites at any-time via smartphone for worshipping or offering sermons virtually (Herman 2010; Bell 2006).

Some practices through digital media extend an individual's spiritual experience by being able to carry out and contribute in events that would not be geographically possible like streaming live 'puja'- considered as establishing direct communication with the deity through experience from any part of the world (Herman 2010); there is evidence of a mobile service provider in Russia allowing to place prayers at the Wailing Wall in Jerusalem by depositing the printed text sent via messaging service (Wyche 2008a; Bell 2006; Campbell 2005a). This kind of remote participation is becoming quite common and are continuously finding new ways to extend to other domains of spiritual activities like ability to send and receive confessions and absolutions remotely (Bell 2006; Campbell 2005b) .

Increased use of digital media for unique spiritual tasks are continually developing new ways to help facilitate spiritual practices effectively- for instance, registration to faith based apps and websites to monitor and regulate unique spiritual needs varying anywhere from education for younger children to utilities (McDonnell 2014; Buie & Blythe 2013) or for repurposing smart devices with GPS functionality to point towards Mecca and to learn the local times to pray. This increase in usage and repurposing digital media for unique spiritual tasks- it is vital for spiritual stakeholders to understand the influence of digital media characteristics on SGS and to look for strategies that would provide effective, reliable and sustainable spiritual goal accomplishments. This study mainly aims to shed more light on understanding the influence of Big-data based digital media characteristics on SGS outcomes and Well-Being.

1.2   Research purpose and MRT rationale

With respect to this study's research gaps discussed in previous section, the main research, aims to examine the influence of digital media from media related theory perspective on SGS and its impact on well-being. For this it is necessary to carefully examine the underlying relationship between perceived digital media characteristics and perceived success in SGS.

From literature review, several theories have attempted to explain media related concerns related to task performances (Table 2:1 Literature Review). A number of media related theories have attempted to explain media capabilities' influence on task effectiveness of individual goal strivings in different contexts (such as Suh 1999; Markus 1987; Trevino et al. 1987; Salancik & Pfeffer 1978) and MRT was shown to be the most cited theory.

According to MRT theory, every medium has different capabilities to carry and process information and provide different capacities to facilitate rapid feedback (related to speed of response, velocity of transmission), supporting multiple cues (head nods, eye contact, body language), supporting various data types (audio, video, written) and finally supporting abilities to personalise information (customisability) (Daft & Lengel 1986; Daft & Lengel 1984; Otondo et al. 2008; Lengel & Daft 1988).

A medium is considered 'richer' if it has the potential and the capability to satisfy objective characteristics for immediate response, (b) ability to support multiple cues, (c) ability to support different data formats and (d) supports personalisation (Timmerman & Madhavapeddi 2008; Webster & Trevino 1995; Ferry et al. 2001). This is shown to affect subjective characteristics like interpretations, comments, perspectives in some cases (Ruggiero 2000; Alan R Dennis & Kinney 1998a). Due to the potential of MRT to capture media capabilities so as to be able to evaluate its influence on task outcomes, this study explores MRT as the fundamental theory to capture the digital media characteristics so as to be able to evaluate its influence on SGS in-spite of several limitations discussed in chapter two section 2.6.

1.2.1 Purpose for extending MRT

This part of this section deals with understanding the purpose of this research to extending MRT so as to be able to capture the digital media characteristics relevant to research context.

MRT theory was originally developed to explain and predict which media should ascertain most effective for individual interactions needs by Daft and Lengel (1986) (Daft & Lengel 1986), large part of MRT in Information Systems (IS) literature and was used to speculate how managers in organisations should choose media ; or for understanding the perceptions of selective media's task-fit scenarios in organisational setting with only a very few exceptions (Otondo et al. 2008; Vat 2004; Alan R Dennis & Kinney 1998a; Daft & Lengel 1986). According to Palvia (2011), for any type of task to be accomplished, efficient and effective media are known to have the potential to provide effective results (Palvia et al. 2011). This can be crucial for certain circumstances

Richness construct of MRT factor structure as it exists in its traditional measure, indicates media capability to have interaction elements to provide real experience. Among them face-to-face interaction is claimed to be the richest forms of communication, due to the ability to have direct experience, personal focus and the allowance of multiple cues. Some other forms of media such as telephones are considered to have lower forms of richness capabilities although it has the ability to have fast feedback. This is due to the limited body cues on telephone interaction. Further decrease in richness is shown for written types of media, although written media types may have the personal focus but it seemingly is known to have very slow feedback and with no cues.

MRT factor structure in its traditional measure was well known in early literature reflecting media study then. However recent emerging digital media is no more in its monolithic

forms. It is ubiquitous and provides portable media for interaction for multi-dimensional uses via supporting systems and devices. MRT richness construct as it exists is insufficient to capture the holistic nature of digital media. Thus MRT theory suffers from several criticisms due to either theory limitations and also due to weaknesses in previous researches. This lack of gradual change in MRT factor structure limits MRT to be adopted as it is in this study. New structural elements are required to be able to capture the multiple capabilities of digital media. The next section discusses these criticisms observed in MRT literature and provides solution by extending MRT factor structure. (Vickery et al. 2004; Mennecke et al. 2000; Burke & Chidambaram 1999; Alan R Dennis & Kinney 1998a; Ngwenyama & Lee 1997; Lee 1994; Markus 1994; Valacich et al. 1993; Kinney & Watson 1992; El-Shinnawy & Markus 1992).

MRT theory lacks the presence of sufficient structural elements to capture multiple capabilities and suffers from the drawbacks to include the situational elements such as time, location, discreetness of situations, needs for urgency, needs for real-time, discreet participation in group discussions, having insights to the information at any time, confidentiality, social interaction and information integrity. Thus it is not possible to predict or accurately measure entire digital media effectiveness without incorporating additional variables to measure its effectiveness (Palvia et al. 2011; Suh 1999; Markus 1994).

To examine holistic nature of digital media capabilities, two important variables were identified from literature review. They are 'perceived real-time presence' (PRT) and 'perceived un-obtrusiveness' (PUob). These were based on MRT considerations on task

effectiveness of everyday goal strivings context. The two main considerations that were used to identify these variables were that the variables should have the potential to explain and predict the influence on personal goal strivings. Secondly the variables would address the unique goal strivings context. After performing critical analysis on existing research works on related studies, these variables were specifically chosen based on their potential to explain digital media capabilities.

The 'real-time presence' construct incorporates the situational element of a task, a need for urgency and immediacy of feedback. The 'unobtrusiveness' construct is defined as the extent to which an interactive unit in a system becomes physically invisible but subtly existent everywhere (Karaiskos & Καραΐσκος 2009). With these digital media capabilities, users are able to use media for interaction at any time and from anywhere without attracting special attention or visibility (Karaiskos & Καραΐσκος 2009). Some researchers have demonstrated the positive influence of these variables to derive satisfactory goal oriented outcomes in organisational contexts (chapter two). Thus this study attempts to extend MRT so as to be able to examine digital media capability characteristics more appropriately. The study adopts MRT richness original factor structure along with two additional variables (PRT and PUob from other models) is hypothesised to positively influence SGS outcome (hypotheses H1, H2, H3 in chapter three).

1.2.2 Purpose for evaluating well-being in this research

Early researchers have shown that the pursuit of personally meaningful goals possessed greater emotional well-being states among individuals than those who lacked meaningful

goal directions ((Emmons 1999), review in (Emmons 1999; Emmons 2005)) .This study is concerned with examining the digital media influence on task effectiveness of spiritual strivings where spiritual strivings are defined as a class of personal strivings having a greater sense of purpose, meaning and value to the individual (Park et al. 2005a; Emmons 1999; Pargament & Park 1995; Worthington Jr et al. 1996; Koenig 1997; Zinnbauer et al. 1997; Martin & Carlson 1988), this context is considered to be concerned with meaningful goals and is associated to eudemonic well-being. Thus it is hypothesised that the success in such goals would promote well-being. In addition to this, scholars in psychology literature have also demonstrated immense support to well-being promoted by success in goal strivings.

Sheldon & Elliot (1999) have shown that success in goal strivings promotes enhanced well-being experiences and have also highlighted it is an important prerequisite for individual's psychological growth (Sheldon et al. 2002; Sheldon & Elliot 1999) for promoting greater well-being (e.g., Brunstein 1993); and also for supporting greater positive change in adjustment and development (Sheldon 2002).

Thus this study attempts to evaluate this well-being state so as to verify that the SGS outcome promotes well-being and to verify that this study's findings are in line with previous literature. Thus it is hypothesised in chapter three that the perceived success in SGS is positively related to 'vitality' aspect of well-being domain.

To summarise, this research is an important contribution to IS literature which lacks sufficient evidence to explain digital media influence on SGS. This research answers to calls

from scholars who have emphasised the importance to explore the nature of facilitation provided by the digital media in supporting SGS (Teusner 2015; McDonnell 2014; Buie & Blythe 2013; Sterling & Zimmerman 2007; Bell 2006). This study on examining digital media influence on task effectiveness of SGS is severely underexplored, considering the impact it has on number of people associated to this subject of faith which accounts to more than 80 per cent of the world population.

1.3   Research aim and objectives

Against this background, the present study's main aim is to examine the influence of big-data based digital media characteristics on SGS and well-being.

Three objectives are derived to examine this study's main aim, they are

a) To examine the relationship between digital media characteristics and SGS outcomes

b) To understand the influence of digital media characteristics on SGS outcomes

c) To examine the influence of SGS outcomes (perceived success or failure) on spiritually motivated individual's well-being

Although personal goal strivings and related concepts from psychology literature are used in this research, it is important to highlight that this research does not make any new contributions to the psychology literature. This research is using existing studies to link media capabilities influence on task effectiveness of SGS and its perceived success / failure linked to well-being component. The main contributions of this study are in its contribution

to IS literature towards understanding the relationship of digital media characteristics on SGS outcomes from MRT perspective.

For the sake of this study, it has been assumed that a) individuals using these digital media have the required competence and b) they are already using digital media voluntarily and are motivated to use it for their everyday spiritual strivings. This first assumption is supported by a number of studies who have demonstrated that experienced users are largely more competent than less experienced users (Judge et al. 2007; Wilfong 2006; Sam et al. 2005; Abd-El-Fattah 2005; Hasan 2003; Saleem et al. 2011). In data analysis chapter section 5.3, the results indicate that a large number of the respondents in this study (> 70%) are experienced users of digital media with at least 1-3 years of experience. This finding in chapter five indicates that respondents are well versed, committed and involved with higher intensity in using digital media. The second assumption is derived from the screening questionnaire where the respondents have voluntarily acknowledged that they are spiritually motivated and use digital media for their everyday SGS.

1.4   Thesis Structure

The thesis is structured to have eight chapters. The first three chapters address the background and purpose of the study. This includes aspects of the digital media influence on SGS, and its effects on individual's well-being domain. The remaining chapters cover aspects of methodology, empirical evaluations, data analysis, results, discussions and conclusions.

CHAPTER 1: INTRODUCTION

Chapter one introduces to an overview of the thesis and includes research purpose, research rationale, purpose of the study, research aim and objectives and finally outlines the thesis structure.

CHAPTER 2: LITERATURE REVIEW

This chapter begin with presenting personal goal striving context of this study followed by literature review of goal strivings and well-being. This chapter also readdresses research gap and introduces MRT. This chapter discusses the identified factors from IS literature influencing task effectiveness of SGS. The study also provides a critical review and drawbacks of media related theories relating to the research. This chapter has six main sections to include MRT literature review, limitations and criticisms, the ways to address the limitations and weakness, identifying key external variables relevant to the study to be included and the overall summary of this chapter to support next phase of the thesis.

CHAPTER 3: CONCEPTUAL FRAMEWORK

This chapter details the inferences made from the literature reviews along with the basic interest to address the research objectives by developing a conceptual model and hypothesis. These constructs' which are conceptualised and the derived hypotheses are evaluated in the later chapters of the study. This chapter is the foundations of the research's conceptual framework which will be pursued in later chapters for finding answers to support or reject the hypotheses.

CHAPTER 4: METHODOLOGY

This chapter presents the methodology utilised in this study. This chapter includes main philosophical paradigm reviews and their implications for this study. Then the chapter deals with the rationale for positivistic stance and the selection of quantitative type of research. Then the chapter includes an explanation for data collection methods, choice of the survey technique, sampling techniques, population included in study and details the reliability of online survey along with ethical issues that were considered in the study. The chapter concludes with explanations on the statistical methods applied in the data analysis part of next chapter.

CHAPTER 5: DATA ANALYSIS I: DESCRIPTIVE ANALYSIS

This chapter begins with presenting the demographic profile of respondents and the procedures that are involved in the statistical analysis of the collected data along with the results of preliminary results. This chapter also discusses the multivariate statistical analysis techniques that are involved in the study for factor confirmation and structure analysis including scale validation techniques, validity and reliability of measurement scales, preliminary regression analysis and model fitness tests, invariance tests and other parameter estimations of the SEM model. Finally the chapter concludes by presenting the process of the analysis of the hypotheses using SEM to be followed in the next chapter.

CHAPTER 6: DATA ANALYSIS II: STRUCTURAL EQUATION MODELLING

In this chapter measurement model evaluation is performed where the description of the evaluation steps to perform SEM to examine the hypotheses developed in chapter three.

Further the chapter provides he details of evaluating constructs validity and reliability measures undertaken in study along with following model fitness assessments and finally provides evaluation results of model fit indices from SEM results.

CHAPTER 7: DISCUSSION

This chapter focuses on discussing the findings from the empirical data analysis in chapter five and six. The finds discussed in this chapter are in relation to understanding the hypotheses test outcomes. The results are discussed with respect to how the outcomes are affected by the input variables. Further the outcomes are discussed in relation to previous findings from other researchers in related studies.

CHAPTER 8: CONCLUSIONS

The summary of theoretical and practical contributions of the study are presented in this chapter presents and along with discussing the limitations of this research. Theory contributions relate to the filling of the research gap and the practical contribution relates to the benefits of the findings for the stakeholders of this study. This chapter also presents the implications of the findings for spiritual organisation managers and spiritually motivated individuals towards accomplishing SGS outcomes.   This chapter also offers recommendations for future research directions.
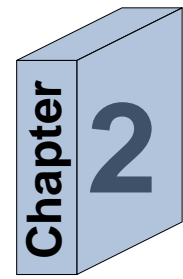
LITERATURE REVIEW

THE THESIS STRUCTURE

CHAPTER 1: Introduction	**Introduction**
CHAPTER 2: Literature Review	**Personal Goal Striving context**
CHAPTER 3: Conceptual Framework	**Digital media in enhancing spiritual goal strivings (SGS)**
CHAPTER 4: Methodology	**Literature review of goal strivings and well-being**
CHAPTER 5: Data Analysis I Descriptive Analysis	**Media Richness Theory (MRT)**
CHAPTER 6: Data Analysis II Structural Equation Modelling	**MRT Limitations and weakness**
CHAPTER 7: Discussion	**Addressing MRT limitations – Extending MRT factor structure**
CHAPTER 8: Conclusion	**Research gaps identified**
	Potential contributions of this thesis
	Summary

Source: *Adapted to this study from* (Kamarullzaman 2006)

2   Chapter Two: Literature Review

2.1   Introduction

In this chapter, studies related to every day spiritual strivings through personal striving literature, digital media as defined in study and related MRT literature will be reviewed. Due to very broad nature of digital media definition as discussed in section 1.3, this study focuses on digital media in literature relating to the definition in this research. This narrowed focus is with the main intention to explore literature on understanding the influence of digital media capabilities on interactive task effectiveness. This narrowed focus in specific areas of literature is mainly to understand and evaluate the influence of digital media capabilities on spiritual practices. For this, media studies were particularly relevant to explore in detail due to its relevance to this study's digital media definition in consideration which describes media in terms of channel/ medium for interacting digitalised content (Otondo et al. 2008; Dennis & Valacich 1999b).

In media studies literature this study focused on reviewing Daft and Lengel's (1986) MRT which is often cited in media studies and was found to be relevant to explore, where 'media richness' is referred to objective media capability characteristics (Daft & Lengel 1986) that facilitates interaction elements that are considered important for accomplishing interactive tasks successfully (Dennis & Valacich 1999b; Carlson & Zmud 1999; Daft & Lengel 1983). Since this study is concerned with understanding the influence of 'digital media'

richness (greater the media capabilities – 'media' is considered to be 'richer' (Dennis & Valacich 1999b)) which is defined as medium which incorporates diverse gathering of capabilities includes handling big-data 3v characteristics so as to facilitate interaction elements with higher degree of media richness experience for accomplishing everyday interactive tasks.

 The chapter thus presents the detailed literature review concerning the MRT in personal strivings related studies. This chapter reviews the theories and models used in understanding the influence of digital media capability characteristics on task effectiveness of everyday personal goal strivings. This chapter reviews a number of theories to address the main objectives of the study and to identify any influential external variables relevant to the study and provides a general review of SGS's coherence concepts long with well-being concepts from psychology literature.

In the first section, literature review concerning personal goal strivings related studies are explored. Further, every day spiritual strivings through personal goal striving literature and its links to well-being is examined from MRT perspective is inspected. MRT is then examined in detail and its limitations are highlighted. In addition to this , external variables are explored for extending the MRT factor structure, the third section deals with exploring personal goal strivings, and in particular the selection of SGS among the other goals and its relationship to well-being.

In the following chapters, a set of hypotheses concerning the effect of digital media is derived with the main focus on extending MRT factor structure first and then to examine its relationship with SGS is explored, that is to develop a conceptual model and appropriate research methodology is presented with data analysis in succeeding chapters. Research findings, study limitations, and suggestions for forthcoming research opportunities are presented in the later parts of this thesis.

2.2   Personal Goal Striving context

According to authors like Emmons (1999) and Little(1993) personal strivings are referred to individual's tasks or goals that individuals typically strive to do in everyday life (van Dierendonck et al. 2009; Emmons 1999; Little 1993). 'Strive' in this study is defined as making attempts to move from current state towards some desired reference value. Personal strivings are personalised goals and is usually comprised of recurrent objectives that can describe a person's intentional activities pursued towards a particular outcome (Emmons et al. 1998b).

Of particular reference to this study are 'spiritual strivings' which according to Emmons (1999) are a class of personal strivings which have a greater sense of purpose, and meaning and value to individuals (Emmons 1999; Zinnbauer et al. 1997). This notion is consistently acknowledged by a number of authors (like (Park et al. 2005b; Worthington Jr et al. 1996; Pargament & Park 1995; Martin & Carlson 1988)).

Scholars have found that the spiritual strivings oriented toward the sacred, ultimate purpose, committed to meaningful life and purpose do find manifestation in everyday personal goal strivings in one form or another (Park et al. 2005b; Emmons et al. 1998b; Emmons 1986).

The definition of 'spirituality' for the context in this study, is defined as a process of recognising the importance of orienting individual strivings towards something non-material but sacred (referring to divine power such as ' god' , 'supreme being', 'ultimate-reality') that is larger than or beyond themselves, with a deeper acknowledgement to a Higher power (Emmons et al. 1998b; Martin & Carlson 1988).

According to Pargament (2001), the process of spiritual striving typically encompasses exploration – for meaning; for feeling harmonious in self and in all; for feeling connected to others; for transcendence; for feeling the sense of experiencing the highest potential of oneself (Pargament 2001). The definition in this study is shown to be consistent with several other research works who have also acknowledged the variety of its meaning; however they also acknowledge the common essence of spirituality and the process of spiritual striving is retained the same as individualistic spiritual desire or a collective spiritual desire (such as religious desire to orient one's life to the ultimate concerns)(e.g. Pargament et al. 2005; Worthington Jr et al. 1996).

In summary when goals are oriented towards the sacred, and are focused to strive towards the ultimate purpose; aligned with beliefs; having strong desire to commit oneself to seek

the divine in daily experience; these are all referred to as SGS. SGS may contain both religious and humanistic themes along with personalised expressions of spiritual concerns (Emmons et al. 1998b).

Spiritual concerns find their expression through personal goals in one form or another in everyday lives like for example parents teaching their child to make a difference in the community; individual's lending direction and purpose to the role of parenthood(other examples of spiritual strivings are in Appendix E: Spiritual strivings examples.

Several studies have indicated the importance of ultimate concerns (also known as 'Higher-level goals' or 'Possible Futures') such as striving for ultimate purpose in life, aiming towards meaningful goal strivings; having a sense of coherence in everyday goal striving. Further scholars have predicted the influence from these ultimate concerns to promote positive functioning, life satisfaction and happiness in individuals (Robak & Griffin 2000; French & Joseph 1999). Whereas in contrast to this, some scholars have also shown that having no clarity in purpose of life or worthlessness have been commonly seen in accompaniment with psychological distress, usually providing an analytical explanation for issues of depression (Keyes 1998; Reker & Wong 1988; Wong & Fry 1998; Baumeister & Leary 1995).

2.3   Digital media in enhancing spiritual goal strivings (SGS)

Digital media provides a medium to accomplish spiritual tasks like gaining knowledge of the Higher power, maintaining and developing emotional relationships with the Higher power

and practicing individual's faith via dedicated portals, web sites, apps, messaging, forums and blogs to approach faith based information. Some scholars (Buie & Blythe 2013; Lee 2013; Campbell 2010; Shrivastava et al. 2010; Herman 2010; Rollier 2010; Wyche 2008b; Bell 2006) have examined individuals' repurposing digital media to deliver spiritual experiences and other desired outcomes. These are discussed below.

Some practices through digital media allows individuals to extend their spiritual experiences which is derived from SGS by participating in spiritual events that would otherwise not be possible to participate due to geographical limitations like streaming live 'puja 'not be possible to participate otherwise due to geographic limitations, like for example streaming live 'Puja' ('Puja' is considered sacred, often ritualistic involving chanting normally along with actions that includes sounds of bells and drums, along with fragrant perfumed incense sticks, flowers and oil lit lamps) and considered as creating path for communicating with the deity of their faith through direct experience- which is possible now from any part of the world (Herman 2010). Due to digital media capabilities, a mobile service provider in Russia has allowed placing prayers at the Wailing-Wall in Jerusalem by depositing the printed texts sent via messaging services (Wyche 2008a; Bell 2006).

This kind of remote participation is becoming quite common and are constantly finding new ways to extend to other domains of spiritual activities like being able to send and receive confessions and absolutions remotely even though there is discrepancy about the confidentially concerns with some priests (Bell 2006; Anon 2011); smart devices with GPS functionality has enabled users to point towards Mecca along with letting the users know

the local times to pray; also some mosques are remotely able to now disable the phone (with users opting this function) for a period of time during regular prayer times to avoid distractions. These functions and services developed from the digital media capabilities indicate a constant connectivity that monitors and addresses spiritual needs of particular users in today's modern world (Bell 2006).

Thus, as digital media is becoming the predominant way of interaction around the world, spiritual organisations and belief groups have come up with several faith based websites (see Appendix D: Examples of faith based websites) dedicated to certain schools of thought and provides dedicated portals for accessing and sharing audios, text based documents, forums, blogs, video recordings of past puja, festivals and ceremonials, with some services offered in localised languages and also providing to particular age groups (Campbell 2012). Spiritually motivated individuals who have adopted digital media for spiritual tasks are developing new ways to help facilitate spiritual practices effectively, for instance registration to faith based apps and websites to monitor and regulate unique spiritual needs from anywhere from education for younger children to utilities and supporting life-styles (Campbell et al. 2014; Buie & Blythe 2013).

Scholars have looked at spiritual practices via digital media such as individuals' visits to virtual temples and shrines. Some examples of such virtual sites are in appendix based on Hindu faith based learning (see Appendix D1: Hindu online site), similarly for Quran recitation for Muslim faith's - supporting Islamic education and practices (see Appendix D4:

Quran, similarly for Christian based faith's offering sermons virtually (Lee 2013; Herman 2010; Shrivastava et al. 2010; Rollier 2010; Bell 2006).

Campbell and other scholars have provided an overview of the most common categories of apps that facilitate spiritual practices like: related to daily patterns like meditation, prayer, yoga, eating (under lifestyle category); family planning, renunciation (under life choices category); reference materials like sacred texts and writings; aids to perform prayers during community projects and rituals such as online experience of puja (see Appendix D1: Hindu online site; individuals can seek out aids for particular life events or situations like during Christening, puja, death, terminal illness etc.; database of commentaries and digital version of belief texts along with supplementary commentary; faith guides and instructions, utility apps for practice (D4: Quran), Qibla compass - helps users orient towards mecca (Azzure Labs 2012), quotes and stories appropriate for certain age groups (under entertainment category) (Kwan 2009) , religion based quiz- like Islamic Quiz (Pesic Stojan 2013); sermons from specific leaders; teachings from revered gurus; rendering sacred messages via social networking and messaging - daily or at specific times; and incredible amounts of musical and visual libraries of faith and traditions readily accessible from anywhere at any point of time (Campbell et al. 2014; Buie & Blythe 2013; Music 2013) . These discussed apps categories that assist spiritual practices are just a small list of many.

There are always new apps being developed and new ways are being formulated for supporting a range of existing spiritual activities as manifested by individual's spiritual needs or by institutions for supporting spiritual tasks and as well as helping to create new ones.

For this, Buie and Blythe (2013) have estimated that approximately 6,000 iPhone and iPad apps were made available to support various aspects of spirituality and religion as on December 2012 with an estimation of roughly doubling every year (Buie & Blythe 2013). These unique everyday requirements of the spiritual audience are coded by scholars to three main categories representing spirituality in strivings known as spiritual goal strivings (SGS) and they will be discussed below.

2.3.1   Spiritual Goal Strivings classifications (SGS)

Researchers like Emmons, Cheung and Tehrani have enhanced multi-dimensional representation of link between everyday goal strivings of spiritual nature directed towards ultimate spiritual concerns by categorizing them to knowledge, feelings, and practice to capture the manifestation of spirituality in strivings (Emmons et al. 1998a; Glock & Stark 1965). That is, strivings are classed 'spiritual' when they reflect in:

(1) Increasing one's knowledge of the Higher power (for example: understanding and enhancing knowledge of a Holy book; or seeking for the ultimate purpose in one's life);

(2) Maintaining and developing relationship with the Higher power in daily life (for example: learning to see god in all, tuning to the Higher power throughout the day, and aiming to increase one's faith in the Higher power);

(3) Exercise spiritual beliefs or attempting to live fully in daily life (for example: to not be judgmental, witnessing to others, living in peace, treating others with compassion, forgiving oneself and assisting others to experience peace) (Mahoney et al. 2005; Emmons 1999; Emmons et al. 1998a).

Higher proportions of these strivings have shown to reflect a greater meaning and having a sense of purpose in life; experiencing a greater life satisfaction; and stronger links between spiritual strivings and well-being were observed compared to any other strivings (Emmons et al. 1998b).

Within the dimension of human personality , daily personal srtivings represents mid-level personal goals under the umbrella of a larger all-embracing Higher-level goals or ultimate concerns (Park et al. 2005b; Tillich 2000; Emmons 1999; Das 1998; Frankl 1969; Tillich 1963). These ultimate concerns are higher-level goals that represents what individuals hope to become or to avoid becoming utilmately (Sheldon & Kasser 1995; Read & Miller 1989; Hyland 1988)

In this study, primary personal strivings are basic interactive tasks with an interim commitment to strive to mid-level spiritual goals. Furthurmore they are concerned with its successful attainment or disconnection from the commitment to long-term goals. Long-term goals are concerned with ultimate concerns of individual's ideal state of reference - where an individual invests maximum value, making it the centre point of their life(Tillich 2000). In simple terms long term spiritual goals are goals that individuals consider primarily important and are ultimate sacred goals.

Daily personal srtivings have shown to help bring about higher-level goals when the mid-level goals are consistent with or regulated by higher-level goals (also known as vertical coherence in (Sheldon & Kasser 1995) and (Unterrainer et al. 2011)). This coherence of

goals is determined by the degree to which individual's everyday personal strivings help bring about possible futures (Emmons et al. 1998b; Sheldon & Kasser 1995). Sheldon and Emmons have assessed the helpfulness of mid-level personal goals in bringing about higher-level goals or also known as possible futures (Markus & Ruvolo 1989) to operationalize the personality integration aspects (Read & Miller 1989; Hyland 1988; Emmons 1989).

Studies have confirmed that the SGS measures is shown to possess adequate reliability and validity (Sheldon & Kasser 1995; Emmons et al. 1998b). Past research has demonstrated that when different aspects of personality are integrated into a relatively harmonious whole then the individual experiences optimal psychological health and well-being (Donahue et al. 1993; Harter & Monsour 1992; Grolnick et al. 1991; Allport 1937) . Emmons et al. (1998) have evaluated the validity of spiritual strivings in predicting psychological well-being (Emmons et al. 1998b).

Within this study's context which is primarily concerned with the influence of digital media on individuals interactive tasks of SGS, the interactive tasks are referred to the (daily) mid-level personal strivings of spiritual nature . This study hypothesises that digital media capability characterisics are positively related to SGS outcomes in the next section. By doing this, this   study would empirically evaluate the coherence of mid-level goals to possible futures which are considered vital for predicting well-being outcomes (Sheldon & Kasser 1995). Therefore hypotheses are derived to first evaluate digital media influence on SGS and further it is hypothesised that perceived success in SGS to be positively related to vitality aspect of well-being.

2.4   Literature review of goal strivings and well-being

All goals are known to contribute differently to well-being (Kökönyei et al. 2001; Emmons et al. 1998a). Literature review of goal strivings and well-being reveal that goals contribute to either well-being or ill-being at different levels, like for example intimacy (relationships) is found to contribute greatly to well-being (Sheldon et al. 2001; Igreja et al. 2000); SGS (Emmons et al. 1998b) and generativity (self-transcendence) where individual strive for a sense of meaning in life like contributing to social or noble cause , leaving legacy (Emmons 2005)   is consistently related to well-being which appears to encompass most of the domains (Cox et al. 2010; Ackerman et al. 2000). Scholars like Sheldon and Houser-Marko, (2001) and McGregor and Little (1998) have clearly demonstrated the existence of strong positive links between goal strivings and well-being whereas strong negative correlation have been reported when there is an existence of goal conflicts (Kelly et al. 2011; Sheldon & Houser-Marko 2001; McGregor & Little 1998; Emmons & King 1988)   Studies have revealed that goal facilitations promotes greater goal pursuits, for example Riediger et al. (2005) established that goal facilitations promoted greater goal outcomes (Riediger et al. 2005; Riediger & Freund 2004). Studies have revealed that the extent of facilitations to goal strivings are associated to a number of positive outcomes such as increased vitality and positive psychological functioning (Sheldon & Kasser 1995). This study intends to add to these findings by recognising the facilitations provided by the capabilities of digital media towards everyday SGS and to report the outcomes of these facilitations on the vitality aspect of well-being experienced by this study's respondents.

Further to literature review goal strivings of spiritual nature to well-being, Emmons et al.(1998) have indicated that spiritual strivings impact well-being positively than non-spiritual strivings (Emmons et al. 1998a). Sheldon and Elliot (1999) have shown that the goal attainment, promotes enhanced well-being experiences (Sheldon & Elliot 1999) and Sheldon and Houser-Marko (2001) have shown that success in personal goal striving affects well-being and further observed that they are bi-directional- that is just as goal attainment fosters well-being, well-being is also seen to foster goal attainment (Sheldon and Houser-Marko (2001) .

Prior studies have proven that optimal well-being is experienced when the different aspects of personality are integrated into a relatively harmonious whole ((Allport 1937) in (Emmons 2008), (Ryan & Deci 2000)). Scholars have also indicated that individual's different aspects of personality when integrated to a relatively harmonious whole would experience optimal psychological wellness; and this is found to influence various well-being domains (Donahue et al. 1993; Harter & Monsour 1992; Grolnick et al. 1991; Allport 1937)

Well-Being measure

Since respondents in the study have indicated their perceptions of success in SGS, well-being measure would indicate the influence of this perception. Thus well-being would verify that the progress of goal attainment fostering well-being. 'Vitality' is a well suited measure and is commonly accepted measure of well-being in such scenarios.

Vitality measure is defined as the measure of aliveness and feeling fully energetic experience of an individual (Ryan & Frederick 1997). Vitality aspect of well-being is chosen mainly because of two main reasons. Firstly, unlike subjective well-being, psychological well-being is more than just experiencing temporality happy and sad emotions (positive and negative feeling); it has been related to eudemonic approach of well-being (Ryan & Deci 2001). Psychological well-being is defined differently and it is a sustainable experience which is beyond the short-term happiness or sadness experienced by the individual (Ryff 1989; Keyes 1998; Schmutte & Ryff 1997). In this study , the results are anticipated to find that success in SGS on vitality construct to be positive for individual to experiences sustainable vitality experience which is consistent with earlier findings (Emmons 2005; Emmons 1986).

Second reason for selecting vitality is because it is considered as a characteristic trait of eudemonic well-being dimensions, for example spiritualty, meaning and purpose, self-realization etc. (Lee 2013; McMahan & Estes 2011), where scholars have shown that the individuals are meant to be optimally functioning and are considered to be psychologically well (Ryan & Deci 2001).

In this study well-being measure was limited to measuring vitality, and any other aspects such as positive and negative effect, concentration, life satisfaction and other hedonic stream of subjective wellbeing (Ryan & Deci 2001) aspects are not considered for study. However previous studies like in Emmons' studies (Emmons 1986) various striving were seen to originate different aspects of well-being experience, however this research is

focused to reveal how the success in SGS would contribute to Vitality aspect of psychological well-being (Emmons 1986).

Ryan and Frederick (1997) have developed vitality scale to measure individual vitality aspect of well-being (Ryan & Frederick 1997). Subsequent research studies have formulated a six item version which is known to work better than the original seven item version (Bostic et al. 2000). This study has adopted this six item version of vitality scale to measure the vitality aspect of well-being and is hypothesised to be influenced by the SGS outcomes.

2.5   Media Richness Theory (MRT)

'Media Richness ' in MRT as it is , is referred to objective media capability characteristics (Daft & Lengel 1986) that facilitates interaction elements that are considered important for accomplishing interactive tasks successfully (Dennis & Valacich 1999b; Carlson & Zmud 1999; Daft & Lengel 1983). Greater the media capabilities - media is considered 'richer' (Dennis & Valacich 1999b).

According to this theory, each media has different capabilities to carry and process information and provides different capacities to facilitate rapid feedback, multiple cues , supporting different data types and having abilities to personalise information (Otondo et al. 2008; Lengel & Daft 1988; Daft & Lengel 1986; Daft & Lengel 1984).

The central theme of this theory argues that a medium used for interaction is most effective only when the task needs are matched to media capabilities and thus provides enhanced

task performance (Dennis & Valacich 1999b; Daft, Lengel & Treviño 1987; Daft & Lengel 1986).

Scholars have claimed that the face to face interaction to provide real experience is the richest form of communication; this is due to the ability to have direct experience, personal focus and the allowance of multiple cues. Other media such as telephone interaction is considered to have lower forms of richness capabilities in spite of having the ability to have fast feedback and this is due to the limited body cues on telephone interaction. Further decrease in richness is shown for written type of media, although written media types may have personal focus but clearly has slow feedback and has no cues and it is thus considered less rich. Despite this fact, often written type is widely used for routine communication such as lean media preference for memo and notes; however using the same media for non –routine communication falling short of the richness indicates communication failure and poor performance. On the other hand, any media with lower capabilities is considered to provide ineffective communication with lower task performance (Lengel & Daft 1988). In addition Palvia et.al (2011) have shown that efficient and effective media have the potential to provide effective results that may be very crucial in certain circumstances (Palvia et al. 2011).

MRT theory was originally developed to explain and predict which media should ascertain most effective for individual's interaction needs by Daft and Lengel (1986), and not to speculate how managers in organisations should choose media predominantly as this is most commonly seen in MRT literature. A serious weakness in previous research works

have been the focus on selective media's task-fit perceptions in organisational settings mainly where much of MRT related investigations are focused on media choice with only very few exceptions (such as (Otondo et al. 2008; Vat 2004; Alan R Dennis & Kinney 1998a; Daft & Lengel 1986)).

Table 2:1 Literature Review

Sample articles of media choice and media-task fit effectiveness from literature review

Authors	Context of study	Title
Vivian C Chen, Ling Sheer, (2004)	This study is focused on managers' media choice study for task accomplishments - where the study proposes a conceptual framework with multiple goals rather than the original objective of instrumental goal. The study highlights that with respect to traditional media that self-presentational goals, relational goals and complexity are the main predictors of media choice in different strengths.	Improving Media Richness Theory a study of interaction goals, message valence, and task complexity in manager-subordinate communication (Management Communication Quarterly)
Mennecke, Valacich, & Wheeler (2000)	This study examines objective performance of various media choices to examine the task to media fitness.	The effects of media and task on user performance: A test of the task-media fit hypothesis (Group decision and negotiation)
Webster, Jane Klebe, Linda (2009) Stein, Trevino Eric (Webster et al. 2009)	This study reveals media choice effects in organisational context using MRT. Variance in media choices is explained in more detail by variance in personal nature than by ambiguity of the message content. The study suggests two separate streams for future studies, one based on the information richness and the other based on the media capabilities to handle information.	Personal nature and ambiguity as sources of message equivocality: An extension of media richness theory (Systems Sciences
Lee (1994)	This study is focused on media choice in organisational context for managers. Choosing electronic mail in the organisational context is based on the rationale decision made based on the needs of email users and recommends this process to be integrated into the system design. Author has led to disagreement about the ability of MRT to explain new media choices with media richness constructs alone.	Electronic mail as a medium for rich communication: An empirical investigation using hermeneutic interpretation (MIS quarterly)
Markus (1994)	This study examines managers setting	Electronic mail as the

	rationale for using electronic email in organisational setting. Using MRT has found inconsistent results as senior managers found using emails largely even for equivocal communications in contrast to previous studies. This disagreement suggested that the media choices may be greatly shaped by considering the social perspectives such as socialisation, social control etc.	medium of managerial choice(Organization science)
Palvia, Prashant Pinjani, Praveen Cannoy, Sherrie Jacks, Tim (2011)	This study focused on media choice by managers for effective decision making and has identified contextual constraints relating to task situations such as urgency, confidentiality, accountability, social interaction, and information integrity process.	Contextual constraints in media choice: Beyond information richness. (Decision Support Systems)
Fernandez, Vicenc Simo, Pep Sallan, Jose M. Enache, Mihaela (2013)	This study is focused on experience with media over time that is to understand the perception of richness of media varying over time using longitudinal study. The results indicate that the varying media richness perceptions are mainly due to change in adjusted experiences over time.	Evolution of online discussion forum richness according to channel expansion theory: A longitudinal panel data analysis (Computers & Education)
Dennis, Alan R Fuller, Robert M Valacich, Joseph S (2008)	This study reveals an empirical evidence for the relationship between perceived media richness and media choice using media synchronicity theory where the media choice for communications is shown to be dependent on the perceived media richness and the communications process tasks that is undertaken like for example convergence and conveyance. This study highlights the importance of media choice for collaborative task effectiveness in organisational environment.	Media, tasks, and communication processes: A theory of media synchronicity (MIS quarterly)
Authors	**Contextual study and inconsistent results**	**Title**
Vickery, Shawnee K Droge, Cornelia Stank, Theodore P Goldsby, Thomas J Markland,	This study has examined the relational performance between customer and supplier in an industrial services background. Relational performance deals with the extent to which the behaviors and tasks that were focused on perusing successful relational services between customer and supplier. The studies have found that the richer	The performance implications of media richness in a business-to-business service environment: Direct versus indirect effects

Robert E (2004)	communication capability enables stronger customer supplier relationships and has a positive effect on customer relational performance. But previous studies on this link between factors relating to richness and performance have found to have no significance in the relationship. This study was one of the first to show the significance of this relationship that media richness affecting firm performance positively based on a study of third-party logistics companies.	
Mennecke, Valacich, and Wheeler 2000 And (Dennis & Valacich 1999b)	This study has demonstrated that mixed performance results in the task-media fit relationships where richness alone was shown to be not a reliable predictor of media effectiveness or preferences. Multiple factors have shown to influence communication media preferences when faced with message ambiguity where multiple interpretations about an interaction may arise. Thus this study has applied MRT in a number of other issues of decision support systems tools like email, video conferencing- to understand why and how people choose media in organisational management communication context. The results showed the inconsistent performance patterns and showed significant dissimilarities across tasks and media.	The effects of media and task on user performance: A test of the task-media fit hypothesis(Group decision and negotiation)
Dennis, Alan R Kinney, Susan T (1998)	Although the author has shown that richer media results in better performance, this study has received mixed results in task-fit outcomes and has demonstrated that media richness alone would not be able to reliably predict performance, task effectiveness or media preferences. Communication media preferences are shown to be influenced more by individual's understanding of richness and on selecting media for a given task as opposed to the capability of the media to support the task effectively. This shows that media richness alone may not be able to provide reliable performance in terms of media usage for communications and for utility purposes.	Testing Media Richness Theory in the New Media: The Effects of Cues, Feedback, and Task Equivocality

Markus 1994; Lee 1994; Ngwenyama and Lee 1997	These studies have not shown convincing results for using leaner media for equivocal tasks. MRT is hypothesized for higher managements in organisations to engage in richer media to deal with equivocal tasks like face to face communications or telephones use; however analysis indicated that the higher level management used leaner media like email than the lower management. Not enough empirical evidence is shown to this unexplained result in these studies.	Communication richness in electronic mail: Critical social theory and the contextuality of meaning; Electronic mail as a medium for rich communication: An empirical investigation using hermeneutic interpretation; Electronic mail as the medium of managerial choice
Rice and Shook 1990	Unlike the original MRT hypothesis, this study found that the discrepancy of upper management at organisational level used emails more often than the lower level clerical staff which is not consistent with previous MRT research works. However media choices variance were shown to be more likely linked to job related tasks and at different organisational levels.	Relationships of Job Categories and Organisational Levels to Use of Communication Channels, Including Electronic Mail: A Meta-Analysis and Extension
(Trevino et al. 1990) Trevino, Linda Klebe Lengel, Robert H Bodensteiner, Wayne Gerloff, Edwin A Muir, Nan Kanoff (1990)	This study showed inconsistent results with modern new media for email and voice mail in organisational setting. Original MRT seemed to generally support traditional conventional medias' such as letter communications and face-to-face interactions. This study's inconsistent empirical results have encouraged a number of other researchers to add messaging between telephone and written communication in the richness continuum. The findings in this new media studies have not been convincing as managers in organisations have found to choose media which is different from the media predicted by MRT(Kinney & Dennis 1994)	The richness imperative and cognitive style: The role of individual differences in media choice behavior

| Dennis and Kinney 1998 | This study found that richer media on high equivocality tasks did not lead to improved performance ('decision quality', 'decision time', 'consensus change', 'communication satisfaction'- using then new media computer-mediated communication). The study did not find support for MRT preposition that performance would improve if richer media were used for equivocal tasks (by allowing faster communication when equivocal messages are comprehended better) | Testing media richness theory in the new media: the effects of cues, feedback, and task equivocality |
| Otondo, Robert F. Van Scotter, James R. Allen, David G. Palvia, Prashant | This study found that multimedia communication context required models with multiple constructs to explain complex relationships (media, message, and communication outcomes) instead of just one or two dimensions and MRT was shown to be a poor predictor of the effects of the complex relationships. The factor structure was found to influence media selection based on perceived satisfaction rather than effectiveness of media capabilities. | The complexity of richness: Media, message, and communication outcomes |

Source: Created by the author of this thesis

In spite of the majority of research works are focusing on media selection than task effectiveness, the theory poses considerable ambiguity, drawbacks in theory's factor structure and several shortcomings of MRT based studies.

In summary, MRT highlights that each interactive media possesses different capability characteristics to facilitate interaction elements which are considered important for accomplishing a task successfully. However this theory suffers from a number of criticisms due to the limitations in theory itself and due to the weakness of the other research works which will be discussed in next section in more detail.

2.6   MRT Limitations and weakness:

MRT theory suffers from a number of criticisms due to serious limitations in theory and practice which fall into three main categories. First one is directed at the theory; the second main criticism is directed at the weakness of previous researches and third is directed to the assumptions and perceptions of previous researches.

2.6.1   Criticism Category 1

In the first criticism category, the theory is disadvantaged from the absence of sufficient structural elements to examine the holistic nature of media capability characteristics that are used for interaction such as MRT not having factor structure to capture ubiquity characteristics and discreet omnipresence characteristics of digital media.

MRT theory's original factor structure is clearly inadequate from the drawbacks to include the situational elements such as time, location, discreetness of situations, needs for urgency, needs for real-time information, in-sightedness, confidentiality, social interaction and information integrity. Not including these and other social factors have been severely criticised as they might affect media perceptions and predictions to accurately measure the task effectiveness of particular individual needs (Palvia et al. 2011; Suh 1999; Markus 1994).

2.6.2   Criticism Category 2

The second main criticism is directed at the weakness of previous investigations that have attempted to test the theory and were focused on media choice and media selective task-fit perceptions and not the actual media effectiveness on task performance (Otondo et al.

2008; Vat 2004) or actual performance (Otondo et al. 2008; Alan R Dennis & Kinney 1998a).

A large number of MRT theorised IS related investigations with very few exceptions, have

not empirically evaluated the perceptions of actual task effectiveness or the performance of

individual goal strivings.

Also evident from previous investigations of MRT literature are the criticisms involving

evaluations of MRT which are based mostly on the perceptions of media task-fit by using

media choice survey rather than actually examining the task and performance effectiveness

of the media use. Thus researchers have been encouraged to seek empirical data on media

influence on   different task effectiveness and performance to either support or reject

previous findings related to MRT (Suh 1999; Kinney & Dennis 1994; Rice 1992; El-Shinnawy

& Markus 1992).

Unfortunately, results from previous investigations have not been convincing enough to

consistently explain the media capabilities on task effectiveness (such as (Vickery et al.

2004; Mennecke et al. 2000; Alan R Dennis & Kinney 1998a; Ngwenyama & Lee 1997;

Markus 1994; Lee 1994; Valacich et al. 1993; Rice & Shook 1990; Trevino et al. 1990)).

2.6.3   Criticism Category 3

The third main criticism which is directed towards assumptions is mainly about the

differences in perceptions that are made in previous research investigations. This may be

the cause for several inconsistencies, confusions and unjustifiable patterns in MRT

literature. There are three of the most prevalent perspective differences seen in literature analysis.

2.6.3.1 Perspective 1

The first is the MRT research perspectives based on the focus of the study. According to Suh (1999) MRT research perspectives may be categorised as   prescriptive or descriptive research types (Suh 1999). The prescriptive types of studies have focused mainly on the media richness effects at either organisational or at individual level where as descriptive types of studies have focused on the perception of managers while selecting media (Suh 1999; Trevino et al. 1990). For this authors like Rice (1990) have questioned MRT effectiveness is a measure for predicting media choices or is it a measure of interactive task effectiveness (Suh 1999; Rice & Shook 1990; Russ et al. 1990).

2.6.3.2 Perspective 2

The second most prevalent confusion that caused   inconsistencies are   seen due to assumptions made about the perceptions of 'richness' types – where there is confusion about media richness and information richness (Palvia et al. 2011; Otondo et al. 2008; Sheer & Chen 2004a; Suh 1999; Lengel & Daft 1988).

Media richness refers to richness of the   media capabilities to carry and process rich information (Otondo et al. 2008; Daft, Lengel & Treviño 1987). However, information richness is referred to the information transmitted in the media which has the ability to reduce uncertainty and change understanding within a timeframe   (Palvia et al. 2011; Otondo et al. 2008; Daft, Lengel & Treviño 1987). These two types of richness overlap a

great deal and are interchangeably used often in MRT literature, thus causing different inferences and creating confusion.

2.6.3.3 Perspective 3

The third reason for inconsistent results is due to authors exploring MRT studies based on the perceived subjective and objective characteristics of the media (Suh 1999; Fulk et al. 1987).

Fulk (1987) has clearly summarised the perspectives of media are based on the rationality employed by individuals and varies depending on the different perspectives. When study's perspectives are on objective characteristics of a medium for media selection or task- fitness studies- these studies are examined under MRT perspectives. However when study involves examining influence from attitudes and behaviours of individuals influenced by social environments are examined under Social Information Perspectives (SIP) (Fulk et al. 1987). When the perspectives are not clearly defined in study, there is likeliness to get inconsistent results.

Scholars like Suh (1999) and Fulk et.al (1987) have employed   alternative perspectives to clarify MRT's unexplained patterns by comparing subjective and objective characteristics assumptions from these two perspectives- social information perspective (SIP) and MRT.

Thus it is evident from literature review that a large number of inconsistencies exist in MRT literature findings and are due to these differences in perceptions to the point that the

media capabilities on task effectiveness may not be adequately explained or predicted reliably. These explanations are important and are very useful to clarify the discrepancies in previous findings.

2.7 Addressing MRT limitations - Extending MRT factor structure

Digital media capabilities are not anymore in its monolithic forms (Dennis & Valacich 1999b; Daft & Lengel 1986). Among several digital media there is no one medium which possess the highest form of richness capabilities in the richness ranking continuum as put forward by Daft & Lengel's (1986) terms (Daft & Lengel 1986). With digital media depending upon how it is configured and adapted to use, one medium may be able to possess multiple levels of interaction capabilities irrespective of context (for example, a smart phone can be configured to have limited access and can provide child friendly interactions when necessary and can be configured to include graphics and video to include for a different adult user). Depending on the configuration, a medium can be adjusted to have higher levels of communications capabilities for everyday interactions (Dennis & Valacich 1999b; Lee 1994).

Overall, digital media for interactions possess many capabilities and the importance of these capabilities may vary in different situations. The 'richest 'definition in original MRT structure is addressed for face-to-face interactions as proposed by Daft and Lengel (1987), which would be inappropriate now. With new digital media, 'richest' medium is the one which provides a selection of capabilities and that fits best for a particular situation (Daft, Lengel & Treviño 1987). Particular situation may vary from time to time based on the individual

needs and from within the context of the individual's interactions (Dennis & Valacich 1999a).

Thus numerous evaluations of MRT on digital media for interactions resulted in its disconfirmation (Markus 1994; Rice 1992) ; and showed inconsistent results with new Computer Mediated Communications CMCs (Lee 1994; Markus 1994) and some scholars deviated and have clearly suggested modifications to the theory (Russ et al. 1990; Daft, Lengel & Treviño 1987) to address some of the new capability characteristics of digital media.

Thus these discrepancies have encouraged scholars to revisit MRT time and again to clarify theory inconsistencies. Some studies have attempted to extend MRT over the years by adding external variables for media use and media selections such as 'user experience' factor (Carlson & Zmud 1999), 'playfulness' factor in media choice (Chen et al. 2008), media 'synchronicity' factor (Alan R Dennis & Kinney 1998a), 'influence on creativity' through media selection factor (Thatcher & Brown 2010), 'context and social environment' factor (Cousins & Robey 2005; Rice 1992). Few other scholars have addressed weak findings of MRT and refined MRT itself (e.g.(Sheer & Chen 2004a; Carlson & Zmud 1999)). Some other scholars have formulated alternative new theories to address the capabilities of digital media (for example (Dennis & Valacich 1999b; McGrath & Hollingshead 1994)).

Among the few scholars (like (Palvia et al. 2011; Fulk 1993; Fulk & Boyd 1991)), who have developed new theories to particularly explain the influence of digital media's use are an

attempt from Dennis and Valacich (1999) who developed a new theory 'Media Synchronicity Theory' (where conveyance and convergence tasks are grouped together) (Dennis & Valacich 1999b). This theory states that when the two processes that is conveyance and convergence tasks are aligned with the capabilities of the media, then the performance is posited to be enhanced greatly, however this new theory does not properly account for media with multiple capabilities and does not accommodate contextual elements such as 'need for urgency', 'discreet participation in groups discussions', 'having insights to certain information at any time' etc. Contextual elements are an important factor to be considered in situations where a medium for interaction is involved for pursuing tasks of relative importance.

The two other prominent theories on media related studies where an attempt has been made to go beyond the traditional concepts of selecting media by task- fit perceptions are Social Influence Theory (SIT) (Palvia et al. 2011; Fulk & Boyd 1991) and the other predominant theory in media selection is Channel Expansion Theory (CET) (Carlson & Zmud 1999) - where in CET, certain experiences of individuals are considered important for evaluating richness perceptions for a given channel or medium. However on the other hand some researchers have contended this broad approach (of where media - task fitness were credited to task performance)   and in contrast have attempted to understand media's influence on communication task performance by examining the   communication task processes that are involved to accomplish a task (like for example (Dennis et al. 2008; Robert & Dennis 2005; Miranda & Saunders 2003; Huang & Wei 2000; Zigurs & Buckland 1998; Fulk & Boyd 1991)).

Overall, it is clearly evident that due to the absence of additional MRT factor structure to capture situational elements, MRT original factor structure (Perceived Media Richness – PMR) alone as it exists will not be possible to explain the holistic characteristics of digital media capabilities. Thus MRT alone will not be able to explain the digital media characteristics influence on task effectiveness of SGS. Also it is no longer sufficient to use one theory or model to capture holistic nature of digital media characteristics, but a combination of variables from other models must be integrated in order to completely capture the holistic nature of digital media characteristics, so that the influence it has on goal strivings can be examined further on SGS. In this study, these situational characteristics along with MRT original factor structure are posited to capture digital media capabilities and are hypothesised to be positively influencing tasks of SGS which will be discussed in next chapter.

2.7.1   Identifying additional variables

Based on the MRT considerations on task effectiveness of SGS context, this research has taken two main considerations to identify additional factors. Firstly the variable should have the potential to explain and predict the influence on goal strivings outcomes. Secondly the variables should address the unique SGS context. Critical analysis on existing media related studies like MRT, User Gratifications Theory (UGT), and Technology Acceptance Model (TAM) were performed. Theories like TAM demonstrated to be extremely valuable theoretical model in IS literature to understand the technology adoption and user behaviours (Legris et al. 2003; Yoon & Kim 2007) ; and UGT displayed to be widely used to explain the motives for media usage and adoption for several decades (Sundar & Limperos

2013; Roy 2009; Ruggiero 2000). However, since this study's main objective is to explain the influence of media characteristics on specific personal strivings, greater emphasis was required to be made on examining media characteristics and its abilities to influence goal strivings, thus MRT which focused on media capabilities and its influences on task effectiveness, this theory was chosen as the most appropriate fundamental theory for this study.

While performing critical analysis on existing media related studies - two important variables were identified. They were chosen based on their potential from literature to explain the influence of digital media on task effectiveness of SGS. The main reasons to include these two new variables to measure media influence towards task effectiveness is explained in the following sections.

2.7.1.1 Perceived Real-Time presence

Perceived Real-Time presence (PRT) in this study is an incorporating idea of accessibility, reachability, and portability with abilities to have continuous access to information insights, irrespective of place and also allowing personalised (same-time and continuous) interactions among multiple interactive units - all into one construct (Karaiskos & Καραϊσκος 2009; Chung & Kim 2008; Junglas & Watson 2003).

In this PRT state, interactive units possesses the ability to interact at anytime, anywhere and also allowing same-time communications with other interactive units such during video conferencing, messaging and sharing information via social networks.

Related constructs that measures PRT dimension has been studied in TAM and UGT literature, under different notions like 'ubiquitous computing', 'ubiquity', 'pervasive IS' and 'omnipresence'.

Previous studies have recognised PRT as an important element affecting tasks relating to interpersonal communication for individual use and for use within team related jobs (Burke and Chidambaram 1999; Walther 1996). Salinas Segura and Thiesse (2015) have shown that there is a direct effect of ubiquity characteristics on task performance and task effort expectancy (Alexander Salinas Segura 2015). further has shown that positive effects of ubiquity to have greater influence with individuals with higher experience (Alexander Salinas Segura 2015). Alexander Salinas Segura (2015) have also shown that the postive effects of ubiquity has greater infleunce with persons having higher experience with digital media (Alexander Salinas Segura 2015). Pervasive information systems is known to influence individuals tasks of everyday life by not only allowing access anywhere but at any time by Kourouthanassis and Giaglis (2008) (Kourouthanassis & Giaglis 2008). Ubiquity is also shown have positive effects on tasks involving social influence (Thong et al. 2011). Goodhue and Thompson (1995) have evaluated that the influences of having access to technology anytime, anywhere enhances the capability to always perform a task anytime, anywhere which in turn increases the prospects to performing their tasks where and when they can (Goodhue & Thompson 1995).

Thus in situations where individuals business and personal tasks are involved at various physical settings, PRT is shown to positively influence these tasks, and is also known to raise expectations of the individuals to perform these tasks and activities anywhere and at any time they demand to succeed their goal strivings (Birnbaum 1997).

PRT characteristics from the perspective of providing mobility, has shown to influence everyday tasks involving real-time interactions between interactive units by enabling them with local mobility by its smooth distribution of computing capabilities in physical space (Norman 2002; Beigl et al. 2001; Luff & Heath 1998).

PRT from the perspective of providing support for portability characteristics is shown to influence individuals tasks by equipping with the capability to move with the computational environment providing continuous access to tasks and services, providing anytime usage to perform tasks (Junglas & Watson 2003; Lyytinen & Yoo 2002). This allows the individual's to extend the possibility of performing tasks at anytime from anywhere

PRT is a special action state giving the individuals the capability to exhibit the arrangement of being present in several interactions at the same time and avail the possibility of having a shared and common focus involved in group interactions providing synchronous interactions (Harrison et al. 2003). Other types of communications where the same time interactions do not happen like for example via email, voice mail, fax etc. are asynchronous interactions. Individuals with digital media have the ability to use either synchronous or asynchronous depending on how they are appropriated.

Based on these points discussed in this section, this PRT variable is identified to account for providing continuous access to along with personalised same time and continuous interactions among multiple interactive units, along with accessibility, reachability, and portability capabilities for different situational needs. This clearly provides provisions for executing various tasks of personal goal strivings more effectively and efficiently in everyday life.

2.7.1.2 Perceived Unobtrusiveness

Perceived Unobtrusiveness (PUob) construct is the second factor considered in this study. This is defined as the degree to which the interactive unit in a system is unseen both cognitively and physically to other interactive units when using the system (Karaiskos & Καραϊσκος 2009) . Some authors have found that the interaction with diffused computing devices in pervasive environment can be severely distracting considering the experience of physical and mental attention that is involved in interacting with a single device interaction (Matsukura et al. 2007; Scholtz 2004; Woodman et al. 2003). According to Luck and Vecera (2002) humans are unable to process several simultaneous interactions thus limiting them to process some inputs filtering out others. Interaction with diffused computing devices in pervasive IS, requires several competing inputs and humans would be mentally or cognitively overloaded due to limited processing capability of humans (Karaiskos & Καραϊσκος 2009; Luck & Vecera 2002). Thus Karaiskos (2009) have promoted unobtrusive use of pervasive IS services for enhanced task effectiveness (Karaiskos & Καραϊσκος 2009).

Authors like Alexander Salinas Segura (2015) have shown that the PUob construct positively influences task performance and effort expectancy (Alexander Salinas Segura 2015).

Lyytinen and Yoo (2002) have shown that due to the unobtrusive nature of the pervasive computing, users are less likely to be distracted and thus the task performance is expected to increase (Lyytinen & Yoo 2002). In relation to safety issues, Junglas and Watson (2003) have shown that the influence on task performance to be positive, where overwhelming features is found to distract users when obtrusive (Junglas & Watson 2003).

Gil et al.(2012) have emphasised that the unobtrusive characteristics of IS   influences positively on task effort in cases where users were overloaded with information and services (Gil et al. 2012). Additionally Yue et al.(2007 have indicated that the influence of unobtrusive characteristics of invisibility is an enhanced feature that the users can utilize the invisible manifestation of natural interaction using individual's basic everyday skills (Yue et al. 2007). Scholars have also addressed the influence of unobtrusive IS characteristic to provide aesthetics and pleasing design is sometimes an important part of users requirement in situations which involves appearance and appealing criteria in decision making tasks (Huh et al. 2007; Vogel & Balakrishnan 2004; Jarvenpaa et al. 2000).

Based on the points discussed above , PUob characteristic variable is identified to account for providing physical and cognitive invisibility of the system to all the interactive units (Karaiskos & Καραΐσκος 2009). Also evident from literature is its ability to enhance tasks effectiveness in situations that requires avoiding overloading demands of competing IS inputs, avoiding distractions and the need for manifesting seamless natural interactions among multiple interactive units. Thus unobtrusive characteristic clearly provides several

provisions for executing various tasks of personal goal strivings more efficiently in everyday life.

Overall two additional factors were identified after performing critical analysis on existing media related studies – PRT and PUob. They were chosen based on their potential from literature to explain the influence of digital media on task effectiveness of SGS. The identified two additional variables were found to be the most appropriate variables besides MRT original variables structure to measure media influence towards task effectiveness of personal goal strivings after critically reviewing MRT and related studies. The theoretical rationale is discussed for each variable that is derived from literature. This will be further used to propose this study's hypotheses in the next chapter.

2.8   Research gaps identified

After critically analysing literature it is certain that areas' relating to digital media influence on spiritual practices is severely understudied. This section emphasises on the research gaps.

With dynamic increase in use of digital media for spiritual practices, it is important for relevant stakeholders to understand its influence on spiritual practices. The three main stakeholders who would benefit from this are spiritual seekers, spiritual organisations and user experience (UX) - user interface (UI) designers of digital media developers, for whom clarity in understanding this relationship between digital media and its influence on SGS outcome is vital for maintaining a sustainable outcome of their investments. It is important

for the stakeholders to understand the significance of relationship between digital media capabilities and task effectiveness of SGS and its impact on sustainable well-being.

In order to review this relationship, prior studies were explored where digital media definition concurred with this study's definition which refers to digital media as medium or channel for interacting digitalized content. Since the generic term digital media is all-encompassing to include digitalized content anywhere from conventional digital media forms of text, audio, video, apps and games, images, electronic books to newer digital media that combines conventional digital media with internet and websites includes social media, digital marketing, TV or newspaper on network and also includes the combination of conventional and newer digital media with increased storage capacity, higher computing power etc. has evidently given rise to numerous digital media definitions and studies in IS literature related to digital media practice, usage patterns, effects, social impacts and well-being. Due to the broad nature of this definition, this study focuses in particular to explore prior studies involving digital media definition in study. This narrowed focus is with an intention to explore literature on understanding the influence of digital media capabilities on interactive task effectiveness (where digital media capabilities corresponds to medium or channel's capabilities utilized for interacting digitalized content from simple to complex forms). This narrowed focus in specific areas of literature is mainly to understand and evaluate the influence of digital media capabilities on spiritual practices. For this, media studies were particularly relevant to explore in detail due to its relevance to this study's digital media definition in consideration which describes media in terms of channel for interacting digitalised content (Otondo et al. 2008; Dennis & Valacich 1999b).

An extensive review of literature in media studies revealed that a substantial number of studies focused on digital media choice, adoption and task-fit perceptions such as (Leek et al. 2016; Sahasrabudhe & Kanungo 2014; Williams et al. 2014; Pai & Arnott 2013; Palvia et al. 2011; Lai & Chang 2011; Sheer & Chen 2004a; Mennecke et al. 2000; Donabedian et al. 1998; Lee 1994) and some on actual media effectiveness (Palvia et al. 2011; Otondo et al. 2008; Dennis et al. 2008; Alan R Dennis & Kinney 1998a) mostly in organisational setting. Some studies were involved in evaluating intentions to use media studies for example (Shang et al. 2016; Seidman 2013; Lo & Leung 2009; Liu et al. 2009; Liu & Chu 2009; Sundar & Limperos 2013; Papacharissi & Rubin 2000) and Some studies have considered focusing on antecedents of media adoption (Saleem et al. 2011; Chen & Jang 2010; Cheng et al. 2017; Papacharissi & Rubin 2000; Lederer et al. 2000). Prior studies have also examined the influence of digital media capabilities on task effectiveness such as(Leek et al. 2016; Dennis et al. 2008; Hung et al. 2007; Mennecke et al. 2000; Treviño et al. 2000; Suh 1999; Alan R. Dennis & Kinney 1998; Rice 1993; Rice 1992; El-Shinnawy & Markus 1992), however a number of gaps were identified.

Identified Research Gaps

First research gap:

Firstly, from literature review it was evident that majority of media studies in relevance to digital media definition in study are mainly on selection, adoption, media - task effectiveness which were focused on evaluating task effectiveness in organisational settings.

Also from literature review it was evident that majority of the media studies are focusing on the media usage aspects and its influences on hedonic aspects of investigating the positive effects and the avoidance of negative effects (Henderson & Knight 2012) rather than the eudemonic aspects like focusing on the spirituality and sustainable well-being aspects for optimal human psychological experience and functioning (measured by Vitality scale) (Deci & Ryan 2008). To this, scholars like Buie and Blythe (2013) have highlighted this underexplored eudemonic areas of interdisciplinary research and have discussed the common challenges faced by researchers in addressing spirituality due to its subjective nature and its uniqueness faced with severe lack of scientific research in this field to support any conclusions (Buie & Blythe 2013). This study finds this important and practical to examine this gap in literature and evaluate the influence of digital media capabilities on task effectiveness of SGS due to the extraordinary growth in spiritual practices via digital media in study.   In addition, this study anticipates that further analysis will reveal the assistances and concerns of digital media characteristics on SGS to literature that can benefit stakeholders and provide insight for future researchers.

To this research gap, scholars like Buie and Blythe (2013) support and have highlighted this underexplored eudemonic areas of interdisciplinary research and have discussed the common challenges faced by researchers in addressing spirituality due to its subjective nature and its uniqueness faced with severe lack of scientific research in this field to support any conclusions (Buie & Blythe 2013).

Also in a recent study conducted by Pew Research Centre's Forum on Religion and Public Life in 2012, have shown that majority of people more than 80 per cent of the world populations are affiliated with a faith group (Life & (2012 n.d.). With the world populations

of more than 80 per cent being affiliated with a faith group (Life & (2012 n.d.), are expected to be some way or the other affected with the findings of this study. In addition to this, are the modern trends of more and more populations are seen embracing digital media as discussed in section 2.3. This clearly indicates that while digital media are being embraced and users are re-purposing its characteristics for various spiritual practices, however there is dearth of scientific research in this field. Thus it is a worthwhile subject of interest that deserves attention towards understanding the influence of digital media capabilities on SGS (that is, to examine the relationship between digital media characteristics and SGS outcomes and to understand its influence on well-being domain). This study attempts to contribute filling this gap.

Second research gap:

This research gap is revealed from media related literature perspective , where from literature review it is shown that while there exists a large number of studies explored on media adoption and usage impacts using the most widely used media theories , but there are very few studies that have been explored in the light of personal strivings from psychology literature (Emmons 1991; Emmons 2005; Emmons et al., 1998). In order to pursue a deeper understanding of digital media impact on SGS from media theory perspective, this study highlights the second research gap of examining the relationship between digital media characteristics and its influence on personal strivings and its impact on well-being domain.

In this, in particular are spiritual strivings which according to Emmons (1999) are a class of personal strivings which have a greater sense of meaning and purpose in life and has significant value to individuals (Emmons 1999; Zinnbauer et al. 1997). Researchers like Emmons, Cheung and Tehrani (1998) have enhanced multi-dimensional representation of link between personal strivings of spiritual nature directed towards ultimate spiritual concerns by categorizing SGS into, knowledge, feelings, and practice to capture the manifestation of spirituality in strivings (Emmons et al. 1998a; Glock & Stark 1965). There are no studies to discuss the relevance of digital media characteristics influences on the basic personal strivings. This study contributes to fill this gap by conducting an empirical analysis and evaluate the existence of this relationship. To the best of the researcher's knowledge, this is one of the first studies to consider integrating well known media related theory and personal strivings from different discipline in a framework for understanding success in SGS. Thus this study fills the second research gap by examining the relationship between digital media characteristics and SGS outcomes in order to pursue a greater understanding on the impact of assistances and hindrances of digital media capabilities on SGS from media theory perspective.

Third research gap:

This research gap was revealed in the digital media related literature itself (in relevance to digital media definition in study), where a large number of media studies were related to intentions to use, task-fit perceptions, media influences, antecedents of media selection, and MRT was found to be the most cited theory. Although a number of theories had attempted to explain media influence on task effectiveness (such as Suh 1999; Markus

1987; Trevino et al. 1987; Salancik & Pfeffer 1978) results have not been convincing. Also in spite of MRT being one of the most cited theories, this theory suffered from several criticisms relating to theory limitations and weaknesses which are discussed in detail in section 2.3. Main theory related limitation was directed towards lack of sufficient media factor structure to capture holistic nature of digital media.

Thus literature review revealed that there was no comprehensive model for capturing complete nature of digital media characteristics. This important research gap is addressed in this study by proposing a theoretical framework in chapter three underpinned by MRT.

Fourth research gap:

Majority of interdisciplinary media studies on spirituality have employed conventional qualitative methods (e.g. interviews) to understand the individuals behavioural intentions and feelings (Wyche 2008b; Wyche et al. 2008; Snow 2013; Wyche et al. 2009; Bell 2006; Ahmad & Razak 2013; Garner 2003). Although the qualitative approach is still very dominant approach and this method can be very useful to understanding the why aspects of individuals behaviour in study, but this approach cannot always be used to look for cause and effect relationships when more than two variables are involved. This study initiates to examine such relationships which are sparsely seen in IS literature. This research study involves examining the relationship between digital media variables and SGS, thus this research contributes towards filling this gap by using quantitative approach towards understanding the relationship between different variables using quantitative methods.

Summary of research gaps

 In summary , as revealed from literature review , scholars have highlighted the uniqueness and importance of addressing digital media and spirituality due to its subjective nature faced with several challenges and severe lack of scientific research (Buie & Blythe 2013). This has motivated this study to derive research objectives in order to answer the main research aim which consequently addresses the several research gaps addressed in the above section. The identified research gaps highlight the importance of shedding more light on the significance of relationship between digital media characteristics and SGS outcomes considering the unique nature of spirituality topic in study. The gaps also highlights the lack of no comprehensive framework or model to explain the influence of digital media on spiritual practices which are beneficial and important information for decision making purposes for various spiritual stakeholders and future researchers.

The drive to fill the research gaps will be seen in subsequent chapters whose target is to address all the derived research objectives. The later chapters will be discussing the findings which can be traced back to study's main objectives which were derived in order to fill the research gaps. Final contributions in this study will include all the findings and any other outcomes that evolved during the study. The next section will point towards the potential contributions of this study which will discuss findings and overall contributions that that is anticipated in this study. These will be discussed in great detail in the later chapters which will revisit the potential contributions to understand the progress of development of this study.

Overall, this research highlights the importance of the research gaps and attempts to address these gaps and consequently advance our understanding the relationship between digital media and SGS and its influence on well-being aspects.

2.9 Potential contributions of this thesis

The study attempts to build empirical knowledge on understanding the influence of inherent characteristics of digital media o SGS. This is by describing the holistic multidimensional media construct representing various capabilities that best explains the influence of relationship between digital media characteristics and SGS outcomes. Research strategy was designed using quantitative research methods due to the structure of enquiry. The empirical data were analysed to answer this study's research objectives derived from the theorisation in earlier chapters. Contributions with respect to research gaps and objectives are followed in subsequent paragraphs.

2.9.1 Evaluation of the relationship between digital media capabilities and SGS outcomes

Contribution one: Evaluate the relationship between digital media capabilities and SGS to the body of knowledge in IS

The first contribution contributes to the first research gap in examining the relationship between digital media capabilities on SGS outcomes while addressing the three main research aim and objectives of this research ass mentioned in chapter one. This finding contributes to the body of IS literature and stakeholders about the significance of the relationship between digital media influences SGS accomplishments. This provides a deeper

understanding on impacts of digital media capabilities impacts on the SGS outcomes which would include successes/ failure of SGS and its impacts on well-being. This knowledge provides evidence of any influence of digital media on SGS and its significance thus benefiting the stakeholders in making informed decisions. This study's contributions would provide sufficient confidence for stakeholders (for example spiritual seekers, spiritual organisations, and user experience (UX) and user interface (UI) designers of digital media developers) for making informed decisions and to look for efficient strategies that would provide effective, reliable and sustainable spiritual goal accomplishments.

2.9.2   One of the first to study the significance of the relationship from MRT

**   perspective**

Contribution two: One of the first's to study the significance of the relationship between digital media capabilities and SGS from MRT perspective

In addition to establishing relevance to the relationship between digital media and SGS, this study empirically evaluates to reveal the significance of the influence of specific digital media characteristics on personal strivings of spiritual nature. This study brings about a conceptual framework which will bring together a number of different dimensional constructs which is capable of capturing holistic nature of digital media capabilities and will further facilitate to examine its influences on task effectiveness of SGS. This will provide confidence for spiritual stakeholders with the knowledge of digital media impacts on spiritual practices with empirical evidence along with contributing a functional conceptual framework on the relevance of digital media influences on the SGS. This contribution fills

the second gap by being one of the first studies (to the best of researcher's knowledge) to develop a conceptual framework and to empirically evaluate the relationship between digital media characteristics and SGS from MRT perspective.

2.9.3   Extending MRT

Contribution 3: Extending MRT

While reviewing the media related literature, it was found that although MRT is the most influential theory among other media related theories, there are significant limitations to overcome (discussed in detail in section 2.3) to capture the holistic nature of digital media and to evaluate its impact on any task effectiveness. This study thus explores MRT as the fundamental theory due to the potential of MRT to evaluate and extend, and then to assess the significance of digital media capabilities' influence on SGS task outcomes. This theory is known for several criticisms in literature for its theory limitations and weaknesses (discussed in detail in section 2.3). MRT theory is known for several criticisms in literature due to lack sufficient factor structure to capture digital media characteristics. To address this limitation this study attempts to extend MRT factor structure with additional variables from other theories and models.

Thus to accomplish the main aim of this study (I.e. to evaluate digital media influences on task effectiveness of SGS) using MRT as the fundamental theory, this study deviates from previous MRT research endeavours in that it markedly focuses on addressing the theory's structural details with an intention to extend and capture the holistic nature of digital

media. This is to measure the influence of digital media characteristics on task effectiveness of SGS. For this, this research draws upon already developed constructs from previous studies which have focused predominantly on their capabilities driven outputs relevant to modern ICT artefacts in IS literature and variables will be identified to measure omnipresence and ubiquitous characteristics of digital media from previously developed scales which will particularly focused in shaping the MRT to capture the digital media characteristics.

Thus with MRT as the base model, this study plans to extend the original MRT factor structure with relevant pervasiveness constructs to holistically measure task effectiveness relevant to the context. (The rationale for the inclusion of additional factors from other theories and models is explained in section 2.4).

This extended MRT factor structure will follow the rigorous validity criteria for verifying reliability of internal structure using appropriate validation tests to add more confidence in using these constructs for this study and for use by other researchers for future research.

These results will contribute to the body of MRT literature with an extended and validated MRT factor structure along with integrated MRT model to measure digital media influence on SGS outcome. This research provides extended MRT factor structure by integrating the current knowledge concerning the characteristics of the phenomenon to provide confidence to explore the extended MRT instrument for future studies.

In summary, these contributions paves way towards filling the research gaps and will be able to explain the relationship significance of media characteristics and its influence on task effectiveness of SGS under MRT perspective. These contributions makes way for future research works with fundamental knowledge on the understanding of the digital media influence on task effectiveness of SGS. Thus this study contributes in its effort by building, formulating a robust conceptual framework and empirically validating the existence of a relationship between digital media and SGS, supported by the robust validation techniques.

2.10 Summary

This chapter reviewed studies related to every day spiritual strivings through personal striving literature and digital media related MRT developments and highlighted its limitations and weaknesses. This chapter reviewed a number of theories to address the main objectives of the study and provides a general review of SGS's coherence concepts long with well-being concepts from psychology literature. The chapter presented a detailed literature review concerning the MRT in personal strivings related studies. This chapter also discussed the possible reasons for several inconsistencies in MRT literature and discussed their criticisms on its limitations and weaknesses. This chapter then pointed out the concerns of MRT scholars with respect to digital media characteristics and discussed their rationality for considering additional variables to capture the holistic nature of digital media characteristics. Finally, the chapter presented two new variables that addressed the limitations of MRT to capture the holistic nature of digital media characteristics relevant to task effectiveness of everyday goal strivings. The next chapter will present the developed

conceptual framework and discuss the hypothesised relationships between digital media

characteristics and SGS.

Chapter

3
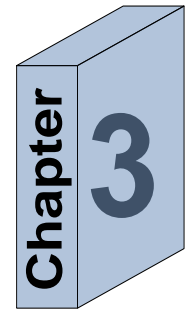
CONCEPTUAL FRAMEWORK

THE THESIS STRUCTURE

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CHAPTER 1:
Introduction
        │
        ▼
CHAPTER 2:
Literature Review
        │
        ▼
CHAPTER 3:                              Introduction
Conceptual Framework ───────────┐          │
        │                       │          ▼
        │                       └──►  Conceptual model development
        ▼                                  │
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Data Analysis I
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        │
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CHAPTER 6:
Data Analysis II
Structural Equation Modelling
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        ▼
CHAPTER 7:
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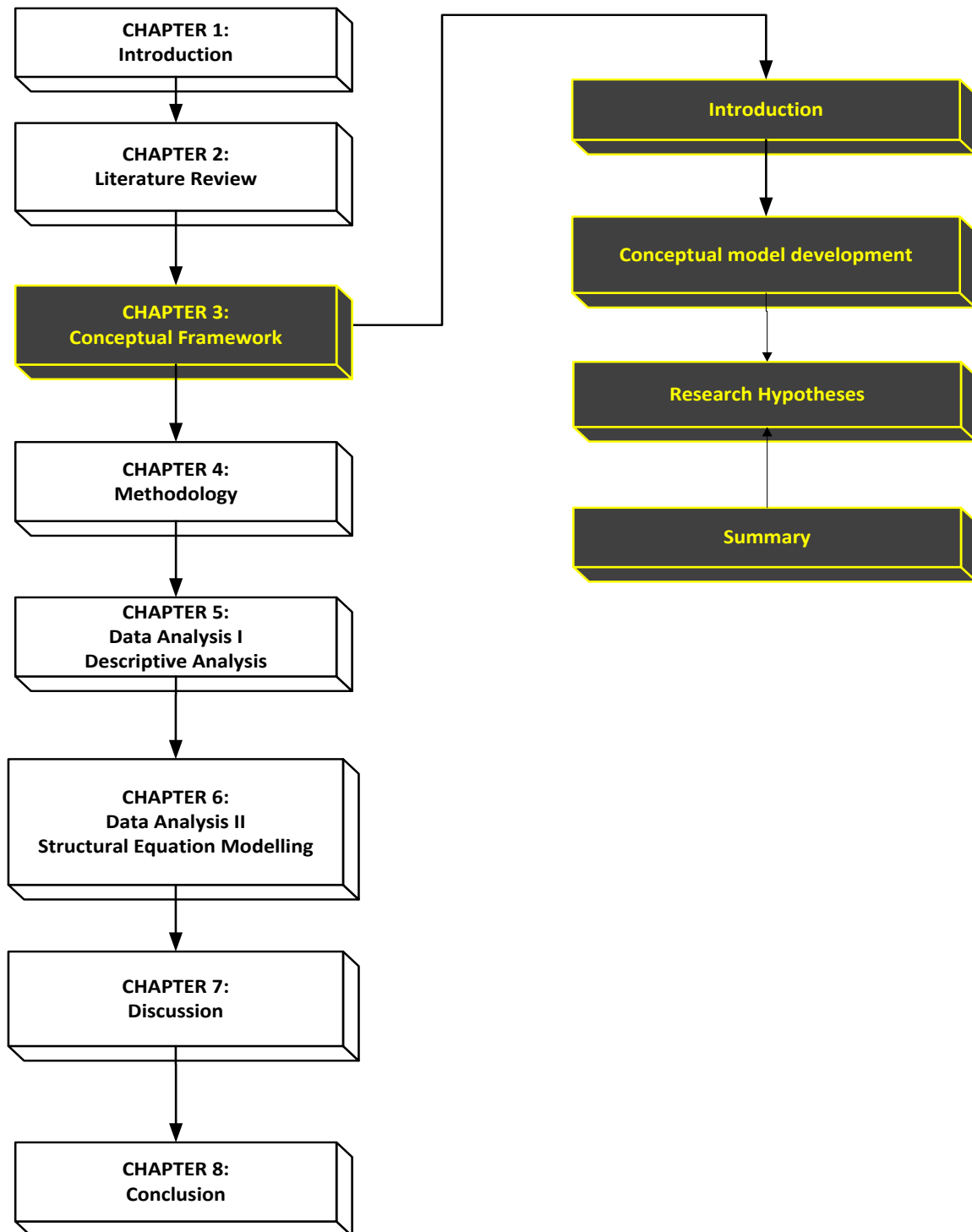
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3 Chapter Three: Conceptual Framework

3.1 Introduction

Previous chapter reviewed the studies related to every day spiritual strivings through personal striving literature and MRT. Also from the previous chapter, it was found that digital media capability characteristics are critical factors to influencing task effectiveness of personal goal strivings particularly concerned with individual's SGS. As a consequence, there is a need to examine such relationships to understand the impact on SGS. These findings would provide answers to this study's main objective that is to understand the influence of digital media capability characteristics on task effectiveness of SGS.

Thus with the main focus on examining the main research objectives, this study describes a conceptual framework for examination defining the relationship between the digital media characteristics (PMR, PRT and PUob) and SGS and well-being. All the hypotheses are derived to govern the relationships between the independent and dependent variables (Perceived digital media constructs and perceived SGS outcomes and further examines the impact of success in SGS on vitally aspect of well-being.

The first section will introduce personal strivings literature and then discuss the impact of digital media capability characteristics in understanding the influence of digital media on SGS. Furthur sections will deal with discussing the retaionale for developing the conceptual framework, hypotheses developmenta and overall summary of derived hypotheses.

3.2   Conceptual model development

The previous chapter discussed the research gaps and also provided the potential contributions of this study.   In this chapter, focus is on the research objectives to be investigated in this study and defines a conceptual model for examination. Conceptual framework describes the relationships between digital media characteristics and SGS which includes PMR-SGS, PRT-SGS, PUob -SGS relationships and SGS-well-being.

In this study, all the hypotheses are derived to govern the relationships between the independent and dependent variables (Perceived digital media constructs and perceived SGS outcomes (Dennis & Valacich 1999a; Alan R Dennis & Kinney 1998a; Lengel & Daft 1988; Daft & Lengel 1983)). The research hypotheses in the developed model govern the direction of each relationship between these constructs and will also enable to examine the impact of success in SGS on vitally aspect of well-being.

From literature review chapter, it was found that digital media capability characteristics are critical factors to influencing task effectiveness of personal goal strivings particularly concerned with individual's SGS. As a consequence, there is a need to examine such relationships to understand the impact on SGS. However there is lack of empirical evidence in evaluating this relationship of media capabilities' influence on task effectiveness of specific goal strivings. In spite of this existing lack of clarity in this area there is an increasing reliance on digital media for everyday interactive tasks of SGS such as for gaining knowledge, maintaining relationships and for spiritual practice.

Among the widely used and applied media theories who have tried to explain media effects on task effectiveness and performance, MRT is argued to be the most popular theory (such as (Otondo et al. 2008; Suh 1999; El-Shinnawy & Markus 1992; Markus 1987; Trevino et al. 1987; Salancik & Pfeffer 1978)). Scholars have repeatedly emphasised the importance of examining this relationship in MRT literature such as (Palvia et al. 2011; Dennis & Valacich 1999a; Suh 1999; Rice 1993; Rice 1992).

This study aims to understand the influence of media capabilities (also known as media capabilities (Otondo et al. 2008)) on task effectiveness of personal goals. Scholars like Palvia et al. (2011)   have used MRT for examining the mediium's effects on individual task outcomes (Palvia et al. 2011; Suh 1999; Daft & Lengel 1986; Daft & Lengel 1984).

several categories of criticisms due to MRT theory limitations and weaknesses discussed in literature review chapter section 2.3 has not deterred scholars from exploring the possibilities to improve their understanding of digital media influences on task effectiveness of everyday goals in various contexts. This is due to the dominant use of digital media for everyday goals.

Thus this study focuses on the importance of determining the significance of relationships between the digital media capabilities on task effectiveness of SGS and considers this an important proposition to undertake to answer this study's research objectives.

3.2.1 Research Framework

Most media related theories have used 'task' as the fundamental element for developing the theories and testing them (Mennecke et al. 2000; Suh 1999; Rice 1992; Zigurs & Buckland 1998; Alan R Dennis & Kinney 1998b; Daft & Lengel 1986). 'Tasks' in personal strivings studies are   referred to goals that individuals typically strive to do in everyday life (van Dierendonck et al. 2009; Emmons 1999; Little 1993). In this study 'tasks' are referred to fundamental processes that are necessary to undertake a goal and not to the entire all inclusive goal itself (Mennecke et al. 2000).

The widespread use of multi-dimensional capabilities of digital media (via smartphones, Ipad devices with internet connections) provides access to a world of several other new contexts, thus providing an imperative need to understand the influence of these media capabilities on task effectiveness of everyday goals. There is no one theory or model which is able to explain of digital media characteristics influence on everyday goals. After performing critical analysis on existing media related studies like MRT, User Gratifications Theory (UGT), Technology Acceptance Model (TAM) - two important variables (PRT and PUob) were identified to be included along with MRT original factor structure (PMR) to capture the holistic nature of digital media characteristics. They were chosen based on their potential from literature to explain the influence of digital media on task effectiveness of SGS. The main reasons to include these two new variables were to overcome the limitations of MRT so as to be able to capture the influence of digital media capability characteristics towards task effectiveness of SGS.

To understand the digital media's influence on task effectiveness of specific goal strivings, it is essential to carefully study the fundamental relationship between perceived media capability characteristics and perceived success in tasks specific to personal goal strivings.

Thus with respect to this study it is important to examine the relationship between perceived media characteristics (that includes PMR, PRT and PUob) and task effectiveness of personal goal strivings of spiritual nature (SGS outcome). The hypotheses are thus derived to empirically examine the relationship between digital media characteristics and SGS outcomes.
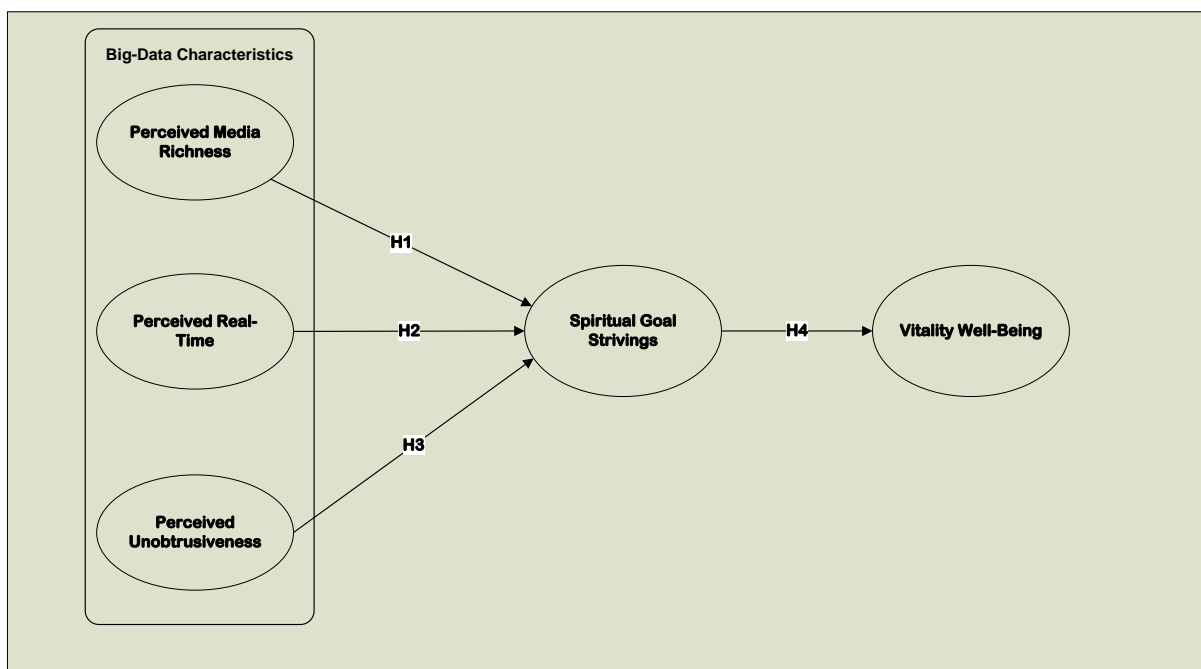
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Figure 3-1 Proposed Structural Model and Hypotheses Paths

3.3   Research Hypotheses

3.3.1   The link between perceived media-richness and SGS outcomes (H1):

A MRT's richness constructs' conceptual definition in this study is based upon its: (a) ability to provide immediate response, (b) ability to support multiple cues, (c) ability to support different data formats (d) and personalisation support (Timmerman & Madhavapeddi 2008; Ferry et al. 2001; Webster & Trevino 1995) .

Researchers discussed in literature review have shown that richer the medium in terms of cues, feedback, and data languages and customisability, are considered to be more efficient in providing a better context for engaging in various task related engagements like knowledge building, decision making, problem solving, and interpersonal development, compared to lower level of richer media (An & Frick 2006; McGrath & Hollingshead 1994; Trevino et al. 1990; Daft & Lengel 1986).

According to Katc et al. (1973) a task outcome is a goal oriented outcome and builds upon the assumption that people select a medium that is designed to enhance user's ability to regulate their expereince as they continue to pursue their goal stirvings (Katz et al. 1973). Daft and Lengel (1986) have demonstrated that the high degree of richness in medium improves the expected task outcomes like their task performance (in managers) (Daft & Lengel 1986). Dennis and Kinney (1998) have demonstrated that better understanding, faster communication, task effectiveness and better performance are outcomes based on rich media capabilities (Alan R Dennis & Kinney 1998b).   It has been highlighted in literature review in chapter two section 2.2 that richer media with higher level of richness in the 'richness' continuum   is mainly based on the capability to satisfy objective characteristics (like speed, multiple cues, data languages and customisability) and facilitates

interaction elements that are considered important for accomplishing interactive tasks successfully (Dennis & Valacich 1999b; Carlson & Zmud 1999; Daft & Lengel 1983). On the other hand, any media with lower capabilities are considered to provide ineffective communication with lower task performance (Lengel & Daft 1988). In addition Palvia et.al (2011) have shown that efficient and effective media have the potential to provide effective results that may be very crucial in certain circumstances (Palvia et al. 2011).

On the contrary, some studies have shown ineffective results in circumstances when media richness capabilities are much greater than what the interactive task requires, for the task to be accomplished for example McGrath & Hollingshead (1994) have found that for certain tasks like generating ideas, the abilities of the media to have emotional connotations and appraisals causes hindrances to accomplish the original task of generating ideas effectively (McGrath & Hollingshead 1994; Lee et al. 2016) and overwhelming media capabilities is shown to reduce task performance due to mediums over fitness for the task in hand (Tarafdar et al. 2015; Junglas & Watson 2003); also in group interactions a consistent interconnectedness is seemed to be negatively affected due to decreased social context indications making the interactions impersonal and also lack of coordinated dynamics of structuring the exchanged information during synchronous group interactions was found to be ineffective (Graetz et al. 1998; Kock 2005), overall leading to affect task outcomes negatively with reduced task performance (Lee 1994; Joseph B. Walther 1996; Markus 1994; Lee et al. 2016). In some studies researchers like Yu et al. (2017) and Otondo et al. (2008) have shown that between media characteristics and communication outcomes, overload of information due to several media features than necessary dampens the task

effectiveness and satisfaction (Yu et al. 2017; Chang et al. 2017; Otondo et al. 2008). While media richness provides capabilities to execute task effectively and is beneficial in most cases, it also sometimes augmented with overloaded complexities and may be detrimental in certain cases and does not always guarantee to provide satisfactory outcome always. However in this study, MRT's crucial underlying concept of media richness is operationalized where higher level of media richness matched with the individual's interactive task requirements (such as gaining information insight of a spiritual topic at the required time, or taking part in group discussions) is anticipated to indicate 'improved' (more effective and greater outcome satisfaction) task performance. With this awareness this study intends to find the positive influence of media richness to task outcomes in the study's context with an intention to strengthening the understanding related to this relationship. Thus it is proposed that the perception of richness capabilities of interactive media that is perceived media richness (PMR) is positively related to task effectiveness of SGS. Thus

H1: Perceived media-richness is positively related to SGS outcomes.

3.3.2   Integrating additional variables

A large number of MRT scholars have attempted examining media selections in organisations than examining media influence on task effectiveness or performance of individual goals (like for example (Kahai & Cooper 2003; Kraut et al. 1998; Rice & Shook 1990; D'Ambra & Rice 1994; Daft, Lengel & Trevino 1987)).

Many experts contend that the evidence is not conclusive , however few studies have indicated support on MRT's central theme of accomplishing greater task effectiveness when media capabilities are matched with the task requirements using MRT measures, such as (Lind & Zmud 1991; Markus 1994; Rice 1992; Russ et al. 1990; Daft, Lengel & Trevino 1987; Trevino et al. 1987; Trevino et al. 1990) (Kraut et al (1992) in Kahai, Surinder Singh Cooper, Randolph B. (2003)). In addition Rice (1992) have found that the richer media than what is essential for a task would not reduce performance effectiveness (Kraut et al. 1992; Kahai & Cooper 2003; Rice 1992). So it can be inferred that richer media used for interactive task would greatly influence to provide more efficient and effective higher task performance.

However the dominant use of digital media for everyday goals had led authors to examine the task performance of different tasks facilitated by the digital media capabilities which have not yielded consistent reliable results for example (Mennecke et al. 2000; Suh 1999; Vickery et al. 2004; Dennis et al. 1998; Ngwenyama & Lee 1997; Valacich et al. 1993; Alan R Dennis & Kinney 1998a)

A related other studies indicated have mixed results (like for example (Mennecke et al. 2000; Valacich et al. 1994; Suh 1999; Alan R Dennis & Kinney 1998a; McGrath & Hollingshead 1994; Rice 1992). This considerable uncertainty with regard to investigations on digital media for instance, Bordia (1997) and Rice (1992) have found mixed support for newer media who have attempted to examine digital systems like commuter mediated communications systems like computer conferencing systems, decision support systems etc.

(Rice 1992), (Bordia 1997). These shortcomings may primarily be due to the limitations of MRT factor structure as discussed in previous chapter section 2.3.

Overall, it is clearly evident that MRT factor structure alone is not sufficient to capture digital media characteristics without the inclusion of situational element of a task such as a need for urgency and immediacy of feedback, discreetness of situations, confidentiality etc. MRT original factor structure (Perceived Media Richness –PMR) alone as it exists will not be possible to explain the holistic nature of digital media capabilities. Thus MRT alone will not be able to explain the digital media characteristics influence on task effectiveness of SGS. Also since it is no longer sufficient to use one theory to capture the holistic nature of digital media characteristics, a combination of variables from other models are identified after performing critical analysis on existing media related studies and they are integrated. PRT and PUob are the two variables obtained from media related studies and are integrated in order to entirely capture the holistic nature of digital media characteristics, so that the influence it has on goal strivings such as SGS can be examined further.

3.3.2.1 The link between Perceived Real-Time Presence and SGS outcomes (H2):

It is apparent that the newer digital media capabilities are now capable to influence task effectiveness in multiple dimensions. It has been highlighted in literature review (in previous chapters section 1.2.1 and 2.7.1.1) that MRT factor structure as it is, is currently unable to holistically capture digital media capability characteristics and is not able to fully explain the influence of these characteristics on task effectiveness of personal goal strivings (of

spiritual nature in this study). This is due to limitations of the inherent richness elements captured in original MRT factor structure (Palvia et al. 2011).

From MRT's literature review, two external variables (PRT and PUob) were identified. These two variables in addition to original PMR variable are posited to capture the holistic nature of digital media characteristics. This eventually will be used to evaluate and measure the influence of digital media capabilities on the interactive task effectiveness of SGS.

PRT in this study is an incorporating idea of accessibility, reachability, and portability all into one construct; allowing the individual's to extend the possibility of personalised continuous goal strivings at anytime from anywhere (Junglas & Watson 2003; Chung & Kim 2008) contributing to positive SGS task outcomes.

Among the several digital media capabilities that may influence task effectiveness; this study is concerned with perceptions of richness capabilities of interactive media (H1) on task outcomes of SGS. Further also includes two additional variables for examining the perceptions of PRT and unobtrusiveness capabilities on success or failure of SGS.

Number of scholars have identified the significant role of PRT characteristic of interactive media and have shown that it provides increased number of multiple transmissions at real-time (that is multiple interactions in channel at the same time) this reflects the width of the media (Shannon & Weaver 1963; Weaver 1949) indicating that the media is supporting large information quantity (as seen in (Valacich et al. 1993; Stone et al. 1992; Rice & Shook

1990)).   This is unlike the traditional media which limits the quantity of transmitted information at any one time (Burgoon et al. 1999) .

Further according to Dennis et al., (2008) , task outcomes are seen to be directly influenced by media capabilities in situations where multiple simultaneous transmissions are found to reduce losses which normally occurs during sequel transmissions (Dennis et al. 2008); also influenced by the flexibility to transmit anytime and from anywhere without the need to get the transmission channel cleared or be at a particular place to transmit and receive; and also provides increased access to real-time information at anytime, anywhere (Alan R Dennis & Kinney 1998b; Gallupe et al. 1992; Valacich et al. 1993)

In addition this PRT construct incorporates the situational element of task, which is a need for urgency in immediacy of feedback. Time has been established in several studies as the key factor in determining the degree to which a particular medium is selected for use (Palvia et al. 2011; Joseph B Walther 1996). A number of studies have looked at the need for urgency as an important factor in MRT -media selection studies   (such as   (Watson-Manheim & Bélanger 2007; Te'eni 2001; Trevino et al. 2000; Alan R Dennis & Kinney 1998b; Daft, Lengel & Trevino 1987)).   Along with these studies Kane(2011) have indicated synchronous communication capability prompts users to select the particular medium due to this potential of providing real-time presence in particular situations (Kane 2011).

PRT influences users to use interactive media based on their accessibility and reachability needs in different situations (Dennis et al. 2001; Desanctis & Scott 1994). Dennis and

Reinicke (2004) and some others have demonstrated that having the option to use these multiple media capabilities have itself created dominant appropriation paths which does both - enables and contains individual behaviours (Dennis & Reinicke 2004; Yoo & Alavi 2001; Wheeler & Valacich 1996).

A number of researchers have demonstrated the positive influence of PRT to derive a number of everyday goal oriented outcomes like for example increased personal insight to make better decisions at any time in any location LaRose et.al (2001), for surveillance purposes (LaRose et al. 2001) ; allowing individuals to know the location, surroundings, and nearby resources and also ascertain available statuses of potential peers at real-time (Cameron & Webster 2005); sharing of knowledge at real-time has shown to influence each other's activities (Roy 2014); dissatisfaction with the present state was identified as a goal-oriented outcome for social media real-time presence use (Nicole B Ellison et al. 2007); mood alterations such as use of real-time interaction for avoiding negative emotional states such as loneliness (Burke et al. 2010) and boredom (Nicole B. Ellison et al. 2007) etc.

Furthermore Dholakia et al (2004) have highlighted that PRT is one of the main reasons for the users for choosing digital media such as smartphones, laptop with network activities etc. whereby this allowed individuals to acquire and connect at   real-time to different material types and instructions (language dictionaries, training skills etc.) from anywhere making it one of the most distinguished advantages in learning (Dholakia et al. 2004). Also Looney et al (2004) in the context of ubiquitous-learning have claimed that the PRT characteristic provide users with exceptional efficiency, flexibility, and convenience, and

thus influencing users task outcome performance leading to increased task satisfaction (Looney et al. 2004).

Despite the many positive influences of PRT on task outcomes , literature review have revealed certain negative influences of PRT on task outcomes like distractions experienced during real time discussions; reduced task effectiveness seen in the context of parallel discussions due to information overload; confusions and lack of focus due to interleaving multiple messages during simultaneous conversations which clearly indicate negative influences on task effectiveness and outcome performance (Simpson 2005; Erickson et al. 2002; Herring 2003; Herring 1999). Although some of these research outcomes indicates negatively impacts of PRT on goal accomplishments, this study considers a broader viewpoint of positive associations of PRT on tasks demonstrated by numerous researchers on various everyday goal strivings discussed above in this section.

Thus, together with a wider perspective from literature it appears that PRT could serve as an important aspect to positively influence task outcomes of SGS. In this regard, the following hypothesis is proposed

Hypothesis H2: PRT is positively related to SGS outcomes

3.3.2.2 The link between perceived unobtrusiveness and SGS outcomes (H3):

Perceived unobtrusiveness (PUob) is another external construct defined as the extent to which where an interactive unit in a system becomes physically invisible but subtly existent everywhere (Karaiskos, 2009).

PUob characteristics of digital media is found to facilitate users to be able to use a medium for interaction without attracting special attention and visibility (Karaiskos & Καραΐσκος 2009). Alexander Salinas Segura (2015) has identified the positive influence of this unobtrusiveness characteristic to task outcomes. Unobtrusiveness is found to positively influence hedonic motivated task outcomes like distraction-less engagement with activities like gaming (Alexander Salinas Segura 2015) . This unobtrusive nature of invisible participation in certain circumstances is shown to positively influence during situations like chatting, (Deng et al. 2010) and also is found to provide positive emotional states (Burke et al. 2010; Nicole B Ellison et al. 2007).

Lyytinen and Yoo (2002) have found that users' engagement in task outcome performance is increased during less distracting unobtrusive environments (Lyytinen & Yoo 2002). This can be easily explained in certain situations where less distractions are preferred such as during praying times, meditating or when concerned with safety during driving issues relating to where distraction of any sort due to diffusion of integrated interactive media elements that are present in the environment could interfere with task outcomes (Junglas & Watson 2003).

Although the discreet integration of media capabilities is subtly existent in the background are continually providing fascinating possibilities for assisting everyday goal strivings , some studies have revealed the potential long term consequences and challenges facing ethical values based on this construct like   privacy ,safety , dependability , predictability and reliability issues (Bohn et al. 2005; Ess 2009).   With dynamic changes in task requirements, circumstances and environment, there are concerns on the predictability aspects of these complex physically invisible systems' ability to adapt themselves dynamically to the current situations while continuing to remain controllable and manageable at the same time. There are also concerns about the ability to predict that the unobtrusive pervasive environment is working correctly at any point as its existence is not noticeable clearly (Estrin et al. 2002). There are issues with dependability aspects dealing with connection issues based on power source which may vary from place to place. Some areas affected by power outages frequently affects safety aspects and also decrease task effectiveness and performance efficiency which may be interrupted due to systems working sporadically (Lee et al. 2002; Bohn et al. 2005). Interruptions and failures due to issues like power outage are some of the challenges that cannot be neglected when considering tasks involving safety and task efficiency (Lee et al. 2002). With dependability of the unobtrusive systems in consideration, reliance on these unobtrusive systems is also limited with control and accountability of these autonomous mechanisms when they turn faulty.

Another most important negative consequence of this unobtrusiveness feature is the privacy hazard for many individuals (Talbott 2000; Araya 1995) . While there are numerous

benefits of unobtrusiveness construct on task efficiency, there is an inherent trading with privacy leading to several other issues. A number of researchers have addressed these privacy invasion and privacy threatening aspects associated with unobtrusiveness characteristics of the interactive medium(Cas 2005) which are revisited continually by various regulation authorities to keep control on the power to use or abuse in order to protect individuals (Jacobs & Abowd 2003; Bhaskar & Ahamed 2007) .

Despite these concerns on unobtrusiveness feature affecting task efficiency and have long term consequences, this study anticipates that within the spiritual strivings context , the numerous benefits of having discreet unobtrusive existence around the clock to peruse everyday goal strivings of spiritual nature would be far more beneficial to respondents than its limitations.

Thus within this research context, respondents are posited to enhance their goal oriented strategies and outcomes due to media capabilities being present subtly everywhere, and allowing respondents to engage to reinforce their spiritual values like recalling forgiveness; also allowing respondents to join or leave group discourses without disturbing other members of the group discreetly. Due to possibilities of unobtrusiveness's influence on hedonic and eudemonic goal oriented task outcomes it is proposed that PUob positively influences SGS outcomes.

Hypothesis H3: PUob is positively related to SGS outcomes

3.3.3 The link between SGS outcomes and Well-Being (H4):

Individuals spend a significant amount of their daily lives reflecting on their personal goals and structures their lives (Emmons 2005). Klinger (1998) has established that individual's preoccupations and feelings are linked to the nature of goal strivings and their outcomes (for e.g.: goal to become rich is of different nature compared to goal to practice meditation and experience peace (Klinger 1998; Wong & Fry 1998); studies have revealed that goals to future life orientations and have provided a powerful measurement scale for capturing the important elements of well-being components (Emmons 2005).

In this pursuit of personal meaningful goals have shown to possess greater emotional well-being states than those who lack meaningful goal direction (see (Emmons 1999), for a review, (Emmons 2005)). Scholars have validated that all goals are not the same and there are certain kinds of goals that are regularly associated with well-being. Their studies have reliably shown to be significant predictors of well-being (detailed review of this literature is presented by (Austin & Vancouver 1996; Sheldon et al. 1996) . Daily personal goal strivings type and the manner of which they are strived for and also their ability to integrate them into a coherent framework to their ultimate goals has shown to influence optimal well-being state (Sheldon & Kasser 1995).

Individuals are embracing digital media for their everyday tasks of personal strivings and are repurposing its characteristics for accomplishing short-term goals like for example using smartphone to receive quotes from church on a daily basis to increase ones' knowledge of the Bible (Tix & Frazier 2005); assisting younger men and women seeking spiritual insights

on the move using their digital media; bringing spiritual seekers closer to each other through group and team discourses at real-time from different locations; improving one's own spiritual growth remotely by being able to seek counselling from reverend at church at any time and place etc. The adoptions and adaptions of these digital media capabilities developments for supporting everyday personal strivings are often seen in usage among individuals having access to digital systems. These adaptions of media capabilities are hypothesised to be facilitating the task outcomes positively towards the attainment of short term goal strivings. These short term personal goals of spiritual nature are known to be oriented towards long term spiritual goals as discussed in previous chapter.

Literature reveals that higher levels of integration measures to have reliable correlation with psychological growth characteristics, including lower negative affect and higher autonomy orientation, vitality, positive affect on other well-being domains (Carver & Scheier 2012; Sheldon & Kasser 1995; Netemeyer et al. 1991). Also studies have proven that optimal well-being is experienced when the different aspects of personality are integrated into a relatively harmonious whole ((Allport 1937) in (Emmons 2008) ; (Ryan & Deci 2000)), that is perceived success in SGS affects well-being components positively.

From literature, successful striving in short-term goal is shown to provide an important prerequisite of psychological growth (Sheldon et al. 2002); positive effects of goal attainment is known to have evidenced greater well-being (e.g., (Brunstein 1993)); and also promotes greater positive change in adjustment and development (Sheldon et al. 2002).

Thus the perceived success of these interlinked goals strivings is hypothesised to promote well-being.

Among the several well-being components highlighted in literature, they are categorised in either hedonic and eudemonic aspects, where hedonic focuses on occurrence of positive affect and the avoidance of negative affect (Henderson & Knight 2012) and eudemonic well-being focuses on optimal psychological experience and functioning (usually measured by Vitality scale) (Henderson & Knight 2012; Deci & Ryan 2008). Since SGS are categorised under eudemonic types and vitality measure is a commonly adopted measure in similar studies, this study hypothesises that SGS to be positively related to vitality measure of well-being.

Hypothesis H4: SGS is positively related to Well-Being

To summarise, this study's research model is based on the theoretical foundations that lies mainly with MRT developed by Daft and Lengel (Daft, Lengel & Trevino 1987; Daft & Lengel 1986; Daft & Lengel 1984) as shown in Figure 3-1. Based on this theory, digital media characteristics are captured by MRT original variables along with two additional variables PRT and PUob to capture the holistic nature of digital media capabilities which is relevant to understanding the influence on SGS outcomes. In summary three independent variables which are PMR, PRT, PUob characteristics are utilised to understand the influence of digital media characteristics on SGS outcome and well-being.

A review of the literature on this topic of meaningful goals affecting aspects of well-being ((Emmons 1999), review in Emmons 1999, (Emmons 2005)) , found that pursuing meaningful goals possesses greater emotional well-being states than those who lack meaningful goal directions. In Sheldon and Elliot (1999) authors found that success in goal strivings promoting enhanced well-being experiences (Sheldon & Elliot 1999; Brunstein 1993); and is an important prerequisite for psychological growth (Sheldon et al. 2002); greater positive change in adjustment and development (Sheldon et al. 2002); thus it is hypothesised that the perceived success in goal strivings is positively related to vitally aspect of wellbeing.

3.4   Summary

This chapter began by reviewing MRT to explain the influence of digital media on SGS outcomes. Further explained the importance of extending MRT factor structure with two identified external variables PRT and PUob.

The next section dealt with the definition of 'tasks, 'strivings', and 'SGS' in the context of their relationship between digital media capabilities influence on SGS outcomes. Furthermore, the chapter also presents the importance of this relationship and derived the relevant hypotheses with a conceptual model.

This developed conceptual model consisted of five constructs (three independent and two dependent variables); the relationships between them were supported and governed by the proposed hypotheses. Overall the research proposed a total of four hypotheses along with

their rationalizations. The developed research model has three independent variables (i.e. PMR, PRT, and PUob) and two dependent variables (i.e. SGS and well-being). These variables were integrated as part of the conceptual model to be examined.

The MRT does not specifically mention SGS outcome based on the SGS tasks. However general assumption is, efficient media capabilities would effectively provide better outcomes which would eventually result in greater outcome satisfaction (Suh 1999). Thus the users who are spiritually motivated and users of digital media are considered to experience success in SGS of their everyday goal process involving short-term tasks related to their ultimate spiritual goals.

The next chapter will present the research methodology which will include research process and design, sampling, and the data collection process. The research design will describe logical steps that the research will follow matching the research objectives. The sampling section will discuss the sampling methods. Finally, the data collection techniques are described in the data collection section.

Chapter 4

METHODOLOGY:

THE THESIS STRUCTURE

CHAPTER 1: Introduction	**Introduction**
CHAPTER 2: Literature Review	**Philosophical Paradigm**
CHAPTER 3: Conceptual Framework	**Research Approach**
CHAPTER 4: Methodology	**Research Design**
CHAPTER 5: Data Analysis I Descriptive Analysis	**Methodological Choice**
CHAPTER 6: Data Analysis II Structural Equation Modelling	**Research strategies**
CHAPTER 7: Discussion	**Time horizon**
CHAPTER 8: Conclusion	**Current research choices**
	Measurement scales
	Ethical considerations
	Survey
	Population
	Sampling
	Pilot Study and feedback
	Main Survey
	SEM
	Summary

Source: Adapted to this study from (Kamarullzaman 2006)

4 Chapter Four: Methodology

4.1   Introduction

This chapter focuses to establish the appropriate research methodology that is suited to meet this research needs. So far, previous chapters have examined the context and established the conceptual framework and developed hypotheses to meet the overall purpose of this research. This chapter is focused to link the research hypotheses and the conceptual framework. The empirical results of the research hypotheses will be discussed in chapters, seven and eight.

Following Saunders et al.' s research onion , this chapter is structured stepwise as shown in Figure 4-1 to contain topics beginning with a) philosophical paradigms, b) research ontology and epistemology c) research approach d) methodological choice e) research strategy f) time horizon and finally g) techniques and procedures containing population and data collection followed by sampling types. Furthermore this chapter discusses the adopted and modified measurement scales followed by discussion on the data analysis and statistical analysis methods that are employed in study and finally addresses the ethical considerations (Saunders Philip Thornhill, Adrian. 2015). This chapter also includes a brief discussion on the exploratory interviews that were conducted prior to development of pilot questionnaire.
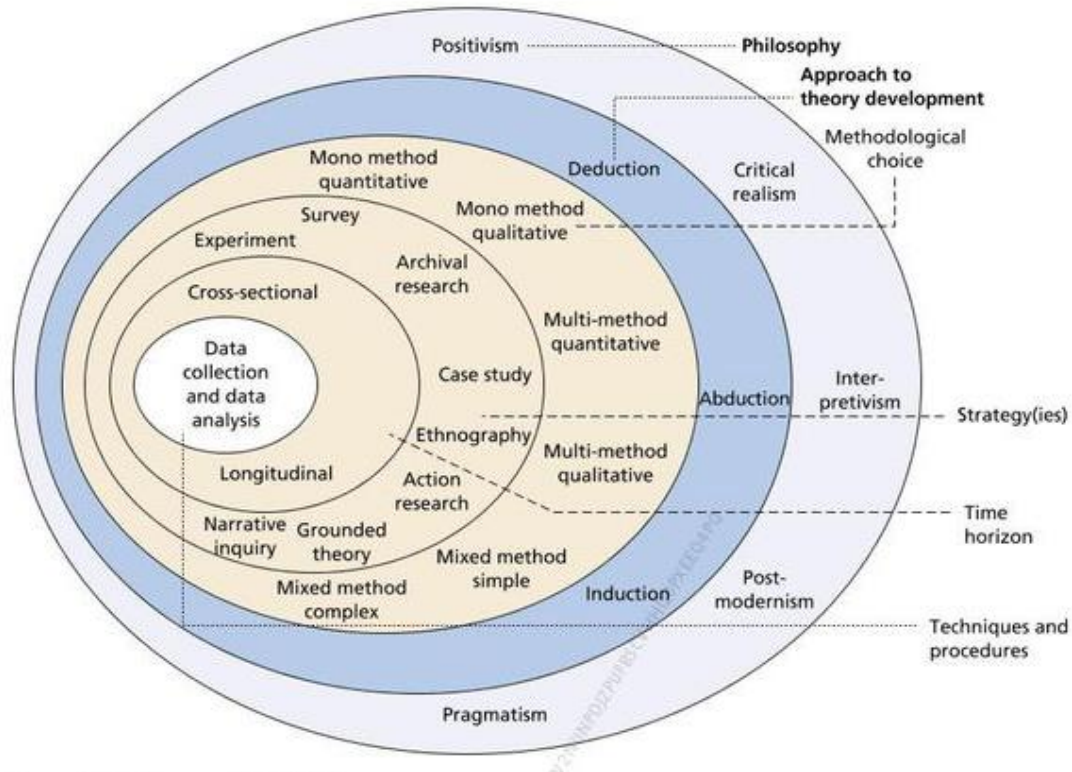
Source: (Saunders Philip Thornhill, Adrian. 2015)

Figure 4-1 The Research Onion

In summary this research has employed quantitative type of data collection and has adopted survey technique to collect data from the intended respondents. All the questionnaire items for the survey were adopted from previously validated instruments and were adapted to this research where necessary to fit within the context of the study. SEM using AMOS 22.0 was used for analysing data for the final conceptual model with the main intention of modelling and predicting the hypothesised construct's relationships.

4.2   Philosophical Paradigm

Philosophical paradigms of any research are basically assumptions that are based upon which data about a phenomenon is gathered and examined to understand the research phenomenon (Blaikie 2007; Guba 1990).

Philosophies of research provides well-informed suggestions to choose the most likely research approach to provide satisfactory solutions to the research queries (Blaikie 2007). This stage of identifying the most ideal research philosophy is an important stage irrespective of the intention to develop a new theory or applying existing theories and models to the research. To this, the general preposition of a good research is when the methods applied to the research are based on the research objectives (Abernethy et al. 1999).

There are a number of philosophies of research and several outlined methodology frameworks adopted in previous literature. Among them are positivism, realism (post-positivism), critical theory, interpretivism or constructivism and pragmatism (Andrade 2009; Sobh & Perry 2006; E. G. Guba & Lincoln 1994; Remenyi et al. 1998; Tashakkori & Teddlie 1998; Saunders Philip Thornhill, Adrian. 2015). Of these, the two main philosophical paradigms with different basic beliefs adopted in research are positivism and interpretivism (Andrade 2009; Blaikie 2007; Remenyi et al. 1998).

According to Guba (1994) the underlying assumptions and beliefs of these two philosophical paradigms is based on ontological, epistemological and methodological assumptions (E. G.

Guba & Lincoln 1994). A clear understanding of ontology and epistemology in any research provides a holistic assessment of what really researched knowledge is and the kind of relationship the researcher has with the examined knowledge (Denzin & Lincoln 2006). The next section will discuss ontology and epistemology in greater detail. This Table 4:1 Positivism Vs. Interpretivism below briefly summarises the paradigmatic comparison of these two types of philosophical paradigms.

Table 4:1 Positivism Vs. Interpretivism

Assumption's Belief	Ontology	Epistemology	Methodology
Positivism Reality	Reality is assumed to exist. This reality is an objectively construed entity and assumed to exist independently excluding any human experiences. This reality can be examined by testing relevant theories about this objective entity.	This is mainly focused on deductive type of study where theories can be tested using hypotheses. Here, the results are normally generalised and can be reproduced for verification.	Experimental research, Hypothetic - deductive theory, Hypotheses verification, Survey research, Mainly quantitative methods
Interpretivism Subjective	There exists no single reality, but reality is a subjective entity which is constructed through human's perspectives and their experiences	Interpretation of reality by understanding the underlying meaning of actions and activities. Assumptions, values and intentions are acknowledged to understand human's perspectives of reality.	Grounded theory, Ethnography, Case study, Field studies etc. that involves examining in the real social setting for obtaining perspectives to interpret knowledge from it.

Source: *Created by the author of this thesis*

4.2.1   Ontology and Epistemology

According to the definition of ontology in English Dictionary, it is described as a unit of metaphysics related to the nature of existence and epistemology is seen to be related to the theory of knowledge within the study's scope, validity and methods (Dictionary.com 2014).

In brief, ontology relates to the understanding of the nature of reality or what exists in real, epistemology is concerned with learning about knowledge, and methodology is concerned with how the researcher is seeking this knowledge. To this, Burrell and Morgan (1979) have discussed the two ontological likelihoods where the understanding is that a) there is just one reality and viewed as an object being observed by the researcher and the other is where the b) reality as such does not exist as an object but is perceived and construed by individual's beliefs, attitudes and behaviours and is dependent on the situation being observed (E. G. E. Guba & Lincoln 1994; Hirschman 1986; Burrell and Morgan ' s 1979).

Epistemology derived from ontology mainly deals with the nature of knowledge and is with the source and scope of that knowledge (Saunders et al. 2012). It is about how the inquirer knows about the object in enquiry is and about understanding the relationship between them and deals with any assumptions that is made between the known and the unknown truth. To this Stewart Clegg (1982) have rightly suggested that a relationship can be derived from an objectively construed entity or in contrast can be derived as knowledge that is known by only a subjective experience (Clegg 1982).

In summary ontology deals with the nature of state of reality and epistemology deals with knowing the relationship between this reality and the inquirer along with any methodologies that are used to examine this reality (Healy & Perry 2000).

This study's ontological position is that the truth or reality exists and is independent of the researcher's influence and it exists outside. The epistemological stance being - positivist type focuses more on knowledge known and its multitude of perspectives. This type of chosen approach in this study is not just for the sake of creating new knowledge but is intended to provide deeper and better understanding of the research topic based on digital media's influence on SGS outcomes.

The epistemological position of this study is made by the choices made at ontological level, correspondingly provides the appropriate research context and theorised appropriate methodology.

Thus, this study aims to generate empirical evidence towards understanding the influence of digital media characteristics on SGS outcomes and further affecting their well-being domain. Consequently this study investigates the reality that exists outside of any influences.

4.2.2 Positivist and Interpretivist assumptions

Based on the philosophical assumptions, positivists are seen to be approaching reality objectively and are shown to have emphasised on the significance of objectively accepted scientific approach (Blaikie 2007; Choudrie & Dwivedi 2005; Remenyi et al. 1998). In this

type of scientific enquiry, reality is considered as an objective entity existing independently

and is considered to be described by measurable properties.

Positivism approach generally attempts to test theories to enhance their understanding of

concepts and the predictive capabilities of the phenomena. This type of approach has been

dominating IS studies (Blackmon & Maylor 2005; Orlikowski & Baroudi 1991) where

measurement constructs , derived hypothesis and inferences that are drawn can be

quantifiable. Such systematic process of understanding reality objectively allows other

researchers to replicate the same study to verify and to further improve tested theories

(Blankenship & Ruona 2009).

Some researchers have argued that positivist paradigm is not best suited for social sciences

due to issues like inconsistency in results (Hirschman 1986), however many other

researchers have suggested for a more varied attitude towards methodologies used in IS

research (for example in (Remenyi et al. 1998)), suggesting that these difficulties may be

identified towards the inaptness of the positivist prototype reflecting on the domain itself.

Researchers have acknowledged that the type of knowledge obtained from scientific

research where developing hypotheses and rigorously gathering evidence and analysing the

results are involved indicates a resilient attempt to test the theory and attempts to increase

the predictive understanding of the phenomenon (Hatch & Cunliffe 2006; Hayes 2000).

Accordingly positivist paradigm accepts that the results can be generalised with the use of

quantitatively measurable evidences about the same reality in study (Blackmon & Maylor 2005).

Authors like Maylor and Blackmon (2005) have suggested that in this type of scientific enquiry - one can understand the phenomena only if one is able to measure it (Blackmon & Maylor 2005); hence a quantitative empirical scientific approach is well suited and most appropriate for this study.

However considering the philosophical assumptions of interpretivists on the other hand, reality phenomena are seen to be completely understood only in their natural environment through subjective intervention and interpretation. In this type of philosophy, research is not independent of researcher's interpretation and thus may give rise to a number of interpretations of reality and is gathered as part of the main phenomenon that the researcher is pursuing.

Both of these different perspectives shape the understanding of the research being studied. The approach is laid out based on the research objectives and they are used independently and also in combinations of these have been used which are relevant to the research elements, aiming to address research objectives.

Since this study concerns with digital media characteristics and seeks to understand its influences on human behaviour patterns, it falls within the IS context. Positivist type of scientific enquiry is seen to fit well, where reality or truth is seen to exist independently and

is viewed as objectively knowable. Thus accepting that the knowledge can be objectively knowable, collecting information for analysis to investigate this reality fits in well with this study (Bryman & Bell 2015; Blackmon & Maylor 2005).

4.3   Research Approach

Researchers have emphasised that for any research, it is important for a researcher to decide on the research approach at the beginning of the study as it affects the subsequent stages of research design and research strategy (Saunders et al. 2012; Creswell 2003; Bryman & Bell 2015). According to Saunders et al. (2015) identifying the research approach at the beginning is the first main step for research design and strategy. Creswell (2014) argues that research approach for a study would pave the way for detailed research methods, design, and data collection and analysis techniques. The way the researcher chooses to address the main research objective will influence the research philosophical paradigm and the research approach. Table 4.1 briefly summarises the differences between philosophical paradigms to help researcher to choose the most appropriate philosophical paradigm to follow and thus will further influence the approach and the following three layers of the research onion in Figure 4-1 (methodological choice, research strategy and time horizon).

According to Saunders et al. (2015) the two most commonly adopted choices of research approaches are deductive and inductive; also some researchers have adopted a combined of these two research approaches. Researchers have stressed the importance of identifying the most appropriate research approach and any lack of knowledge on the choice of research approach would create problems during research and lead to wrong conclusions. The two main research approaches which are deductive and inductive will guide the researchers to examine the study in the most appropriate way (Bryman 2008). The following section will explore these two research approaches to enable a rationale understanding on selecting the most appropriate research approach for this study.

4.3.1   Deductive and Inductive approach

In deductive approach, the researcher is aimed to develop a conceptual framework which is driven by the theory, this is followed by examining the framework by using an appropriate research approach and methodology before collecting and analysing data (Bryman 2008).

On the contrary, in inductive approach, the researcher is involved in exploring the data first and then use the data to develop a theory or framework, and then further relate this to extend the literature (Bryman 2008).

Both Inductive and deductive approaches are differing to each other where deductive approach moves from theory to data in its research process and the opposite of data to theory with inductive approach (Bryman 2008). A number of other contrasting

characteristics are associated with the two main approaches such as in deductive approach, highly structured research process is maintained and mainly deals with methods related to quantitative data collection, however inductive approach is much more flexible and deals with qualitative data collection methods (Saunders et al. 2012). However time required for data collection and analysis is normally longer in inductive type than compared to deductive types of approach (Saunders et al. 2012). Next section will discuss more about quantitative and qualitative methods.

In spite of risks associated with both deductive and inductive approaches, where the deductive approach is seen to be associated with a risk of low response rates and the main risk associated with inductive approach is to do with not being able to find the appropriate pattern of themes from the data. However both these approaches are widely adopted in various research settings. Other differing characteristics of the two strategies are seen in the generalisability of the study outcome which is based on the sample size. This is highly sensitive and requires a larger sample for deductive approach and is not so concerned for the inductive approach types.

In inductive approach, the researcher's opinions and experience is part of the research process however in deductive approach, researcher opinion is not so important and is detached from the respondents view in study (Bryman 2008). Furthermore to this, several stages of deductive approach has been described by previous researchers (Saunders et al. 2012; Lancaster 2005) which involves reviewing theories for hypothesis formulation, clearly defining variables and developing hypotheses, collecting and analysing data, verifying for

confirmation or rejection of hypotheses using quantitative methods and sometimes studies may propose modifications in the theory based on their findings.

Summary of the major differences in the deductive and inductive approaches are gathered in the table shown below.

Table 4:2 Inductive and deductive approach

Inductive	Deductive
Derived from data to theory - iterative research process involved	Derived from theory to data – involves sequential research process.
Flexible structure and higher risk strategy	Very structured and lower risk strategy
Researchers are highly involved during the data collection process and during data analysis stages.	Researcher is not involved highly during data collection process and during data analysis stages. Research is free from researcher's interference
Not focused on generalizing	Usually study outcomes are generalized
Not much concerned with sample size	Usually requires large sample size
Normally involves qualitative approach	Normally involves quantitative approach

Source: *Created by the author of this thesis*

In the current study, based on the purpose of the research, this study adopts a deductive approach to understand the relevance and effect of hypothesised variables and their relationship's significance. This is because the research is involved in developing a conceptual framework which is driven by the theory and followed by examining the relationships between the variables in the framework. As discussed in previous section, this

research holds positivism type of philosophy where the existence of truth is independent of researcher and the knowledge is purely based on respondent's experiences, and thus deductive type of enquiry is well suited to determine the outcome using strategic statistical analysis to either support or reject the derived hypothesis.

4.4 Research Design

Research design consists of details and procedures for gathering information to provide a structure for conducting the research (Malhotra et al. 2012) with the main intention to address specific research objectives. In this stage, a number of decisions are to be made to operationalize research objectives and ensure coherence with various elements of the research project (Saunders Philip Thornhill, Adrian. 2015) This section helps to plan out research boundaries such as defining unit of analysis, details of investigation types, handling data collection techniques, data analysis and interpretations along with any other related issues.

Research design is normally categorised into exploratory, confirmatory or conclusive type of enquiry (Malhotra et al. 2012). In exploratory types of research, as the name exploratory suggests, is aimed at providing insights of the research phenomena in study where there is little known information in literature, whereas a conclusive research is aimed at justifying any relationships and assists in evaluating research phenomena and also for decision making in a given situation (Malhotra et al. 2012; Malhotra 2010; Churchill & Iacobucci 2004; Gerring 2001) . Exploratory research studies mostly includes subject expert interviews, observations and focus groups, whereas conclusive type research studies includes

identifying the information first of what is required prior to conducting research from either cross-sectional or longitudinal designs which would conclude or justify the hypothesised relationships (Kerlinger 1986).

Conclusive type of research is mainly deductive type of enquiry and greatly relies on the strategic statistical analysis to determine the outcome to support or reject the research hypothesis (Meyers et al. 2006). Conclusive type of study settings can either be of causal, correlational or descriptive. In the causal type of research, all the variables are involved in cause-and-effect relationships and they are examined by experimentation or intermediation which is known to provide a reliable way to determine cause and affect outcomes (where experiments are usually monitored and variables are allowed to be manipulated in a controlled environment) (Churchill & Iacobucci 2004). Churchill & Iacobucci (2004); whereas in the correlational type of setting, research involves investigating the associations and relationships between the independent and dependent variables (Churchill & Iacobucci 2004; Sekaran 2003). These conclusive types of design may further be classified into either cross- sectional or longitudinal research designs which will be discussed in detail in next section. In the descriptive type of research, the research phenomenon is described and the research is carried out to evaluate certain variable characteristics in more detail which contributes towards the phenomenon (Parasuraman, 1991).

Choosing the appropriate research design is challenging and this entails re-examining the research purpose and outcome and involves meticulous planning ahead (Collis & Hussey 2013). Based on the major variations in the research design approaches – are exploratory

and conclusive according to Malhotra et.al., (2012), both these strategies may be approached considering the context of the elements in the conceptual framework (Malhotra et al. 2012). However reflecting on the main objective of this research, which is to evaluate and examine the relationship between digital media characteristics and SGS outcomes, earlier research works have been examined in IS literature using various theoretical perspectives -where it is seen that some authors have attempted to create new theories to understand this (Dennis et al. 2008; Dennis & Valacich 1999a), and some have just highlighted the importance of further understanding the influence of digital technological developments on everyday goals; subsequently there exists rich literature with studies that addresses issues of influence on everyday uses and goals, thus slightly relating to the research problem to be examined in this study, consequently this study was not considered under exploratory research.

To consider any research under conclusive- causal category (causal- confirmatory) - Hair et al. (2010) have claimed that in the circumstances the research should be mainly driven by use of theory and all the variables need to be examined in causality research that leads to a phenomenon and may take a long time, and can sometimes get very complex, and also turn out to be expensive (Joseph F Hair, Black, Babin, Anderson, et al. 2010). Other variables other than the ones identified in this research may very well exist and since they are not considered in the research that may be able to illuminate other correlations. In the current study, examining all variables that leads to the phenomenon is not practical or feasible and thus this study cannot be categorised under causal types of study.

Based on the purpose of this current study under objective perspective, this study aims to examine the significance of relationship between digital media and SGS outcomes (Joseph F Hair, Black, Babin, Anderson, et al. 2010; Churchill & Iacobucci 2004; Zikmund 2003), where in this category, a study normally comprises of research design and data collection and may contain questionnaire to gather entries from respondents from a limited number of choices to be chosen from (Joseph F Hair, Black, Babin, Anderson, et al. 2010), these type of studies are often classed as confirmatory. In confirmatory type of studies, hypotheses are formulated and then using defined structure- data is collected and analysed to understand the relationships of the phenomenon, unlike exploratory research types (Joseph F Hair, Black, Babin, Anderson, et al. 2010; Malhotra 2008).

Based on this, the setting of this study is correlational and confirmatory and this is based on the purpose of the study under objective perspective, where the main objective of this research is to confirm the existence of relationships between independent and dependent variables and to find their statistical significance using the conceptual framework. Thus this study adopts conclusive – correlational (correlational- confirmatory) types of research study to justify the existence of relationships between variables, which being characteristically objective and the evidence will be gathered by empirical observation (Collis & Hussey 2010).

4.5   Research Methodological choice

To understand methodological position of any study, each philosophical approach that is applied has its own outlined frameworks and has its own different conducting methods. Thus choosing the appropriate philosophical approach is very important so as to able to

apply the method that is based on the research objectives stated in the study (Abernethy et al. 1999). Researchers have recommended a number of different research approaches and methodologies to choose from - for examination (Pollard et al. 2010; Dick 1997; Patton 1990).

Qualitative research dwells to understand the research phenomena based on the researchers intentions about the real world experiences of people or situations (Armour & Macdonald 2012; Denzin & Lincoln 2006), furthermore the researcher is the key for understanding the phenomenon, and the data is mostly obtained through field-work from either interviews or observations. They mainly go either through open ended questions during their field work. As mentioned in previous section- inductive research strategies are applied in the design where concepts are built towards building a theory that is moving from data to theory. In this type of design there is the flexibility but has the risk of suffering from subjectivity issues and also has the risk of not having an expected pattern from data analysis (Armour & Macdonald 2012). Alternatively, quantitative research attempts an objective type of approach where the reality is perceived to exist outside researcher's perceptions.

Any research can be designed to be quantitative, qualitative or both which is entirely based on the research objectives. The research objectives in chapter one bring about the nature and scope of this study with respect of qualitative or quantitative methods (Wilson 2010; Blaikie 2007).

As discussed in previous section, this research holds positivism type of philosophy where the researcher and the reality or the truth that are to be examined are independent of each other and also the knowledge that is built is based on human experiences. Normally this type of research design is associated with deductive approach and positivism type of philosophy (Saunders et al. 2012; Byrne 2001). The researcher and the reality do not interact with each other during any process of data collection or analysis; thus are treated as separate entities. Thus in this type of study, data is gathered by objective methods to evaluate relationships from the information that is gathered without any contamination from researchers views (Armour & Macdonald 2012). These assumptions and approaches are contradicting with the qualitative approach.

Thus this study's methodological position is emphasised on quantitative methods involving data collection and data analysis of the hypothesised variables. By identifying the importance of understanding the reality objectively, this study adopts positivist-quantitative approach and the following sections will elaborate the quantitative research strategies undertaken in more detail.

4.6 Research strategies

Among the quantitative research types, survey and experiment research strategies are the most commonly used methods to collect data (Weber 2004). Experiments are conducted in controlled environments to understand the cause and effect outcomes. Survey is usually conducted using questionaries' that are used to reach a larger population to understand the cross-sectional status of research phenomenon at any given time and in some cases

measured repeatedly at different points of times (longitudinal design) (Armour & Macdonald 2012; Saunders et al. 2012).

In this current correlational design type of study, the association between the independent variables and the dependent variables are investigated with very minimal researchers interference unlike causal study where researcher's interference to do with the experiments to identify cause and effect is usually required (Sekaran 2003). Thus the questionnaires have been used to capture the respondent's feedback which does not have researcher's interference (Sekaran 2003).

4.7 Time horizon

Using questionnaire in a correlational cross-sectional or longitudinal design depends mainly on the research design and main objectives of research. Cross-sectional research is when a snapshot of situation at a given time is captured. In this, when only one type of sample of population from the target population is selected it is classed as single cross-sectional, however in some cases multiple samples of respondents are used to collect data at the same time, then it is classed as multiple cross sectional design. Cross-sectional research mainly collects data elements only once from the sample of respondents and may be either single or multiple cross-sectional design (Malhotra 2008; Parasuraman et al. 2006; Churchill & Iacobucci 2004). Overall in the cross-sectional design the data is collected only once (Malhotra et al. 2012) from single or multiple set of respondents.

In contrast to cross-sectional design where collecting data from a fixed same sample of respondents more than once on different times are classed as longitudinal design and here the data elements from the target population are measured repeatedly at different points of times (Parasuraman et al. 2006; Churchill & Iacobucci 2004). In this type of design, research may provide more realistic information of the phenomena compared to cross-sectional designed study, where it just provides a snapshot of the situation at a single time rather than revealing the changes over time which corresponds to realistic picture. Although longitudinal research is robustly realistic it can be very expensive and may demand a lot of time and effort to repeat measurements.

In this study a correlational cross-sectional design is adopted where variables are captured at the same point in time. This type of design is wide spread in IS research areas due to the affordability, flexibility, simplicity, discreetness and has very less interference from researcher.

4.8 Summary of current research choices

The main purpose of conclusive–correlational (correlational-confirmatory) types of research study is to justify the existence of relationships, which being characteristically objective and thus evidence can be gathered by empirical observation (Collis & Hussey 2010). Consequently, for this study, deductive logic approach is employed and hypotheses are derived in chapter four and they will be analysed and discussed in chapter six and seven.

Overall the current study is categorised as a correlational cross-sectional design, which uses survey to collect data from respondents to capture a snapshot of variables measured at the same time (Joseph F Hair, Black, Babin, Anderson, et al. 2010), with an aim to understand the significance of a relationship that exists at the time of research. Based on the purpose of the study, this research adopts a deductive approach to understand the relevance and effect of hypothesised variables and their relationship's significance. This study's methodological position is emphasised on quantitative methods involving meticulous statistical analysis of the hypothesised variables yielding statistically significant result. By recognising the importance of understanding the reality objectively, this study adopts positivist-quantitative approach. The flowchart Figure 4-3 summarises the current research choices that are made in this study.
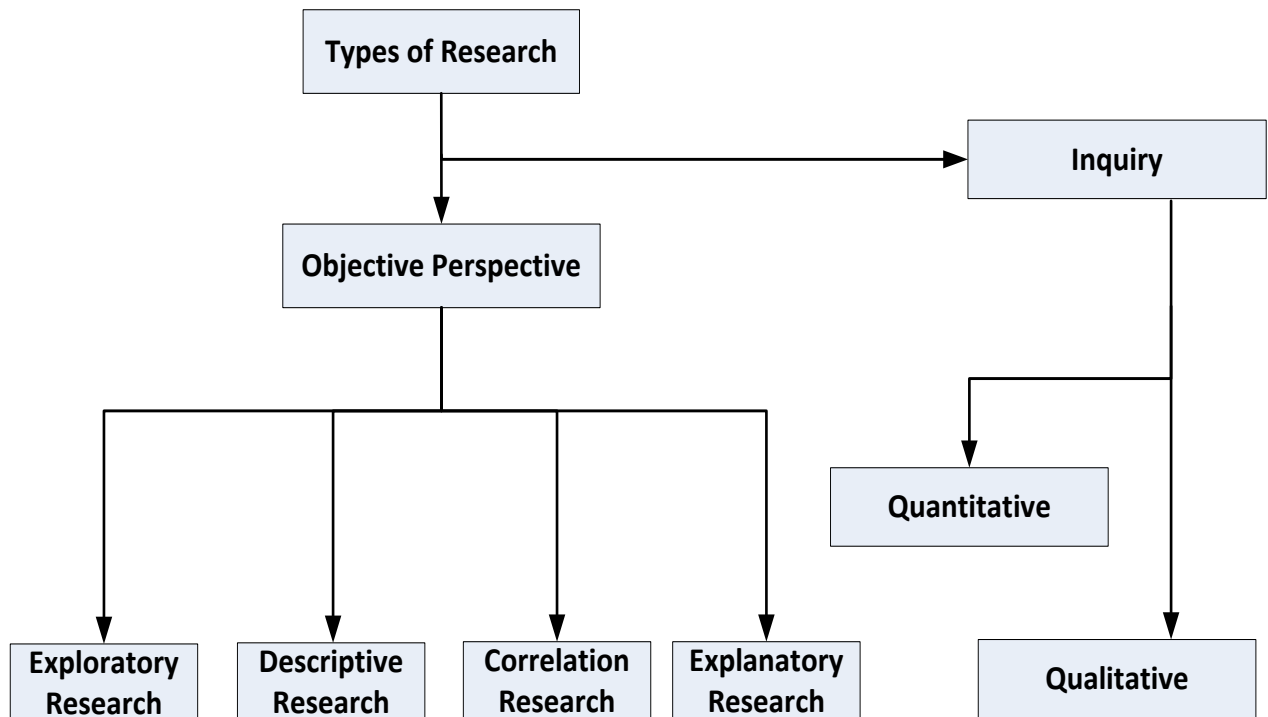
Source: Adapted from (Ghauri & Grønhaug 2010)

Figure 4-2 Research perspectives
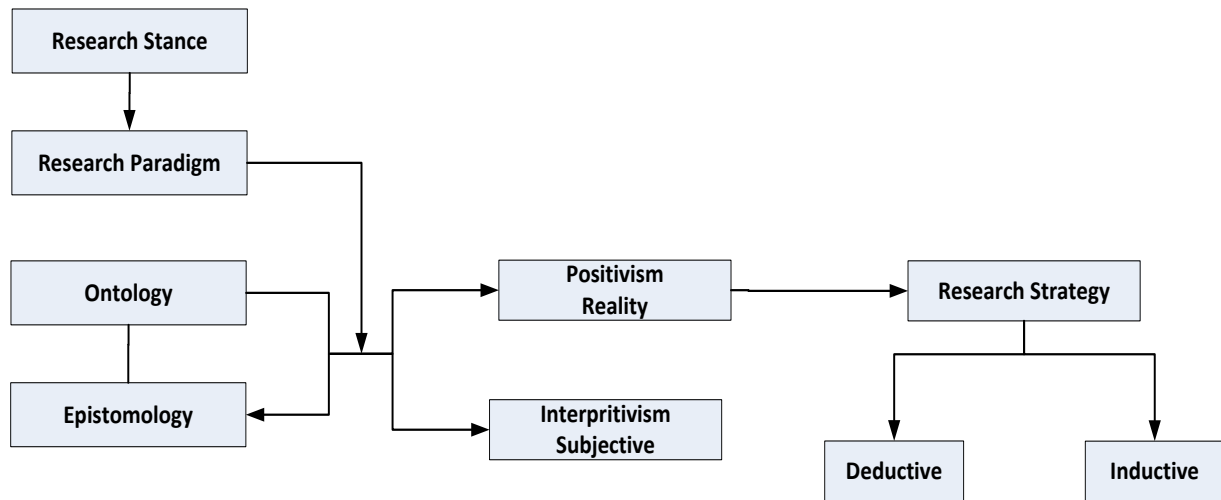
Adapted from (Blaikie 2007)

Figure 4-3 Current Research Choices

The current research choices in the flowchart include all the basic assumptions and paradigm choices made in this research. The next section deals with reasons for using questionnaires in this study are discussed.

4.9   Measurement scales

The measurement scales that were used in the questionnaire for this study were the adaptations of the original scales from previous studies and they were modified to fit the context. The adapted questionnaires were then reviewed by subject experts from academics and non-academics for its appropriateness to reflect addressing the purpose of this research

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and their feedbacks were incorporated prior to conducting actual pilot tests.   .
Measurement scale items for each construct with their sources are discussed in the
following sections.

Perceived Media Richness Scale

The measurement scales for this construct was adopted from previous studies. Certain
items in measurement scales were adapted to fit to the context for evaluating digital media
influence on SGS. In this study, measurement scale to assess respondents' perceived media
richness contains seven items and is adopted from Fernandez et al. (2013) which includes
four original items (PMR1-PMR4) proposed by Carlson and Zmud (1999) (Carlson & Zmud
1999; Fernandez et al. 2013a). These four original items were set forth by Carlson and Zmud
(1999) and were developed for measuring perceived richness of electronic mail. The other
three items (PMR5-PMR7) includes Hasty et al.,(2006) 's three items proposed originally by
Dennis and Kinney (1998) (Hasty et al. 2006; Daft & Lengel 1986). These items were
designed from the conceptual definition of the media richness construct by Daft and Lengel
(1986) and contain seven items presenting a single construct to measure respondents' PMR.

These seven items and their adaptations have been the most commonly used in several
studies when evaluating the medium's richness construct like for instance, for PMR1 -
various adaptions were reviewed like 'E-mail allows my communication partner [my project
partner] and me to give and receive timely feedback' in Carlson and Zmud (1999) ,   and
other adaptions like 'The online discussion forum feature allows us to give and receive
timely feedback' in Fernandez et al (2013) and 'The VLE features allow me to give and

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receive timely feedback' in Hew & Kadir (2016) . Similarly this has been adapted to fit to context of this study and modified to 'this type of interactive systems* allows my communication partner and me to give and receive timely feedback', where interactive systems* definition in study were clearly stated with examples. Thus in the current study all seven items have been adapted to fit to the research context. More items are shown in Table 4:3.

Table 4:3Measurement items and their sources for Perceived Media Richness (PMR)

Construct: Perceived Media Richness (PMR)

Acronyms	Items	Source
PMR1	This type of interactive systems* allows my communication partner and me to give and receive timely feedback	(Carlson & Zmud 1999; Fernandez et al. 2013b)
PMR2	This type of interactive systems allows my communication partner and me to tailor our messages to our own personal requirements.	
PMR3	This type of interactive systems allows my communication partner and me to communicate in a variety of different cues (such as emotional tone, attitude, or formality).	
PMR4	This type of interactive systems allows my communication partner and me to use rich and varied formats such as video, message, audio, digital text etc.	
PMR5	I am able to easily explain things using these types of systems to interact.	(Fernandez et al. 2013b; Alan R. Dennis & Kinney 1998; Hasty et al. 2006)
PMR6	This type of interactive systems helps me to communicate quickly.	
PMR7	This type of interactive systems helps me to better understand each other's ideas.	

Perceived Real-Time presence:

The scale items for Perceived Real-Time presence (PRT) were adopted from Karaiskos (2009) and it contains five items. This was developed to measure ubiquity, also recognised in literature with different notions like 'ubiquitous computing', 'pervasive IS' and 'omnipresence' (Karaiskos & Καραΐσκος 2009; Alexander Salinas Segura 2015; Jung 2014; Ping 2001; Chung & Kim 2008; Kang & Jung 2014). The five items incorporates the situational element of system's ability to provide continuous access to information and interaction irrespective of time and place. With the definition of PRT in this study which incorporates the situational element of a task, a need for urgency and immediacy of feedback, against this background Karaiskos (2009) developed scale was most appropriate and was adopted to evaluate respondents' perceived real-time presence. Thus for the current study these items were adapted to fit to this research context, for example, the original item PRT1 'The system is available to use whenever I need it' has been changed to 'The interactive system * is available for use whenever I need it.' where interactive systems definition in study is clearly stated with examples. More items are in Table 4:4.

Table 4:4 Measurement items and their sources for Perceived Real-Time presence (PRT)

Construct: Perceived Real-Time presence (PRT)		
Acronyms	Items	Source
PRT1	The interactive system * is available for use whenever I need it.	(Karaiskos & Καραΐσκος 2009; Alexander Salinas Segura 2015)
PRT2	The interactive system is available for use wherever I need it.	
PRT3	I am able to use the interactive system anytime.	
PRT4	The interactive system is accessible everywhere.	

Perceived Unobtrusiveness:

Similar to PRT the measurement for this construct perceived unobtrusiveness (PUob) was adopted from Karaiskos (2009) and contains six items which was developed to measure PUob in several studies (Karaiskos & Καραΐσκος 2009; Alexander Salinas Segura 2015; Chung & Kim 2008) . Slight modification to the items have been made to fit to this study's context, for instance, the original item 'My attention does not need to be focused on the system the whole time' has been changed to 'My attention does not need to be focused on the interactive* system the whole time' where interactive systems definition in study is clearly stated with examples. More items are in Table 4:5.

Table 4:5 Measurement items and their sources for Perceived Unobtrusiveness (PUob)

Construct: Perceived Unobtrusiveness (PUob)		
Acronyms	Items	Source
PUob1	My attention does not need to be focused on the interactive* system the whole time.	(Karaiskos & Καραΐσκος 2009; Alexander Salinas Segura 2015)
PUob2	I don't have to concentrate fully on the interactive system when using it.	
PUob3	I don't need to be intensely absorbed when using the interactive system.	
PUob4	The usage of the interactive system does not disrupt me from other activities.	
PUob5	The interactive system does not distract me too often.	
PUob6	The interactive system does not require continuous attention.	

Spiritual Goal Strivings (SGS)

Manifestation of everyday personal goal strivings linked with ultimate spiritual strivings to measure personality integration is adapted from Sheldon and Kasser (Sheldon & Kasser 1995). SGS in this study are categorized into, knowledge, feelings, and practice to capture the manifestation of spirituality in strivings (Emmons et al. 1998a; Glock & Stark 1965). According to Sheldon and Kasser, predicted progress in SGS is assessed with the coherence of individual's everyday goal striving helping to bring about possible futures (spiritual goals) (Sheldon & Kasser 1995; Emmons et al. 1998b), and the approach in this study to evaluate SGS is borrowed from previous studies (such as (Sheldon & Kasser 1995; Emmons 2008; Emmons et al. 1998a)). Respondents were to rate their perception based on their experience to the three possible futures (SGS categories), such as 'Would success at everyday goal strivings related to increasing one's knowledge of spiritual subject; tend to take you closer to this aspired future? More items are described in Table 4:6.

Table 4:6 Measurement items and their sources for Spiritual Goal Strivings (SGS)

Spiritual Goal Strivings (SGS)		
Acronyms	Items	Source
SGS1	Would success at everyday goal strivings related to increasing one's knowledge of spiritual subject tend to take you closer to this aspired future?	(Sheldon & Kasser 1995; Emmons 2008; Emmons et al. 1998)
SGS2	Would success at everyday goal strivings related to maintaining and developing relationship with the spiritual subject tend to take you closer to this aspired future?	
SGS3	Would success at everyday goal strivings related to relate to exercising spiritual beliefs	

	tend to take you closer to this aspired future?	

Vitality Well-Being Scale (VWB)

In this study individual vitality aspect of well-being was measured by the vitality scale developed by Ryan and Frederick (1997) (Ryan & Frederick 1997). It is commonly known as Subjective Vitality scale (SVS) and is used to assess individual's state of feeling alert and alive, and having energy available to their self.   This is   considered as an aspect of eudemonic well-being (Ryan & Deci 2001) of being vital and well-spirited which is part of well-being indicators of an individual to be psychologically well and fully functioning.

Table 4:7 Measurement items and their sources for Vitality Well-Being Scale (VWB)

Construct: Vitality Well-Being Scale (VWB)		
Acronyms	Items	Source
V1	I feel alive and vital.	(Ryan & Frederick 1997; Bostic et al. 2000)
V3	Sometimes I feel so alive I just want to burst.	
V4	I have energy and spirit.	
V5	I look forward to each new day.	
V6	I nearly always feel alert and awake.	
V7	I feel energized.	

The adapted measurement scales has been reviewed by academics and subject experts including supervisors, directors of spiritual organisations, and spiritual seekers for its appropriateness based on their knowledge and experience (Dillman 2011). Their critical review and comments were considered prior to pilot testing as shown in Figure 4-4. These reviewers were chosen based on their involvement in this field or related fields and also due

to their experiences. Their suggestions added invaluable input towards verifying the measurements scale's appropriateness considering the study's main aim and objectives.
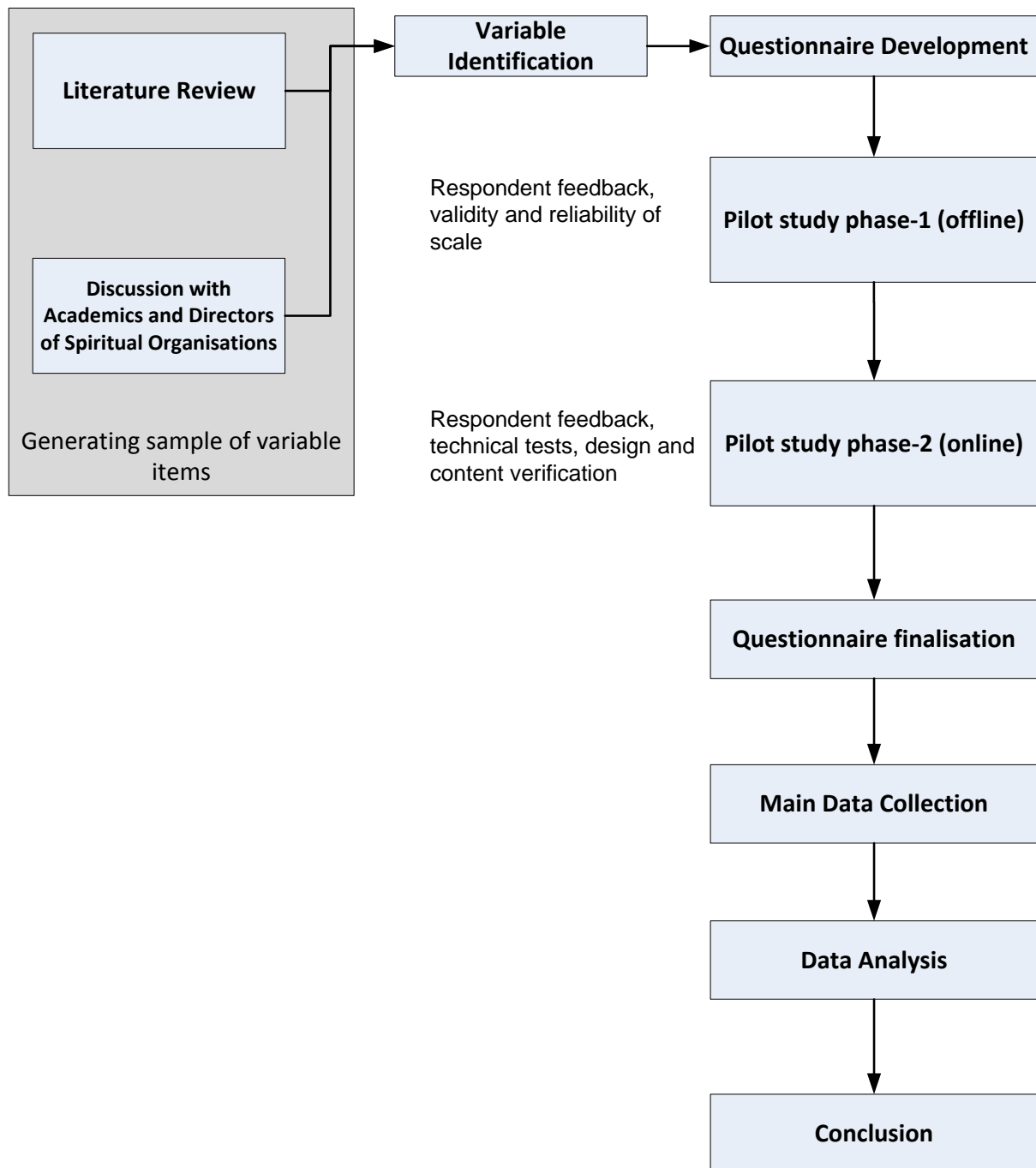
Source: Created by the author of this thesis

Figure 4-4 Research Process Flow Chart

The overall feedback was constructive and modifications were considered that were necessary to provide more clarity to comprehension of phrases and ambiguous wordings like the terms 'big-data based digital media', 'interactive systems' , 'modern systems' and 'spirituality'. These feedbacks were incorporated by making changes to add more details to the terminologies used in the questionnaire items and some were used with examples.

After the feedbacks were incorporated, pilot survey was executed to verify every aspect of questionnaire including design, layout clarity, ambiguity of wordings, and flow of questions, editing, logic, standard buttons and other formatting issues to make the data collection process more efficient. Data collected from pilot study was used to conduct data analysis with an intention to refine the scale instruments as part of scale purification depending on the results of data analysis (Churchill, 1979; Appiah-Adu, 1998). Pilot study will be discussed in more detail in sections 4.15 and 4.16 and will be followed by data analysis for scale purification that was performed with the main intention to refine the measurement scales.

4.10 Ethical considerations

This research strictly followed the ethical code of University of Bedfordshire. The ethical forms were submitted to Research Graduate School and the ethical committee for the approval for conforming to standards set by the University of Bedfordshire. As per the conditions of ethical approval, data were collected from respondents strictly only after the participants were informed that participation was voluntary and they could opt out at any point of time (Bohn et al. 2005; Ess 2009) . Information gathered were treated confidentially and used only for this research purpose. After ethical code of approval was satisfied and approved, pilot study launch was made in April 2004. After minimal revisions

on the questionnaire with suggested feedback and obtaining approval, the main launch was made in 13th January 2016 and ended nine weeks later on 10th March 2016.

4.11 Online Survey rationale and design considerations

Reflecting on the background of this study where the unit of analysis is related to digital systems for information and communication purposes for their everyday goals; this clearly deals with using the internet usage predominantly. Thus in situation where internet users are involved, it is most appropriate to using internet for distributing and collecting responses, which is commonly known as e-survey or internet-survey or online-questionnaire.

Online survey are becoming very common with the emerging use of internet for various reasons for communication, interaction and entertainment (Lazar & Preece 1999) . These are widely used and known for its efficiency where survey methods are engaged and email messages with questionnaire are distributed or displayed as a post on websites for individuals to click and complete it online at any time. With this flexibility, very large scale distribution is possible with minimal cost (Watt 1999) and the data collection is almost instant and very quick , where data is readily arranged in database for further use (Couper 2000; Weible & Wallace 1998).

Some researchers have found that online survey were no different from postal survey along with the added advantage of flexibility, fast distribution and collection (Kamarullzaman 2006; Yun & Trumbo 2000; Swoboda et al. 1997).

Thus the rationale for selecting mainly online survey but not limited to online only is due to these advantages like wide coverage in short time; effective in terms of receiving higher response rates; receiving more honest responses; and finally for the possibility of easily and quickly collecting data for analysis.

To ensure sample representativeness is not disadvantaged for respondents who preferred paper based, these paper based forms were made available at these centres.

Among the most commonly used electronic–digital survey, which are email and web based survey, this study adopted web based survey predominantly. Link to the survey questionnaires survey were posted on web portals, associated electronic bulletin boards, other relevant social websites mostly used by respondents.

Design considerations

For the purpose of data collection, questionnaire design was considered very important. Several stages of development process have taken place to ensure the validity and reliability of the questionnaires. Firstly, items were identified which measured the developed model variables. These items for every variable were identified and adapted from previously validated measures in IS literature (section 4.9). A minimum of two items were recommended by (Joseph F Hair, Black, Babin, Anderson, et al. 2010) for performing CFA . There were in total twenty eight measurement items that were modified to fit to the research context. These questions were designed in such a way to capture the respondent's

experiences using statements, where users would be able to choose their level of agreement using five point Likert-scales. Once this was finalised, questionnaire design layout were determined that best suited the respondent's characteristics. The design of questionnaire was considered to be important to reduce errors and non- response rates and to increase response rates. Care was taken to provide clear instructions, attention to flow of questions and to improve the general appearance of the questionnaire (Dillman 2011).

The design of the online and paper survey format followed the same principles and accommodated the same design including the question scales, multiple choice options, wording, informed consent, open ended questions, definitions and examples and demographic items in the same way as recommended by (Lazar & Preece 1999; Witmer et al. 1999; Nonnecke et al. 2006). The open ended questions have been found to be lengthier and more self-disclosing feedback on online survey compared to paper based (Dillman 2011; Bachmann et al. 1996; Locke & Gilbert 1995; Stone et al. 1992).

The survey used multiple choice questions (please see Appendix C: Main Questionnaire) and used five point Likert-type scales with number of statements to which respondents would indicate degree of agreement based on their experience. There were twenty-eight main questions categorised to three sections. The questions were presented with few questions per each sub-section and multiple scales in different formats were presented using radio buttons and scroll bars. Edit text box was presented at the end of the survey to share any additional thoughts in the comments section (Jacobs et al. 2014; Pitkow & Recker 1995). For online survey, a completion rate indicator was presented to the respondents to let them

know the percentage of questions they have completed and to let them know the percentage of questions to be completed. Screening questions were presented before the main questionnaire to screen the sampling population relevant to the research. For this, logic was used and pre-programmed to end the survey for respondents who did not fit the criteria along with a thank you note for their interest in participation. In paper questionnaire the eligibility screening questionnaire was presented before leading participants to the main questionnaire.

Online survey in this study used standard buttons like next, back, save, exit and submit buttons (Andrews et al. 2003; Van Selm & Jankowski 2006). Online survey was programed to remind the respondents if they had only partially completed or forgot to submit the questionnaire at the end.

 The e-survey allowed respondent's to type answers, click responses, use dropdown menus and also edit blank spaces to write open ended questions. Respondents could save and return to the questionnaire at another time. The e-survey provided automatically verifying for incomplete responses and reminded the respondents to return to the incomplete survey for completion at certain intervals. E-survey design provided the option to embed online survey directly within email messages that could be sent manually. This was hardly used, as obtaining email addresses from these organisations were a challenge due to confidentiality and security reasons. However the use of web based survey allowed responses to be collected based on the likelihood that for any particular time period web visitors could choose to click and answer the survey.

4.12 Screening for eligibility

In this current study certain procedures were put in place to screen individuals who were relevant to the research. Based on this study's unit of analysis, respondents in this research were spiritually motivated and were users of digital media to moderate amounts for their spiritual goal strivings. Thus the screening phase was an important part of data collection process which enables to recruit correct respondents who fit the unit of analysis criteria.

Screening questionnaire was introduced at the beginning of the main study where respondents had to voluntarily acknowledge if they were spiritually motivated and if they used digital media for their everyday SGS. Screening questions (in Appendix B: Screening Questionnaire) were presented before the main questionnaire to screen the sampling population relevant to the research. The questionnaire survey was thus made in two parts, the first part was involved in screening individuals, and once the respondent's satisfied this study's criteria, only then those respondents were provided with the main questionnaire. All answers in questionnaires were subject to self-completion with voluntary participation. They were automatically collected in the data base, and individuals who preferred paper based were sent paper based questionnaires and responses were then fed to the data base manually.

The actual process of screening eligible sampling population was done during the beginning of data collection process to ensure that the data collected for analysis is valid and meets the research criteria. It was necessary to obtain relevant population to the research and thus the screening questions was always presented before the main questionnaire.

This was done in a number of ways; for respondents using online survey questionnaire, logic was pre-programmed to end the survey with a thank you note for their interest in participation for respondents who did not fit the criteria and eligible candidates were presented with the main questionnaire to continue providing their responses. For respondents who preferred paper questionnaire, the eligibility screening questionnaire was administered before leading participants to the main questionnaire.

To summarise, all survey respondents in this study were screened and restricted to only individuals who reflected on their true experience of being spiritually motivated and with using digital media for their SGS to ensure that the respondents fit the criteria set in the study.

4.13 Population

According to Hair et al. (2010) and Sekaran (2003), target population entails the total collection of individuals, occasions or cases that the investigator is studying. Any inference that is made in the study refers to this population (Joseph F Hair, Black, Babin, Anderson, et al. 2010; Sekaran 2003). In this study, the 'unit of analysis' or 'sampling unit' are spiritually motivated individuals who use digital media systems for their SGS. Based on this description, individuals associated to one or more spiritual organisations in Bangalore were approached. The reason for choosing a specific location for this study is because this study is focused on individual's goal strivings and on subjective well-being (and not focused on organisations or workplaces). It is common in the literature especially related to personal

goal strivings and well-being to collect data from a specific region or city. For example Sheldon et al., (2002) have evaluated personal goals in relation to individual's psychological growth but focused on data from only one city Missouri and in particular University of Missouri (Sheldon et al. 2002) . Similarly there are other related studies focused on a single setting or in particular universities like (Chico Librán 2006; Ogara et al. 2014; Emmons 2005; Sheldon & Kasser 1995; van Dierendonck et al. 2009; Van et al. 2010). Thus this thesis has followed the same approach, to focus on a specific setting – Bangalore to collect data from the target population who fits the description of unit of analysis in study. The reason for selecting Bangalore is further discussed in next following sections.

Based on this description of unit of analysis, the population who fits the sampling unit is not known. However a rough estimate is assumed based on the iTunes spiritual apps downloads alone to approximately 96000 potential respondents (Buie & Blythe 2013). Bengaluru (previously known as Bangalore) city with a population of over 12 million in Karnataka state is recognized in India for its harmonious cosmopolitan culture embracing multi-faith and multi-religious population from different regions (Firoz & Kumar 2017; Mishra et al. 2015; Narayanan & Bindumadhav 2018; K. Chandramouli 2002). The city has several iconic religious centres of different faiths with more than a thousand temples, four hundred mosques, and one hundred churches and several others (K. Chandramouli 2002), reflecting a large multi-faith population living in the major technology hub of India(Mishra et al. 2015). This city is also popularly known as the Silicon Valley of India due to the several numbers of software and information technology companies located in the city (Mishra et al. 2015; Kaul 2014).

As this research is not linked to any specific religion or cultural background, several spiritual organisations from various religious and non-religious background were approached like Christian, Muslim, Sikh and Spiritual Societies during data collection, however due to access restrictions and lack of support, this study had to resolve to only those organisations who responded to the survey request- adding to the limitation of this thesis.

There was no attempt made in this study to focus on any particular Indian religion and the study was approached to be as inclusive as possible. This is reflected in the data collection, where individuals who have responded to the survey were from various backgrounds and not just from one cultural background or religion. From the demographic survey, it was seen that there were, 11 Hispanics, 52 whites, 15 Africans, 47 from other backgrounds and 862 from Asian background (see Appendix G: Cultural back ground). Although majority of the respondents who have responded are Asians, they may not all be from one Indian religion. There probably may be many Hindus due to the location Bangalore being populated by more Hindus but this study made no attempt to focus on Indian religion Hindu or was not biased to one particular background, thus the outcome is independent of religion. There were similar studies in literature like for example den Broeck Van et al., (2010) where the pyscological needs satisfaction were evaluated independent of religion and the study was focused in Belgium where majority are Christians, thus there is more likeliness that the majority of the respondents in their study of 1185 may be from Christianity (den Broeck Van et al. 2010). However their study was not specific to any religion, but the choice of the location Belgium may have introduced a bias. In the similar lines, this study has attempted

to evaluate digital media influences of spiritual goals strivings of individuals which is independent of religion or any backgrounds.

Since the target population for this study were not subjected to be from any particular religion, backgrounds or specific to any regions, as suggested by Johnson (2001) and other researchers, survey questions were thus not linked to any religion, particular faith or the location of Bengaluru (Johnson 2001; Wright 2006; Andrews et al. 2003). Since the analysis and results are independent of the religion and are not linked to any particular faith, selecting spiritual organisations in Bengaluru was most suitable to this study - as they offered accessibility to technology savvy individuals and spiritually motivated individuals using digital media for their spiritual strivings.

The city with a population size of over 12 million offered great number of larger spiritual centres supporting spiritual wellness programs – and with the location being popularly known to be occupied by technology savvy individuals, Bengaluru was pursued as the suitable place for conducting the study. To increase generalisability, respondents associated to spiritual organisations that were targeted in this study were categorised as non-profit, non-sectarian with universally accepted philosophy of world peace, multifaceted, and engaged in educative well-being programs. The study's outcome may be replicated in other similar sites in India or other countries where accessibility to spiritually motivated individuals are utilizing digital media benefits for their spiritual strivings. There may be some bias with respect to aspects such as the amount of technological development and

individual's involvement with associated spiritual activities - which may be prejudiced based on the quality of urban life-style and social – economic status in comparison to some developed or underdeveloped countries which are addressed in limitations chapter section 8.4.

 A huge gathering in some of the spiritual centres have been witnessed during events associated to activities involved in these spiritual centres, an exact number was not disclosed by the organisations due to confidentiality and security reasons. Due to the difficulty in obtaining a sampling frame and the estimated population size were large, self-selection option was adopted in these environments (where spiritual organisations organised their activities and events in Bengaluru) (Saunders & Tosey 2013). The respondents could be any race, gender, age of 17 years and above and have any form of faith. Beginning with the larger organisations such as Brahma Kumaris, The Art of Living, Sri Sathya Sai Baba Ashram, The International Society for Krishna Consciousness, Ramana Maharshi Centre for Learning were some of the organisations who were targeted and screened for the purpose of research for they were using digital media systems for their activities involving SGS (Saunders et al. 2012; Sekaran 2003).

In order to improve the generalisability of results as much as possible, these spiritual organisations from where respondents were chosen were all categorised as non-profit, non-sectarian with universally accepted philosophy of world peace, multifaceted, and engaged in educative well-being programs. These organisations observed spirituality as more of an individual practice and to do with having a sense of effort to integrate peace and purpose

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outside the context of religiousness. There are some limitations relating to the issue of generalisability, which are discussed in the chapter eight section 8.4.

Additionally the minimum sampling size required as recommended by Hair et al., (2010) for SEM regression analysis and Confirmatory Factor Analysis (CFA) is 50 responses for each independent variable that is the ratio of 50:1 for better results (Hair et al. 1998). This research model consisted of three independent variables, PMR, PRT and PUob, thus the minimum required sample size indicated a total of 150 responses. Since this study uses SEM where model is examined based on model fit indices, some researchers have suggested that there is a strong relationship between sample size and model fit indices (Anderson & Gerbing 1988; Jöreskog & Bollen 1993; Hu & Bentler 1999) where a minimum of 250 or greater when independent variables are latent is suggested for model indices to be relatively stable and consistent. In the data analysis process from the data collected which will be discussed in chapter five, the total completed and valid responses that were finally obtained for SEM are 987 responses which satisfied the expected number of responses (Joseph F Hair, Black, Babin, Anderson, et al. 2010; Janssens et al. 2008). In the next chapter all the 987 respondents were used to validate the CFA model and this was followed by rigorous multiple regression analysis to evaluate the developed hypotheses.

4.14 Sampling

Sampling is a method or process of selecting smaller number of suitable units from the research population to draw inferences about the entire population (Pedhazurand Schmelkin, 1993; Zikmund, 1997). Sampling is important and is a useful approach to adopt in

situations where it is difficult to survey the research population due to large population or in situations where infeasibility is raised due to geographical boundaries (Saunders et al. 2012). Two most commonly used approaches of sampling are probability and non-probability sampling. In situations where every element of the research population has equal chance of being selected to participate is seen in probability sampling (Sekaran 2003). However in some cases it is always not possible to have a sampling frame, in such situations where sampling frame is difficult to obtain or unavailable the probability sampling is not possible, in such circumstances non-probability sampling is deliberately used. In summary the sample frame is the set of individuals who make the research population (Sekaran 2003) to be studied.

There are a number of techniques in non-probability sampling method such as convenience sampling, judgement sampling, snowball sampling and self-selection sampling which enable the researchers to sample the research population without a sampling frame. This study adopts non-probability self–selection approach for a number of reasons. Firstly a known number of research population from reliable sources was not possible to find, also previous researchers have reported that a there is lack of research in this research areas to have any global list possible until more research works are done in this area (Buie & Blythe 2013). Thus generating a random list or from few lists of organisations would not be appropriate. Thus self-selection non probability technique was the most suited sampling method. In addition to this, even if there was a global list available - it would have been difficult to approach respondents as the restriction to access such respondents sites are restricted and are only for particular community use for their spiritual activities and purposes and not for

research. Obtaining such permission was not easy and would have needed a lot of time to get approval from several higher authorities within these e-spiritual communities. Also since the spiritually motivated members are all mostly voluntary they were difficult to find and get any response in time for gathering a suitable sampling frame. Some communities of spiritual organisations have policies, confidentiality and security regulations to not disclose any information about their community members or activities. In such situations it would be difficult to obtain a representative sample without correct sampling frame from reliable source of entire research population. For this reason again self-selection was found to be the most useful way to move ahead.

Lastly the situations arose from some e-spiritual communities sharing their members list, but this again had inconclusive end where it included people registered as members but who would leave and never visit again. This also included a large number of lurkers who were not visible or participating in events so it was difficult to contact them. In this case too, non-probability self-selection was found to be the most useful and appropriate way to collect data.

Among the non-probability techniques, Couper (2000) has suggested a typology for e - survey sampling techniques that is self-selection or the use of a volunteer panel. In self-selection option, invitations to survey are posted at several online or offline locations whereas in volunteer panel, individuals are invited to participate only by invitations (Couper 2000).

Researchers have suggested that e-survey responders are usually more intense, experienced and skilled digital media users as compared to participants who have chosen not to participate (Kehoe & Pitkow 1997). Also participants who have responded to see survey are found to be highly educated, and in professional experience of using the digital media (Yun & Trumbo 2000); and having a sense of higher competence or self-ability in using digital media (Zhang 2000) ; and finally include mainly younger males from reasonably higher income household (Sheehan & Hoy 1999).

Survey respondents in this study were screened and restricted to only individuals who could reflect on their true experience with using digital media for their SGS. This would indicate that the respondents have actually tried using digital media for SGS to a certain degree and have built perceptions about its helpfulness in attaining success to their everyday SGS. All types of individuals were samples, both male, female; anyone greater than seventeen years of age, irrespective of their occupations or educational backgrounds.

4.15 Pilot Study and analysis

Conducting a pilot study is essential in a research study, which is usually a small scale study, conducted before the main data collection- using survey questionnaire (Wilson, 2010). Selecting reasonable sample size from the target population is consistent and recommended for this scale of study (Sekaran 2003) . In preparation for the main survey execution for this study, pilot study was conducted between 14th August 2015 and 28th August 2015. Main objective of this pilot study was to evaluate measuring scale's reliability and validity of measurement data. This along with respondent's feedback on questionnaire

wording, content flow and structure and finally to ensure that the time taken to complete the questionnaire was suitable to most potential participants to accurately provide answers. Considering the location - Bengaluru based spiritual organisations from where the respondents were chosen (see section 4.13for more details on selecting location), it was important to ascertain that the willingness of the spiritual organisations' premises for distribution and collection of questionnaires and also to establish if the respondents understood the questions and were able to accurately respond based on their experience. This was important as this digital media could be subjective and understood differently based on how the respondent used digital media and how they understood its capabilities (Dadzie, 2002).

The pilot study was done in four stages, in the first stage questionnaires were sent to supervisors for critical review and comments. After receiving the suggestions and comments via both email and personal discussions - changes were made to add more details to the terminologies used in the questionnaires. In the second phase, the questionnaires were sent to eight peer colleagues for their feedback based on their knowledge and experience (Dillman 2011) and further forty questionnaires were administered for pilot study after prior screening from a gathering of spiritually motivated individuals in Bengaluru (the time lines for the data collection process are shown in the Table 4:8) . Sixteen responses were incomplete and only twenty four responses were completed and deemed fit for inclusion in the data analysis. Of the twenty four responses 83 per cent were males and 17 per cent were females, aged between seventeen and thirty. Data analysis was performed involving data cleaning, EFA, CFA, reliability tests, validity tests and path analysis was performed using

SPSS and AMOS. Investigations on the results revealed essential changes to the wording of the contents and the presentation style. The term interactive systems, modern systems and spiritual strivings were clearly redefined with examples. The presentation style changes included changing the page layout to portrait from landscape and increased font size to accommodate the respondent's feedback. It turned out that most participants were keen to be contacted again if the study needed additional information and showed the interest to leave their email and name. Thus name, email and additional details options were added as optional data to enter if preferred. This phase included understanding the real experience and appearance of questionnaire before launching it, using the actual setting over the internet.

Data analysis stage was performed to refine the scale instruments as part of scale purification depending on the results of the data analysis (Churchill, 1979; Appiah-Adu, 1998). The measurement scales that have been used in this study are the adaptations of the original scales from previous studies and modified to fit to the context. The adapted questionnaire has been reviewed by subject experts from academics for its appropriateness and wordings prior to pilot testing.

Data analysis began with data cleaning and verified for unengaged responses (none), outliers (none) and kurtosis and made no changes. Kaiser-Meyer-Olkin Measure of Sampling Adequacy for individual items was 0.84 (> 0.5 min and close to 1 was expected). Communalities were greater than 0.3 which indicated that the items were well correlated. For assessing the internal reliability of the scale, Cronbach's alpha coefficient was used to

provide support and was greater than 0.82 where the coefficient up to 0.7 is suggested as providing a strong reliability (Cronbach, 1947). All items showed that they were loaded to at least one factor and there showed no negative loadings and also the average of group loads indicated greater than 0.7. Thus after satisfactory results of reliability tests, validity tests were performed. Pattern matrix was used to verify for a very clean factor structure in which convergent and discriminant validity was evident by the high loadings within factors, and no cross-loadings between factors. Variables were highly correlated where the item loadings were >0.5 and Ave>0.7. The measures included verifying if all the items measured the same factor (Item loading>0.3) and also verified for how much each variable were correlated with other variables. Variables showed that they were relating more strongly to their own factor than to other factors (discriminant) and indicated <0.7 showing that they had less shared variance. After performing the exploratory tests, confirmatory tests were performed where measurement model was validated using (AMOS 22.0 version). Model fit measures were verified as recommended by Hair et al (2010) and Hu and Bentler (1999) (Hair et al. 2010 on page 654) and Hu and Bentler (1999). The results indicated a good fit. Standard deviation tests with mean scores were conducted. Using SEM and multiple regression techniques, the developed hypotheses were tested. Overall the changes to the instrument were only made to the problems that were raised by respondents and issues that were found during data analysis. These steps were necessary to establish the comprehensiveness of the measurement scales that were used in the study. As part of pilot testing phase- the same questionnaire was pilot tested on websites of spiritual organisations by posting a link to the survey and also used email requests with access to survey in the email. The main intention of this phase was to evaluate technicality aspects that were involved by respondents to

answer and also to verify the design and content aesthetic view with all the necessary information that respondents may want to know or contact. Changes were made with this phase of pilot testing are described in detail in section 4.11.

Table 4:8 shows all the data collection process that was involved in this study commencing with pilot study to the final main data collection.

Table 4:8 The data collection process timeline

Phase	Description	Respondents data	Time span
Questionnaire: First phase of pilot test (offline)	Paper-based questionnaire were administered after prior screening from a gathering of spiritually motivated individuals in Bengaluru. The main aim of this phase was to evaluate the reliability and validity of the measurement data along with respondent's feedback on questionnaire wording, content flow and structure and finally to ensure that the time taken to complete the questionnaire was suitable to most potential participants to accurately provide answers.	14 sent -7 replies	April to May 2004
Questionnaire: Second phase of pilot test (online)	This phase was conducted online (is described in detail in section 4.11). Overall access to a web-based questionnaire via a link was tested on community websites of spiritual organisations in Bengaluru. The main aim of this phase was to test technicality, design and content of the web survey.	Received 40 replies after prior screening.	14th August 2015 and 28th August 2015
Final web-based survey	Link to the web-based survey was posted on selected organization's community websites for a limited time period along with links to contact the researcher for any information regarding survey participation.	Completed /started – 987 Completed/Started (screened out) – 362 Started(left before completing)- 296 Viewed only-1407 Total : 3052	13th January to 10th March 2016

4.16 Pilot Study feedback

After piloting online survey options and with the availability of valid e-survey licence option, web based survey was used which had the ability to collect the survey responses directly to the database without any interference, thus eliminating any transcription errors, and avoiding any introduction of human errors into it, and also preventing the possibility of multiple submissions. While selecting survey collection software, care was taken to ensure that there was support for single and multiple browsers, also ensured for multiple platforms support (Yun and Trumbo, 2000)- providing the ability to edit and apply logic (Kehoe & Pitkow 1997) . Thus this gave the ability to answer a large number of questions and allowed open ended questions to be captured (Yun & Trumbo 2000) and also had the ability to opt out anytime, and also had the ability to provide the completion feedback time scale options to let the respondents know how much they have completed (Smith 1997).

During pilot study, survey questionnaire were reviewed on a small scale basis with supervisory panel and also with peer colleagues for suggestions to eliminate any potential problems (Hunt et al. 1982). Feedbacks were incorporated and pilot survey were executed to verify every aspect of questionnaire including design, layout clarity, ambiguous questions, wording, flow of questions, editing, logic and use of standard buttons etc.   The pilot study was done in four stages, in the first stage questionnaires were sent to supervisors for critical review and comments. After receiving the suggestions and comments via both email and personal discussions - changes were made to add more details to the terminologies used in the questionnaire.   In the second phase, the questionnaire was sent to eight peer colleagues for their feedback based on their knowledge and experience (Dillman 2011). Further Forty questionnaires were administered for pilot study after prior screening from a

gathering of spiritually motivated individuals in Bengaluru. This included real experience and appearance of questionnaire in phase three and finally actual pilot testing was launched using the actual setting over the internet. Data collection procedure in database was verified for downloading, reviewing, following up with the incomplete questionnaires with respondents etc. Detailed analysis of this pilot study is discussed in section 4.11 . In the three phases the overall feedback was positive and changes were made regarding comprehension of phrases like the understanding term big data based digital media in study to 'interactive systems' and 'modern systems', questionnaire design, wording and flow of questions and the overall questionnaire was improved. In the phase four, final checks was carried out with a new group of peer researchers for detecting any additional problem that may have crept (Dillman 2011). The final questionnaire was reviewed and completed with no major problems.

4.17 Administration of the main survey

Survey posting included a message requesting participation from volunteers who were willing to participate in the study. The research needs, aim and purpose were briefed with the approximate time that would take to answer and provide a link to the questionnaire with options to fill online or offline survey. Paper questionnaires were made available at book stores in the spiritual organisations book-shop. An exact replica of this web based survey was also made available to the respondents who preferred the traditional method of answering via paper questionnaire design. The principles of both these were the same which included scales, multiple choice options, radial buttons, informed consent, with examples , rating formats , demographic items , contact information and comment sections

– entirely followed the same principles in both the types of survey (Dillman 2011; Lazar & Preece 1999; Witmer et al. 1999; Nonnecke et al. 2006). 3078 participants participated in the eleven weeks' time and the responses were stored in the database securely. After the eleven weeks the hyper-link to questionnaire was closed.

Data collection is a vital part of research design, and as explained at the beginning of this chapter, it involves using the most appropriate method for collecting data for further analysis. This study has adopted the survey questionnaire with rationale of its appropriateness. The two commonly used types of questionnaires are self-completed or interviewer completed (Bryman & Bell 2015). This study adopted the use of self-completed type of questionnaires based on the respondent's characteristics, sample size, question type and number of questions (Saunders et al. 2012). Furthermore this type of questions is the most commonly used method in most IS related research domains (Šumak et al. 2010; Roca & Gagné 2008; Park 2009; Lee et al. 2009).

To summarise, online questionnaire enabled the rationale with several advantages to benefit distribution and collection of responses for this study. Replica of web based online questionnaire was made available to the respondents who preferred paper based forms. Reponses were voluntary and it was made clear to the respondents they could leave the survey at any point of time without any obligation. Confidentiality and anonymity details were presented at the beginning- in the front page before answering any questions. The option to save and continue and the completion rate scale were presented to the respondents. General information along with the purpose of study was made available to

the respondents at the beginning of the questionnaire. A link was provided to contact, if the respondents needed to know more about the research.

Overall the online and offline questionnaires were used for a limited time period and responses were collected which included, completed, incomplete, invalid and dis-engaged responses which have been utilised in this study and this will be discussed in the next chapter. The next sections will discuss the statistical tool that is used in this study to analyse the data collected using the survey questionnaires.

4.18 Structural Equation Modelling (SEM)

The next chapter five is another important chapter which is concerned with data analysis of the gathered data through the survey. Chapter five aims to examine the findings from the identified statistical tests and techniques applied in this study. SEM is considered to be used to examine the proposed framework and to test the hypothesised relationships. This section discusses the rationale for using SEM as the most suitable method to perform data analysis.

SEM is a combination of statistical techniques offering a framework that can be employed to evaluate multiple variable relationships simultaneously (J. F. Hair et al. 2010; Byrne 2010). SEM provides a suitable framework for analysing data using various statistical tools (Kline n.d.; Hair et al. 2006). Along with SEM facilitating the researchers to examine the goodness of fit between the data being analysed and the model (Kline 2011), traditional multivariate techniques like factor analysis and multiple regression facilitates examining the effects of variables among each other(Hooper et al. 2008; Lowry & Gaskin 2014). However considering

the complexity of the conceptual framework (Chapter Three: Conceptual Framework 3.2 and Figure 3-1), simple analytic techniques such as factor analysis and simple regression are not sufficient to evaluate such complex relationships. SEM being the most preferred in IS research works (Janssens et al. 2008; Hooper et al. 2008) is considered to be a very powerful statistical tool for data modelling and analysis. It has been applied satisfactorily to a number of complex problems due to the capability to assess multivariate associations and evaluate complex relationships at multiple layers. Thus applying SEM statistical tools is considered to be the most suited to this study to evaluate both the measurement model and structural model in this research following rigorous statistical techniques and principles.

In SEM, associations that relate to latent and observed variables which are based on theoretical findings are identified as measurement model. SEM techniques and tools enables researcher to use confirmatory tool with CFA equations to evaluate and confirm possible relationships between multiple variables in addition to performing factor analysis (Byrne 2001; Kline 2011). After confirming satisfactory measurement model outcomes, structural models evaluations are conducted. Further depending on the goodness of fit adequateness, the hypothesised relationships can either be rejected or accepted (Byrne 2010).

Overall SEM process involves testing the data collected against the developed theoretical model to evaluate the extent to which the data fits the model. During this process repetitive parameter modifications and refinements can be performed following statistical principles to improve the fit. Since SEM is capable of assessing multivariate associations and evaluate

complex relationships at multiple layers, SEM is the most preferred in IS research works (Janssens et al. 2008).

Despite the several many advantages of using SEM , there are some criticisms cautioned by researchers to be vary of and they are the assumptions that have to be met prior to SEM being applied otherwise the outcome of SEM is likely to be not acceptable. Another common criticism is about SEM depending on correlational data and more often interpreting them as being causal (West et al. 1995). Despite the drawbacks, SEM is considered a very powerful statistical tool for data modelling and analysis. This study takes into account of the SEM limitations and its advantages and has verified the precautionary measures to ensure that the assumptions are satisfactorily met before applying SEM to research. The next two chapters will discuss the types of analysis involved in this study by applying SEM appropriately to evaluate the measurement model and structural model in this research following vigorous statistical techniques and principles.

This next chapter begins by addressing the preliminary analysis which includes 1) descriptive statistics, (2) reliability tests and (3) validity tests using advanced SEM statistical techniques and includes preliminary multiple-regression analysis and its assumptions such as checking for data normality, linearity and co-linearity assumptions. Further, after verifying the satisfactory outcome of EFA and CFA in order to assess the reliability and validity of the measurement model, main analysis involving examining the structural model and testing the hypotheses is executed.

4.19 Summary

Overall non-probability self-selection sampling was used, where individuals showed a desire to participate in the survey in response to participation request postings. Only individuals who fit the criteria were selected after screening. Based on the unit of analysis, only individuals who were spiritually motivated and users of digital media were chosen for the study. The questionnaires were in two parts, the first part focused on screening individuals, once satisfied with the first part, respondents were then requested to answer the second part (main questionnaire). The answers to self-completion questionnaires were automatically collected in the database, and individuals who preferred paper based were sent paper based questionnaires and those responses were then fed to the database manually.

This chapter focused on the research methodology which provided explanations regarding research process, design, questionnaire development, data collection techniques, research population and sampling.

The next chapter deals with data analysis approaches beginning with reliability and validity testing in Exploratory Factor Analysis (EFA) , this followed by more rigorous statistical analysis in succeeding sections of the next two chapters .

Chapter 5

DATA ANALYSIS 1:

DESCRIPTIVE- ANALYSIS

THE THESIS STRUCTURE

CHAPTER 1: Introduction	**Introduction**
CHAPTER 2: Literature Review	**Demographic Profile**
CHAPTER 3: Conceptual Framework	**Intensity of use via length of use**
CHAPTER 4: Methodology	**Descriptive Analysis of Measurement Scales**
CHAPTER 5: Data Analysis I Descriptive Analysis	**Normality Assumption Testing**
CHAPTER 6: Data Analysis II Structural Equation Modelling	**Reliability and Validity of Measurement**
CHAPTER 7: Discussion	**Validity of measurement Scales**
CHAPTER 8: Conclusion	**Preliminary Regression Analysis**
	Regression Analysis Results
	Summary

Source*: Adapted to this study from* (Kamarullzaman 2006)

5 Chapter Five Data Analysis 1: Descriptive Analysis

5.1 Introduction

The previous Methodology chapter four discussed the research philosophy, techniques and approach undertaken in research analysis and also provided the rationalisations on the adopted research methodology. This chapter is concerned with data analysis of the gathered data through the survey. This is an important chapter as it aims to examine the findings from the statistical tests and techniques applied in this study and for model formulation. To examine the proposed framework and to test the hypothesised relationships, SEM is used. The statistical analysis is performed using the AMOS (version 22.0) and the Statistical Package for the Social Sciences (SPSS-version 22).

This chapter will first address the preliminary analysis which includes 1) descriptive statistics, (2) reliability tests (Cronbach's alpha) and finally (3) validity tests.

The structure of this chapter is divided into several parts and is as follows. Part one and two include data analysis. Part one describes statistical analysis using SPSS for data editing and data coding procedures and includes checking for any incomplete, inaccuracy and for the presence of outliers in responses. Descriptive statistics of the collected data are presented to describe the demographic characteristics such as age, gender and education.

From part two onwards, advanced SEM statistical techniques is used for data analysis procedures to follow. In part two, data is subjected to preliminary multiple-regression analysis and verified for its assumptions such as checking for data normality, linearity and co-linearity assumptions.

Part three of this chapter will then finally focus on assessing the reliability and validity of the measurement data. Factor analysis such as EFA and Confirmatory Factor Analysis (CFA) is performed to validate the proposed measurement model (Hair et al. 2006). Since the proposed model is based on a strong theoretical background and is an empirical study, CFA is selected to confirm the identified factors in the conceptual model. In the stage of section three, initial reliability testing for the constructs and EFA using Maximum component analysis is conducted.

After the preliminary stage, measurement model's main analysis is performed where reliability and validity (convergent and discriminant) tests are executed and validated along with invariance tests, unidimensionality assessment of the model and common method bias tests (by examining the presence or absence of method bias) prior to undertaking further analytical analysis which involves examining the structural model and testing the hypotheses.

Overall this chapter begins with data screening and preparation based on the SEM procedures. Following this, measurement model will be subjected to EFA and CFA to

perform robust validation checks. After CFA, structural model analysis will be performed to examine the overall fitness of the proposed model. Finally, the hypothesised relationships among the latent constructs will be examined. Here the structural model is examined based on path analysis using SEM and the relationship model is analysed to test the hypotheses. Finally, overall summary and conclusions are provided.

Part1

5.2   Demographic Profile

In methodology chapter four, it is described that all the individuals who took part in the data collection survey were spiritually motivated and were users of digital media for their SGS. Thus, all the actual candidates who took part in the survey were the ones who have experienced the capabilities of digital media for their SGS for at least six months. Thus, 'respondents' in this chapter will be interchangeably used for individuals who are spiritually motivated and are also users of digital media which are based on big-data.

The main demographic profile of this study comprises of age, education level and gender of respondents. Multiple choices questions was designed in the questionnaire for the respondents to select their respective age, gender and corresponding education level using nominal and ordinal scales.   Results of the demographic characteristics of respondents are reported in Table 5:1.

Table 5:1 Demographics and descriptive statistics

Characteristics	Total	Per cent
Gender		
Male	502	50.9
Female	485	49.1
Age		
<=17	12	1.2
18-30	162	16.4
31-40	419	42.5
41-50	178	18.0
51-60	150	15.2
>=60	66	6.7
Education		
No Schooling completed	8	0.8
High school graduate, diploma or the equivalent	81	8.2
College graduate	72	7.3
Trade/technical/vocational training	47	4.8
Bachelor's degree/ Under-graduate	375	38.0
Master's degree/ Post-graduate	250	25.3
Professional degree	104	10.5
Doctorate	50	5.1
Devices		
Smart devices	658	
Desktop/Laptop with n/w connection	322	
Paper offline	6	

Source: Created by the author of this thesis

Descriptive statistics provides a summary of the study population it is found that the respondents were slightly between middle and older aged males, between 31 to 50 years old, which were quite well educated with a minimum of under-graduate qualification. Most of them have shown the preference of using smart devices or desktop/laptop with network connection.   A bivariate analysis was performed with an aim to examine if there were any major differences between the respondents demographic backgrounds based on the length of their commitment to use digital mediums for spiritual practice in next section.

Table 5:2 Intensity of use via length of use

		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Less than 6 Months	32	3.2	3.2	3.2
	6 months to less than 1 year	84	8.5	8.5	11.8
	1 year to less than 3 years	293	29.7	29.7	41.4
	3 years to less than 5 years	173	17.5	17.5	59.0
	5 years or more	405	41.0	41.0	100.0
	Total	987	100.0	100.0	

Source: *Created by the author of this thesis*

5.3   Intensity of use via length of use

Intensity of using the digital media for SGS is measured by the length of use / amount of involvement / commitment in using the digital media for their SGS (Mishna et al. 2012; Schiller 2016; Mahoney et al. 2005).

Table 5:2 illustrates the respondents' amount of commitment in using the digital media in terms of the number of months to years.

Length of modern interactive systems usage

- Less than 6 Months
- 6 months to less than 1 year
- 1 year to less than 3 years
- 3 years to less than 5 years
- 5 years or more
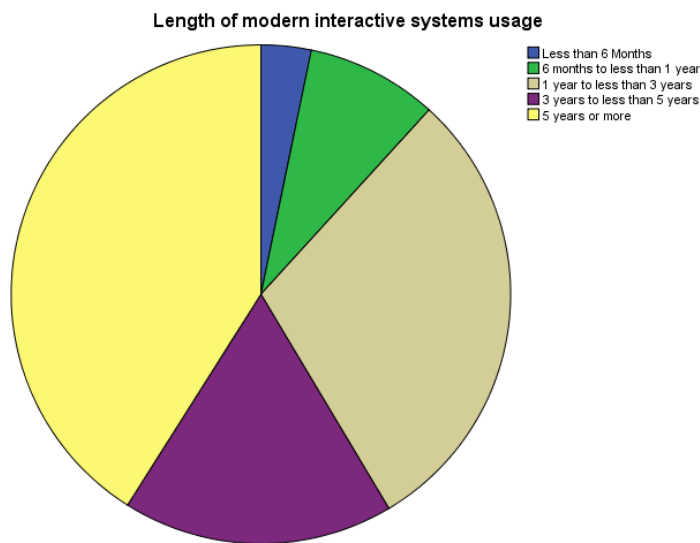
Source*: Created by the author of this thesis*
Figure 5-1 Intensity of use (Pie Chart)

5.3.1 Length of involvement >5 years vs. <5 years

In the above pie chart the length of commitment of using the digital media for their SGS, it is seen that there are two larger groups of respondents who participated fall into one of the either- greater than 5 years or less than 5 years of involvement.   The majority of participants are involved with > 5 years that is individuals who are committed to this experience with greater intensity than those who have been involved for less than 5 years. From previous literature (Hughes & Palen 2009; Joinson 2008; Kam & Riquelme 2007), it may be likely that there exists some differences among these two groups.

T-tests were thus performed to verify if there are any differences in demographic backgrounds and the commitment to use for varying lengths of time between > 5 years and < 5 years. .**Error! Reference source not found.** Summarises the t-test results.
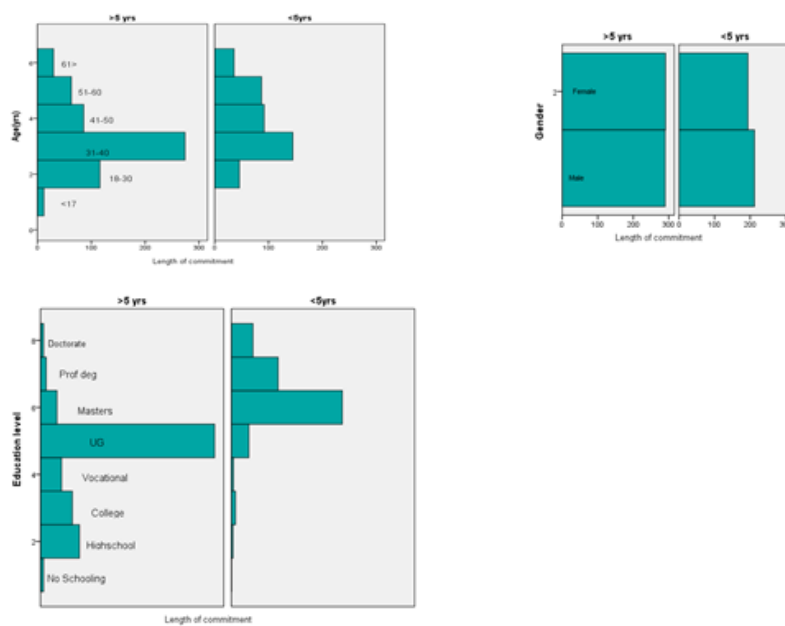
Source*: Created by the author of this thesis*

Figure 5-2 Independent Samples Test

Table 5:3 Group statistics

	Expc at	N	Mean	Std.Deviation	Std.Error Mean
Gender	1	581	1.50	0.50	0.021
	2	406	1.48	0.50	0.025
Age	1	581	3.28	1.119	0.046
	2	406	3.81	1.160	0.058
Edu	1	581	4.40	1.335	0.055
	2	406	6.21	1.079	0.054

Source: *Created by the author of this thesis*

The results of t-test demonstrated that there are no major differences among gender differences, however, some significant differences were seen between the two groups in terms of age and education, as shown in Table 5:3 Group statistics

Table 5:3 Group statistics

	Expc at	N	Mean	Std.Deviation	Std.Error Mean
Gender	1	581	1.50	0.50	0.021
	2	406	1.48	0.50	0.025
Age	1	581	3.28	1.119	0.046
	2	406	3.81	1.160	0.058
Edu	1	581	4.40	1.335	0.055
	2	406	6.21	1.079	0.054

Source: *Created by the author of this thesis*

The results demonstrate that the respondents with > 5 years of experience are 31-40 years of age and may have a greater influence of using digital media towards their success in

spiritual goals due to the capabilities like having constant easy access to spiritual content and convenient access to group discussions who are committed to similar long term interests; this may have developed as a result of the length of digital media usage for SGS.

With respect to educational level of respondents, the results demonstrate that respondents with > 5 years of experience have greater educational backgrounds, greater than the graduates and post graduates than the group with respondents with < 5 years of experience. This result was anticipated, as graduates are assumed to use digital media more often and are adapt to their digital systems for various purposes due to the rich capabilities of the digital media. They are expected to be well experienced and utilise the capabilities to the greatest extent either for learning, practicing or maintaining relationship with their spiritual subject; hence, they may have greater experience and may have greater vitality. The results imply that the respondents with > 5 years of experience are educated and may have a greater influence of using digital media towards their success in spiritual goals due to their learning abilities developed through education and may have constant access to digital media for their jobs or further studies; this suggests that spiritually motivated individuals will have access to utilise the capabilities to the greatest extent either for learning, practicing or maintaining relationship with their spiritual subject ; hence, they may have greater experience and may have greater vitality.

Thus the result suggests that there is a familiarity in association with the digital media usage pattern between >5 years and < 5 years of use. Lengthier committed users are found to be

more experienced: the majority of them have been using the digital media for spiritual practice for greater than 5 years. Nevertheless, respondents using digital media for < 5 years for their spiritual practice could be considered as less experienced and may be using with lesser intensity towards spiritual practice, with the majority using for last 5 years or less.

To summarise, the results in this section shows the respondents profile in more detail. The results demonstrate the different patterns of influence of digital media on spiritual practice between respondents who are committed to use digital media for longer time > 5 years and < 5 years commitment for spiritual strivings. The long term committed respondents were slightly older and were found to be mostly graduates. From the findings, respondents are expected to have greater influence towards spiritual practices depending on the longer length of commitment and involvement in using the digital media.

Part2

5.4   Descriptive Analysis of constructs

This part presents the measurement scales' descriptive analysis for each construct used in this study. In chapter three, five constructs were described in the proposed model: perceived media richness (PMR), perceived real-time presence (PRT), perceived unobtrusiveness (PUob), SGS (SGS) and vitality. Detailed descriptions of the scale items are reported which are questions in questionnaire, data percentage, standard deviations,

skewness and kurtosis for each scale (see **Error! Reference source not found.** to Table 5:8).

The descriptive discussions for each of the constructs and items are mainly based on the

mean scores (to measure central tendency).

5.4.1 Perceived Media Richness results

Perceived media richness construct consists of six items to capture certain capabilities of the

digital media so as to increase the level of interactivity of a medium as perceived by the

respondents in relation to individuals' spiritual practices. This measurement scale contains

an explanation of digital media' in relevance to study, that is, it is considered as a medium

or channel that is used for interacting, such as smartphone, laptop, and pad with

connectivity to access web, internet and cloud services, blogs, messaging etc. particularly in

terms of using this medium for everyday goal strivings like looking for information,

participating in group discussions etc.. The PMR descriptive analysis results are shown in

Table 5:4.

Table 5:4 Measures for Perceived Media Richness

Items		Response Scale (%)					Scale Descriptive			
		(1)	(2)	(3)	(4)	(5)	Mean	SD	Skewness	Kurtosis
PMR1	This type of interactive systems* allows my communication partner and me to give and receive timely feedback	3	7.7	15.6	34.8	38.9	3.85	1.067	-.832	0..62
PMR2	This type of interactive systems allows my communication partner and me to tailor our messages to our own personal requirements.	3.3	9.4	17	39.1	31.1	3.86	1.149	-.821	-.164
PMR3	This type of interactive systems allows my communication partner and me to communicate in a variety of different cues (such as emotional tone, attitude, or formality).	4.7	9.1	18.7	30.8	36.7	3.95	1.097	-.873	-.039
PMR4	This type of interactive systems allows my communication partner and me to use rich and varied formats such as video, message, audio, digital text etc.	3.1	8.9	17.3	31.4	39.2	3.86	1.120	-.810	-.155
PMR5	I am able to easily explain things using these types of systems to interact.	3.9	10.1	17.3	33.8	.34.9	3.88	1.095	-.850	-.012
PMR6	This type of interactive systems helps me to communicate quickly.	3.5	9.6	16.5	36.1	34.2	3.99	1.062	-.974	.303

Notes. *Interactive systems are systems that are used for interacting such as smartphone, laptop, and ipad with connectivity to access web, internet and cloud services, blogs, messaging etc.

Table 5:5 Measures for Perceived Real-time Presence

		Response Scale (%)					Scale Descriptives			
Items		(1)	(2)	(3)	(4)	(5)	Mean	SD	Skewness	Kurtosis
PRT1	The interactive system * is available for use **whenever** I need it.	2.7	6.4	11.7	36	43.3	4.11	1.02	-1.19	0.95
PRT2	The interactive system is available for use **wherever** I need it.	3.2	5.2	10.1	42.8	38.7	4.09	0.99	-1.29	1.52
PRT3	I am able to use the interactive system **anytime.**	2.8	5.7	9.9	33.7	47.8	4.18	1.01	1.01	1.37
PRT4	The interactive system is accessible **everywhere**.	2.9	9.4	16.2	33.1	38.3	3.94	1.08	1.08	-.02

Notes. *Interactive systems are systems that are used for interacting such as smartphone, laptop, and ipad with connectivity to access web, internet and cloud services, blogs, messaging etc.

Table 5:6 Measures for Perceived Unobtrusiveness

Items		Response Scale (%)					Scale Descriptives			
		(1)	(2)	(3)	(4)	(5)	Mean	SD	Skewness	Kurtosis
PUob1	My attention does not need to be focused on the interactive system the whole time.	5.6	11.1	14.8	32.5	36.0	3.82	1.194	-.836	-.269
PUob2	I don't have to concentrate fully on the interactive system when using it.	5.5	13.9	17.8	35.8	27.1	3.65	1.173	-.629	-.527
PUob3	I don't need to be intensely absorbed when using the interactive system.	7.0	15.6	17.5	28.7	31.2	3.61	1.263	-.550	-.825
PUob4	The usage of the interactive system does not disrupt me from other activities.	8.1	14.1	12.8	31.1	33.9	3.69	1.290	-.707	-.678
PUob5	The interactive system does not distract me too often.	6.9	11.3	16.6	35.6	29.6	3.70	1.202	-.747	-.368
PUob6	The interactive system does not require continuous attention.	6.2	10.0	13.6	39.9	30.3	3.78	1.162	-.901	.008

Notes. *Interactive systems are systems that are used for interacting such as smartphone, laptop, and ipad with connectivity to access web, internet and cloud services, blogs, messaging etc.

Table 5:7 Measures for Spiritual goal strivings

Items		Response Scale (%)					Scale Descriptives			
		(1)	(2)	(3)	(4)	(5)	Mean	SD	Skewness	Kurtosis
SGS1	Would success at everyday goal strivings related to increasing knowledge of spiritual subject * tend to take you closer to the aspired future?	2.3	11.3	25.6	20.6	40.1	3.85	1.140	-.540	-.805
SGS2	Would success at everyday goal strivings related to maintaining and developing relationship with the spiritual subject ** tend to take you closer to the aspired future?	3.4	16.1	24.0	24.9	31.5	3.65	1.178	-.394	-.927
SGS3	Would success at everyday goal strivings related to exercising spiritual beliefs *** tend to take you closer to the aspired future?	8.7	17.3	21.0	22.1	30.9	3.49	1.319	-.375	-1.064

Notes:

* Possible Future I: Knowledge: Increasing one's knowledge of a Higher power or spiritual subject.

**Possible Future II: Feeling: Maintain and develop relationship with a Higher power or spiritual subject in daily life.

***Possible Future III: Practice: Exercise spiritual beliefs or attempt to live fully in daily life.

Table 5:8 Measures for Vitality well-being

		Response Scale (%)					Scale Descriptives			
Items		(1)	(2)	(3)	(4)	(5)	Mean	SD	Skewness	Kurtosis
V1	I feel alive and vital.	.2	7.7	20.6	31.7	39.8	4.03	.96	-.636	-.601
V3	Sometimes I feel so alive I just want to burst.	4.2	6.0	14.6	35.6	39.7	3.97	1.08	-1.106	.679
V4	I have energy and spirit.	2.2	9.5	17.3	32.5	38.4	3.95	1.07	-.821	-.141
V5	I look forward to each new day.	2.3	9.1	19.4	28.3	40.9	3.96	1.09	-.796	-.253
V6	I nearly always feel alert and awake.	3.3	8.9	16.3	35.6	35.9	3.92	1.08	-.890	.086
V7	I feel energized.	3.7	6.8	20.0	29.8	39.7	3.95	1.09	-.892	.090

Notes (Ryan & Frederick 1997; Bostic et al. 2000)

During data collection, respondents were asked questions based on their perception of their experience for each scale item, and were asked to provide the appropriate answer using a five-point Likert scale ranging from '1' ('strongly disagree) to '5' ('strongly agree).   This data was gathered for data analysis and evaluated for each item mean score, where it indicated that the respondents demonstrated rather strong agreement that digital media offered respondents the capability to communicate quickly enabling them to utilise for quick clarification or receive faster feedback towards pursuing their spiritual practices (M=3.99, SD=1.1), instead of having to wait longer. Traditional ways of clarification by receiving feedback was through face to face communication which was possible by visiting spiritual centres or visiting 'satsang's' (spiritual gatherings) where like-minded people discuss on a spiritual topic. Such face to face experiences is matched by the digital media capabilities, as the results of the respondents have demonstrated that they strongly agree that digital media enables communication support in a variety of different cues enabling them to experience emotional tone, attitude, formality similar to face to face interactive experience (M=3.95, SD=1.1). Additionally, the results demonstrated that the digital media helps them to explain things easily through it, thus enabling them to clarify and communicate with less effort on spiritual matters (M=3.88, SD=1.1). Further respondents have agreed that the digital media helps them to tailor its capabilities to their personal requirements, enabling them to personalise the information and adapt the features to meet their personal spiritual goals (M=3.86, SD=1.15); also have agreed that it enables them to interact in various formats such as video, message, audio etc., enabling an increase in effectiveness of the communication experience relevant to spiritual practices (M=3.86, SD=1.12); further they

have agreed that they are able to receive and give feedback in time rather than waiting for them to visit to their spiritual guide or physical gatherings to communicate topics of spiritual interest for clarification or for information seeking. Timely feedback enables respondents to experience almost real-time feedback which can be effective in pursuing spiritual practices without delay (M=3.85, SD=1.07).

The results of this section indicate that capabilities of digital media enables an increase in level of interactivity and provides a higher degree of richness in media capabilities for effective communication not only for providing high speed response and timely feedback but also because it offers interaction in various data languages, supporting multiple cues, imitating face to face interaction and have the ability to tailor individual specific spiritual needs and practices. Thus adding more value to the experience and feelings on the purpose of using the digital media for SGS - the higher their involvement will be and therefore influence SGS like gaining knowledge and to maintain connection with spiritual subject. However, it should be noted that use of digital media may also be expose some negative impacts which are not evaluated in this study, for example, dependence on the digital media for SGS could cause problems of over-reliability on the media itself etc.

5.4.2 Perceived Real-Time presence results

Table 5:5 shows the results of the descriptive statistics of PRT. Four items were measured for respondents perception of PRT experience by using a five-point Likert scale, and an explanation of digital media' in relevance to study, similar to PMR.

Results of the data analysis on PRT mean scores indicates that the majority of the respondents strongly agree that they are able to use the digital media at any-time enabling them to obtain information or interact with other data sources without the limitation of day or night, (M=4.18, SD=1.01). In particular, they felt that the digital media allowed them to interact whenever they needed it at any point of time; online or offline, (M=4.11, SD=1.02). Furthermore, the respondents also agreed that the digital media allows them to have access to information or interact with other data sources without the limitations of time (M=4.09, SD=0.99) this enables respondents to have an increased insight to information irrespective of location (at work or at home or airport or hospital etc.). Finally respondents somewhat agreed that accessibility to digital media is possible everywhere, the results somewhat indicate that accessibility to information or interact with other data sources is almost possible everywhere (M=3.94, SD=1.08).

The results in this section demonstrates, that respondents are able to utilise the capabilities of digital media at anytime and anywhere; enabling the respondents to have an increased insight to information; providing opportunity for self-directed learning without location or time constraints (Joiner et al. 2006) and providing an increased interaction possibility for utilising towards their spiritual practices.

Although information insight is very useful, it should be noted that use of digital media at anytime, anywhere may also have some negative impacts like inability to focus on one topic when discussions are happening at real-time, interleaving simultaneous messages at real-

time may cause distraction; sometimes this real-time capability may also create dependability and individuals may experience over-reliability to this capability; sometimes may create issues such as 'fear of missing out' on information, addiction, such other issues will need more investigation and this will be discussed in more detail in chapter eight.

5.4.3 Perceived Unobtrusiveness results

Table 5:6 shows descriptive analysis of PUob construct. Six items were measured by a five-point Likert scale on respondent's perception of experience of the items in this scale in relevance to study, similar to PMR.

Respondents mean scores indicated a strong agreement (M=3.82, SD=1.194) that they did not have to focus on the digital media continuously during interaction (M=3.78, SD=1.162), this demonstrates that less mental energy is used and all of the attention related resources are not consumed by the object of attention that is interactive system itself (thus avoiding heavy cognitive over loads); and are more attention free (supporting earlier studies (Rogers et al. 2005). This enables respondents to have more mental energy to process the information required for their spiritual practices.

Furthermore, the respondents also agreed that the digital media' does not distract them often (M=3.70, SD=1.202) allowing them to continue processing information for their spiritual needs. In addition respondents have largely agreed that their interactive system does not disrupt them from other activities (M=3.69, SD=1.290), demonstrates that users are not getting unduly distracted by the interactive system and is not interfering with their

other activities. This enables them to work in a particular mode to continue working on their spiritual practices and experiences. Finally respondents agreed that when using the interactive system, full concentration is not required (M=3.65, SD=1.173) and also do not need to intensely absorb in interactive system for information (M=3.61, SD=1.263). This clearly demonstrates having to do less effort and pay little attention to obtain access to information for processing for their spiritual practices rather than tediously focusing on digital media networks (embedded in the environment) around us, often requiring us to make effort and concentrate on interactions along with our daily lives. To summarise this capability of the interactive system enables respondents to put less effort and have more time to obtain and process information for their spiritual practices.

The results of this section demonstrates that capabilities of digital media allows the respondents to obtain and have access to information without putting much effort mentally or physically as technologies are embedded in the environment around us requiring very less energy for interactions as we go about our daily lives. In addition to this, this also is seen to be benefiting the respondents from having less disruption to their daily goals.

Although unobtrusive construct is seen as enabling users to interact with less effort, less disruptive and providing easier forms of communication adaptability with the needs of the respondents supporting in varying settings with other computing devices diffused in the physical surrounding, it also has the potential to distract due to multiple input and output

cues that will be constantly signifying the system in such an environment can get annoying and distracting.

5.4.4   Spiritual goal strivings results

Descriptive statistics for the SGS construct are reported Table 5:7. Relevant measures were based on assessing the helpfulness of interactive system capabilities on personal goal strivings of spiritual nature, which are considered intermediate or lower level goals representing everyday goals (Sheldon & Kasser 1995; Emmons et al. 1998a; Emmons 1989; Emmons 1986). In essence, it is what the individuals are trying to do in their everyday behaviour (Emmons 1989; Sheldon & Kasser 1995) towards bringing about possible futures or higher-level goals(Markus & Ruvolo 1989; Hyland 1988; Sheldon & Kasser 1995; Read & Miller 1989). Based on this, a measurement scale was adapted comprising of three items (which was previous adopted scale by (Sheldon & Kasser 1995), to assess the helpfulness of everyday goal strivings of spiritual nature relevant to bringing about possible higher-level goals like gaining knowledge of spiritual subject.

Respondents answers from their experience indicated their level of agreement for each item, measured by a five-point Likert scale ranging from '1' ('not at all helpful) to '5' ('very helpful). As shown in Table 5:7 the mean scores of the items were shown to be between 3.49 and 3.85. The respondents indicated very strong agreement (M=3.85, SD=1.14) that their everyday goal strivings of spiritual nature were found to be very helpful towards increasing knowledge of their spiritual subject. They also claimed that they strongly agree that their everyday goal strivings of spiritual nature were helpful toward maintaining and

developing relationship with the spiritual subject (M=3.65, SD=1.178). Further, results also establish that their everyday goals were helpful for their spiritual practices (M=3.49, SD=1.319).

As for overall evaluation, individuals in this study felt that their success in everyday goal strivings of spiritual nature as being quite helpful to achieve their higher-level spiritual goals, thus enabling a coherence of lower-level goals with higher-level goals leading to personality integration as suggested by (Sheldon & Kasser 1995) where aspects of individual personality when cohered with each other (Sheldon & Kasser 1995) is known to create a harmonious whole personality.

5.4.5 Vitality Well-Being scale results

The descriptive statistics regarding the Subjective Vitality Scale (Ryan & Frederick 1997) where original scale is a 7-item scale to measure vitality and another version was developed by Bostic et al.,(2000) containing six items- using CFA which was seen to have worked better than the original scale (Bostic et al. 2000).

In the study, six item version is adopted, responses to each item indicated their level of agreement to which it is generally true in their lives which was measured by a five-point liker scale ranging from '1' ('strongly disagree) to '5' ('strongly agree). Mean score was calculated for each item as shown in Table 5:8, respondents demonstrated rather strong agreement that they feel alive and vital (M=4.03, SD=0.964), indicating that respondents' generally experienced aliveness and felt energetic, reflecting manifestation of eudemonic

well-being (Ryan et al. 2013). Also respondents demonstrated a strong agreement with the feeling of wanting to burst at times indicating lots of positive energy experienced in respondents daily lives (M=3.97, SD=1.08); respondents also agreed that they look forward to everyday (M=3.96, SD=1.09) indicating the feeling of newness in their everyday lives; also respondents have equally agreed on similar terms of having energy and spirit (M=3.95, SD=1.07) and feeling energised (M=3.95, SD=1.09) which reflects sense of aliveness and seems to be positively correlated with satisfaction with life, self-actualization (Ryan & Frederick 1997) reflecting eudemonic well-being (Ryan et al. 2013). Finally respondents have agreed that they almost feel alert and awake mostly (M=3.92, SD=1.08) indicating a sense of vitality where respondents are attentive and positively vigilant at most times.

For an overall evaluation it can be construed that the respondents established relatively higher-level of vitality experience in their everyday lives which are considered to reflect eudemonic well-being (Ryan et al. 2013). These findings correspond with previous findings in several psychology literatures.

5.5   Normality Assumption Testing

Prior to conducting the SEM analyses to test the research hypotheses, an assessment of the normality of data is an important necessity, because normal data is an underlying assumption in many statistical procedures (Joseph F Hair, Black, Babin & Anderson 2010).

Normality discusses the amount of sample data distribution corresponding to a normal distribution (Joseph F Hair, Black, Babin & Anderson 2010). Any variation from this normal distribution could invalidate statistical tests (Kline 2005; Byrne 2010; Joseph F Hair, Black, Babin & Anderson 2010). In this study, as mentioned in methodology chapter, SPSS version 22 is used to test the normality of data using skewness, which measures symmetry of data distribution (Tabachnick & Fidell 2006; Tabachnick & Fidell 2007) and kurtosis, which measures the relative shape of distribution i.e. peaked or flattened in comparison to normal distribution (Joseph F Hair, Black, Babin & Anderson 2010).

As a general criteria, suggested by (Bryne 1998; Yuan & Bentler 2006; Kline n.d.; Kline 2005), that skewness values are to be above an absolute value of 3.0 and other researchers have suggested the cut-off criteria is absolute value of 2.0 is considered acceptable for normal distribution of data (Field 2009; Trochim 2005; Andy 2000; Gravetter & Wallnau 2013)**.** For measuring kurtosis, cut-off criteria values > 7.00 indicate extreme non-normality and in some cases > 10 is considered as cut-off for non-normality (Kline 2011).

With the above criteria's as guidelines, all the results for the five constructs in Table 5:4**Error! Reference source not found.** to Table 5:8 shows skewness and kurtosis values of less than 1.7. This demonstrates that every variable measured is within the acceptable range and below the cut-off criteria, thus it can be established that all the items are normally distributed and no further treatment of data was required. A number of other tests can also be performed in order to test whether the data is normally distributed such as

Kolmogorov-Smirnov, Shapiro-Wilk tests and scatter plots which will be discussed in section 5.8.4.

This section summarises the descriptive analysis of all the measurement variables and includes all means, standard deviations, skewness and kurtosis. The subsequent parts of this chapter discuss and interpret the reliability and validity results of all the variables using various tools and approaches.

Part3

5.6   Reliability and Validity tests

Previous section focused on the findings of the descriptive analysis. This section will focus on assessing the reliability and validity of the measurement data. Igbaria et al. (1995), suggests the following three phases of testing to assess the constructs' reliability and validity (Igbaria et al. 1995). Phase 1 of testing includes, testing the reliability of the scale items where items are dropped from the constructs' if they display low reliability. Items are dropped one by one at a time and tested to ensure reliability of items until the construct is sufficiently high reliability before proceeding to the next stage. Phase 2 of testing includes testing the measurement model properties by examining reliability, internal consistency, and AVE and factor loadings. At this stage, some items may be dropped where there is seen any non-significant paths during analysis. Phase 3 of testing includes examining Structural Equation Modelling (SEM) and its significance properties.

After the initial reliability assessment and ensuring that only reliable constructs are used for further measurement model analysis, measurement properties of the constructs are tested and later structural paths are tested. At this stage, measurement model is examined for item reliability and its internal consistency, AVE measures and factor loadings. At the final stage structural model is examined and analysis is discussed in the subsequent chapters.

5.6.1   Reliability test

For reliability testing, researchers have suggested a two-step approach according to Hair et al.,(2010) (Joseph F Hair, Black, Babin & Anderson 2010). This involves first testing the reliability and validity of the measurement constructs' generally known as measurement model and following this step satisfactorily, to then proceed to second step of testing the structural model.

Reliability test simply refers to measuring every constructs' overall consistency (Boudreau et al. 2001). This basically ensures replicability that is, researches should be able to repeat the research to obtain same or similar results under similar conditions (Straub et al. 2004a; Joseph F Hair, Black, Babin & Anderson 2010).

There are several ways to perform reliability tests and this research uses inter-item consistency reliability (Cronbach's alpha (α) coefficient)) to measure reliability   (Boudreau et al. 2001; Straub 1989; Straub et al. 2004b). These states that large Cronbach's α coefficient values are usually signs that indicate that measures are quite reliable. This way of

measuring reliability is widely appreciated by academic researchers due to its accessibility and clarity.

Although there is not any critical cut-off score specified for Cronbach's α value, a score of 0.70 is generally agreed upon as minimum allowed score, although in some cases 0.60 is seen to be acceptable (Hair et al. 1998). Reaching this limit establishes very little or no systematic errors to exist within the data, enabling generalisations to be derived from the results.

Table 5:9 Results of Reliability and Validity tests presents the reliability test results of the measurement scales which were calculated using SPSS 22.0. The result includes Cronbach's alpha coefficients and item-to-total correlations.

The Cronbach's alpha for each construct shows high degrees of internal consistency > 0.80. A highest Cronbach's alpha value is seen to be 0.902 for SGS and vitality scale being the next highest at 0.89. While PMR indicates next highest Cronbach's alpha value at 0.872 followed by PUob with a Cronbach's alpha value of 0.856, and finally, PRT construct shows the lowest Cronbach's alpha value of 0.809. In total, two items were deleted from PRT and PMR construct, which had item-to-total correlation of less than 0.50. This process of item deletion was done starting with the lowest score of item-total correlation value- at a time, and the reliability was re-tested and the results are shown in Table 5:9Table 5:9.

Table 5:9 Results of Reliability and Validity tests

Items	Item-total correlation	Cronbach alpha
Perceived Media Richness		
PMR1 This type of interactive systems* allows my communication partner and me to give and receive timely feedback	.677	
PMR2 This type of interactive systems allows my communication partner and me to tailor our messages to our own personal requirements.	.660	
PMR3 This type of interactive systems allows my communication partner and me to communicate in a variety of different cues (such as emotional tone, attitude, or formality).	.700	.872
PMR4 This type of interactive systems allows my communication partner and me to use rich and varied formats such as video, message, audio, digital text etc.	.621	
PMR5 I am able to easily explain things using these types of systems to interact.	.706	
PMR6 This type of interactive systems helps me to communicate quickly.	.667	
Perceived Real-time presence		
PRT1 The interactive system * is available for use **whenever** I need it.	.679	.809

PRT2	The interactive system is available for use **wherever** I need it.	.568	
PRT3	I am able to use the interactive system **anytime.**	.636	
PRT4	The interactive system is accessible **everywhere**.	.623	

Perceived Unobtrusiveness

PUob1	My attention does not need to be focused on the interactive system the whole time.	.675	
PUob2	I don't have to concentrate fully on the interactive system when using it.	.638	
PUob3	I don't need to be intensely absorbed when using the interactive system.	.617	
PUob4	The usage of the interactive system does not disrupt me from other activities.	.637	.856
PUob5	The interactive system does not distract me too often.	.661	
PUob6	The interactive system does not require continuous attention.	.642	

Spiritual goal strivings

SGS1	Would success at everyday goal strivings related to increasing knowledge of spiritual subject ** tend to take you closer to the aspired future, further from it, or is it unrelated?	.809	
SGS2	Would success at everyday goal strivings related to maintaining and developing relationship with the spiritual subject *** tend to take you closer to the aspired future, further from it, or is it unrelated?	.853	.902

SGS3	Would success at everyday goal strivings related to exercising spiritual beliefs **** tend to take you closer to the aspired future, further from it, or is it unrelated?	.765	
Vitality well-being			
V1	I feel alive and vital.	.706	
V3	Sometimes I feel so alive I just want to burst.	.660	
V4	I have energy and spirit.	.735	
V5	I look forward to each new day.	.760	.890
V6	I nearly always feel alert and awake.	.717	
V7	I feel energized.	.673	

Notes. * Interactive systems are systems that are used for interacting such as smartphone, laptop, and ipad with connectivity to access web, internet and cloud services, blogs, messaging etc. ** Possible Future I: Knowledge: Increasing one's knowledge of a Higher power or spiritual subject. ***Possible Future II: Feeling: Maintain and develop relationship with a Higher power or spiritual subject in daily life. ****Possible Future III: Practice: Exercise spiritual beliefs or attempt to live fully in daily life.

5.7   Validity test

Validity tests are performed to examine the extent to which all the items of the measurement construct are measuring what they are supposed to measure. And to validate that the items are not measuring other constructs (Hair et al. 1998). As mentioned in methodology chapter it is important to evaluate construct validity, for which it is necessary to examine the two validity tests that is convergent and discriminant validity tests (Trochim 2006). Convergent validity tests are referred to tests that are performed on items to ensure that they measure their intended variable only, and are not measuring any other variable in the model. Discriminant validity tests are referred to tests performed on items to confirm that the constructs in the model measures as a whole; and is differing from the other variables (Straub 1989). In this study validity tests are evaluated by performing EFA. The results obtained will be discussed in the following paragraphs.

5.7.1   Exploratory Factor Analysis

Exploratory factor analysis (EFA) is explored by researchers for a variety of reasons and purposes. In this study, factor analysis techniques are used to support the validity tests of the measurement scale (Worthington & Whittaker 2006). EFA is used to examine if all the items are loaded as exactly as they are expected to be. Along with this, EFA is also used to assess relationships among the variables of a scale to be represented in a simpler way (Byrne 2010; J. F. Hair et al. 2010). Other than this, EFA is also used by researchers to help them examine uncertain links between latent and observed variables (Byrne 2010), by doing

this researchers are provided with more information to understand the minimum number of factors required to represent the data (Hair et al. 2006).

EFA is considered absolutely necessary for evaluation of newly-developed scales scale in particular (Joseph F Hair, Black, Babin & Anderson 2010). In this study, the measurement items has been adopted and adapted to the current study from the already developed scales. Reliability testing could have been sufficient to verify if the scales worked as expected. However EFA was performed to understand this study's data before going further in the analysis (Worthington & Whittaker 2006). So as to help to assess and examine the validity of the measures in the study's setting as it did with the original specification settings where items were developed.

Consequently, a total of twenty six items were used in EFA. Used Promax -Kaiser Normalization rotation method and Maximum Likelihood Extraction Method in order to extract the constructs from the large total items to a smaller set of variables (Joseph F Hair, Black, Babin & Anderson 2010); and which showed sufficient Eigen values and variance (Nunnally & Bernstein 1994) . As suggested by Nunnally and Bernstein (1994) before beginning with this factor analysis techniques, data needs to be assessed for factorability of correlation matrix from individual and overall variable perspectives (Joseph F Hair, Black, Babin & Anderson 2010). For this examination of suitability of survey data-factor analysis, KMO sampling adequacy and Bartlett's test of Sphericity measures were evaluated for the existence of statistical significance correlations between the variables (Joseph F Hair, Black,

Babin & Anderson 2010). These tests can be very sensitive to sample size and may be very difficult to detect for large sample size. As shown in the Table 5:10 which indicated the amount of common variance is 0.948 and this is exceeding the minimum recommended value of 0.6 (Pallant 2010; Field 2009); According to Hair et al., (2010) and Tabachnick & Fidell, (2014), KMO value of .80 is meritorious; Value of .70 and above is middling; .60 or above is considered mediocre; .50 or above is acceptable but poor; and below .50 is unacceptable (J. F. Hair et al. 2010; Tabachnick & Fidell 2013).

Barlett's test of Sphericity (BTS) value as significant at p=.000 indicating that the non-zero correlations exist and thus these findings show that the survey data is suitable for factor analysis and can proceed to the next stage (Hair et al. 1998).

Table 5:10 KMO and Bartlett's Test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.948
Bartlett's Test of Sphericity	Approx. Chi-Square	13256.554
	df	300
	Sig.	.000

EFA testing using SPSS version 22.0 resulted in capturing five distinct factors from the pool of twenty six items which included all the dependent and independent variable items together. After examining the item loadings, correlation matrix and factor solutions, a total of two items were deleted (PMR7 and PRT5) and these deleted items were no longer used for any subsequent analyses. These items were deleted one at a time because some items confirmed low loadings below 0.40 and some cross loadings were seen on more than one factor (J. F. Hair et al. 2010).

The remaining items after dropping these two items, EFA was again performed and a final five factor model was captured where all the items factor loadings were above 0.40 and had low cross loadings of below 0.40 and communalities less than 0.50. Table 5:10 to Table 5:15 shows the results of EFA.

Table 5:11 Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.736	37.445	37.445	9.191	35.348	35.348
2	2.653	10.202	47.647	2.211	8.504	43.85
3	1.659	6.380	54.027	1.058	4.069	47.92
4	1.371	5.275	59.302	.830	3.191	51.11
5	1.018	3.915	63.217	.920	3.540	54.65
6	.854	3.283	66.501			
7	.679	2.611	69.112			
8	.601	2.312	71.424			
9	.574	2.208	73.632			
10	.557	2.144	75.777			
11	.542	2.086	77.862			
12	.512	1.971	79.833			
13	.500	1.925	81.758			
14	.481	1.849	83.607			
15	.472	1.816	85.424			
16	.447	1.720	87.143			
17	.433	1.664	88.807			
18	.419	1.610	90.418			
19	.394	1.514	91.931			
20	.368	1.417	93.348			
21	.349	1.343	94.691			
22	.338	1.302	95.992			
23	.294	1.129	98.367			
24	.258	.993	99.360			
25	.166	.640	100.000			

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total var

Table 5:11 shows the five factor solution accounted for 63.21% of the total variance. To help determine the exact number of components to extract, Cattell's scree test (Cattell 1966) was used in the study which mainly involves plotting eigenvalues of each component and examining the point where the scree plot tails off to become horizontal to tail off (Pallant 2010) . All the components above the point where the curve changes to become horizontal to tails off is retained as recommended by Catell (1966) and Pallant (2010), as they would be contributing the most of the variance in the data set . With this test, five components were retained for study and these were also further supported by the results of the factor structure shown in pattern matrix.

Table 5:11 Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.736	37.445	37.445	9.191	35.348	35.348	7.467
2	2.653	10.202	47.647	2.211	8.504	43.852	7.104
3	1.659	6.380	54.027	1.058	4.069	47.921	7.126
4	1.371	5.275	59.302	.830	3.191	51.112	2.309
5	1.018	3.915	63.217	.920	3.540	54.652	6.670
6	.854	3.283	66.501				
7	.679	2.611	69.112				
8	.601	2.312	71.424				
9	.574	2.208	73.632				
10	.557	2.144	75.777				
11	.542	2.086	77.862				
12	.512	1.971	79.833				
13	.500	1.925	81.758				
14	.481	1.849	83.607				
15	.472	1.816	85.424				

16	.447	1.720	87.143				
17	.433	1.664	88.807				
18	.419	1.610	90.418				
19	.394	1.514	91.931				
20	.368	1.417	93.348				
21	.349	1.343	94.691				
22	.338	1.302	95.992				
23	.294	1.129	98.367				
24	.258	.993	99.360				
25	.166	.640	100.000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

An inspection of the pattern matrix in Table 5:12 showed a clear structure with meaningful strong item loadings of variables into components. They all were above 0.5 values mostly, as recommended by (Field 2005). Inter-correlations among the variables were examined by using pattern matrix. In the factor structure -as shown in Table 5:12, it is clearly seen that the variables were loaded into factors. This factor structure clearly demonstrated convergent validity, which was evident by high factor loadings seen within factors. Discriminant validity was evident in the factor structure where there were no major cross loadings between factors.

Table 5:12 Pattern Matrix

	Factor				
	1	2	3	4	5
PMR_1		.688			
PMR_2		.692			
PMR_3		.768			
PMR_4		.618			
PMR_5		.814			
PMR_6		.702			
PRT_1				.783	
PRT_2				.642	
PRT_3				.711	
PRT_4				.727	
UOb_1			.734		
UOb_2			.675		
UOb_3			.647		
UOb_4			.690		
UOb_5			.704		
UOb_6			.674		
SGS1					.734
SGS2					.675
SGS3					.647
V_1	.837				

V_3	.652				
V_4	.673				
V_5	.837				
V_6	.700				
V_7	.708				

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 5 iterations.
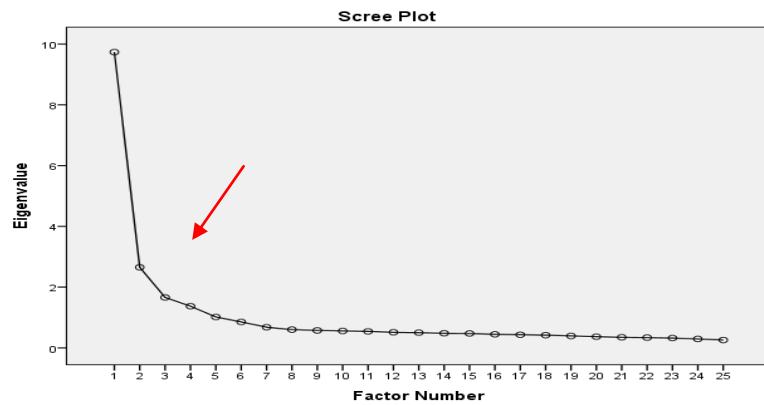
Figure 5-3 Scree Plot

5.7.2   Convergent Validity

Similar to several other indicators of reliability and validity tests like EFA, CFA , Average Variance Extracted (AVE) is an another indicator that is used to measure the percentage of the variance captured by the constructs by using the mentioned in the previous chapter four (Gefen et al. 2000) and the results are shown in Table 5:13 .

Fornell and Larcker (1981) recommend that AVE measure to be 0.50 or above - reflecting the overall variance explained by the latent constructs (Fornell & Larcker 1981). However Malhotra and Dash (2011) have suggested that AVE score to be a more conservative measure than Composite reliability (CR) and have suggested that researchers can conclude the adequateness of the constructs of convergent validity based on the CR measure alone (Malhotra, N., K. & Dash 2011). The results in the Table 5:13 indicate that most of the constructs exceeds the minimum requirement for Convergent Validity.

Table 5:13 Convergent Validity

Constructs/Factors/Items	Item Loading	Composite Reliability (CR)	AVE
Factor1: Perceived Media Richness		0.86	0.51
PMR1	.688		
PMR2	.692		
PMR3	.768		
PMR4	.618		
PMR5	.814		
PMR6	.702		
Factor 2: Perceived Real-time presence		0.81	0.51
PRT1	.783		
PRT2	.642		
PRT3	.711		
PRT4	.727		
Factor 3: Perceived Unobtrusiveness		0.85	0.48
PUob1	.734		

	PUob2	.675		
	PUob3	.647		
	PUob4	.690		
	PUob5	.704		
	PUob6	.674		
Factor 4: Spiritual Goal Strivings			0.68	0.57
	SGS1	.794		
	SGS2	.862		
	SGS3	.569		
Factor 5: Vitality Well-Being			0.88	0.56
	V1	. 652		
	V3	.673		
	V4	.837		
	V5	.700		
	V6	.708		
	V7	.837		

Validity with CR value of > 0.70 (Barclay et al. 1995) and AVE > 0.50. Only factor three showed values close to satisfactory values AVE of 0.48 (Fornell & Larcker 1981) although the validity of the individual items in this particular construct is questionable, CR value of this construct is satisfactory and according to Dash and Malhotra (2011), this alone is sufficient to validate this construct (Malhotra, N., K. & Dash 2011).) In the following sections, constructs validity were further examined in CFA (Anderson & Gerbing 1988; Hair et al. 1998) and results presented in the SEM analysis section ensured that the convergent validity of this construct is satisfactory (Borsboom et al. 2004).

In the case of construct three which demonstrated AVE slightly below 0.50, is considered as a limitation in this thesis. This may be interpreted as 'very provisional' and suggest a need of replication. Apart from the factor three, rest of all the constructs show satisfactory AVE above 0.50 and thus supporting the reliability of the study measures.

5.7.3   Discriminant Validity

According to Fornell & Larcker (1981) and Staples et al., (1998), when the variable as a whole differs from other variables, discriminant validity can be confirmed. The square root of AVE for each latent variable in bold diagonal elements is shown in Table 5:14 and off-diagonal numbers are the correlations among factors (Staples et al. 1998; Fornell & Larcker 1981). The result demonstrates that every construct was shown to be

sufficiently different from other constructs, and their AVE-squared values (diagonal values) were larger than any correlation coefficients of the

latent variables indicating sufficient discriminant validity (where the latent variables describing the variance shared between factor have not

exceeded the AVE demonstrating sufficient discriminant validity) (Barclay et al. 1995; Staples et al. 1998).

Table 5:14 Discriminant Validity- Correlation Matrix

Construct	1	2	3	4	5
1	**0.714**				
2	.539	**0.714**			
3	.555	.595	**. 69**		
4	.153	.028	.140	**0.75**	
5	.577	.608	.565	.018	**0.74**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Note: Numbers in bold along the diagonal are the Square roots
of AVE's shown on diagonal (in bold)

To summarise this section, results have indicated only a few factors which were able to explain a considerable portion of the variance and the

other factors explained relatively small portions of variance, as is normal in any factor analysis. To consider any factor analysis to be

satisfactory, there are no absolute threshold measures that can be adopted, however Hair et al.,(1998), have suggested that combination of factors that accounts for close to 60 per cent of the cumulative variance that can be considered satisfactory (Hair et al. 1998). In this study the first construct explains a large portion of total variance in percentage (37.45%) and the remaining four constructs accounts for 63.22 in percentage of the total variance, as shown in Table 5:15. From these findings, it can be established that five factors could be used for further investigating this study's research objectives.

Table 5:15 Satisfactory cumulative variance explained

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings |
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.736	37.445	37.445	9.191	35.348	35.348	7.467
2	2.653	10.202	47.647	2.211	8.504	43.852	7.104
3	1.659	6.380	54.027	1.058	4.069	47.921	7.126
4	1.371	5.275	59.302	.830	3.191	51.112	2.309
5	1.018	3.915	63.217	.920	3.540	54.652	6.670

To summarise, the above tests have demonstrated satisfactory results for convergent validity and discriminant validity. This construct validity was validated again during CFA in SEM to produce empirical evidence of construct validity. The next section is focused on important aspects of regression analysis prior to the SEM.

5.8   Preliminary Regression Analysis

Similar to factor analysis in the previous section, regression analysis is utilised here as a tool for extracting valuable information from the survey data using multivariate data analysis techniques. Regression analysis has been very useful in predicting an outcome from one or multiple predictor variables. When one predictor is used as an independent variable to predict an outcome, it is commonly called as single regression, for a case with multiple independents; it is termed as multiple regressions (Field 2009).   Along with providing the best model prediction, regression analysis provides explanations for complex multivariate relationships (Ho 2006) for a set of variables. Thus as a normal procedure, statistical multivariate assumptions viz. normality and multi-collinearity (J. F. Hair et al. 2010) are examined and initial multiple regression is performed to pre-test the proposed model.

5.8.1   Checking the Assumptions

Since this study reports to examine a variety of variables and their effects on SGS and on vitality aspect of wellbeing, multivariate statistical procedures are used extensively. Several major assumptions of multivariate analysis for the data are to be upheld like normality, linearity, homoscedasticity (Wonnacott & Wonnacott 1981) and multicollinearity (J. F. Hair et al. 2010). This section will examine the major assumptions of multivariate regression analysis.

5.8.2   Multicollinearity and Singularity

Multicollinearity is a condition that is not desirable. This means in this condition the variance of the independent variables (normally called as IVs) are very highly correlated with

each other and thus it will not be able to explain unique variance of each independent variable in the dependent variable. In terms of the calculation, regression coefficients are through matrix inversion. This inversion becomes unstable, if there is multicollinearity and singularity.

The rule of thumb to check if there is multicollinearity issues is to examine Variable Inflation Factor (VIF) for every independent variable in model, and if VIF< 3, indicates no multicollinearity issues; If VIF>3 and in some cases VIF> 5 is considered to have some issues, and if VIF>10 is a strong indications of multicollinearity issues (O'brien 2007) . Multicollinearity issues were tested by using SPSS version 22.0. Recommended VIF values below 10 cut-off value was considered as suggested by Yannopuos, Auh and Menguc (2012) and Neter, Wasserman and Kutner (1989) (Neter & Wasserman 1989; Yannopoulos et al. 2012). As a result, collinearity between the variables was verified by testing for VIF for each of the regression coefficients. The VIF values ranged from 1.6 to 2.4 and demonstrated well below the recommended value of 10 cut-off (Neter & Wasserman 1989; Yannopoulos et al. 2012), thus the values were not violating the assumption and were also below the cut-off VIF of 5, as recommended by Field, A.(2009) (Field 2009). Some other researchers also have recommended a VIF of 5 as acceptable (Cenfetelli & Bassellier 2009; Petter et al. 2007).

5.8.3 Multiple Outliers

Multivariate outliers are referred to cases in the data set that do not fit the standard correlation patterns as seen by other cases in the same data set. These outliers are known

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to sometimes influence the results. To detect these multivariate outliers, Mahalanobi's distances are calculated using AMOS 22.0 to detect outliers on the predictors. There were multivariate outliers seen in this study's data set but no cases were removed, as removing the outliers without proper justification seemed inaccurate and also because in large data sets there is some level of outliers that are bound to exist in the data (Tabachnick et al. 2001). Outliers detected by Mahalanobi's distances may not necessarily be influential data cases, however more conventional approach is to examine the influential cases indicated by the Cook's distance which will determine if the influential outlier is sufficient enough to be deleted (Bollen & Jackman 1990). The threshold for cooks distance is > 1, then these data sets are flagged to be influential and is different from the rest of the data, such cases can be deleted. However if Cook distance is < 1, indicates that the data sets does not have a large effect on the regression analysis (Tabachnick & Fidell 2006; Stevens 2012). Using SPSS 22.0, Cooks distance was evaluated as shown in the Figure 5-4 and Figure 5-5, and the data sets demonstrated Cook's distance way below 1. Thus there was no real need to delete the data point as indicated in this test result.
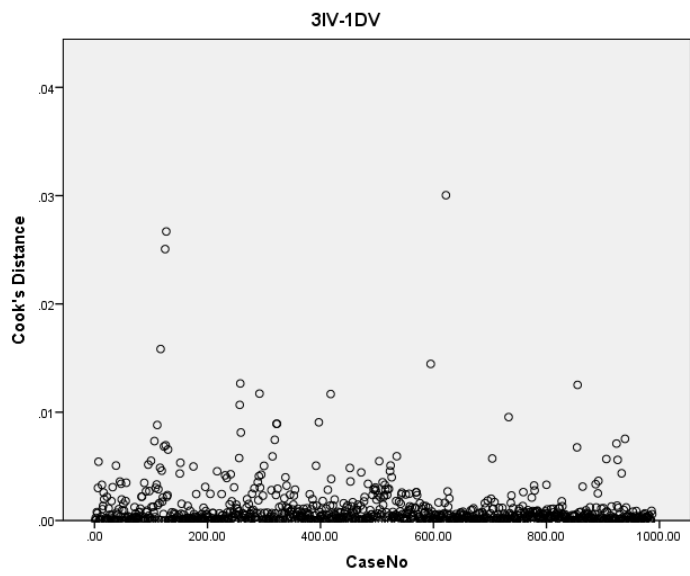
Figure 5-4 Cook's Distance a
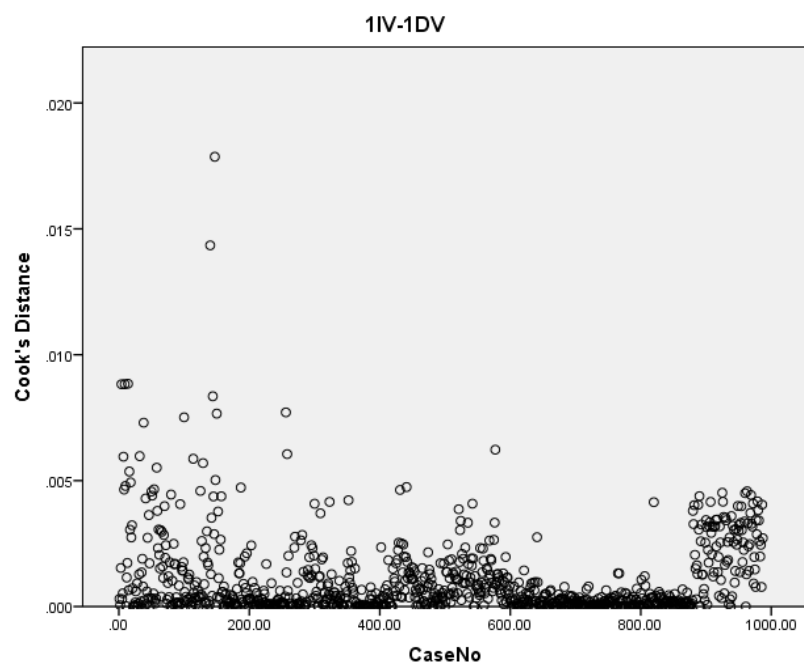
Figure 5-5 Cook's Distance b

5.8.4   Homoscedasticity, Linearity and Normality

Homoscedasticity test examines that the variable's residual errors show approximately equal across different levels of the predicted dependent variable. Homoscedasticity of a relationship can be determined using a residuals scatter plot.

The plot above shows the scatter plot with a fairly consistent pattern indicating Homoscedasticity. This scatter plot is also used for determining linearity and normality. Scatter plot showed that the assumptions of linearity and normality were considerably met. If the pattern was not showing a consistent pattern, it would look like a plot showing wider points as the values for the predicted dependent variable increases.

Homoscedasticity can be verified by using residuals plot as shown below, which demonstrates linearity and normality at the same time. With scores concentrated in the centre of the scatterplot which is roughly distributed in rectangular shape. The residuals plot Figure 5-6 shows homoscedastic data. Overall these scatterplots show that the linearity and normality assumptions are satisfactorily met.
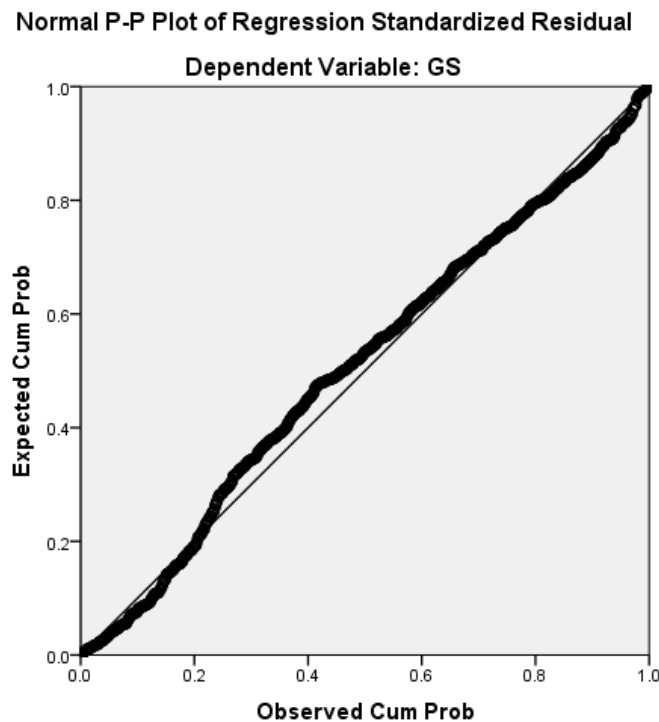
Figure 5-6 Normal Plot of regression standard residual

Normal Probability Plot is used to determine normality. This plot exhibits a fairly straight line diagonally upwards indicating no major deviations from normality and the straight-line upward diagonally indicates a linear relationship between the independent variables and the dependent variable. This suggests that the normal distribution of data attenuates issues of heteroscedasticity. To summarise assumptions of Homoscedasticity, Linearity and Normality were examined and the result indicated that the assumptions have been met and there were no major concerns to proceed to the regression analysis.

5.9   Regression Analysis Results

The regression analyses in detail were conducted to the entire conceptual model and the results for regression model with hypotheses paths will be discussed in the next chapter six. All the path's statistical significance is evaluated (p values) and the variances explained (R^2) will be discussed.

However from these initial findings in this chapter, it can be suggested that all the three independent variables influence dependent variable where PMR and PUob explains the success in SGS. However, the negative correlation for PRT suggests that this variable influences negatively on the SGS outcomes. Vitality aspect of well-being is shown to be positively affected by the possibility of success in SGS

Overall this implies that PMR and PUob, do have a positive influence on SGS and is negatively influenced by PRT. Further, success in SGS is seen to positively influence vitality aspects of well-being.

The preliminary regression analyses were performed to suggest ways to tidy the structural model. All the hypotheses were supported with just one hypothesis showing negative correlation. Subsequent chapter will go through with a detailed analysis and discussion of each hypothesis' results.

5.10 Summary

At the beginning of this chapter, analysis of demographic characteristics were performed to understand the data profile and the behaviour patterns with respect to perception of

respondents in using digital media for their SGS. The overall result showed that the respondents who participated in this study were, from slightly middle to older aged males between 31 to 50 years old and who were quite well educated with under-graduate qualifications at the least. Most of them have preferred to use smart devices or desktop/laptop with network connections.

The summary of the construct measures, normality, skewness and kurtosis levels were acceptable for each construct. Constructs' measurement scales were based on five-point Likert scales and are reported in **Error! Reference source not found.** to Table 5:8. Finally the reliability and validity of each measurement scale was analysed and results of the five constructs are shown in Table 5:13 and Table 5:14 . They demonstrate a satisfactory convergent and discriminant validity measures. Important multivariate assumptions were examined and the examined results were found to be satisfactory enough to continue further sophisticated and robust statistical procedures which will be observed in the next section.

Chapter

6

DATA ANALYSIS II:

STRUCTURAL EQUATION MODELLING

THE THESIS STRUCTURE

CHAPTER 1: Introduction	Introduction
CHAPTER 2: Literature Review	Measurement model specification and evaluation
CHAPTER 3: Conceptual Framework	Confirmatory Factor Analysis
CHAPTER 4: Methodology	Structural Equation Modelling Analysis
CHAPTER 5: Data Analysis I Descriptive Analysis	Construct validity
CHAPTER 6: Data Analysis II Structural Equation Modelling	Goodness-of-Fit Indices
CHAPTER 7: Discussion	Scale Reliability
CHAPTER 8: Conclusion	CFA and fitness measures on individual constructs
	CFA for Overall Constructs
	Structural Model Assessment
	Summary

Source: *Adapted to this study from* (Kamarullzaman 2006)

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6   Chapter Six Data Analysis II: Structural Equation Modelling

6.1   Introduction

Previous chapter of this study focused on the descriptive findings of the survey data and this chapter focuses on the multivariate analysis process – Structural Equation Modelling (SEM).

Anderson and Anderson and Gerbing (1988) recommend a two–step approach to examine SEM analysis (Anderson & Gerbing 1988).   The first step focuses on assessing the measurement model and this includes fitness and validity of the proposed model by performing Confirmatory Factor Analysis (CFA). CFA examines the interrelationships between items and the latent constructs. The second step focuses on the structural model to assess the research hypotheses specified in the model (Anderson & Gerbing 1988). AMOS software is used to examine the explained variance of the constructs, model fit, and to examine research hypotheses.

This chapter begins with data screening and preparation based on the SEM procedures described in previous chapter five. Following this, measurement model will be subjected to CFA to perform robust validation checks. After CFA, structural model analysis will be performed to examine the overall fitness of the proposed model. Finally the hypothesised relationships among the latent constructs will be examined.

Part1

In the two-step approach as recommended by Anderson and Gerbing (1988) (Anderson & Gerbing 1988), the first part deals with measurement model which is mainly focused on validating the constructs, followed by the estimation of the overall structural models in the later parts of this chapter. Hair et al., (1998) proposed a one-step approach which involves simultaneous estimation of both the steps consisting of measurement and structural model (Hair et al. 1998). This is usually recommended in scenarios where the research model has a strong theoretical underpinning and the measures adopted in such studies have shown to have high reliable measures (Hair et al. 1998).

6.2   Measurement model specification and evaluation

In this section, SEM process is evaluated through the application of CFA to examine the measurement properties of latent constructs which are measured in terms of their observed items (Tan 2007; Pansuwong 2009). The main purpose of this task is to understand how well the observed items are serving as a measurement scale for this study's latent constructs. The process includes assessing the validity and reliability of the measurement properties and assessing its dimensionality. It is important to examine CFA before assessing structural model as it is important to understand what the measurement model holds otherwise further analysis at structural model level will become meaningless without first establishing

the measurement model. CFA of the measurement model is performed using AMOS 22.0, beginning with data preparation and screening.

6.2.1   Data Cleaning

Data cleaning relates to data screening and preparations are similar to the discussions in the earlier chapter about assumptions of multivariate statistics, but here the applied analytical methods are different. It is important to focus on this data preparation and screening before beginning with SEM process, as SEM makes certain assumptions about the data that is used for analysis. All the data used for analysis were coded into SPSS 22.0 as shown in Table 6:1. If the data preparation does not demonstrate enough confidence, problems related to model fit and estimation may arise and may also demonstrate false results (Kline 1998). Thus it is important to examine common issues with regard to data preparation such as to examine missing data, outliers and normality assumptions satisfactorily.

Table 6:1 Coding the questionnaire Construct

constructs/Factors/Items	Code in SPSS	Description in the questionnaire	Values	Measures
Perceived Media Richness	PMR1-PMR7	1-7	5 Point	Scale
Perceived Real-time	PRT1-PRT5	8-12	5 Point	Scale
Perceived Unobtrusiveness	PUob1-PUob6	13-18	5 Point	Scale
Spiritual Gaol strivings	SGS1-SGS3	19-21	5 Point	Scale
Vitality Well-Being	V1-V7	22-28	5 Point	Scale
Gender	1=Male	a) Male		
	2=Female	b) Female	2 options	Nominal
Age	1=<17years	a) <17years		
	2=18-30	b) 18-30		
	3=31-40	c) 31-40		
	4=41-50	d) 41-50	7 options	Nominal
	5=51-60	e) 51-60		
	6=>61	f) >61		

Education	1=No Schooling completed			
	2= High school graduate, diploma or the equivalent	a) No Schooling completed		
		b) High school graduate		
	3= College graduate	c) College graduate		
	4= Trade/technical/vocational training	d) Trade/technical/vocational training		
			8 options	Nominal
	5= Bachelor's degree/ Under-graduate	e) Bachelor's degree/ Under-graduate		
		f) Master's degree/ Post-graduate		
	6= Master's degree/ Post-graduate	g) Professional degree		
	7= Professional degree	h) Doctorate		
	8= Doctorate			
Experience/usage	1= Less than 6 Months	a) Less than 6 Months		
	2= 6 months to less than 1 year	b) 6 months to less than 1 year		
	3= 1 year to less than 3 years	c) 1 year to less than 3 years	5 options	Nominal
	4= 3 years to less than 5 years	d) 3 years to less than 5 years		
	5= 5 years or more	e) 5 years or more		

6.2.2   Missing Data

Missing data will impact on statistical analysis, making the results biased and invalid.

Table 6:2 Factors' names

Construct	Variables number	The variables
Perceived Media Richness	6	PMR1, PMR2, PMR3, PMR4, PMR5, PMR6
Perceived Real-time presence	4	PRT1, PRT2, PRT3, PRT4
Perceived Unobtrusiveness	6	PUob1, PUob2, PUob3, PUob4, PUob5, PUob6
Spiritual Goal Strivings	3	SGS1, SGS2, SGS3
Vitality Well-Being	6	V1, V2, V3, V4, V5, V6
Total 5 Constructs	25	Observed Variables

As a rule of thumb this study is consistent with at-least a minimum of three indicators per construct as recommended by (Hair et al. 2006) and all the measures in the model were reflective (where the direction of causality were from latent construct to the observed items) and finally each of the observed items was assigned to only one construct (Garver & Mentzer 1999).

While performing CFA, it is important to establish construct validity, this is to actually ensure that all the measures are actually assessing the theoretical constructs as expected. There are number of methods to establish construct validity, like performing face validity, convergent, discriminant and nomological validity. However in this section, the absolute necessary tests like convergent and discriminant validity test results are explained where the constructs have been assessed to identify adequate convergent and discriminant validity. Also reliability of the model was examined, as this is considered important when performing CFA (Hair et al. 2006). Other important measures like unidimensionality that are performed during CFA will be discussed in next section.

To perform validity and reliability tests, a few useful measures to evaluate are: Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), Composite Reliability (CR) and Average Shared Squared Variance (ASV). Threshold values from the literature for Reliability and Construct Validity evaluations are as follows (Garver & Mentzer 1999; Malhotra 2008; J. F. Hair et al. 2010):

Reliability: CR > 0.7

Convergent Validity: CR>AVE, AVE> 0.5

Discriminant Validity: MSV < AVE, ASV < AVE

According to Dunn et al. (1994), an adequate convergent validity and discriminant validity values would provide sufficient evidence to support construct validity (Dunn et al. 1994).

After validating the measurement model satisfactorily, estimating the structural model was planned to examine the structural relationships, this is with an intention to understand the correlational effect and the amount of unexplained variance (Garver & Mentzer 1999; Ping 2004).

CFA was thus performed on each construct with its observed items and also assessed for: unidimensionaility in terms of the overall fitness of the measurement model; parameter estimates; and statistical significance of the parameter estimates (Byrne 2001). Any poor fitting and problematic items were considered to be removed and this removal of items was performed one item at a time. Finally CFA was executed for the overall model and all the significant results from the measurement model have been reported.

6.3 Construct validity

6.3.1   Convergent validity

As discussed in previous chapter convergent validity is a category of construct validity where the measurement items or indicators are assessed to measure the extent of correlation among the items themselves representing the construct. Higher the parameter estimates- the greater its convergence to its constructs (Anderson & Gerbing 1988).

Convergent validity can be evaluated by various statistical methods to check if the correlations between the measures of models' constructs are significantly different and are

as large as possible (Hinkin 1998). In the study, the convergent validity is examined using the methods as recommended by Hair et al. (2010) and Bagozzi and Yi (1988) that is to check if:

Convergent Validity: CR>AVE, AVE> 0.5 (J. F. Hair et al. 2010; Bagozzi & Yi 1988).   This is

a) Amount of variance captured by a construct is Average variance extracted (AVE) which is recommended to be > 0.5 (Fornell & Larcker 1981),

b) Composite Reliability (CR) is used as a measure in this research to evaluate the internal consistency of the factors. CR   assesses the internal consistency of a measure which is calculated by the formula shown below (Raykov 1997).

c) Additional threshold to verify convergent validity is Standardised factor loadings > 0.5 ; > 0.6 (Bagozzi & Yi 1988); or > 0.7 regarded as ideal measure (Igbaria et al. 1995),

 d) Recommended value of CR value for good convergent validity is it should be > AVE , and recommended CR values is between 0.6 and 0.7 (Fornell & Larcker 1981); for CR values > .70 indicates good reliability (Joseph F Hair et al. 2010).

Equation 1 : Composite Reliability (CR)

$$CR = \frac{(\sum \lambda_1)^2}{(\sum \lambda_1)^2 + (\sum \epsilon_1)}$$

Variance $r^2 - 1$
Variance r-square =

$$r^2 = \lambda_1^2 = 1 - \epsilon_1$$

Equation 2 : Variance Extracted (VE)

$$VE = \frac{\sum_{i=1}^{n}\lambda_1^2}{n}$$

Where λ (lambda) = standardised factor loadings; *i* = Observed items; ε = error variance =

$$\epsilon_i = 1 - \lambda_i^2$$

Table 6:3 Factor correlation matrix and Validity results

	CR	AVE	MSV	MaxR(H)	PMR	PRT	PUob	SGS	VWB
PMR	0.87	0.53	0.52	0.87	**0.73**				
PRT	0.81	0.51	0.04	0.82	0.21	**0.72**			
PUob	0.86	0.51	0.50	0.85	0.65	0.18	**0.71**		
SGS	0.91	0.76	0.57	0.92	0.72	0.02	0.70	**0.87**	
VWB	0.89	0.58	0.57	0.89	0.63	0.03	0.70	0.75	**0.76**

Note 1: (Grey coloured part of table) Convergent and discriminant validity results.

Note 2: (Second part of table) Factor correlation matrix with the square root of AVE in the diagonal (in bold)

Table 6:3 provides evidence for convergent validity and shows that AVE is equal or greater

than 0.50 and lower than CR. This indicates that the variance explained by the construct is

greater than the measurement error and also greater than the cross-loadings. This confirms that AVE of each construct is higher than its correlation with other constructs. Along with this, most of the items were evidenced to have standardised loadings of >0.60, which is the recommended threshold by Bagozzi and Yi (1988) (Bagozzi & Yi 1988). This implies that the resulting measurement model displays an acceptable level of convergence.

Table 6:4 Validity and reliability of the measurement model

Constructs		Items	Factor Loadings	Variance Extracted	Construct Reliability	SQRT (AVE)
PMR	**AVE=** (.74^2+.72^2+.76^2+.68^2+.76^2+.73^2)/6=0.53 **MSV=** .72^2=0.52 **ASV=** (.0.64^2+.65^2+.21^2+.72^2)/4=0.34 **CR=** [(.74+.72+.76+.68+.76+.73)^2]/[(.74+.72+.76+.68+.76+.73)^2+(1-.0.55)+(1-.0.52)+(1-.58))+(1-.0.46)+(1-.58) +(1-.0.53)]=0.87	PMR1	0.74	0.53	0.87	0.73
		PMR2	0.72			
		PMR3	0.76			
		PMR4	0.68			
		PMR5	0.76			
		PMR6	0.73			
PRT	**AVE=** (.79^2+.63^2+.72^2+.72^2)/4=.51 **MSV=** .21^2=0.04 **ASV=** (.18^2+.21^2+.03^2+.04^2)/4=0.019 **CR=** [(.79+.63+.72+.72)^2]/[(.79+.63+.72+.72)^2+(1-.0.62)+(1-.0.39)+(1-0.52)+(1-0.52)]=0.81	PRT1	0.79	0.51	0.81	0.72
		PRT2	0.63			
		PRT3	0.72			
		PRT4	0.72			
PUob	**AVE=** (.74^2+.70^2+.68^2+.70^2+.76^2+.70^2)/6=0.51 **MSV=** .71^2=0.50 **ASV=** (.65^2+.71^2+.71^2+.18^2)/4=0.36 **CR=** [(.74+.70+.68+.70+.76+.70)^2]/[(.74+.70+.68+.70+.76+.70)^2+(1-.55)+(1-.0.49)+(1-.0.46))+(1-.0.49)+(1-.0.58) +(1-.0.49)]=0.86	PUob1	0.74	0.51	0.86	0.71
		PUob2	0.70			
		PUob3	0.68			
		PUob4	0.70			

		PUob5	0.76			
		PUob6	0.70			
SGS	**AVE=** (.88^2+.92^2+.82^2)/3=0.76 **MSV=** .76^2=0.57 **ASV=** (.03^2+.71^2+.72^2+.76^2)/4=0.40 **CR=** [(.88+.92+.82)^2]/[(.88+.92+.82)^2+(1-0.77)+(1-0.85)+(1-0.67)]=0.91	SGS1	0.88			
		SGS2	0.92	0.76	0.91	0.87
		SGS3	0.82			
VWB	**AVE=** (.75^2+.70^2+.81^2+.82^2+.78^2+.71^2)/6=0.58 **MSV=** .76^2=0.58 **ASV=** (.64^2+.71^2+.04^2+.76^2)/4=0.3732 **CR=** [(.75+.70+.81+.82+.78+.71)^2]/[(75+.82+.71+.81+.78+.70)^2+(1-.56)+(1-.49)+(1-0.66))+(1-.0.67)+(1-0.61)+(1-0.50)]=0.89	V1	0.75			
		V3	0.70			
		V4	0.81			
		V5	0.82	0.58	0.89	0.76
		V6	0.78			
		V7	0.71			

6.3.2   Discriminant Validity

Discriminant validity implies the degree to which one variable differs from other variables (Barclay et al. 1995). Higher value of discriminant validity indicates higher degree of uniqueness of one construct from other constructs (J. F. Hair et al. 2010). If there were any discriminant issues then the variables of one construct are seen to be more correlated with variables of their constructs outside their own parent construct, indicating that the latent constructs is better explained by variables from other constructs rather than its own observes variables.

In this research , discriminant validity is assessed by the procedure proposed by (Fornell & Larcker 1981) where discriminant validity is examined by the following measuring thresholds

a) Maximum shared squared variance (MSV) < AVE, and

 b) Average shared squared variance ASV < AVE; to confirm adequate discriminant validity (Joseph F Hair, Black, Babin & Anderson 2010).

Also the calculated square roots of variance were compared with each correlation value and it is shown to be larger than correlation with other constructs, thus demonstrates sufficient discriminant validity. The results of discriminant validity are in Table 6:3. This provides evidence for discriminant validity that is MSV < AVE and ASV < AVE. This indicates that discriminant validity is satisfactory indicating higher degree of uniqueness of each construct in relation to the other.

Unidimensionality is the degree to which a set of measurable items suggests the existence of single latent construct (Garver & Mentzer 1999; Steenkamp & Van Trijp 1991; Chen & Paulraj 2004). Scale items are considered to be unidimensional, if they fulfil two suggested conditions (Anderson & Gerbing 1988; Hunter & Gerbing 1982) that is

a) If all the measurable items are measuring a common construct then it is considered to have a higher degree of internal consistency and

b) If the measurable items are not measuring more than one construct, then it is considered to have higher degree of external consistency.

These two conditions indicate construct validity; this shows that as long as the scales have been tested for construct validity and have shown adequate confidence in convergent and discriminant validation tests, then the scales are considered to be unidimensional (Dunn et al. 1994).

There are several ways to examine unidimensionality by employing methods such as EFA, item-to-total correlation and Cronbach's Alpha measures; these results have been evaluated in the section 5.6. Some researchers have argued that these methods are not sufficient enough to actually measure unidimensionality (Anderson & Gerbing 1988; Kline 1998) and have suggested to employ CFA to assess unidimensionality by using various model fit indicators and other statistical components of the measurement model such as standardised residuals and modification indices (Garver & Mentzer 1999; J. F. Hair et al. 2010).

Thus in the present study, several fit criteria were exploited to obtain fit indices of the measurement model as shown in Table 6:5. Most commonly recommended fit criteria by (J. F. Hair et al. 2010) in IS and computer related research areas are goodness of fit index (GFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA), standardised root mean residual (SRMR) and Tucker-Lewis index (TLI). Table 6:6 shows Goodness of Fit Indices, used in the research, fit indices and recommended acceptable threshold values are shown in Table 6:5 These are used for evaluating unidimensionality (Hinkin 1998).

Additionally other measures of model fit that are recommended and widely accepted are the insignificant statistics of chi-square and normed chi-square (NC) and a good model fit at 0.05 level (Hooper et al. 2008). However, in this study this measure will not be used as a measure of goodness of fit because

a) chi-square is usually very sensitive to large sample size and this measure of significance of chi-square will be misleading in such cases as in this study (J. F. Hair et al. 2010; Schumacker & Lomax 2004). Researchers have pointed out that any sample size of > 250 is expected to have a significant chi-square, even if the model fit should not indicate significance

b) Hair et al., (2010) has indicated that normed chi-square thresholds may not be an appropriate measure for models with large sample sizes > 750 (J. F. Hair et al. 2010).

Additionally, Kline (2011) has emphasised that the normed chi-square has very little statistical ability for fitness assessment (Kline 2011), and hence should be ignored. However other five selected Goodness of Fit measures will be discussed in this following section.

Table 6:5 - Model fitness Index

Model fitness Index	Description	Acceptable Fit measures
Measure of Absolute Fit		
Chi-Square (X2)	This value indicates the amount of the differences in estimated and observed covariance matrices. This value is extremely sensitive to sample size and larger sample sizes is likely to result in p value < 0.05, instead of desired non- significant P value with P>0.005 . Due to these being greatly affected by sample size, this measure is likely to be dropped from analysis of this study.	Non -significance P value > 0.05 value
Normed Fit Chi-Square (/2/df) (df=degree of freedom)	Often also known as absolute fit measure and parsimony with values nearer to 1 indicating good fit and values less than 1 indicating over fit. This measure is known to be meaningful only when taken into account with its degrees of freedom	Value between 2 and 5 is considered as reasonable fit.
Standardised Root Mean Square Residual (SRMR)	Signifies a standardised summary of the covariance residuals (differences between observed and model- implied covariances) average.	Value<.05 good fit; .01 to .05 adequate fit.
Root Mean Square Error Of Approximation (RMSEA)	Representing how well the fitted model approximates per df.	Values .05 to .08 are adequate fit.
Goodness-Of-Fit Index (GFI)	Representing a comparison of the square residuals for the df.	Value>.95 good fit; .90 to .95 adequate fit.

Incremental Fit Measures

Adjusted Goodness-Of-Fit Index (AGFI)	Goodness-of-fit adjusted for the df. Less often used, due to not performing well in some applications. Value can fall outside 0-1 range.	Value>.95 good fit; .90 to .95 adequate fit.
Bunder-Bonett Normed Fit Index (NFI)	Representing a comparative index between the proposed and more restricted, nested baseline model (null model), and not adjusted for df, thus the effects of sample size are strong.	
Tucker-Lewis Index (TLI) also known as Bunder-Bonett Non-Normed Fit Index (NNFI)	Comparative index between proposed and null models adjusted for degrees of freedom. Can avoid extreme underestimation and overestimation and robust against sample size. Highly recommended- fit index of choice.	
Bollen's Incremental Fit Index (IFI)	Comparative index between proposed and null models adjusted for degrees of freedom.	
Comparative Fit Index (CFI) similar to relative Non-Centrality Index (RNI)	Comparative index between proposed and null models, adjusted for degrees of freedom. Interpreted similarly to NFI but may be less affected by sample size. Highly recommended as the index of choice.	Close to 1 very good fit; Value>.95 good fit; .90 to .95 adequate fit.

Parsimonious Fit Measure

Akaike Information Criterion (AIC)	Comparative index between alternative models	Value closer to 0 better fit & greater parsimony
Parsimony Normed Fit Index (PNFI)	This index takes into account both the model being evaluated and the baseline model.	Higher value indicates better fit,
Parsimony Comparative Fit Index (PCNFI)	This index takes into account both the model being evaluated and the baseline model.	Comparison between alternative models.

Source: Adapted from **(Kline 2005; Arbuckle** 2003**)**

Table 6:6 Goodness of Fit Indices used in the research

Measure	Abbreviation	Type	Accepted Level
Normed Chi-Square	(χ2 /df)	Absolute fit	≤ 2.0 is very good
			≥ 2.0 and ≤ 3.0 is acceptable threshold fit level
			≥ 3.0 and ≤ 5.0 is acceptable
Goodness-of-fit index	GFI	Absolute fit	≥ 0.95 is good fit level
			≥0.90 is acceptable threshold level
Root mean square error of approximation	RMSEA	Absolute fit	≤ 0.05 is good
			≤ 0.08 is adequate
Standardized Root Mean Square Residual	SRMR	Absolute fit	Value<.05 good fit;
			0.01 to .05 is adequate fit.
Adjusted Goodness-Of-Fit Index	AGFI	Incremental fit	Value>.95 good fit; .90 to .95 adequate fit.

Bunder-Bonett Normed Fit Index	NFI	Incremental fit	Value>.95 good fit; .90 to .95 adequate fit
Tucker-Lewis index	TLI	Incremental fit	≥ 0.95 is good fit level
			≥ 0.90 is acceptable
Comparative-fit index	CFI	Incremental fit	≥ 0.97 is good fit level
			≥ 0.95 is acceptable
Parsimony Normed Fit Index	PNFI	Parsimonious fit	Higher value indicates better fit,
Akaike Information Criterion	AIC	Parsimonious fit	Value closer to 0 better fit & greater parsimony

Source: (Byrne 2010; Joseph F Hair, Black, Babin, Anderson, et al. 2010; Kline 2005)

6.4   Goodness-of-Fit Indices

These measures can explain the extent to which the theoretical model is matching the collected data from the survey. According to Hair et.al (2010) the more the similarity of this theoretically estimated value of the covariance matrix to the real values of the observed valance matrix, the better is the fitness of the model (J. F. Hair et al. 2010). This is suggested to be in agreement with unidimensionality of the model (Ping 2004; Chin et al. 2008). The two most commonly used fit indices to measure are absolute and incremental fit indices (J. F. Hair et al. 2010; Chin et al. 2008).

6.4.1   Absolute fit indices

These fit indices indicate the extent to which the observed data fits the theoretical model. These measures relate to the confidence in reproducing the observed data from the developed model. The fit indices in this category include chi-square and normed chi-square statistical values, GFI, AGFI, RMSEA and SRMR.

6.4.1.1 Chi-square statistic

Chi-square is usually represented as ∑. This value indicates the amount of the differences in the estimated and the observed covariance matrices. Lower Chi-square values are preferred as this implies better fit of theoretical model and data that is collected. This measure is

highly sensitive to sample size and complexity. Previous research works have shown that for larger sample sizes, the value of Chi-square also increases.

6.4.1.2 Normed chi-square

Chi-square is seen to be varying, based on the model complexity as mentioned before. Greater the model complexity - is seen to have larger values and thus rejection of the model is likely to happen. Thus on such situation's Normed Chi-square is considered for evaluation where the chi-square per degree of freedom is used. The Normed Chi-square criterion is < 3.0 (J. F. Hair et al. 2010).

6.4.1.3 Goodness-of-Fit Index (GFI)

GFI value indicates the fitness of data to the theoretical model. Expected range for fitness for a good model fit is between 0 and 1. Model Fit and > 0.90 is indicated as acceptable fit between theoretical model and the observed covariance matrix (J. F. Hair et al. 2010; Janssens et al. 2008; Hu & Bentler 1999). There is seen a tendency to drop this measure from assessing it for fitness of model due to it being very sensitive to sample sizes (J. F. Hair et al. 2010).

6.4.1.4 Adjusted Goodness-of-Fit Index (AGFI)

AGFI is the corrected GFI and this looks at various aspects of model complexity. This is mainly influenced by the number of indicator items for each construct. Recommended cut-off values of AGFI are between 0 and 1; where 0 indicates poor fit and 1 indicates perfect fit. Values > 0.90 is considered satisfactory; > 0.80 is considered acceptable (Janssens et al.

2008). Kline (2011) has suggested that since AGFI has not performed well in previous simulation studies they can be ignored too (Kline 2011).

Equation 3 : Goodness-of-Fit (GFI) and Adjusted Goodness-of-Fit Index (AGFI)

GFI = 1- (V residual / V total)

Where:

V residual = residual variance / error variance that cannot be explained

by the model

V total= total variance explained by the covariance matrix

$$GFI = 1 - \frac{tr(\sum^{-1}S - I)^2}{tr(\sum^{-1}S)^2}$$

$$AGFI = 1 - \left[\frac{r(r-1)}{2df}\right](1 - GFI)$$

6.4.1.5 Root Mean Square Error of Approximation (RMSEA)

This indicator is considered as the most informative measure, useful in assessing fitness of a model. This is an important indicator in cases where the model has a tendency to be rejected due to large sample size or rejected due to large number of indicators for each construct. In such scenarios RMSEA measure is very informative (Byrne 2010; J. F. Hair et al.

2010). Lower RMSEA value is always preferred. The recommended values are < 0.05 which indicates a good fit; < 0.08 indicates acceptable fit (Ping 2004; Byrne 2010); between 0.05 and 0.08 is considered acceptable according to some researchers (J. F. Hair et al. 2010; Janssens et al. 2008).

Equation 4: Root Mean Square Error of Approximation (RMSEA)

$$RMSEA = \sqrt{\frac{\ddot{F}_0}{d}}$$

$\ddot{F}$ = minimum value of the discrepancy function

d = degree of freedom

6.4.1.6 Standardised Root Mean Residual (SRMR)

This is calculated by the formula shown and the recommended criterion for this value is < 0.08 (Janssens et al. 2008).

Equation 5 : Standardised Root Mean Residual (SRMR)

$$SRMR = \sqrt{\frac{2}{k(k+1+2\delta)} \left[\sum_i^K \sum_j^i \frac{(c_{ij} - \delta_{ij})^2}{c_{ii} c_{jj}} + \delta \sum_i^k \frac{(\tilde{x}_i - \hat{\mu}_i)^2}{c_{ii}} \right]}$$

k = the number of identified variables

c = correlation matrix

$\tilde{x}_i$ = the sample means of the p-vector

δ_{ij} = the correlation matrix predicted

δ = the structures mean

6.4.2   Incremental fit indices (IFI)

This fit explains how well the model fits compared to other baseline models such as a null model. Null model assumes that all the variables are uncorrelated (Ping 2004).   The other most commonly used IFI are Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI). The recommended values of TLI are between 0 and 1 where >0.90 indicates acceptable fit (J. F. Hair et al. 2010; Ping 2004).

6.4.2.1 Tucker-Lewis Index (TLI)

According to Hair et al , (J. F. Hair et al. 2010) TLI value close to 1 is recommended for a good fit., however a cut-off value is > 0.90 The value can fall below 0 and above 1. A TLI value close to 1 indicates a good model fit (Janssens et al. 2008) and is calculated using the formula

Equation 6 : Tucker-Lewis Index (TLI)

$$TLI = \frac{\dfrac{C}{d_b} - \dfrac{\hat{C}}{d}}{\dfrac{\hat{C}_b}{d_b} \quad 1}$$

C = the discrepancy of the market being evaluated

d = the degree of freedom of the mode the model being evaluated

$\hat{C}_b$ = the discrepancy of the baseline model

d_b = the degree of freedom of the baseline model

6.4.2.2 Comparative Fit Index (CFI)

CLI is common used measure as it is less sensitive to model complexity and is calculate by using the formula shown (J. F. Hair et al. 2010) Recommended value of CFI is >0.90 for a good fit (J. F. Hair et al. 2010; Janssens et al. 2008).

Equation 7 : Comparative Fit Index (CFI)

)

$$CFI = 1 - \frac{max\left(\hat{C} - d, 0\right)}{max\left(\hat{C}_b - d_{b,0}\right)}$$

$\left(\hat{C} - d, 0\right)$ = the non-centrality, degree of freedom and discrepancy parameters for the model being evaluated

$\left(\hat{C}_b - d_{b,0}\right)$ = the non-centrality, degree of freedom and discrepancy parameters for the baseline model

6.5   Scale Reliability

Reliability of the scale is referred to the consistency and accuracy in reproducibility aspect of the measurement instrument (Kerlinger 1980). It is the extent to which the observed items are accurately represented without any errors and is measuring the same underlying construct (J. F. Hair et al. 2010; Pallant 2007).

Reliability can be measured using many statistical methods such as based on a Cronbach Alpha recommended value of .70 (Nunnally & Bernstein 1994; DeVellis 1991) as discussed in above section. Some researchers have criticised using Cronbach's coefficient alpha, as it has been seen that it underestimates reliability in cases where some indicators are not indicating unidimensionality (J. F. Hair et al. 2010; Ping 2004). This happens because this traditional coefficient alpha method assumes that the measured items are correlated without any errors with their underlying construct which is practically not possible (Ping

2004). Also in some cases Cronbach Alpha values are inflated when there is large number of items in model and assumes that all the items of the measured variable have equal reliabilities, which is again not practically possible. Hence CFA is suggested as an alternative way to measure reliability. In this alternative method of using CFA to measure construct reliability, a recommended cut-off value of > 0.7 is used to evaluate internal consistency (Hair et al. 2010) as shown in section 5.6.1 . Gerbing and Anderson (1988) and others have also recommended that this CFA approach for measuring scale reliability is suitable for most models (Byrne 2013; Kline 1998; Anderson & Gerbing 1988).

Construct reliability is evaluated in section 5.6.1 where squared sum of factor loadings and sum of the error variance for every construct in the model is measured (J. F. Hair et al. 2010).

AVE is evaluated for each latent construct in the model which also indicates scale reliability. AVE recommended cut-off value >0.5 is used in this study (J. F. Hair et al. 2010; Koufteros 1999). The results demonstrates AVE > 0.50, thus explains that the indicators are highly representing their latent construct sufficiently enough as recommended for adequate scale reliability (Hair et al. 1998).

Overall the results indicate highly reliable constructs where the indicators are seen as highly inter-correlated. Also results demonstrate that the indicators are measuring the same underlying construct.

Part2

6.6 CFA and fitness measures on individual constructs

CFA performed evaluations of identified goodness of fit measures and are shown in Table 6:7 to Table 6:12 for 987 responses. The results in these tables confirm good fit and adequate construct validity. In addition to this, previous researchers have considered using several other methods to improve the developed model to improve the model indices, such as:

As indicated by (Hair et al. 1998), on verifying the standardised regression weights or factor loadings of the variables, lower loadings below 0.5 are to be removed for improving the model indices. Thus PRT5, PMR7 were removed as it showed lower than 0.5 recommended value. After removing the items, one at a time, using CFA all the model fit measures were calculated again each time, the final results shown in the Table 6:13 which indicates the improvements in the overall goodness of fit of the measurement model.

Figure 6-5 shows a measurement model representation of AMOS graph where the model variables PMR, PRT, PUob, SGS and Vitality are connected to each other. This measurement model assesses the degree to which the observed items serve as a measurement instrument for the latent variables. CFA is then performed and the details of developed models' unidimensionality, goodness of fit measures and constructs validity. They are discussed in detail in further sections.

To examine unidimensionality, CFA is utilised to determine parameter estimates, statistical significance and fitness indices (Byrne 2001) in two phases. In the first phase, CFA is performed on individual constructs which is eventually incorporated in the measurement model. In the second phase CFA is executed on the overall model. Results of the findings of the measurement model are discussed in the following section.

The SEM-measurement model mainly describes the extent to which items of the constructs assists towards measuring latent constructs. EFA results in previous chapter five shows that the identified items and construct specifications of the entire measurement model. In the final measurement model consisting of five constructs - Perceived Media Richness (PMR), Perceived Real-time (PRT), Perceived Unobtrusiveness (PUob), Spiritual Goal strivings (SGS), Vitality – wellbeing (WB) are examined and tested.

CFA was performed to examine individual items' standard errors and their covariance's, squared multiple correlations and standardized loadings and other fit indices (Garver & Mentzer 1999; Koufteros 1999). Any misspecification seen in the measurement indicators were suggested to be removed. In addition to this, further analysis of any items of concern is suggested such as any large residual covariance's > absolute value of 2 has been recommended to be removed at the CFA stage (Anderson & Gerbing 1988; Gefen et al. 2000; Pansuwong 2009). Also modification indices (MI) were also suggested to be used to identify errors in models which were also examined in this study.

6.6.1 Perceived Media Richness (PMR)

In this section of CFA, focus was on individual items' standard error, squared multiple correlations and standardized loadings. During this entire CFA process, main consideration was taken to consider the theoretical rationale rather than the statistical evidence into account throughout the CFA (Garver & Mentzer 1999; Koufteros 1999) . Thus, this study has retained only six items for further analysis PMR1, PMR2, PMR3, PMR4, PMR5 and PMR6. These were re-estimated for model fitness and the CFA results are presented in Table 6:7 .

The CFA results in Table 6:7 also describe fit indices, standardised loadings and P-value. These results demonstrate values associated with the individual items achieving their validity threshold levels (Anderson & Gerbing 1988). The results show the fit statistics demonstrating adequate model fitness to data, with AGFI, RMSEA values.

The squared multiple correlations were evaluated to examine the extent to which the measurement model adequately represented the observed items. Recommended values for this are between 0 to 1 (Mueller 1999; Mueller 1996; Bollen & Jackman 1990).

In line with the theory, all of the items in model were shown to have positive standardised regression weights ranging from 0.52 (PMR1) to 0.66 (PMR4), indicating the importance of the observed items as indicators of the PMR construct. All these standard regression weights were all statistically significant at a $p < 0.001$.

The chi-square value of the PMR construct is 17.244 with 9 degrees of freedom. This is with a significant p-value of 0.045 implying to reject this model; however in this case, this value was ignored as the chi-square value in known to be very sensitive to large sample size and is bound to give significant p value. Other important fitness indices for the PMR construct were evaluated and demonstrated adequate fitness with GFI=.994, RMR=.016, AGFI=.986, IFI=.997, CFI=.997, RMSEA value of .030 was within the accepted range.

The squared multiple correlation (R square) which evaluates the extent to which the measurement model satisfactorily represents observed items (Bryne 1998; Kline 1998) were ranged between 0.67 and 0.77 indicating sufficiently reliability (Bollen & Jackman 1990). Further, CR and AVE have already been assessed to examine the reliability of PMR by using the formula in Equation 1 and Equation 2 in section 6.3. The CR value of PMR measurement model was .87, which exceeded .70 which is the recommended threshold level (Hair et al. 1998). The AVE value exceeded the acceptable threshold guideline level of .50 indicating that the overall amount of variance in the items were accounted for, by their underlying latent construct (Hair et al. 1998).

Based on these recommended methods of improving model fitness, the measurement model for Perceived Media Richness (PMR) was tested with its seven items or indicators. However as seen in previous chapter five in section 5.6 concerning validity and reliability tests , one item was found to be problematic towards scale reliability , that is PMR7. This item was considered to be deleted. In view of the results obtained from EFA for this

construct, additional analysis were employed such as inspecting standardised residual covariance's and modification indices in CFA. Upon inspecting this, PMR7 item indicated higher standard residual errors and MIs and on removal of this item demonstrated an improved fitness values. Thus, this PMR7 item was not part of the CFA hence forth for any analysis in SEM, as it may not bring out a reliable measure of PMR.

In conclusion, the PMR construct, consisted of six observed items, and demonstrated satisfactory results with regard to the unidimensionality, fit indices, convergent validity and reliability, as discussed above. Therefore, PMR exhibits adequate measurement properties to proceed to subsequent hypothesis testing in structural model evaluation in the next chapter.
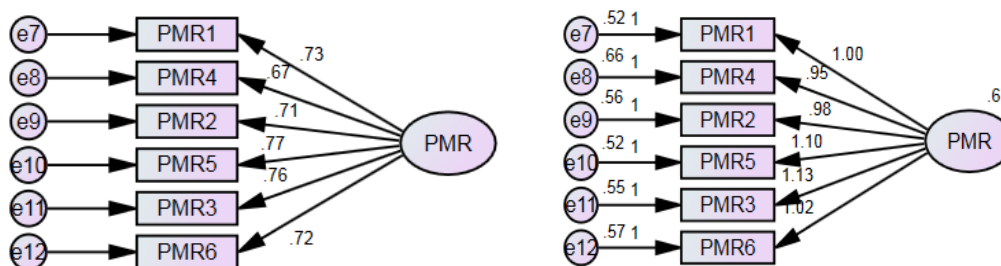

Figure 6-1 PMR construct with observed items

Table 6:7 CFA Results for Perceived Media Richness

Construct and Measures	Standard Loading	P Value
PMR1	0.73	***
PMR2	0.71	***
PMR3	0.76	***
PMR4	0.67	***
PMR5	0.77	***
PMR6	0.72	***

Goodness- of- fit statistics	Specified	Cut-Off Value	Fit Status
Chi-Square P value	P<0.005	p>0.05	Misfit
CFI	0.997	>=0.90	Fit
RMSEA	0.030	<=0.05 is good <=0.08 is adequate	Fit
RMR	0.016	<0.05	Fit
GFI	0.994	>0.95 Good fit; .90 to .95 adequate fit.	Fit
AGFI	0.986	>=0.95 Good fit; .90 to .95 adequate fit.	Fit
TLI	.994	>=0.90 good fit; .90 to .95 adequate fit	Fit
IFI	0.997	>0.95 good fit; .90 to .95 adequate fit	Fit

*** indicates P value < 0.001

6.6.2   CFA for Perceived Real-time presence

Other constructs similar to PMR of the measurement model were examined for CFA, however it should be noted that the model indices are described only briefly in the following sections

As discussed above during EFA evaluation in section 5.4.2 of chapter five, the initial 'PRT' measurement scale contained five observed items. During EFA and CFA, PRT5 was removed (see Appendix F: Reason for removing items during CFA process)   and verified – as PR5 did not seem to contribute enough toward reliability of the overall construct.

The CFA evaluation of this construct shows that the model is not acceptable as Chi square is statistically significant (p<.0001), suggesting that this model is not totally adequate. However as recommended earlier for other PMR construct, to ignore the P value in certain cases where they are oversensitive to sample size leading to inaccurate significance value. Other important indices provide sufficient evidence of adequate model fitness with scores of CFI = 0.991 (>= 0.90 is good), RMSEA= 0.074 (<=0.05 is good), RMR = 0.019 ((<=0.05 is good), GFI= 0.993   (>0.95 is good fit), ,AGFI= 0.967 (>=0.95 is Good) , TLI= 0.974 (>=0.90 good fit) ,IFI = 0.991 (>0.95 is good) . The results are shown in Table 6:8.

Table 6:9 CFA Results for Perceived Real-time presence

Construct and Measures	Standard Loading		P Value
PRT1	0.793		***
PRT2	0.635		***
PRT3	0.721		***
PRT4	0.722		***
Goodness- of- fit statistics	**Specified**	**Cut-Off Value**	**Fit Status**
Chi-Square P value	P<0.05	p>0.05	
CFI	0.991	>=0.90	Fit
RMSEA	0.074	<=0.05 is good <=0.08 is adequate	Fit
RMR	0.019	<0.05	Fit
GFI	0.993	>0.95 Good fit; .90 to .95 adequate fit.	Fit
AGFI	0.967	>=0.95 Good fit; .90 to .95 adequate fit.	Fit
TLI	.974	>=0.90 good fit; .90 to .95 adequate fit	Fit
IFI	0.991	>0.95 good fit; .90 to .95 adequate fit	Fit

*** indicates P value<0.001

 Furthermore, the standardized loadings ranged from 0.635 to 0.793, indicating a high

reliability of the model. Additional CR and AVE values of the construct were CR = 0.804 and

AVE = 0.716, they revealed to exceed their recommended levels of .70 and .50, respectively, demonstrating that the all the four specified indicators were significantly related to the PRT construct and represented PRT construct satisfactorily.

In view of these results, it can be concluded that all indicator items were significantly related to the PRT, therefore suggesting that there is a substantial support for the PRT construct with its four items.
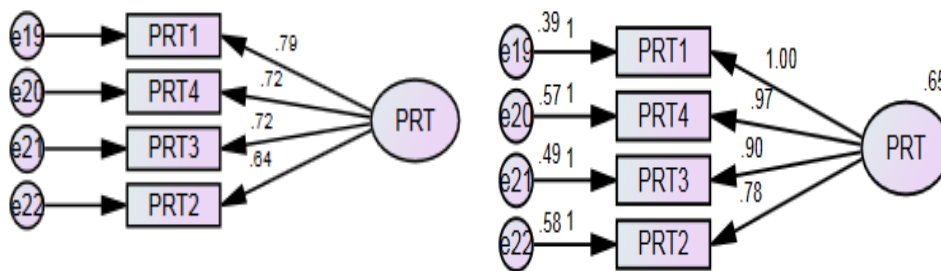

Figure 6-2 PRT construct with observed items

Table 6:9 CFA Results for Perceived Real-time presence

Construct and Measures	Standard Loading		P Value
PRT1	0.793		***
PRT2	0.635		***
PRT3	0.721		***
PRT4	0.722		***
Goodness- of- fit statistics	**Specified**	**Cut-Off Value**	**Fit Status**
Chi-Square P value	P<0.05	p>0.05	
CFI	0.991	>=0.90	Fit
RMSEA	0.074	<=0.05 is good <=0.08 is adequate	Fit
RMR	0.019	<0.05	Fit
GFI	0.993	>0.95 Good fit; .90 to .95 adequate fit.	Fit
AGFI	0.967	>=0.95 Good fit; .90 to .95 adequate fit.	Fit
TLI	.974	>=0.90 good fit; .90 to .95 adequate fit	Fit
IFI	0.991	>0.95 good fit; .90 to .95 adequate fit	Fit

*** indicates P value<0.001

6.6.3   CFA for Perceived Unobtrusiveness (PUob)

EFA results of PUob as reported in chapter five; were used to specify the measurement model. PUob is comprised of six observable indicators.

Similar to the previous construct, CFA evaluation of this construct shows that Chi square P value is statistically significant (p<.0001), suggesting that this model is not completely adequate. However as recommended by earlier researchers to ignore chi-square P value for large samples, as chi-square is over sensitive to sample size   leading to inaccurate significance value. Thus ignoring this measure, the other important indices were evaluated to provide sufficient evidence of adequate model fitness. As shown in CFA Table 6:10 , scores of CFI = 0.953 (>=0.90 is considered good), RMSEA= 0.10 indicates slightly lower than the cut-off point 0.08. However according to Hu and Bentler (1999); and Hair et al., (1992) have recommended that the RMSEA should not be more than 0.10 for an acceptable model fit, thus in this case this RMSEA value is accepted as adequate(Hu & Bentler 1999; Hair et al. 1998) , RMR= 0.05 (<0.05 is considered good), GFI= 0.962   (>=0.95 is considered good), AGFI= 0.912 (>=0.95 is considered good) , TLI= 0.921 (>=0.90 is considered good) ,IFI = 0.953 (>=0.95 is considered good) ; overall indicates a well-fitting model.

Furthermore, the standardized loadings ranged from 0.674 to 0.741, indicating a high reliability of the model. Additional CR and AVE values of the construct where CR =0.912 and AVE = 0.713 revealed exceeding their recommended levels of .70 and .50, respectively,

demonstrated that the all the six specified indicators were significantly related to the PUob

construct and represents PUob construct satisfactorily.

In view of these results, it can be concluded that all indicator items were significantly

related to the PUob, therefore suggesting that there is a substantial support for the PUob
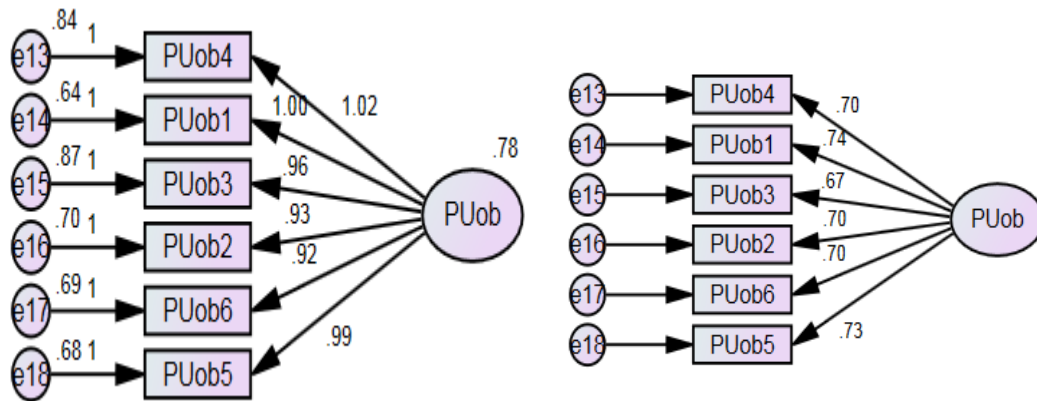
construct from its six observed items.

Figure 6-3 PUob construct with observed items

Table 6:10 CFA Results for Perceived Unobtrusiveness

Construct and Measures	Standard Loading	P Value
PUob1	0.741	***
PUob2	0.699	***
PUob3	0.674	***
PUob4	0.702	***
PUob5	0.727	***
PUob6	0.700	***

Goodness- of- fit statistics	Specified	Cut-Off Value	Fit Status
Chi-Square and Probability	117.64(9)	p>0.05	
CFI	0.953	>=0.90	Fit
RMSEA	0.1	<=0.05 is good <=0.08 is adequate	Adequate fit
RMR	0.05	<0.05	Fit
GFI	0.962	>0.95 Good fit; .90 to .95 adequate fit.	Fit
AGFI	0.912	>=0.95 Good fit; .90 to .95 adequate fit.	Fit
TLI	0.921	>=0.90 good fit; .90 to .95 adequate fit	Fit
IFI	0.953	>0.95 good fit; .90 to .95 adequate fit	Fit

*** indicates P value<0.001

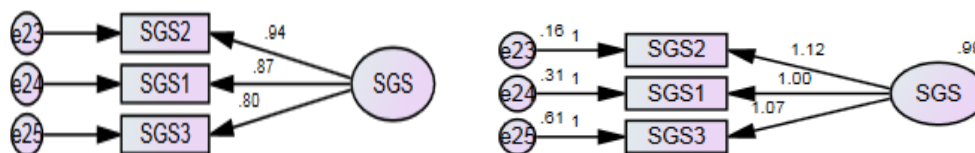### 6.6.4   CFA for Spiritual Goal Strivings

Figure 6-4 SGS construct with observed items

The measurement model for SGS is comprised of three observable items, thus according to Byrne it is regarded as 'saturated' or 'just identified'. This means in these cases the model-fit is considered as perfect, in situations where the number of equations is same as the number of estimated co-efficient, and when the model has zero degrees of freedom and further computation of the probability level cannot be computed any further (Arbuckle & Wothke 1999; Hair et al. 1998; Bearden et al. 1982). Hence this model will be re-estimated in the next section during the CFA of the overall mode in section l6.7. As such in summary the CFA results are shown in Table 6:11show only a summary of standard regression weights and its significance.

With respect to construct reliability, the value of standard loadings exceeded 0.70 recommended value, this indicates that the three items represents the construct SGS satisfactorily. Also AVE value of 0.874 exceeded the recommended cut-off value of 0.50 implying that estimated variance of the items actually represents its underlying SGS construct. In summary standard regression loading were found satisfactory.

Table 6:11 CFA Results for Spiritual Goal strivings

Construct and Measures	Standard Loading	P Value
SGS1	0.872	***
SGS2	0.941	***
SGS3	0.805	***

*** indicates P value<0.001

6.6.5   CFA for Vitality construct

EFA results of Vitality have been discussed in sections 5.4.5 and 5.7 of chapter five. The measurement items of vitality scale are comprised of six observable indicators. As discussed before in methodology chapter, the scale adopted in this study has the six item measure instead of the seven item measure.

Similar to the previous construct, CFA evaluation of this construct shows that Chi square P value is statistically significant (p<.0001), suggesting that this model is not entirely adequate. However as recommended by earlier researchers to ignore chi-square P value for large samples as chi-square is over sensitive to sample size   leading to inaccurate significance value. Thus ignoring this measure, the other important indices are evaluated to provide sufficient evidence of adequate model fitness. As shown in CFA Table 6:12, scores of CFI = 0.98 (> 0.90, good), RMSEA= 0.08 (<0.05, good), RMR= 0.03 (< 0.05), GFI= 0.98 (> 0.95, good), AGFI= 0.95 (= 0.95, good), TLI= 0.97 (> 0.90, good), IFI = 0.98 (>0.95, good); all the values indicate a well-fitting model.

Table 6:12 Vitality construct - CFA results

| Construct and Measures	Standard Loading		P Value
V1	0.76		***
V3	0.69		***
V4	0.79		***
V5	0.82		***
V6	0.77		***
V7	0.71		***
Goodness- of- fit statistics	**Specified**	**Cut-Off Value**	**Fit Status**
Chi-Square and Probability	P<0.005	p>0.05	
CFI	0.98	>=0.90	Fit
RMSEA	0.08	<=0.05 is good <=0.08 is adequate	Fit
RMR	0.03	<0.05	Fit
GFI	0.98	>0.95 Good fit; .90 to .95 adequate fit.	Fit
AGFI	0.95	>=0.95 Good fit; .90 to .95 adequate fit.	Fit
TLI	.97	>=0.90 good fit; .90 to .95 adequate fit	Fit
IFI	0.98	>0.95 good fit; .90 to .95 adequate fit	Fit

*** indicates P value<0.001

Furthermore, the standardized loadings ranged from 0.69 to 0.82 and the R square is 62 %, indicating a high reliability of the model. Additional CR and AVE values of the construct where CR = 0.919 and AVE = 0.57 revealed exceeding their recommended levels of .70 and .50, respectively, demonstrated that the all the six specified indicators were significantly related to the SGS construct and represents SGS construct satisfactorily.

In view of these results, it can be concluded that all indicator items were significantly related to the SGS construct, therefore suggesting that there is a substantial support for the SGS construct from its six observed items.

In conclusion to this section of this chapter has demonstrated that the measurement model proves sufficient evidence of unidimensionality, constructs validity and reliability.

6.7   CFA for Overall Constructs

In the previous section each constructs in the measurement model was assessed independently to understand if the data fits the constructs adequately. During CFA, measurement models for each construct was modified as required based on the results of fitness indicators and on the basis of statistical and theoretical rationale of each construct. The next section will focus on the overall measurement model where the constructs are connected to each other with two headed arrows indicating constructs correlation. The values above the ellipse shapes (which are latent variables) are the estimation of variance. The observed items or indicators are shown in rectangles and the measurement errors are presented in small circles associated with each indicator. The path coefficients (regression weights) of observed items to its constructs are shown above each arrow (single headed arrow).
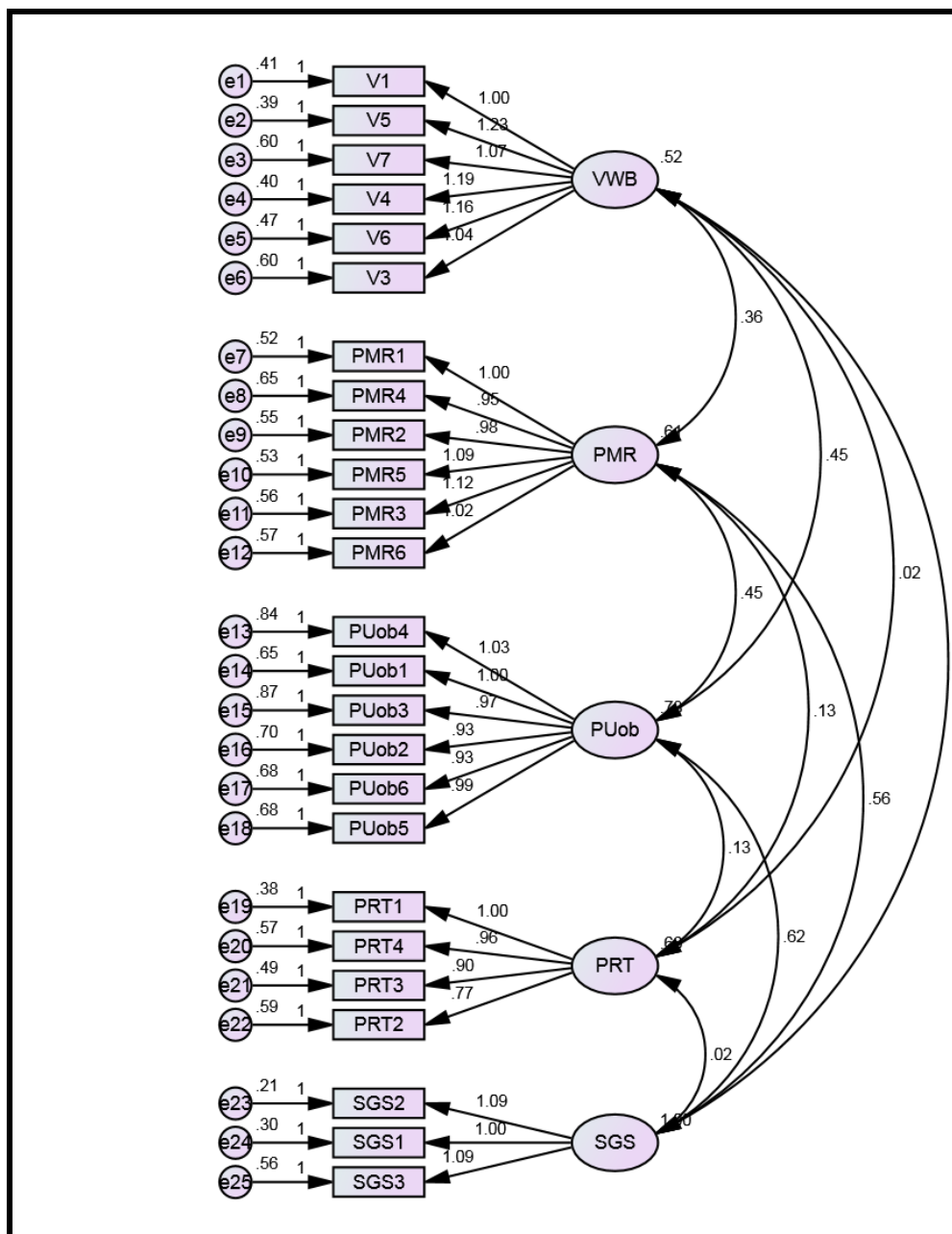
Source: Created by the author of this thesis

Figure 6-5 Measurement Model of Overall Constructs

This overall measurement model consists of five constructs PMR, PRT, PUob, SGS and VWB.

Six items or observed indicators are loaded onto PMR; four items are loaded onto PRT; six

items are loaded on to PUob; three items are loaded onto SGS construct and six items are loaded onto vitality construct.

In the previous section, full CFA model was evaluated and the results are summarised as shown in Table 6:13 along with values of R^2 values. The R^2 values ranged from .40 to .85 although indicated slightly lower values than the acceptable threshold of 0.50 for convergence (Steenkamp & Van Trijp 1991; Bollen & Jackman 1990), CR for all constructs reached >0.70 a value higher than the threshold recommended >0.60 by Bagozzi and Yi (1988) (Bagozzi & Yi 1988). AVE values evidenced satisfactory results and were above the recommended value of >0.50 demonstrating   reliability (Fornell & Larcker 1981). This also provided evidence that the construct's variance is greater than the variance due to error (Hair et al., 1998).   Furthermore all the observed items showed excellent values of acceptable reliability with Cronbach alpha > .70 (Nunnally & Bernstein 1994). In this section the overall model is examined by three main types of fit indices a) absolute b) incremental and parsimonious fit indices. The results are reported in the second part of the Table 6:13. The standardised path coefficients or loadings indicated the amount of importance of the measured items to their constructs

Table 6:13 Overall Measurement Model - CFA results

Constructs	Items	Standardised Loadings	P Value	R^2	Variance Extracted	Construct Reliability	Cronbach Alpha
PMR	PMR1	0.737	***	0.543			
	PMR2	0.716	***	0.528			
	PMR3	0.760	***	0.577			
	PMR4	0.678	***	0.460	.536	0.878	0.872
	PMR5	0.758	***	0.575			
	PMR6	0.726	***	0.528			
PRT	PRT1	0.795	***	0.632			
	PRT2	0.634	***	0.402			
	PRT3	0.723	***	0.523	0.514	0.804	0.809
	PRT4	0.718	***	0.515			
PUob	PUob1	0.738	***	0.545			
	PUob2	0.698	***	0.488			
	PUob3	0.675	***	0.456	0.509	0.912	.856
	PUob4	0.702	***	0.493			
	PUob5	0.726	***	0.528			

	PUob6	0.702	***	0.493			
SGS	SGS1	0.878	***	0.771			
	SGS2	0.923	***	0.852	0.764	0.780	.902
	SGS3	0.824	***	0.680			
VWB	V1	0.749	***	0.561			
	V3	0.695	***	0.484			
	V4	0.807	***	0.650			
	V5	0.816	***	0.665	0582	0.919	0.890
	V6	0.776	***	0.603			
	V7	0.706	***	0.499			

Goodness of fit Measures	Cut-off value	F
Absolute Fit Measures		
Chi-square X^2 of estimated model	P>0.05	602.781 (df 265,p<0.05)
Normed Chi-Square	<3.0	2.275
Root mean square residual (RMR)	<0.05	0.37
Root mean square error of approximation (RMSEA)	<=0.05 is good <=0.08 is adequate	0.036
Goodness-of-fit Index (GFI)	>0.95 Good fit; .90 to .95 adequate fit.	0.953
Incremental Fit Measures		
Adjusted Goodness-of-fit Index (AGFI)	>=0.95 good fit; .90 to .95 adequate fit	0.942
Normed Fit Index (NFI)	>=0.90 good fit; .90 to .95 adequate fit	0.955
Tucker Lewis Index (TLI)	>=0.90 good fit; .90 to .95 adequate fit	0.971
Parsimonious Fit Measures		
Parsimony Goodness-of-fit Index (PGFI)	within 0.50 while other fitness of measures were over 0.90	0.777
Parsimony Normed Fit Index (PNFI)	Based on the basis of NFI	0.844
Comparative Fit Index (CFI)	≥ 0.95	0.974
Incremental Fit Index (IFI)	>0.95 good fit; .90 to .95 adequate fit	0.974

Absolute Fit Index has been examined to understand how well an hypothesised model characters compare with the sample data to make a perfect fit between the model and sample data (McDonald & Ho 2002). This fitness is different from incremental fit indices because the calculation in this are not based on the comparisons with baseline model, as is the case in incremental fitness measure; instead this demonstrates the model fitness characters compared to the perfect fit and demonstrates which model has a superior fit and is measured by estimated model's Chi-Square(X^2),GFI, RMR and RMSEA   (Maruyama 1997; Hu & Bentler 1999; Bollen & Jackman 1990). The first part of the Table 6:5 to Table 6:6 show these indices.

To increase the overall model fitness measure, poorly fitting items PMR7 and PRT5 were removed due to their relatively high standard errors, loading on more than one constructs and low explained variances. The fitness characters are shown in Table 6:13 where the chi-square (X2) is 602.781 with 265 degrees of freedom (p=.00), GFI was 0.953; while RMR was 0.37 and RMSEA was 0.036. Except for P value of chi-square which is highly sensitive to large data sample the other findings were well within the recommended levels as mentioned in second part of the Table, thus the model indicates adequate fitness of model, indicating that the model fits the data well.

After the absolute fit index was evaluated, the Incremental Fit Indices were evaluated where the hypothesised model was compared with the more restricted base line model. The findings have shown that Adjusted Goodness-of-fit Index (AGFI) value of 0.942, a Tucker

Lewis index (TLI) of 0.955, and a normed fit index (NFI) of .971. The recommended indices for these for good fit is >=0.95 to indicate a good fit model (Bryne 1998; Hu & Bentler 1999). These indices above demonstrate the recommended levels, yielding a good level of fitness. The result indices has been close to 1.00 indicating a good fit model (Bryne 1998; Hu & Bentler 1999).

Finally, the last fitness index is to evaluate the Parsimonious Goodness of Fit Indices (PGFI), which provided the information about issues of parsimony in SEM (James et al. 1982). This information is about complexity of the model providing the number of estimated parameters of the model in assessment for overall model fitness.

According to Mulaik et al (1989) the cut off indices are around 0.50 while other fitness of measures were over 0.90 (Mulaik et al. 1989). Researchers have recommended that these indices are to be used with other measures of fitness. PGFI is usually assessed with values based upon GFI which is evaluated by adjusting for loss of degrees of freedom, thus no threshold values for these values have been recommended.

Other indicators like the Parsimonious Normed Fit Index (PNFI) , NFI ,CFI were evaluated and they indicated values of PNFI is 0.84; CFI is 0.97; IFI is 0.97, these values suggested satisfactory model fitness for the model.

A summary of the fit indices indicate good support demonstrating that the model and data fits well. This infers that model is valid and reliable. The results demonstrate that all the models display a good fit, as well as provide sufficient indication of model fit indicators for measures of unidimensionality, construct validity and reliability. This model fit results indicate that it is ready for the subsequent SEM analysis and has satisfied the requirement of the initial assessment of measurement model fitness indices in SEM.

Part3

6.8   Structural Model Assessment

This is the final part of the SEM assessment to evaluate structural model (Byrne 2010). In this part of SEM analysis, the theoretical relationships among the constructs are evaluated (Byrne 1998; Jöreskog & Bollen 1993; Bollen & Jackman 1990) along with identifying any influence of these constructs on other constructs in terms of magnitude, direction and significance (Byrne 1998; Maruyama 1997). Previous section established the measurement model for five constructs, PMR, PRT, PUob, SGS and VWB. In this section, initial tests will include validating the structural model in comparison with CFA results for any difference between them and they will be discussed. Subsequently statistical significance of each hypothesised path will be evaluated which would include testing the theoretical model and their relationships between the independent and dependent latent constructs with an intention to test the relationships between SGS and four other constructs as shown in Figure 6-6. This study uses AMOS 22.0 to test these SEM-hypotheses.

The correlations between the independent variables are indicated by a double headed arrow and single headed arrow indicates the causation between the dependent and independent variables, errors (residuals) are indicated by circles which show the association with each of the dependent variables. Accordingly,(Garson 2012; Kline 2011; J. F. Hair et al. 2010) .

Unlike in the previous section of this chapter, this stage of SEM is emphasised on focusing on the strength (magnitude) and direction of the causal relationships via studying hypotheses rather than examining the relationships between constructs(J. F. Hair et al. 2010). **Error! Reference source not found.** shows the constructs relationship with each other and the nature of relationship, with four hypotheses which are represented by causal paths between the latent constructs.

Hypotheses H1, H2, H3 posited the influence of PMR, PUob and PRT on SGS, while H4 posited the influence of SGS on Vitality aspect of wellbeing. Prior to hypotheses testing this hypothesised model is evaluated for a good fit before testing the hypotheses.
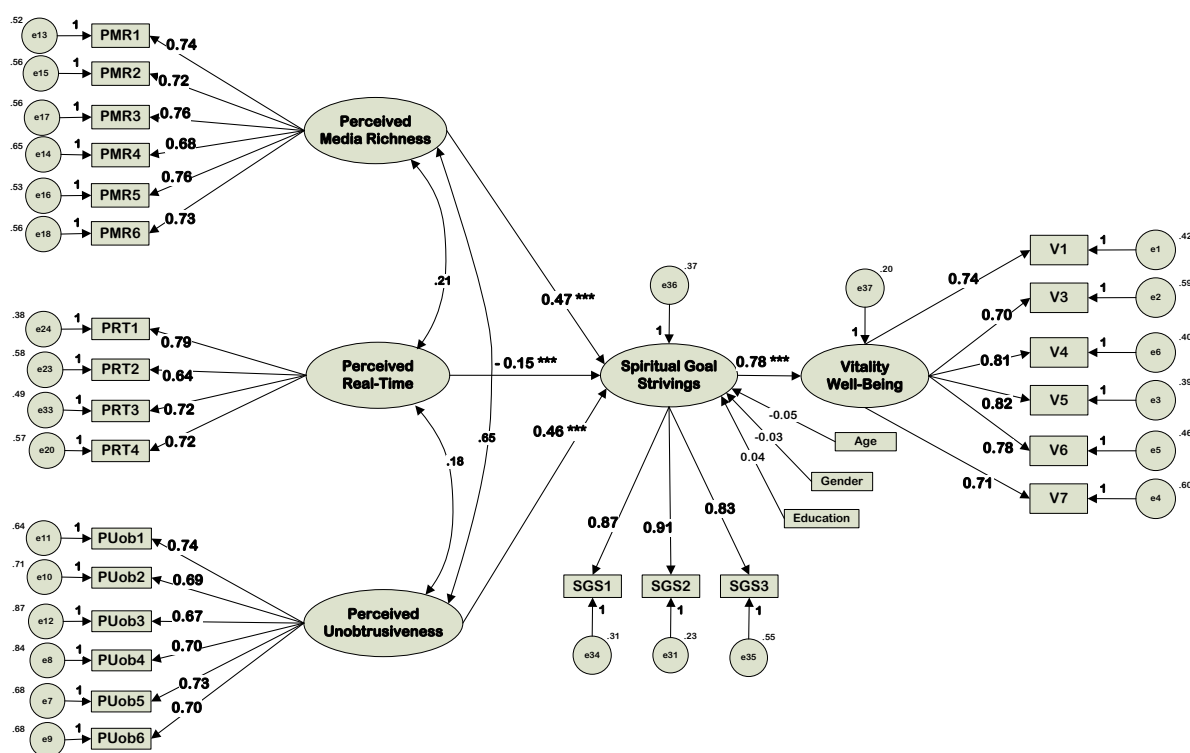
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Figure 6-6 Path causal relationships

Figure 6-6 shows five causal paths (H1, H2, H3 and H4) that are used to test the relationships between the latent constructs which are mainly classified into independent and dependent variables. Independent constructs are SGS and Vitality while dependent constructs are the PMRT, PRT and PUob. To evaluate the hypothesis, goodness of fit indices and other parameters were examined and the results of the parameter estimates demonstrate greater support for all the four hypothesises by showing significance with P>0.001. The results are shown in Figure 6-6

Table 6:14 Hypotheses testing - Path causal relationships

Construct	Code	Hypothesis	Relationship

Perceived Media Richness	PMRT	H1	SGS <--- PMRT
Perceived Real-Time	PRT	H2	SGS <--- PRT
Perceived Unobtrusiveness	PUob	H3	SGS <--- PUob
Spiritual Goal Strivings	SGS		
		H4	VWB <--- SGS
Vitality Well-Being	VWB		

Structural model fit indices as shown in Table 6:15 demonstrate a good fit to the data for the structural model. Although chi-square ratio ($\chi2$ = 784.099; df = 340; p = .000) is shown significant (p <.001), considering the large sample this was expected to be very sensitive indicating significant p value; however, other fit measures demonstrated good model fitness for the observed data. Similar to measurement model other fit measures, the absolute fit measures indicated good fit with value of GFI = 0.944 and RMSEA = 0.036; incremental fit measures were also above the recommended level with values of NFI =0.942 and CFI =.966; the parsimony fit measure were also above the cut-off recommended values with AGFI = 0.933 (cut-off point of > 0.9).

Furthermore Normed Chi-square value also indicated support with 0 $\chi2$/ df = 2.306 which is within the recommended values of $\chi2$/ df < 3.0 Table 6:15 shows these findings

(χ2 = 784.099; df = 340; p = .000)

Normed Chi-square= 2.306

Absolute fit measures: GFI = 0.944 and RMSEA =0.036

Incremental fit measures NFI = 0.942 and CFI =.966, AGFI = 0.933

The parsimony fit measure PNFI=0.847, AIC=0.972

Table 6:15 Structural model fit measure assessment

Measure Abbreviation	Type	Obtained	Accepted Level
(χ2 /df)	Absolute fit	2.306	≤ 2.0 is very good
			≥ 2.0 and ≤ 3.0 is acceptable threshold fit level
			≥ 3.0 and ≤ 5.0 is acceptable
GFI	Absolute fit	0.944	≥ 0.95 is good fit level
			≥0.90 is acceptable threshold level
RMSEA	Absolute fit	0.036	≤ 0.05 is good
			≤ 0.08 is adequate
SRMR	Absolute fit	0.037	Value<.05 good fit;
			0.01 to .05 is adequate fit.
AGFI	Incremental fit	0.933	Value>.95 good fit; .90 to .95 adequate fit.
NFI	Incremental fit	0.942	Value>.95 good fit; .90 to .95 adequate fit
TLI	Incremental fit	0.962	≥ 0.95 is good fit level
			≥ 0.90 is acceptable
CFI	Incremental fit	0.966	≥ 0.97 is good fit level
			≥ 0.95 is acceptable
PNFI	Parsimonious fit	0.847	Higher value indicates better fit

AIC	Parsimonious fit	0.972	Value closer to 0 better fit & greater parsimony

6.8.1   Hypothesis Testing of Proposed Structural Model

Research findings, after performing SEM all the four hypothesised paths demonstrated that they were statistically significant. The results are shown in Figure 6-7**Error! Reference source not found.**
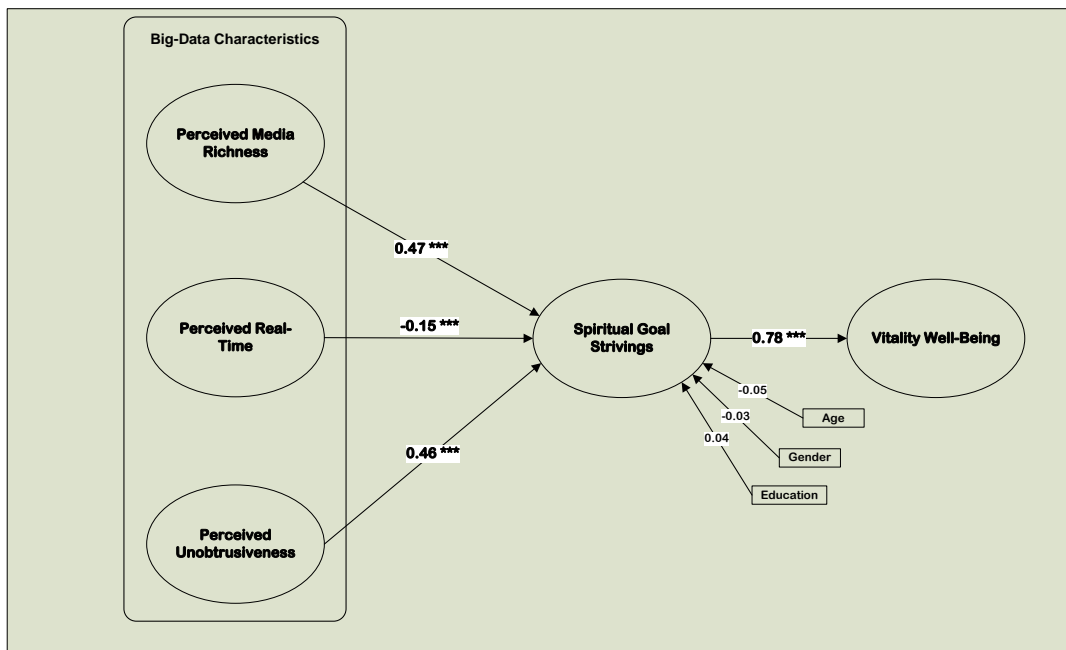
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Figure 6-7 Hypotheses paths- Final Structural model

Table 6:16 Final Structural Model Hypotheses Test Results

H	Hypothesized paths	Standard coefficient	C.R.	P	Results
H1	SGS <--- PMRT	0.473	12.534	***	Supported
H2	SGS <--- PRT	-0.150	-5.845	***	Not Supported
H3	SGS <--- PUob	0.451	12.220	***	Supported
H4	VWB <--- SGS	0.785	22.658	***	Supported

Note: *** p <0.001; **p <0.01, *p <0.05; # p insignificant value

C.R. = Critical ratio; P= p-value =significance value

Table 6:17 Results of revised structural model

Construct	Code	H	Relationship	Correlation	Supported
Perceived Media Richness	PMRT	H1	SGS <--- PMRT	Positive	YES ***
Perceived Real-Time	PRT	H2	SGS <--- PRT	Negative	NO ***
Perceived Unobtrusiveness	PUob	H3	SGS <--- PUob	Positive	YES ***
Spiritual Goal Strivings	SGS				
		H4	VWB <--- SGS	Positive	YES ***
Vitality Well-Being	VWB				

Note: *** p <0.001; **p <0.01, *p <0.05; # p insignificant value

The S.E. is the standard error and the C.R. is the critical ratio (t-statistic equivalent). Structural models covariance matrix was created by using parameter estimates and five latent constructs were recognised by 29 measurement items.

To test the structural model's relationships between the constructs, critical ratio (C.R.) (t-statistic equivalent) was evaluated by dividing the regression weight value by its standard error (S.E). This C.R. test is similar to T-test with a null hypothesis asserting that if an C.R. value is greater than a 1.96 and p<.05 (Mueller 1996), then the null hypothesis that the associated estimated parameter = 0 is rejected and the hypothesised path is accepted along with theoretical reasoning. In the case if C.R. <1.96 indicates that the path is not supported by the data and thus the hypothesised path is removed and the model is to be changed before proceeding further.

In this section empirical results of the structural model are evaluated to verify if they support the hypothesised relationships in the conceptual framework as discussed in chapter three. The simplified model is shown in **Error! Reference source not found.** which is without the observed indicators and the SEM model with indicators are shown in **Error! Reference source not found.** . The results with standardised estimates, critical ratio (C.R.) and significance level (P value) are shown in Table 6:14.

According to Hair et al., (2010) when C.R. value >1.96 for a regression weight, then the co-efficient value of the parameter is statistically significant at 0.05 level (J. F. Hair et al.

2010). Thus using the C.R. values and path estimates, four hypothesised paths were examined in this research study and were found to be statistically significant. For instance the hypothesised path between PMR and SGS showed C.R. value of 12.53 which is > 1.96 is statistically significant with P<0.001. Similarly paths between PRT and SGS is -5.84; PUob and SGS is 12.22; SGS and Vitality demonstrates C.R. = 22.65 and all are statistically significant with P<0.001. All of these has values >1.96 and thus were statistically significant at P<0.001.

Furthermore these results as shown in Table 6:15 Structural model fit measure assessment revealed that three hypotheses H1, H3 and H4 were positive with statistical significance. The hypothesis path coefficients are interpreted the same as correlation or regression (Mclntosh & Gonzalez-Lima 1994) where, when it indicates a positive coefficient indicates that a unit increase in one structure measure will lead to an increase in the activity measure of its related structure and is relative to the coefficient size. Alternatively a negative coefficient means that a unit increase will relative decrease in the measure of its related structures. In the results it shows hypotheses H1, H3 and, H4 with positive path coefficients were supported as hypothesised however H2 was negative although was statistically significant. The positive correlation CR value of 0.47, 0.458 and 0.785 suggests that there exists a positive correlation of PMRT and SGS, PUob and SGS and SGS and vitality respectively. PRT was negatively correlated with SGS with a C.R. value of -0.15. Thus, this result shows that the respondents felt that there was significant negative relationship between PRT and SGS, meaning that they felt significantly lower impact on spiritual goal striving; this is contrary to

the original conceptualisation. Thus, overall, all the hypotheses except one are accepted as the data analysis supported significant correlation between independent and dependent variables. Further discussion on this counter intuitive result is discussed in sections 7.3 and 8.3.6 .

Table 6:18 shows the squared multiple correlations R^2 for the dependent constructs. This is a statistical measure which reveals how much of variance is predictable by the independent variables (Hair et al. 2006; Brown 2006). In other words, percentage of R^2 closer to 1.00 indicates greater ability of that model to predict the expected results (Brown 2006). The entire dependent variable showed $R^2 > 0.60$ (60%). This indicated that the independent variables were able to explain the behaviour of dependent variables by 68% and 62%.

Table 6:18 Proportion of Variance Accounted (R square)

Construct	R^2 (R Square)
Spiritual Goal strivings	0.62
Vitality Well-Being	0.68

Overall, hypothesised model indicated that all the paths were significant and also revealed a considerable high amount of variance explained by independent variables by 68% and 62%.The next section is structured based on the constructs and discusses the hypothesised relationship results in detail, , namely PMR (H1), PRT(H2), PUob (H3) and SGS(H4).
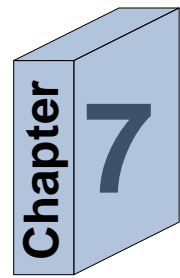
6.9   Summary

This chapter looked into the main analytical process of the data employed in the present study using SEM on AMOS 22.0. In this chapter, data screening was performed and data preparation included outliers' detection and normality tests. Most of the outliers were not removed mainly to determine generalisability. Normality test results showed that the multivariate normality assumptions were satisfied. Tests for multivariate assumptions were performed to check for the recommended levels, the results were satisfactory.

CFA validation was performed to validate the latent constructs. Results of all measurement models showed that it satisfied the minimum criteria of unidimensionality, reliability and construct validity.

Lastly the structural model was evaluated to examine the hypothesised relationships between the latent variables and the results are shown in Table 6:17. The fitness indices indicated in the Table 6:15 demonstrated that the hypothesised structural model provides a good fit to the data and all the hypotheses were found to be statistically significant.
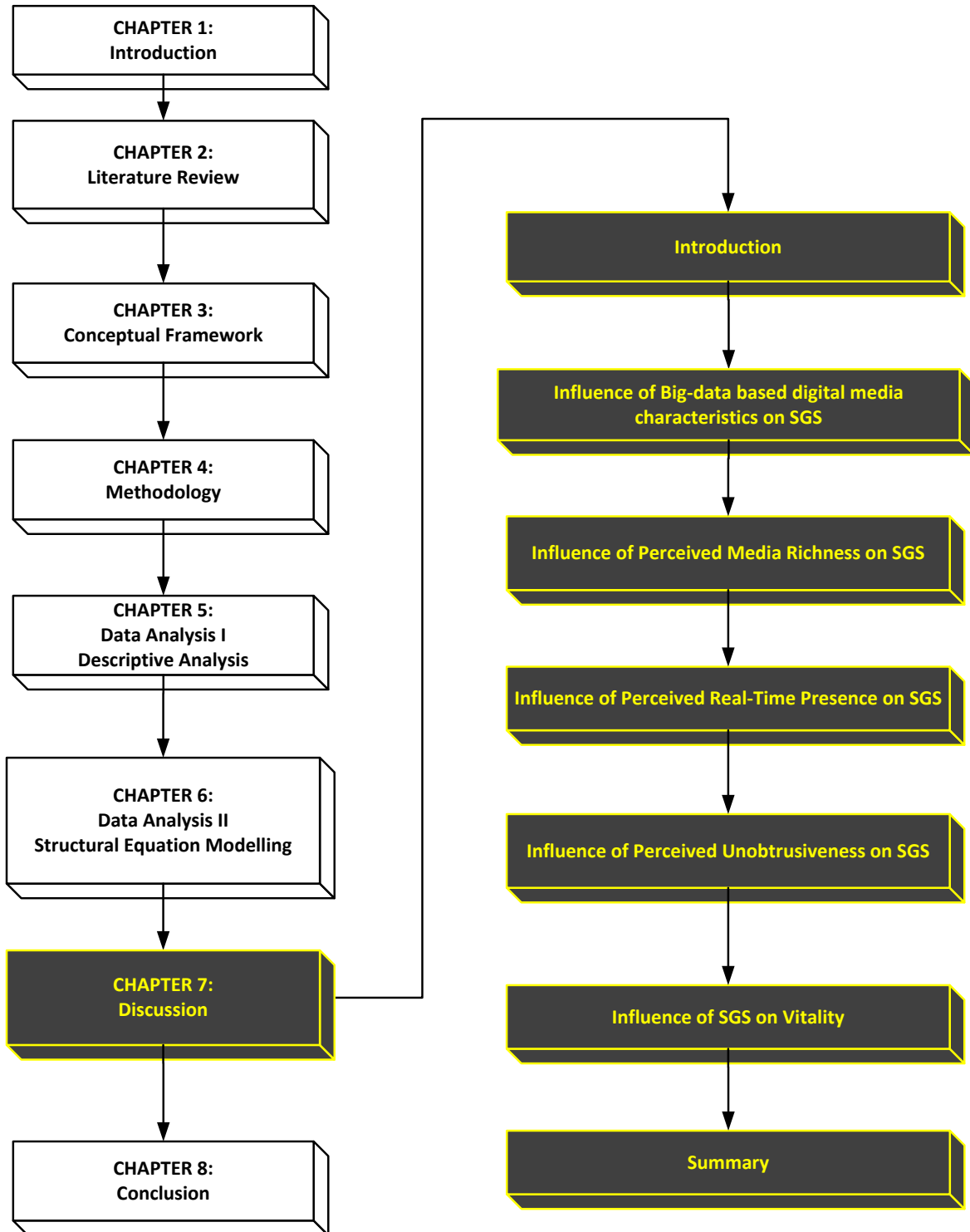
The next chapter will provide discussions on the research objectives and reflecting on the research findings to understand the overall data analysis and its purpose. This will be followed by discussing the implications and recommendations for future research.

Overall, these data analysis chapters demonstrated the advanced statistical methods that were used in this study for performing data analysis. This chapter was categorically divided into two main phases followed as data analysis chapter I and then data analysis chapter II chapters and several sub sections. The earlier chapter was involved in presenting fundamental statistical analysis dealing with demographic data of the data that were collected and analysed their characteristics, along with other basic preliminary regression analysis that was required to be performed before analysing the structural model using SEM software. Test results and the suitability for performing further advanced SEM analysis have been reported in the earlier chapter. Following the preliminary tests, this chapter was followed with advanced statistical methods which were appropriate to analyse the collected data. The data collected were evaluated as proposed by the framework. SEM analysis using AMOS software was performed due to their strength in conducting effective SEM tests and their ability to ensure the integrity of the analysed data and to eliminate any effects of bias during analysis. Beginning with measurement model evaluation, CFA was performed to establish the construct validity and reliability measures were adequate and to eliminate any issues which would affect the next phase of structural data analysis. After the measurement model indicated satisfactory results, structural model was evaluated to verify the derived hypotheses in this chapter by examining the path estimates, errors and p values between the variables as described in the conceptual framework. The results of the hypotheses indicated significance of the derived paths. In addition, some results were not as expected. The next chapter will discuss more elaborately the findings in this chapter in more detail.

Chapter 7

DISCUSSION

THE THESIS STRUCTURE

CHAPTER 1: Introduction		Introduction
CHAPTER 2: Literature Review		Influence of Big-data based digital media characteristics on SGS
CHAPTER 3: Conceptual Framework		Influence of Perceived Media Richness on SGS
CHAPTER 4: Methodology		Influence of Perceived Real-Time Presence on SGS
CHAPTER 5: Data Analysis I Descriptive Analysis		Influence of Perceived Unobtrusiveness on SGS
CHAPTER 6: Data Analysis II Structural Equation Modelling		Influence of SGS on Vitality
CHAPTER 7: Discussion		Summary
CHAPTER 8: Conclusion		

Source: *Adapted to this study from* (Kamarullzaman 2006)

7   Chapter Seven: Discussion

7.1   Introduction

Earlier in this study a conceptual framework was proposed to examine the influence of relationship between big -data characterises and SGS and their effects on well-being of spiritual motivated individuals.   In order to carry out this examination which would appropriately address the research aim and objectives, responses from individuals who moderately used data using digital media based on big-data for their everyday SGS were collected using questionnaire survey prior to the survey, the study performed critical literature review to identify the most appropriate theory to be able to capture the entire characteristics of big data based digital media. Most widely used theory MRT was explored which was capable of capturing the holistic nature of digital media by extending this theory. For this, two new variables PRT and PUob were added to aptly capture the nature of big-data based digital media in chapter two and their relation hip is explained in chapter three. Vitality measure was identified for measuring the well-being aspect of individuals who actively participated in using digital media for their SGS.   Following the reasonable explanation of the importance of this study gathered in research gap and its possible contributions to particular stakeholders dealing with spiritual wellness. Conceptual framework was proposed which evaluated the influence in the subsequent chapters. For this , rigorous data analysis have been presented in two separate chapters involved in assessing the collected data from analysing the demographic profile of respondents to final SEM analysis. Detailed data analysis included preliminary assessments of data for their fitness to conduct advanced statistical analysis. Reliability and validity tests were conducted

using the measurement model, the finding revealed a satisfactory outcome allowing further data analysis procedures to be conducted with confidence during the next phase which was focused on evaluating structural model. This was the final part of the data analysis which involved in evaluating derived hypotheses. Four hypotheses that were hypothesised during the conceptual framework now reported their results in previous chapter. This discussion chapter will follow on to the results found in previous chapter and discuss the key findings with respect to the main research expectations and the key influential factors of big-data characteristics on SGS and their significance will be discussed in detail. The findings also present connections to other domains of spiritually motivated individuals like influence on wellbeing in connection to previous studies.

Influence of Big-data based digital media characteristics on SGS

The data analysis presented in the previous chapter offered empirical evidence to literature on the existence of significant influence of big data based digital media capabilities and SGS outcomes. That is between: 1) PMR and SGS 2) PRT and SGS 3) PUob and SGS. A graphical representation of the final model and estimation results is shown in Figure 7-1. The Table 6:16 comprising of standardised coefficients and C.R. values exceeded the critical value of 1.96 and the P-value associated with each of the path coefficients < .05 (Mueller 1996).

This data analysis was carried out in Anderson and Gerbing's (1988), two-step method (Anderson & Gerbing 1988), beginning with measurement model CFA evaluation to establish unidimensionality, reliability and construct validity. CFA results demonstrate that all the measurement models were within recommended thresholds.

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In the second step, structural model was evaluated for fitness indices. The results indicated adequate fitness to the data to explain the influence of digital media on SGS. The overall fitness indices, path significance and predictive power were reported in this section which represented the best fit to the data

The main structural model revealed that all the four hypotheses were significant, however only three hypotheses indicated being positively correlated and one hypothesis was shown to be negatively correlated. Thus the research finding demonstrated that that the hypotheses were all supported indicating that there is a relationship between digital media characteristics and SGS here some characteristics showed positive influence on SGS and some have showed negative influences on SGS.

7.2   Influence of Perceived Media Richness on SGS

H1: There is a positive relationship between perceived media richness and the perceived success in SGS.

The H1 results in shown in Figure 7-1which shows that the relationship between PMR and SGS was positive and significant   (SE= 0.459, CR= 12.53, p<.001).

In the context of using data by spiritually motivated individuals for their everyday goal strivings of spiritual nature, this result implies that for any interactive tasks with relevance to accomplishing SGS using digital media- user believes that the digital medium makes it

easier to explain things over it, and are able to interact quickly using this medium. The findings also reveal that the users are able to give and receive timely feedback and are able use various data formats to communicate such as user being able to use audio, video, text etc., to communicate effectively. The findings also reveals that using the digital medium , users are able to understand the cues well during the interaction and are able to tailor messages to their own use, so that allowing them to use it later.

Certain influential factors can be derived from the data analysis results (in section 5.2 to section 5.3.1) to understand some of the reasons for the hypothesis to be the way they are, demonstrating H1 to be positive and significant. Respondents having lengthier commitment to using digital media for their personal strivings have acknowledged that the digital media greatly influences their tasks to be completed effectively based on their perceptions of their experiences, implying that longer lengths of commitment and involvement in using the digital media greatly influences their success in spiritual practices. Having longer involvements with digital media for spiritual practices builds familiarity in association with the medium gives a sense of ease that is gained due to knowledge and understanding over time. Under these circumstances it can derived that length of commitment is an influential factor and users are more likely to experience s success in SGS with lengthier commitment to use digital media for their SGS.

Additionally there are aspects of respondents level of education which have revealed might be an influential factor for the results to be the way they are. Majority of the respondents

were highly educated or professionals having opted to use online questionnaire using their smart devices. This clearly indicates their preference to digital access for information. Again under these conditions involving respondents who are highly educated are implied to have access to utilise digital media capabilities to greater lengths either for learning, practicing or maintaining relationship with their spiritual subject building their experience and familiarity.

Thus under certain circumstances, respondents who are well educated and committed have demonstrated that digital media offers greater capabilities for their accomplishing their tasks effectively. This implied that with respect to tasks related to SGS, respondents are able to send and receive feedback quickly for instance ability to receive quick clarification from a friend using audio ,video or text capabilities of digital media   or search for information online rather than waiting for personal communication by visiting spiritual centres or gatherings. Respondents able to experience different cues similar to face to face interaction demonstrates that they are able to communicate quickly and effortlessly assisting the respondents to explain things easily, clarify, receive quick feedback, ability to personalise information necessary for SGS with less effort on spiritual matters. This makes respondents interactive tasks using digital media very effective, making the respondents experience ricer enabling an increase in level of interactivity. This provides them with a higher degree of richness in media capabilities for effective communication to individual specific spiritual needs and practices. Higher their involvement will influence SGS such as gaining knowledge and to maintain connection with spiritual subject. Overall, adding more value to the experience and feelings on the purpose of using the digital media for SGS. This

reveals then the digital media users will be more likely to believe the advantages of using the digital media for its assistances and usefulness for their everyday goal strivings of spiritual nature. The result demonstrates that the PMR which is measured by all these capabilities has shown to have strong significant effect on success in goal strivings of spiritual nature, implying that if there was an increase in the Perceived Media Richness (PMR) then it would positively influence user's success in SGS. In summary, these results suggest that PMR is one of the major contributing factors for predicting success in SGS.

The findings from past studies on the users adopting digital media based on media functional and usefulness capabilities having positive impact on satisfying goal outcomes like task accomplishments (Sheer & Chen 2004b); on interaction effectiveness (Alan R Dennis & Kinney 1998b); on task performance (Daft, Lengel & Trevino 1987; Daft & Lengel 1986; Kanawattanachai & Yoo 2007; Rice 1992; Yoo & Alavi 2001); on increased level of interactivity provided by rich media is seen to greatly influence on disseminating knowledge (Hew & Syed Abdul Kadir 2016) ; increase in several outcomes like interactivity of online discussion forum (Fernandez et al. 2013b) , on instant messaging (Ogara et al. 2014), on attitude (Saat & Selamat 2014); greater experience (Carlson & Zmud 1999); media choice (Fulk & Boyd 1991). Consistent with the findings from past research works were consistent with the theory that has been explored and established sufficient evidence to support H1, that is PMR characteristics of digital media influences positively on SGS of spiritually motivated individuals. Hence this study suggests that spiritually motivated individuals will benefit from using digital media for their SGS to be accomplished.

7.3   Influence of Perceived Real-Time presence on SGS

H2: There is a positive relationship between perceived real-time presence and the perceived success in SGS. The result of H2 is shown in Table 6:16(SE=-0.15, C.R. value= -5.845, p<.001). This suggests that real-time presence influences SGS significantly and is negatively correlated. This reveals that respondent's perception of real-time presence experience of the digital media is likely to have less success in their SGS.

The findings of real-time presence have not been as expected but not surprising too. Within the context of omnipresence impact on individual's motivation to use, a number of studies have predominantly indicated a positive influence of real-time on goal attainments (Chung & Kim 2008; Junglas & Watson 2003); on task outcomes like increased personal insight to make better decisions at any time in any location (LaRose et al. 2001), for surveillance; allowing individuals to know the location, surroundings, and nearby resources and also available statuses of potential peers at real-time (Cameron & Webster 2005); sharing of knowledge at real-time has shown to influence each other's activities (Roy 2014); dissatisfaction with the present state was identified as a goal-oriented outcome for social media use   (Nicole B Ellison et al. 2007); mood alterations such as use of real-time interaction for avoiding negative emotional states such as loneliness (Burke et al. 2010) and boredom (Nicole B Ellison et al. 2007); enables distinguished advantages in leaning to acquire information at any time and real-time (Dholakia et al. 2004) and positive influence on performance outcome due to flexibility, convenience and effectiveness in obtaining information insight at real-time (Looney et al. 2004). Together with a wider perspective

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from literature it was hypothesised in this study that real-time presence to be positively related to goal strivings of spiritual nature where it was anticipated that real-time presence could serve as an important aspect to reinforce and recall spiritual goals at real-time and anytime and it is enhanced by having access to information via discussion or through other digital sources at real-time.

However literature review has shown to support the negative influences of real-time presence in the context of parallel discussions at real-time leading to information overload which is found to be impairing the ability of the users to develop a shared focus on single task (Simpson 2005; Erickson et al. 2002; Herring 2003; Herring 1999). Real-time presence in the context of multiple threads of information transmissions is seen to have negative impact where multiple senders are transmitting messages at real-time or multiple simultaneous conversation threads are occurring negative influence on task effectiveness and performance is observed in previous studies (Simpson 2005; Herring 2003; Herring 1999). These research outcomes suggest that perceived real time presence negatively impacts goal accomplishments.

The results in this study reveals that the PRT has strong negative influence on the SGS with statistical significance for H2 at P = 0.001. This implies that the respondents PRT that is having access to information at anytime, anywhere or all the time was not helping their SGS. In summary, along with PMR, PRT was found to be an important contributing factor for

users' success in SGS; however, PRT was found to be relatively less influential than the PMR and negatively correlated.

Although real-time presence in previous literature has shown positive effects on goal strivings, aspects of real-time presence can be disruptive in some situations. The reasons for these deviations from being positive towards SGS possibly are due to the interferences experienced during real-time discussions where several conversation threads can get intertwined rather than focus on one conversation- leading to lack of focus and causing confusions. Individuals may also experience lack of concentration in spiritual practice due to real-time interferences if digital media is not configured properly. Individuals can also get dependent on staying connected with real-time presence information and develop a tendency to not miss important real-time information creating psychological disorders over time. Thus in some situations real-time presence influences respondents towards the failure of SGS. Certain factors such as reduced focus, multiple messages leading to confusions and reluctance in missing out information at real-time are some of the factors that influence the real-time presence to be negative in this study.

Hence this research outcome contradicts with the some extant literature of impacts of real-time presence on task effectiveness and effective goal outcomes. Nonetheless, the data analysis revealed that the PRT is still an important influential factor for goal outcomes. Particularly, this factor is found to have negative correlation with the SGS outcomes that is -0.15, this shows that the real-time presence capability does not help towards SGS accomplishments, instead would hinder SGS. Hence spiritually motivated individuals using

digital media for SGS should be vary of this hindrance for SGS accomplishments and use this feature with great caution. This research outcome will be discussed in more detail in section 8.3.6.

7.4   Influence of Perceived Unobtrusiveness on SGS

H3: There is a positive relationship between Perceived Unobtrusiveness and the perceived success in SGS.

The research outcome of this study is shown to have a positive relationship between PUob and SGS. This hypothesis was supported by the data with SE = 0.458, CR= 2.22, p <.001, shows that the relationship between PUob and SGS was both positive and significant similar to PMR.

Influential factors highlighted in section 7.2, are able to explain some of the reasons for the hypothesis H3 to be the significant and positive .With majority of the respondent's experiencing unobtrusiveness feature as allowing them to not have continuous focus on the digital media during interactions, facilitating the respondents to use less mental energy, avoiding heavy cognitive overloads, less disruptive, requiring less effort. This is shown to provide easier forms of communication in various settings with other computing devices diffused in the physical surrounding benefiting the respondents to pursue their goals with fewer distractions. With respect to lengthier commitment (as discussed Section 7.2) with respondent builds familiarity of using less mental energy , less effort and other related resources that are not consumed by the interactive system itself, allowing attention free

tasks being executed to conserve more mental energy to process information required for spiritual practices effectively. Also lack of interference with other activities, less distraction and disruptions experienced by long term committed respondents encourages them to continue processing formation for their SGS effortlessly rather than tediously focusing on digital systems and networks in environments.   In line with this inference, long term committed respondents have demonstrated that the digital media greatly influences their tasks to be completed effectively in section 5.3, implying that longer lengths of involvement of digital media on SGS greatly influence their success in spiritual practices. This denotes that respondents believe that unnoticeable ways of interaction along with not having the need to concentrate or focus on the interactive system all the time for receiving information, then the respondents are more likely to believe that this is helpful for their SGS.

These findings in this study are consistent with previous studies that has been explored and established sufficient evidence that unobtrusiveness, which is a subtle presence of interactions or physically invisible interactions everywhere influences positively on output performance such as,; influences hedonic motivation   like in gaming (Alexander Salinas Segura 2015), chatting (Deng et al. 2010); seen to provide positive emotional states through subtle interactions use (Burke et al. 2010; Nicole B Ellison et al. 2007); increased task performance with less distractions was observed (Lyytinen & Yoo 2002).

Thus the results demonstrates that the PUob has strong significant effect on success in goal strivings of spiritual nature, implying that if there was increase in the PUob then there is a positive influence user's success in SGS. In summary, these results suggest that PUob is one of the major contributing factors for predicting success in SGS.

7.5   Influence of SGS on Vitality

H4: There is a positive relationship between SGS and Vitality.

The data analysis presented in the previous chapter has offered empirical evidence to literature on the existence of significant relationship between SGS and Vitality. That is between SGS and Vitality. A graphical representation of the final model and estimation results is shown in **Error! Reference source not found.**.   Table 6:16comprising of standardised coefficients and C.R. values exceeded the critical value of 1.96 and the P-value associated with each of the path coefficients < .05 (Mueller 1996).

The main structural model revealed that the hypotheses were significant and were positively related, thus supporting the hypothesis.

This positive relationship between SGS and vitality in revealed from data analysis. Success in SGS influences vitality aspect of well-being and this hypothesis is supported with SE = 0.785, CR = 22.658, p<.001. These findings clearly indicate that there is a positive relationship between SGS and Vitality.

Along with this study's findings numerous research works demonstrates that goal accomplishments promotes enhanced well-being experiences. With certain influential factors derived from the data analysis results (Section 5.3) will help to understand the reasons for higher levels of vitality experienced by this study's respondents. Long term committed respondents in this study have shown to experience higher levels of vitality in them infers that the successful goal accomplishment over long term promotes well-being states. This however requires longitudinal studies to evaluate and confirm and is a limitation discussed in section 8.4. however previous studies support that successful goal striving has shown to provide an important prerequisite of growth (Sheldon et al. 2002) and evidenced greater wellbeing (Brunstein 1993) due to greater positive change in adjustment and development (Sheldon et al. 2002).

Under the circumstances the result in this study is consistent with the theory and is supported by the previous literature where successful striving has shown to provide an important prerequisite of growth (Sheldon et al. 2002); positive effects of goal attainment have evidenced greater well-being (e.g., (Brunstein 1993), greater positive change in adjustment and development (Sheldon et al. 2002). Sheldon & Kasser (1995) have predicted this progress in goal strivings to provide integration measures where the aspects of one's personality both cohere with one another and are congruent with organismic needs (Sheldon & Kasser 1995). Also from literature there is evidence that higher levels of integration measures in an individuals have reliably shown to be correlated with psychological growth characteristics, including lower negative affect and higher autonomy

orientation, vitality, positive affect (Sheldon & Kasser 1995; Carver & Scheier 2012; Netemeyer et al. 1991). Thus this finding is well expected and is found to influence vitality aspect of well-being.
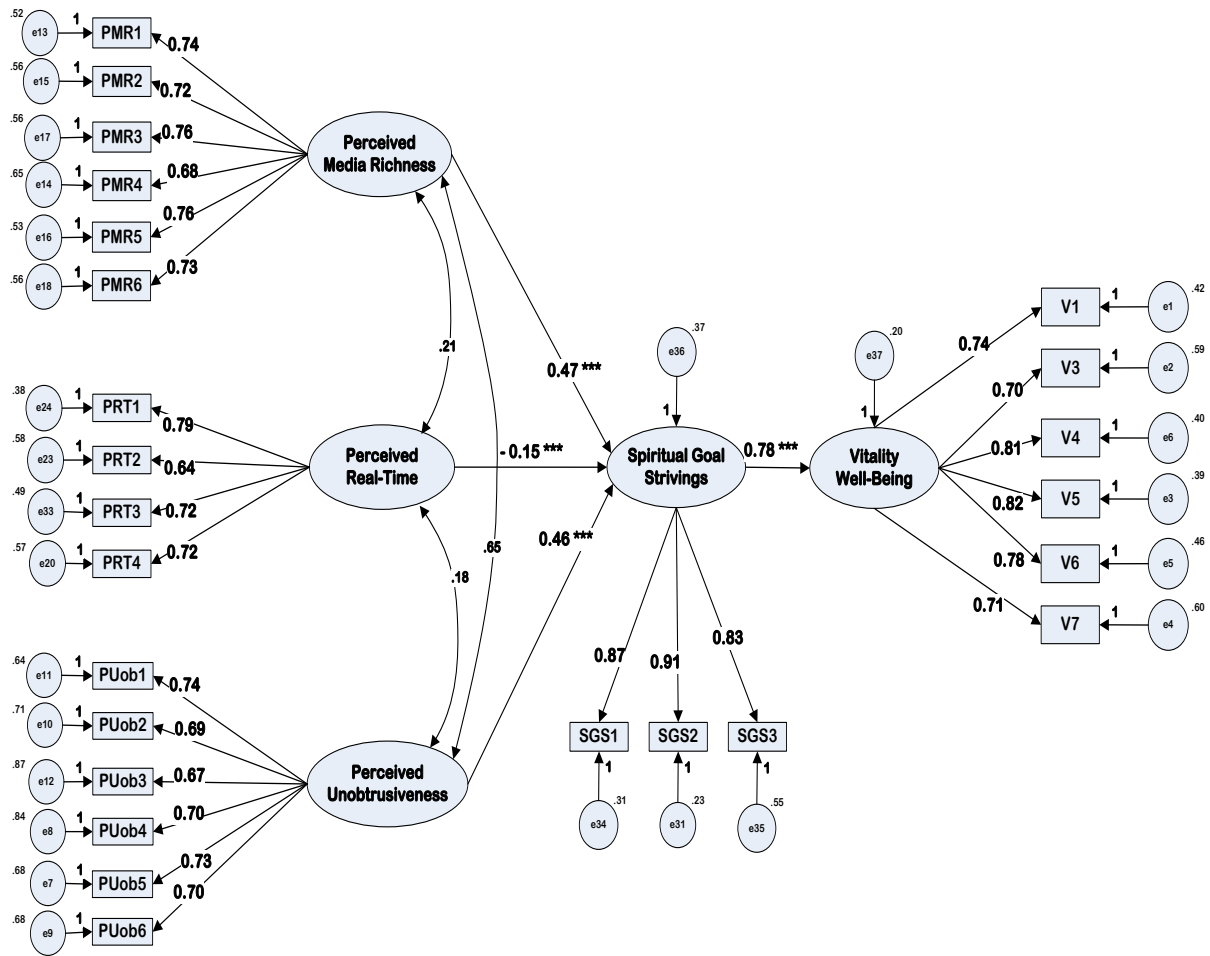
Source: *Created by the author of this thesis*

Figure 7-1 Final Structural Model

7.6   Summary of main research findings

The main findings in this study revealed that the relationship between digital media characteristics and SGS are statistically significant as shown in chapter six.   Results in chapter six demonstrated that the hypothesised structural model provided a good fit to the data and all the hypotheses were found to be statistically significant as shown in Table 6:16. This finding indicates that there is a significant relationship between the digital media characteristics and SGS (This finding answers the main research objective a).

Further, findings in chapter six Table 6:16demonstrated that digital media characteristics represented by all three examined independent variables (PMR, PRT, PUob) were significant but only two variables (PMR and PUob) were positively correlated. This indicates that a digital media richness factor that includes multiple cues, fast feedback, multiple data types and personalisation aspects of digital media influences SGS positively. This indicates that richness capabilities of digital media influences task effectiveness of SGS to be successfully accomplished. Similarly unobtrusiveness characteristics of digital media, that is, discreet interactions are shown to influence success in SGS. The result (in Table 6:16) shows PRT to be negatively correlated. The negative correlation indicated that anytime anywhere interaction capabilities of digital media influenced towards failure of SGS. Overall this demonstrates that some aspects of digital media characteristics assist SGS towards accomplishments while some characteristics of digital media cause hindrances for SGS to be accomplished. The highlights of this finding are discussed in more detail in Other

Contributions section 8.3.5. Overall this finding addresses first and second research objective.

The findings in chapter six indicated that PRT influences the least as compared to PMR and PUob. This shows that the richness characteristics and unobtrusiveness characteristics of digital media influence towards bringing out success in SGS outcomes and it is more than the influence of the hindrances of real-time presence characteristics of digital media. This means, that the advantages of assistances provided by digital media towards SGS outweigh the disadvantages of hindrances caused by digital media (This finding addresses research objective b).

The results of hypotheses have shown that the relationship between SGS and Vitality construct are positively related. Findings indicate that the respondents' experienced significant increase in vitality is in relation to success in SGS outcome. These findings are supported by previous studies where success in SGS showed significant impacts on well-being. This indicates that success in SGS influences individual's well-being domain. (This finding and addresses objective b).

In summary the overall findings have addressed the research objectives. **The results have indicated that the assistances of digital media to accomplish SGS outweigh the hindrances (disadvantages) of digital media**. Also findings have revealed that the assistances of digital media for SGS have consequential benefits on vitality aspect of well-being domain.
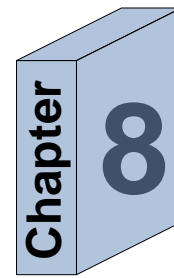
Chapter 8

CONCLUSIONS

THE THESIS STRUCTURE

CHAPTER 1: Introduction

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CHAPTER 2: Literature Review

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CHAPTER 3: Conceptual Framework

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CHAPTER 4: Methodology

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CHAPTER 5: Data Analysis I Descriptive Analysis

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CHAPTER 6: Data Analysis II Structural Equation Modelling

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CHAPTER 7: Discussion

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CHAPTER 8: Conclusion

Introduction

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A discussion on achievements of the research aim and objectives of this thesis

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Research outcomes leading to contributions

↓

Limitations

↓

Recommendations

Source: *Adapted to this study from* (Kamarullzaman 2006)

8   Chapter Eight: Conclusions

8.1   Introduction

The earlier first three chapters have presented a complete overview of theorisation and rationalisation for the research design in this study and the chapter four, five and six focus on data collection, analysis and findings from analysis. A comprehensive discussion of the empirical findings on the influence of digital media influences on task effectiveness of spiritual strivings is examined in the final chapters.

This conclusion chapter highlights the core findings and contributions of the study that emerge from both theoretical and empirical evaluations of digital media impacts including specifying the study's limitations and their level of significance. Finally, this chapter discusses the outcomes by providing an incentive for generating ideas for further research to address additional intriguing aspects of widespread impacts of digital media.

This chapter is organized as follows

• First part summarizes the findings presented in the earlier chapters with a discussion on the achievements of the research's main aim and objectives. This is presented by tracing the findings back to this study's main objectives presented in Introduction chapter one of this study. This is followed by the theoretical and practical contributions that fulfil the research gap of this study as presented in chaper two section 2.8.

• Second part of this chapter is focussed on discussing the impact of study's limitations on the appeal and generalisability of the research outcomes (section 8.4).

• The final third part of this chapter focuses on recommendations and possible further research directions based on the study's theorisation, research design and research findings (section 8.5).

8.2   A discussion on achievements of the research aim and objectives of this thesis

The study set off after observing gradual emergence of digital media advances in assisting spiritual practices. Growing number of spiritual websites and applications for spiritual practices indicated characteristics of digital media capabilities facitating spiritual seekers striving for spiritual wellness. The potential of these developments to serve spiritual needs motivated this study to explore the influence of digital media on SGS.

The rapid increase in use of digital media for SGS has become one of the dominant ways of assisting spiritual practices around the world. This perseverance rush of digital media capabilities providing assistance to spiritual practices requires tempering with a greater understanding of the holistic nature of digital media characteristics and its influence on SGS outcomes.

Based on this observation, three objectives were derived to examine this study's main aim (that is to examine the influence of big-data based digital media characteristics on SGS and its influence on well-being), they are

   a) To examine the relationship between digital media characteristics and SGS outcomes

   b) To understand the influence of digital media characteristics on SGS outcomes

c) To examine the influence of SGS outcomes (perceived success or failure) on spiritually motivated individual's well-being

These objectives have been achieved in this thesis as explained below.

Following the study's main goal of building empirical knowledge on the inherent characteristics of digital media, this study describes multidimensional constructs to represent media capabilities that best explain the relationships of digital media characteristics and SGS outcomes. Based on this, this study developed a conceptual framework which brought together a number of different dimensional constructs capable of examining the relationship between digital media capabilities and its influences on SGS outcomes. Research strategy was designed using quantitative research methods due to the structure of enquiry. The empirical data were analysed to answer this study's research objectives derived from the theorisation in earlier chapters.

SEM was utilised to evaluate this study's hypotheses which was derived to find the relationship between the digital media and SGS. The hypothesis results are presented in the chapter six and the findings are discussed in chapter seven. These findings address the research objectives to understand the digital media influences on SGS outcomes.

The findings have revealed that there is a significant relationship between the digital media characteristics and SGS outcomes; **this addresses the first research objective**. Further it is shown that the digital media characteristics influences successes in SGS outcomes where

certain aspects of digital media characteristics (PMR, PUob) are shown to assist SGS towards accomplishments while some (PRT) have shown to cause hindrances for SGS to be accomplished, **this addresses the second research objective**. This study **addresses the third research objective** by revealing that the respondents experienced an increase in vitality linked to success in SGS, this demonstrates that success in SGS outcomes increases vitality aspect of well-being in spiritually motivated individuals.

Overall, this section discusses on the achievement of this research's main aim and objectives. This study's main aim is achieved by addressing the three research objectives, where this knowledge provides evidence of significant influences of digital media on SGS outcomes and consequently influencing well-being. Contributions with respect to research gaps are followed in subsequent paragraphs where theoretical and practical contributions of this study are discussed and have outlined the implications for various spiritual stakeholders who will benefit from the findings of this empirical research.

8.3   Research outcomes leading to contributions

This section focuses on the theoretical and practical contributions with respect to research gaps outlined in section 2.8 along with other contributions from this study, also discusses the implications for various spiritual stakeholders.

The main focus in this research was to build the empirical knowledge on the inherent characteristics of digital media and to understand its influences on SGS outcomes. For this,

multidimensional constructs representing digital media capabilities are described that best explains the relationships between digital media characteristics and SGS outcomes. The study followed the approach with an objective to capture the holistic nature of digital media capabilities based on MRT considerations, where the objectives augmented the understanding the influence of digital media on SGS outcomes. The limited knowledge on any type of media influence on SGS in literature has been garnered through qualitative studies causing this area to lack any confirmatory research of this relationship. Thus the study was furthur driven and reinforced to evaluate the impact of SGS affecting well-being phenomenon. Research strategy was then designed using quantitative research methods due to the structure of enquiry. The empirical data were analysed to answer this study's research objectives derived from the theorisation in earlier chapters. Contributions with respect to research gaps and other study contributions are followed in subsequent paragraphs.

8.3.1   Contributions to knowledge

Contribution one: Evaluation of relationship between digital media characteristics and SGS to the body of knowledge in IS

This study contributes to the first research gap that is revealed in chapter two - section 2.8 to examine the digital media influences on SGS outcomes, by addressing the three main research objectives listed in previous section. This study's findings contribute to the body of IS literature and stakeholders that digital media impacts SGS accomplishments significantly. This finding indicates that there is a significant relationship between the digital media characteristics and SGS outcomes, where successes in SGS outcomes are found to be

influenced by digital media characteristics. The findings have revealed that certain aspects of digital media characteristics assist SGS accomplishments while some have shown to cause hindrances for SGS to be accomplished. In addition the findings reveal that the strength of assistances of digital media to accomplish SGS outweigh the strength of hindrances. Further findings also have revealed that the respondents experienced an increase in vitality linked to success in SGS. These findings address all the three main research objectives.

Overall, this study's main aim has been achieved by addressing the three research objectives where this knowledge contribution provides evidence of significant influences of digital media on SGS and consequently influencing well-being, thus benefiting the stakeholders in making informed decisions.

With dynamic increase in use of digital media for spiritual practices, it is important for stakeholders of spiritual well-being (for example spiritual seekers, spiritual organisations, user experience (UX) and user interface (UI) designers of digital media developers) to understand this relationship and its impacts on everyday strivings and for sustainable wellbeing. This study's contributions which include identifying the significant influence of digital media capability characteristics on SGS would provide sufficient confidence for stakeholders for making informed decisions and to look for efficient strategies that would provide effective, reliable and sustainable spiritual goal accomplishments. This study also highlights spiritually motivated individuals experiences greater vitality as a consequence of success in SGS. **Thus this study examined the main aim by addressing the three research**

objectives of this study and attempts to fill the first research gap in chapter two 2.8 by shedding more light on the impacts of big-data based digital media on SGS.

8.3.2   Contributions to Literature

Contribution two: One of the first's to study the significance of the relationship between digital media characteristics and SGS from MRT perspective

In addition to establishing relevance to the relationship between digital media and SGS, this study empirically evaluates to reveal the significance of the influence of specific digital media characteristics on personal strivings of spiritual nature. Earlier in the research in chapter two and three, this study showed digital media novelty with a conceptual framework which brought together a number of different dimensional constructs capable of capturing holistic nature of digital media capabilities and to examine its influences on task effectiveness of SGS. Along with providing confidence for spiritual stakeholders with the knowledge of digital media impacts on spiritual practices, this study contributes to knowledge with a conceptual framework on the relevance of digital media influences on the personal strivings of spiritual nature. **This contribution fills the second gap** described in chapter two 2.8by being one of the first studies (to the best of researcher's knowledge) to have developed a conceptual framework and also have empirically evaluated the derived relationships.

8.3.3   Contributions to Existing Knowledge

Contribution three: extending the existing knowledge in literature-Extending MRT

While reviewing the media related literature, MRT was found to be the most influential theory among the other media related theories (chapter two). This study explores MRT as the fundamental theory to capture the digital media characteristics. This is due to the potential of MRT to capture digital media capabilities, so as to be able to evaluate its influence on SGS task outcomes. However this theory is known for several criticisms in literature for its theory limitations and weaknesses (discussed in detail in section 2.6). MRT theory limitations were mainly due to lack of sufficient factor structure to capture digital media characteristics. To address this limitation this study attempts to extend MRT factor structure with additional variables from other theories and models.

This research began with the main aim to understand particular characteristics of digital media that influences task effectiveness of SGS. This research identified relevant characteristics of digital media that comprehends the shift away from the traditional features of media paradigm. To accomplish this goal, and using the adopted MRT as the fundamental theory, this study deviates from previous MRT research endeavours in that it markedly focuses on addressing the theory's structural details with an intention to capture the holistic nature of digital media. This is to measure the influence of digital media characteristics on task effectiveness of SGS. For this, this research draws upon already developed constructs from previous studies which have focused predominantly on their

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capabilities driven outputs relevant to modern ICT artefacts discussed in IS literature (chapter two) .

Two variables were identified to measure- 'omnipresence' and 'ubiquitous' characteristic of digital media from previously developed scales in pervasive IS literature and focused on shaping the MRT to capture the digital media characteristics. With MRT as the base model, this study extended the original MRT factor structure with two relevant pervasiveness constructs namely perceived real-time presence (PRT) and perceived unobtrusiveness (PUob) to measure task effectiveness relevant to the context. (The rationale for the inclusion of additional factors from other theories and models is explained in section 2.7)

This extended MRT factor structure was verified for internal structure model fitness through rigorous validity criteria using CFA and confirmed to have no issues of reliability. The validation tests added more confidence in using these constructs by other researchers for future research.

CB-SEM was used for empirical analysis and confirmed the applicability of the integrated MRT model to measures the influence of digital media characteristics on task effectiveness of SGS. Supported by both - theoretical and empirical evidence, significant results of the hypotheses have been confirmed which satisfies the research objective, In particular the results supports the significance of three independent variables.

These results contribute to the body of MRT literature with an extended and validated MRT factor structure along with integrated MRT model to measure digital media influence on SGS outcome. This research provides validation results for extending MRT factor structure by integrating the current knowledge concerning the characteristics of the phenomenon to provide confidence to explore the extended MRT instrument for future studies. Thus **this study fills the third research gap (**as described in chapter two 2.8) **by contributing in its effort in extending MRT to measure the inherent characteristics of digital media.**

In summary this contribution makes way for further undertakings within the same thematic area, while also equipping future research works with fundamental knowledge on the understanding of the digital media influence on task effectiveness of personal goal striving on task effectiveness. Finally, it should be emphasised that this contribution is empirically validated, where this area is underexplored regarding the influence of digital media capability characteristics on SGS outcomes. Effort was made towards explaining the relationship of media characteristics and its influence on task effectiveness of SGS under MRT perspective. Thus this study contributes in its effort by building, formulating a robust conceptual framework and resulting in confirming the existence of relationships between digital media characteristics and SGS, supported by the robust validation techniques.

8.3.4 Contributions to Practice

8.3.4.1 Benefits spiritual seekers and spiritual organisations

In addition to establishing relevance to the relationship between digital media and SGS, this study has revealed several practical implications for stakeholders of this study who mainly

include spiritual seekers, spiritual organisations, user experience (UX) - user interface (UI) designers of digital media developers. The study's outcome provides a deeper understanding on the impacts of digital media capabilities on SGS and this benefits spiritual seekers and spiritual organisations for making informed decisions. They can confidently utilise the findings of this study for improved returns. The commonly expected returns are achieving SGS accomplishments effectively and to experience sustainable well-being in individual's life for both spiritual seekers and for spiritual organisations dealing with spiritual well-ness programs. This study's findings provides empirically evaluated evidence for organisations to confidently adopt and develop effective strategies to implement digital systems in organisations which can be configured and tuned to utilise the accelerating aspects of digital media for successful SGS . They can encourage their members to utilise the assistances provided by digital media along with training individuals to configure their systems in such a way to evade the possible hindrances caused by digital media for SGS.

Spiritually motivated seekers can make informed decisions with this information and adapt their digital systems to control and adjust how they use digital media for SGS. They can confidentially repurpose their digital media systems to utilise the assistances provided by their capability to support individual's unique needs of SGS.

Overall the findings provide optimistic future for spiritual stakeholders in utilising digital media capabilities for SGS and benefits both spiritual seekers and spiritual organisations

with the findings that have revealed that the hindrances of digital media are far less as compared to the assistances of digital media to accomplish SGS.

8.3.4.2 Benefits UX and UI designers and developers

User experience (UX) and user interface (UI) designers of digital media developers as stakeholders of this study can benefit significantly from the successful indications of assistances and hindrances of digital media for SGS. With so many applications and portals being developed for individuals to effectively accomplish SGS, this study clearly reveals that digital media as it is does not always facilitate in bringing success in individuals SGS. This study clearly demonstrated UI and UX developers that developing digital systems and devices for SGS should not be taken for granted and they should strictly consider effective strategies in their development phase to accommodate the revealed concerns of digital media characteristics causing hindrances to SGS. From this study it is evident that UI and UX developers must consider through for further investigations for its concerns before deploying any type of digital media for spiritual strivings in the form of apps or portals and devices to support SGS.

Overall user experience (UX) and user interface (UI) designers of digital media developers will benefit significantly to design and develop digital systems to support SGS based on the deeper understanding of the certain factors which influence SGS and to look for efficient strategies that would provide effective, consistent and sustainable spiritual goal outcomes.

8.3.5   Contributions to Research Approach and Practice

The fourth research gap in chapter two 2.8 was about employing quantitative research methods which is lacking in this interdisciplinary field related to personal striving and spirituality literature. This is normally dominated by qualitative studies. **This study contributes to fulfilling this fourth research gap** (as described in chapter two 2.8) **by employing quantitative approach towards understanding the relationship between different variables of digital media and SGS.**

In addition to the above contributions, one of the contributions is from the counter intuitive results from the findings in chapter six - section 6.8.1 and discussed further in next section 8.3.6. This is with respect to the three independent constructs- it was identified that all the three constructs were important for accomplishing success in SGS outcomes, while PRT (real-time presence) construct showed negative correlation. This means that digital media real-time presence capabilities were shown to be negatively influencing to SGS outcome. This means that the respondents found that anytime anywhere characteristics of digital media diminished their SGS task effectiveness resulting in the failure of SGS outcomes. Although this was not completely expected outcome, as prior studies relating to PRT have shown that real-time presence capabilities presented more as a driver for improving task effectiveness towards accomplishing tasks in organisational contexts (Alexander Salinas Segura 2015). The current finding of negative correlation in comparison with other results from prior studies related to TAM is a deviation from the expected results. This indicates the need for further investigation. This finding is discussed in more detail in next section. A

probable reason to the deviation may be due to distraction caused to users experiencing reduced shared focus (during real-time interaction tasks / during same time discussions) where discussions can become intertwined rather than focusing on one topic thus interleaving multiple messages (Simpson 2005; Herring 2003; Erickson et al. 2002; Herring 1999). This contribution offers challenges to future researchers and spiritual stakeholders to consider the possible drawbacks of this specific real-time presence characteristic with caution until further research investigates this in more detail. The following section will discuss these findings more explicitly and highlight the contributions.

8.3.6 Counter-intuitive contribution

Discussion of research outcome, a contribution:

This section discusses the findings in section 7.3 in in chapter seven. The final structural model in Figure 7-1 demonstrated that digital media characteristics as represented by the three independent variables (PMR, PRT, PUob) were significant but only two variables (PMR and PUob) were positively correlated. This shows that each of the factors that are digital media perceived richness factor -PMR (which includes multiple cues, fast feedback, multiple data types and personalisation aspects of digital media) and perceived unobtrusiveness factor- PUob characteristics of digital media (that is, discreet presence) are shown to influence SGS outcomes positively. This means that media richness capabilities of digital media and perceived unobtrusiveness characteristics of digital media influences task effectiveness of SGS to be successfully accomplished. However the results also show not all but just one factor PRT to be negatively correlated. The negative correlation indicates that

anytime - anywhere interaction capabilities of digital media influences towards the failure of SGS.

Although this finding of real-time presence being negatively correlated is counter intuitive it was not completely unexpected. From a wider perspective of literature that was conducted primarily, this real-time presence was anticipated to serve as an important aspect to reinforce and recall goal strivings of spiritual nature at real-time and any-time and provided users with the ability to access information, participate in real-time discussion was expected to enhance SGS accomplishments. This from literature review was displayed through a number of studies which have predominantly indicated a positive influence of real-time presence factor on task accomplishments for example, omnipresence was seen to influence increased personal insight without geographic limitations (LaRose et al. 2001), for surveillance (Cameron & Webster 2005); sharing information at real-time (Roy 2014); deviation from state of dissatisfaction or loneliness(Burke et al. 2010; Nicole B. Ellison et al. 2007); for goal attainments (Chung & Kim 2008; Junglas & Watson 2003); flexibility, convenience and effectiveness (Looney et al. 2004) etc.

However findings in this study was counter-intuitive and revealed that the real-time presence was negatively correlated indicating influence towards the failure of SGS. The probable reason to the deviation may possibly be due to distractions experienced in having reduced shared focus at real-time discussions where some-times discussions have shown to become intertwined rather than focusing on one topic, thus interleaving multiple messages

leading to confusion and lack of focus (Simpson 2005; Herring 2003; Erickson et al. 2002; Herring 1999). There is some evidence in literature on the counter intuitive findings of negative influence of real-time presence which is seen in the context of parallel discussions at real-time which was found to be weakening the ability of the users to develop a shared focus on a single task (Simpson 2005; Erickson et al. 2002; Herring 2003; Herring 1999). Real-time presence in the context where multiple senders are transmitting messages at real-time or multiple simultaneous conversation threads are seen to have negative influence on task effectiveness and performance (Simpson 2005; Herring 2003; Herring 1999). Thus this suggests that PRT is a significant factor and is seen to impact SGS negatively and this counter intuitive contribution offers challenges to future researchers and spiritual stakeholders to consider the possible drawbacks of this specific real-time presence characteristic with caution until further research investigates this in more detail.

In summary to this discussion this deviation in finding indicates that certain aspects of digital media characteristics (like PMR, and PUob) assists towards accomplishing SGS while certain characteristics of digital media (like PRT- although significant) is seen to hinder SGS accomplishments. The findings also indicate that strength of assistances of digital media to accomplish SGS outweigh the strength of hindrances. Thus, this contribution offers both challenges and caution suggesting that the drawbacks of digital media are to be considered carefully for spiritual stakeholders and for future research until further examination provides more information on this.

8.4   Limitations

As with any research, this study is not free from its limitations. Thus this study persuades the readers to interpret and evaluate the research outcomes with some caution and evaluate within certain context, considering several limitations that have emerged during several research procedural stages. The intention is to highlight the importance of recognising the limitations to ensure that this study's contributions and outcome are properly assessed with respect to aim and objectives of the research appeal.

The limitations of this study are discussed as follows:

First set of limitations directly relates to the issue of generalisibility. This is relating to the specific context in this study, which is relating to the digital media influence on personal strivings. Although Bengaluru, India, was pursued due to many reasons discussed in section 4.13, time and budget constraints on the part of the researcher have necessitated the focus on Bengaluru alone, and the research can be conducted in multiple sites and results may be compared. Being a study done in Bangalore, it has more number of respondents who are Asians and may probably be from Hindu background, so it can be repeated in multiple sites. The target population in study may have a certain amount bias in the findings due to the amount of technological development and individual's involvement with associated spiritual activities and communities specific to this place. The patterns of influence of digital media might be prejudiced based on the quality of urban life-style and social – economic status compared to other developed or underdeveloped countries. If the study was to be

replicated in a developed or underdeveloped country, the influencing patterns and findings may be different which may be an interesting call for researchers to replicate the study in different settings and also examine if there are any profound cross-cultural issues. Thus of the outcome with respect to other developed or underdeveloped countries may be limited.

Additionally this study has used confirmatory type of study which confines the generalisability due to differences in systemic and actual usage. Finally, the requests for volunteers to participate for the study were made at specific spiritual organisations that were non-profit, non-sectarian and who followed the universal definition of peace and offered numerous educative programs. However on the positive side on generisability, the volunteers who participated were from various locations in Bengaluru and were from mixed backgrounds.

The second sets of limitations were concerned with research design and the biases were introduced from the choice of cross-sectional research methods that was used. In the study empirical data collections were a snapshot instead of longitudinal research design with multiple time intervals. Due to this, the hypothesised assessments were made at one point in time rather than evaluating at multiple time intervals. Thus the relationship are inferred to exist at a certain time rather than concluding to exist definitely over longer lengths of time. This calls for further research using longitudinal research design to provide further contributions to literature (Joseph F Hair, Black, Babin, Anderson, et al. 2010).

The third limitations were due to sampling approach. This study employed non-probability sampling approach to ensure maximum response from all possible respondents. Non-probability sampling is prone to generate biased data due to self-selections that constrains the generalisability of study outcomes (Wright 2005). However a large sample was obtained to increase the statistical power of the findings and to reduce any possible effect of limitations introduced due to sampling type on the results. The study was exposed to bias which may be induced from those who did not participate in this self-selection study. Due to the absence of responses from those who did not take part in the study, some possible interesting feedback were not obtained that may have been useful and influential in the study.

In summary, these limitations cast some amount of uncertainty with respect to generalisability of the study's findings and their transferability to other contexts. Nonetheless, this study opens up plethora of research directions and opportunities in methodological and theoretical aspects of the study. This study paves way to elaborate further on study's' findings and contributions to overcome any limitations.

8.5 Recommendations

As with every research, endeavouring to continue exploring the phenomenon of newly emerging ideas, this study also attempts to make recommendations and proposes stimulating research opportunities to be explored based on the research outcomes and limitations of the study. Several stakeholders could benefit from the findings of this

research who include mainly spiritual seekers, spiritual organisations, user experience (UX) - user interface (UI) designers of digital media developers.

This research provides a deeper understanding on impacts of digital media capabilities on SGS for stakeholders who can now confidently utilise the findings of this study with information that the impact of assistances of digital media to accomplish SGS outweighs the hindrances (disadvantages) of digital media. This current successful indications of assistances of digital media being highly helpful in bringing out success in their SGS alone should not be taken for granted as the study has also revealed concerns of some digital media characteristics causing hindrances to SGS. Stakeholders of this study could benefit from this empirically evaluated evidence that it is important to consider implications of the extent of assistances to hindrances provided by the digital media characteristics that one must think through for its concerns before deploying any type of digital media for spiritual strivings without further investigations. With knowledge considered as the most powerful resource, this study benefits the stakeholders in making informed decisions about deploying digital media for SGS. Spiritually motivated individuals and organisations can now decide to manipulate and repurpose the digital media systems appropriately after having information from the findings of this study about factors which hinder SGS and the factors which are highly effective in bringing about success in SGS. User experience (UX) and user interface (UI) designers of digital media developers) are able to make informed decisions based on the deeper understanding of the certain factors which influence SGS positively and to look

for efficient strategies that would provide effective, reliable and sustainable spiritual goal accomplishments.

From the finding of this study it is apparent that the perceived real time presence feature impacts SGS negatively and this counter intuitive contribution offers challenges for stakeholders to consider the possible drawbacks of this specific real-time presence characteristic with caution until further research investigates this in more detail. Thus this study recommends stakeholders to consider investing in further research to investigate the drawbacks of this specific real-time presence characteristic and to use it with caution until further research investigation reveals more information on this.

As discussed in previous section this study recommends obtaining additional clarification from spiritual seekers and researches and providing prospects to explore different research courses to complement study's outcomes. These courses usually incorporate addressing shortcomings of research outcomes and attempts to broaden the understating by highlighting alternate perspectives to the phenomenon in study. This section suggests various future research recommendations based on the findings from the current study.

Firstly, although this study has incorporated important variables to capture the holistic nature of digital media and has attempted to explain its influence on individual's SGS, it would be stimulating to explore other variables associated with the emerging multifaceted digital media. Further research should extend MRT factor structure of digital media to

encompass other contextual conditions like confidentiality, accountability etc. More broadly, MRT-IS researcher's needs to expand digital media dimensions by defining more sub-dimensions of digital media inquired dimensions for different research settings.

Secondly, further research would be useful to focus on the enrichment of the theoretical set up with additional demographic and individual's psychological attributes associated with the ability to provide more explanatory power focusing on the relationships of digital media and SGS. This might be able to provide valuable insights on the moderating effects that these influences could have on the SGS

Furthermore it would be interesting to explore the effect of any mediating factors such as frequency of use, self–efficacy etc. It would also be very helpful to further extend MRT based conceptual models to encompass other theoretical constructs relevant to eudemonic goal   pursuits like resilience, transcendence such as satisfaction, spiritual wellness, happiness , quality of life etc.

Thirdly, although the current research is examining influence of digital media on SGS on a small part of the world – Bengaluru in India which typically includes technology savvy individuals residing alongside large spiritual organisations (Mishra et al. 2015), it would be worthwhile for imminent research to validate the generalisability of this study's model with regard to validating outside these locations in different settings.

Fourthly, as the current research was based on gathering responses from specific spiritual non-sectarian organisations for convenience, it would be worthwhile for replicating this study in other locations in different settings so as to corroborate the generalisability of the developed conceptual model which is based on the aggregation of respondents driven by religious organisations, online virtual communities etc. It is recommended that by embarking on such research avenues would promise effective strategies that could be developed and utilised with greater efficiency benefiting the stakeholders' overall returns.

Fifthly, from the findings PRT (Perceived real-time presence) was found to be negatively correlated to SGS. This unexpected outcome could be explained by the assumptions that immediate cognitive need for attention in multiple ways creates inability to focus on a particular task within the context of SGS where it demands focus to spiritual strivings. This study's relationship need to be re-examined in different time-importance contexts and in different environments where the need for PRT is considered useful (for example PRT in education, surveillance).

Finally, as the research design of this study used cross-sectional, future research is suggested to adopt the longitudinal research approach, which may be useful to assess the time-based dynamics of digital media influence on SGS as it could provide stronger inferences of this relationship for improving our understanding of the digital media influences and cumulative effects among posited relationships.

To summarise, in light of the current developments in IS discipline demonstrates the significance of digital media on assistances towards SGS, this research provides recommendations and suggests a plethora of different research opportunities, to pursue towards its theoretical or methodological settings, and as such, it is hopeful that it will bring about inspiring complementary research works.

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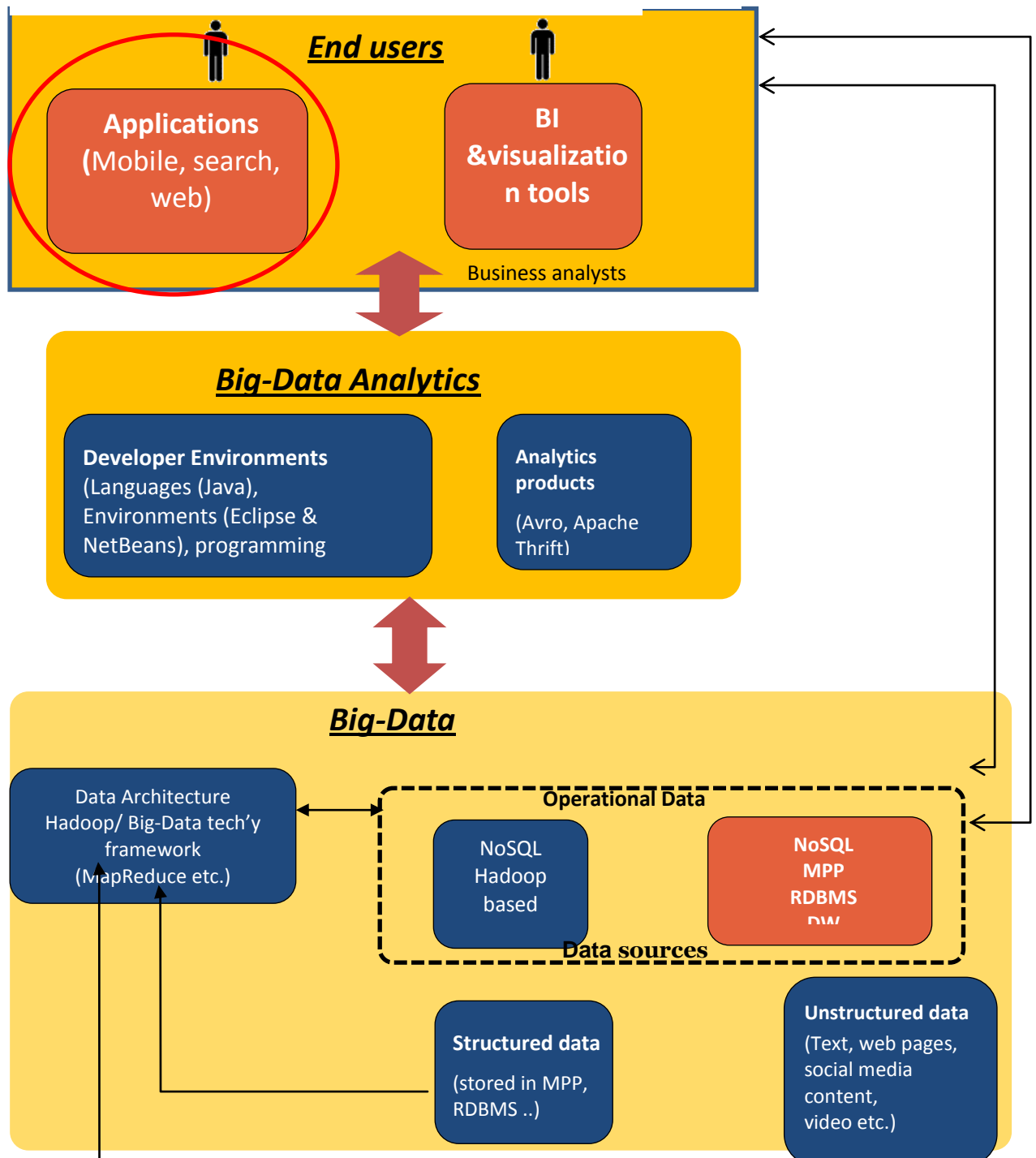
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APPENDICES

Appendices

A: End users access to Big- Data

Source: Adapted from Big-Data landscape and IBM big-data advanced analytics platform (Feinleib 2014; Hitzler & Janowicz 2013)

B: Screening Questionnaire

Screening questionnaire

Name:

Email (Optional):

1. Do you consider spiritual[i] beliefs as an important source of inner strength *(peace, love, hope, meaning and connection, a support to hold on to during difficult times)* in your life?

   ☐ Yes ☐ No

2. Are you motivated to pursue to be kind of person you value being in service of these beliefs *(such as being a good partner/parent, helping others, praying, meditating, attending religious services, hiking, communicating with nature, etc.)*?

   ☐ Yes ☐ No

3. Do you use modern technologies (such as laptops or smartphones with network connections to connect to internet and messaging services) to facilitate any aspects of spiritual practices? *(e.g.: to gain knowledge or obtain information through online resources, develop and maintain updates and news via social network sites; messaging services; information repositories (audio, video or text) of spiritual nature, to connect and participate in events of similar nature in day to day life)*

   ☐ Yes ☐ No

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[i] In this study, the term 'spirituality' is interpreted rather loosely. This may be as simple as connecting with nature, meditating, or praying, or as formal as participating in an organized religious group. Consider the very important spiritual / religious beliefs you have, and the kind of person you value being in service of these beliefs (which might include things like 'acting as a loving or caring person'; 'working to stay connected to the people and things around me'; 'devoting regular time to worship, prayer, etc.'; or 'acting consistently with my religious/spiritual beliefs').

C: Main Questionnaire

Main Questionnaire

This survey consists of three parts. Please complete all parts.

Name:

Email (Optional):

Part 1 of 3

Use of Modern systems

Demographic Survey

1.   Gender : Male__ Female__

2.   Age: __
- ☐   Under 17 years old
- ☐   18-30 years old
- ☐   31-40 years old
- ☐   41-50years old
- ☐   51-60 years old
- ☐   61 years or older

3.   Education level: __
- ☐   No schooling completed
- ☐   High school graduate, diploma or the equivalent
- ☐   College graduate
- ☐   Trade/technical/vocational training
- ☐   Bachelor's degree/ Under-graduate
- ☐   Master's degree/ Post-graduate
- ☐   Professional degree
- ☐   Doctorate degree/PhD

4. Cultural back ground :

       ☐   White
       ☐   Hispanic
       ☐   African
       ☐   Asian
       ☐   Other: Please specify --------

The following questions contain items about your perception and experience provided by modern interactive systems (*such as smartphone, laptop, ipad with connectivity to access web, cloud services, blogs, messaging etc.*) that facilitate and help accomplish your everyday goal strivings of spiritual nature.

Please indicate how strongly you agree or disagree, using the following scale as a guide for each item:

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Please indicate how strongly you agree or disagree using the scale for each item	1	2	3	4	5
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Data Richness					

1	This type of interactive systems[ii] allows my communication partner and me to give and receive timely feedback.					
2	This type of interactive systems allows my communication partner and me to tailor our messages to our own personal requirements.					
3	This type of interactive systems allows my communication partner and me to communicate in a variety of different cues (such as emotional tone, attitude, or formality).					
4	This type of interactive systems allows my communication partner and me to use rich and varied formats such as video, message, audio, digital text etc.					
5	I am able to easily explain things using these types of systems to interact.					
6	This type of interactive systems helps me to communicate quickly.					
7	This type of interactive systems helps me to better understand each other's ideas.					
Real-time presence						
1	The interactive system is available for use **whenever** I need it					
2	The interactive system is available for use **wherever** I need it.					
3	I am able to use the interactive system **anytime.**					
4	The interactive system is accessible **everywhere**.					

[ii] Interactive systems are systems that are used for interacting such as smartphone, laptop, and ipad with connectivity to access web, internet and cloud services, blogs, messaging etc.

5	The interactive system is always available to me.					
Unobtrusiveness						
1	My attention does not need to be focused on the interactive system the whole time.					
2	I don't have to concentrate fully on the interactive system when using it.					
3	I don't need to be intensely absorbed when using the interactive system.					
4	The usage of the interactive system does not disrupt me from other activities.					
5	The interactive system does not distract me too often.					
6	The interactive system does not require continuous attention.					

Part 2 of 3

Striving/"Possible future" linkages

In this section are descriptions of 3 "possible futures" which many people aspire to attain down the road. Please consider how success at everyday strivings might affect each "possible future".

Would success at everyday goal strivings tend to take you closer to that future?

Possible Future I: <u>Knowledge</u>: Increasing one's knowledge of a higher power or spiritual subject.

Rate your success at everyday goal strivings related to gaining knowledge in terms of how much it would impact this possible future

Not at all helpful	Not helpful	No effect	Somewhat helpful	Very helpful
☐	☐	☐	☐	☐

Possible Future II: <u>Feeling</u>: Maintain and develop relationship with a higher power or spiritual subject in daily life.

Rate your success at everyday goal strivings related to maintaining relationship with the spiritual subject in terms of how much it would impact this possible future

Not at all helpful	Not helpful	No effect	Somewhat helpful	Very helpful
☐	☐	☐	☐	☐

Possible Future III: <u>Practice:</u> Exercise spiritual beliefs or attempt to live fully in daily life.

Rate your success at everyday goal strivings related to exercising your spiritual beliefs in terms of how much it would impact this possible future

Not at all helpful	Not helpful	No effect	Somewhat helpful	Very helpful
☐	☐	☐	☐	☐

Part 3 of 3

Your Well-Being in General

Vitality Scale:

Please respond to each of the following statements by indicating the degree to which you agree that the statement is true for you in general in your life.

Use the following scale:

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Please indicate how strongly you agree or disagree using the scale for each item of well-being	1	2	3	4	5

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I feel alive and vital					
2	I don't feel very energetic.					
3	Sometimes I feel so alive I just want to burst.					
4	I have energy and spirit					
5	I look forward to each new day.					
6	I nearly always feel alert and awake					
7	I feel energized.					

If you have any comments in relation to how modern interactive systems help facilitate a spiritually-motivated individual's well-being, please leave them here:

D: Examples of faith based websites

Appendix D1: Hindu online site

Hindu faith based learning

Fig: Hindu online website (online image) Retrieved Sep 01, 2017 from
http://hinduonline.co/

Appendix   D2: Speaking tree online site

Spiritual site on meditation
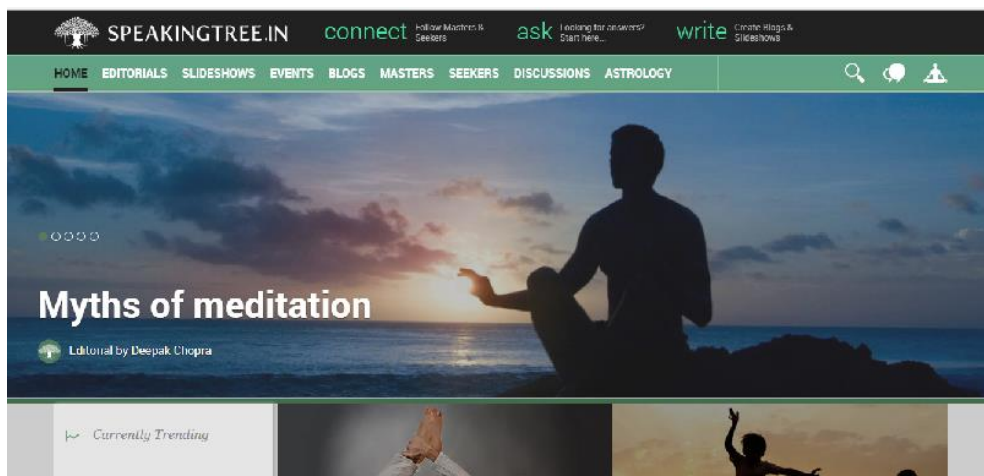
Fig: Spiritual website in India (online image) Retrieved Sep 01, 2017 from
http://www.speakingtree.in/

Appendix   D3: Brahma Kumaris

Spiritual organisation international
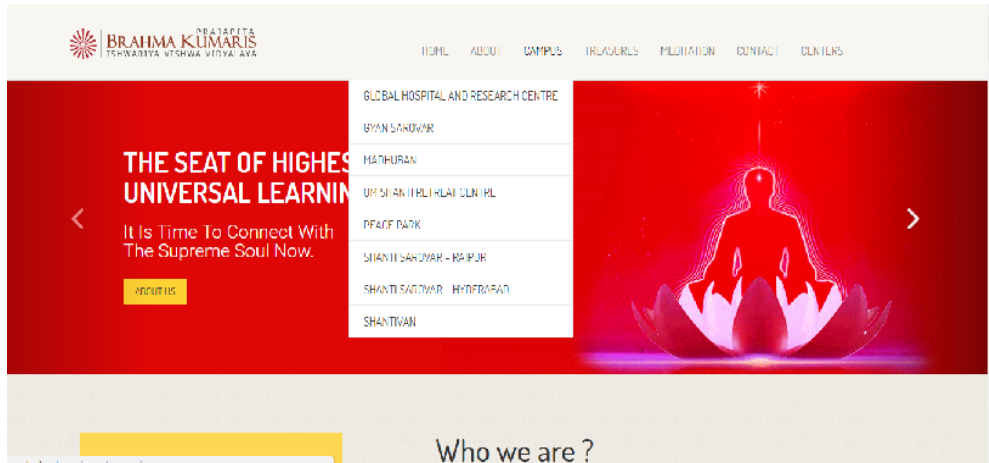
Fig: International non-governmental spiritual organisation
 (Online image)Retrieved Sep 01, 2017 from
http://www.brahmakumaris.com/

Appendix   D4: Quran

Quran interactive

Fig: Quran website (online image) Retrieved Sep 01, 2017 from
http://quranexplorer.com/

E: Spiritual strivings examples

This list from (Emmons et al. 1998a):Examples of spiritual strivings

"Be aware of the spiritual meaningfulness of my life and all life on Earth"
"Discern and follow God's will for my life"
"Be humble" "Remove my self-centred thoughts"
"Live life more simply"
"Bring my life in line with my beliefs"
"Teach my children spiritual truths"
"Find time for church functions"
"Do unto others as I would have them do unto me"
"Pray and meditate each day"

F: Reason for removing items during CFA process

CFA was performed on each construct to examine individual items' standard errors, covariance's, squared multiple correlations, standardized loadings, statistical significance of the parameter estimates and other fit indices (Byrne 2001; Garver & Mentzer 1999; Koufteros 1999; Hair et al. 1998).

Construct with five observed items
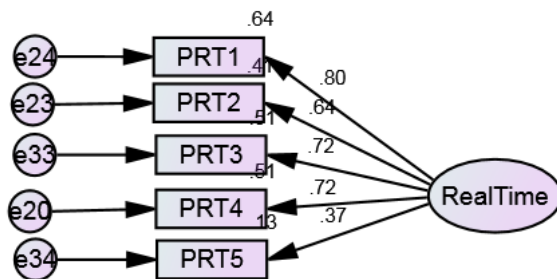
Construct with seven observed items
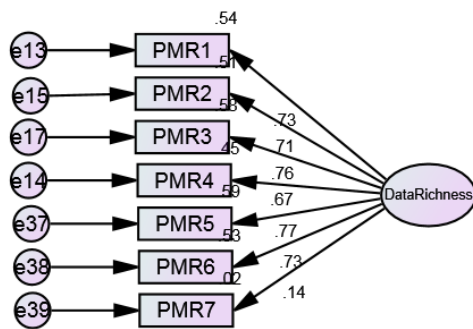
As indicated by (Hair et al. 1998), if it was found that the standardised regression weights or factor loadings of any variable, with loadings of any value below 0.5 were suggested to be removed for improving the model indices. Such poor loadings are considered to be problematic items causing poor fitting and is shown to not contribute enough toward reliability of the overall construct. Thus PMR7 and PRT5 were identified to be removed due to their poor loadings of below 0.5 values as shown in the above two figures. After removing the items, one at a time, model fit measures were calculated again each time and verified for improved results. The final outcome showed improved results for overall goodness of fit of the measurement model.

G: Cultural back ground
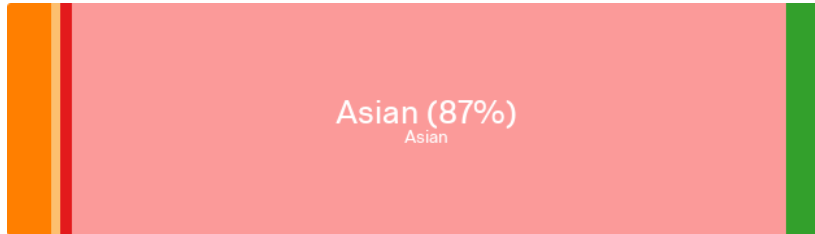
Cultural back ground	Number of respondents
White	52
Hispanic	11
African	15
Asian	862
Others	47
Total	987