

**The effects of cultural archetypes on the
perceived usefulness of IT: evidence from a UK
public-sector organisation**

by

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Dedication

This thesis is dedicated to my late mum – Olasumbo Abosedede Odusanya.

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Abstract

A long-standing inquiry that has persisted in practice and research over the years is how to explain the uptake of information systems by users. A key indicator of systems being accepted by users is that they are used by individuals and that they consider them to be useful. Specifically, one of the most well-established measures that has been used to assess the extent to which users find IT useful is perceived usefulness, which in turn is influenced by users' cultural values, assumptions and behaviours. Nevertheless, researchers have pointed to the lack of insights on the cultural factors that explain users' perceived usefulness of IT.

A recent theoretical advance in the IS literature, the IT culture concept, allows the identification of user archetypes grounded in their needs and motivation to use IT. As a consequence of adopting this concept, this research has provided insights on users' cultural values and for the first time portrayed how cultural archetypes influence the perceived usefulness of IT. Using data obtained from a survey of 270 IT users within a local council in the UK, five cultural archetypes (the social users; the compliant-dodgers; the interested users; the high intensity users; and the dangerous users) were identified through a multivariate cluster analysis, while their effects on the perceived usefulness of IT was conducted using a multiple regression analysis.

Overall, this thesis makes theoretical and practical contributions. Drawing on the IT culture concept, this study provides deeper understanding of cultural archetypes within an organisational context. It extends current IT culture literature by investigating the influence of cultural archetypes on the perceived usefulness of IT. In addition, the results also provide managers with insight on how to deal with employees that exhibit these cultural archetypes. Moreover, our study shows that business leaders may find it useful to embrace a diversified strategy that responds to the needs and motivation of IT users within their organisation.

Keywords

IT culture, perceived usefulness, cluster analysis, multiple regression

List of publications

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Chapter One

1 INTRODUCTION

In this chapter, the background, motivation and research objectives are introduced. Together, these sections provide a broad overview of the goal of this research. To conclude, an outline of the thesis structure is also presented.

1.1 Background to Research Problem

Organisational investments in IS/IT are growing even as business leaders bid to derive a range of benefits to enhance their business operations. By the end of 2018, these investments are expected to rise by 4.5% from 2017 to \$3.7 trillion (Gartner, 2018). However, empirical evidence has shown that most of these investments do not deliver expected benefits (Peppard and Ward, 2005; Doherty et al. 2012). The failure rate of IT projects has remained high as many projects continue to fail at different stages of implementation. For instance, Shpilberg et al. (2007) reports that as much as 74% of IT projects still fail to deliver expected value after implementation. The Standish Group (Standish Group, 2015) have also reported that the success rates of IT project implementations have remained below 30%, with 19% considered utter failures. Another study on ERP implementations has found that as many as 37% projects delivered less than half of the benefits they expected

(Panorama, 2017). Within the UK, high profile losses from IS/IT investments are routinely reported. Recently, the British Broadcasting Corporation (BBC) to curtail its losses of a little over £98 million, axed a technology project to avoid “*throwing good money after bad*” (Conlan, 2013). In addition, the National Health Service (NHS) had reportedly lost more than £10 billion in what has been described as possibly “*the most catastrophic IT failure even seen by the government*” (Walker, 2013).

Within the IS literature, one important reason for the failures and under-achieving performances witnessed with IS/IT projects is underutilisation by users (Deng and Chi, 2012; Bagayogo et al. 2014; Liang et al. 2015). In other words, an organisation’s ability to enjoy intended benefits from a new IS/IT system depends significantly on the ability of IT users to effectively use the system to fulfil their day-to-day job tasks (Burton-Jones and Grange, 2012; Kim and Gupta, 2014; Veiga et al. 2014). Therefore, the perceived usefulness of using an IS/IT is a core construct of the technology acceptance literature (Davis, 1989; Davis, 1993), and it refers to the “*degree to which a person believes that using a particular system would enhance his or her job performance*” (p. 320).

Also, studies investigating the cultural patterns of IT usage have also shown that individuals espouse different IT-related values, assumptions and behaviours that shape their perceptions and use of IS/IT resources (Barki and Hartwick, 1994; Gallivan and Srite, 2005; Leidner and Kayworth, 2006; Lee et al. 2007; Walsh et al. 2010). In fact, Barki and Hartwick (1994) point out that individuals maintain distinct natural tendencies in behaviour towards adoption and use of IS/IT resources. The ability to manage these individual-level cultural factors may have an important influence on the overall success derived from IS/IT investments. However, to date there remains a lack of clarity on how culture influences perceived usefulness beliefs at the individual-level (Bagozzi, 2007).

Furthermore, the existing insights on how culture influences IS phenomena has predominantly been limited to national and organisational culture perspectives (Leidner and Kayworth, 2006). While these lenses have been useful, they do not give a clear understanding of how the manifestation of culture at the individual-level might be understood, let alone its impact on various IS phenomena. The need for an

individual unit of analysis is therefore based on the understanding that IS phenomena exert a strong influence in organisations, first at an individual level, and then extrapolated to a group of users within the organisation. To address the limited attention to culture at the individual level in the IS literature, Walsh et al. (2010) portrayed the idea of IT culture, as one that comprises of distinct values, assumptions and behaviours ascribed to IT by an individual. It explores how different groups might evolve within organisations based on these set of IT-related dispositions. This research is rooted on the IT culture concept as an appropriate theoretical toolkit to first explore cultural manifestations at the individual-level of analysis, and then investigate their influences on perceived usefulness beliefs.

To fulfil its objectives, this thesis uses a local council located in the East Midlands region of England. This case site represents one of several public-sector organisations within the country that are funded by the UK government. In terms of their business operations, local councils consist of various departments through which several services are disseminated across the communities in which they operate. As a result, they use a wide range of niche applications to enable individuals who occupy different departments/job roles to fulfil their day-to-day job tasks. However, councils are facing severe cuts in government funding. Already, government funding to councils have been cut by 40% (Local Government Association, 2014); and the Local Government Association – the body that sets the political agenda on issues that matters to councils in the UK – anticipates that councils face a £5.8 billion shortfall in government funding by 2020 (Smulian, 2017). In the face of these budget cuts and increasing cost of providing community services, several councils in the UK have begun to exploit the use of technology and digital tools to improve the quality, cost and efficiency of the several services they provide. (See Local Government Association, 2014). This makes the local council an ideal research environment to locate this study.

Consequently, there is a need for this study, as it investigates the IT culture archetypes that exist within a local council, and how such archetypes might influence perceived usefulness beliefs. It is envisaged that through this dual research objective, useful insights will be provided to enhance the uptake of technology within the

council. In addition, it will also provide a blueprint through which study can be replicated in other local councils across the UK.

1.2 Motivation

Prior to detailing the significance of the research conducted in this thesis, this section focuses on the motivation for the study.

Despite the important role that culture plays in framing the social practices of individuals, its application to perceived usefulness beliefs has been sparse in the IS literature. The absence of empirical studies to investigate how cultural factors influence perceived usefulness at the individual-level, may have largely been due to the lack of theoretical foundations to explore culture at the individual-level. Instead, efforts have generally been limited to the use of Hofstede's (1980) national culture dimensions. By doing so, studies using this approach wrongly assume that cultural manifestations are homogeneous and that there are insignificant cultural variations at the individual-level (Karahanna et al. 2006). This position is becoming increasingly unpopular, as a few studies have begun to explore different approaches to investigate culture at the individual level (e.g. Straub et al. 2002; Walsh et al. 2010).

This research is therefore motivated by the gap identified in the literature to investigate how culture influences perceived usefulness beliefs of IT. IT culture provides a guide for research to explore individuals' IT-related values that shape their social interactions with IT. It provides theoretical support whereby the relationship between culture and IS phenomena can be studied at the individual-level. This thesis adopts IT culture (Walsh et al. 2010) – a growing theoretical lens in the IS literature - to investigate how different cultural manifestations might influence perceived usefulness beliefs. This goal is further discussed in the next sections into more specific research objectives. Subsequently, the organisation of chapters in this thesis is provided. In the next section, the significance of this research is discussed.

1.3 Significance of this Research

In terms of its significance, this thesis brings together two strands of research, that is, the IT culture literature and the technology acceptance model (TAM) literature, to shed light on the theory-practice gap concerning IS success. A key factor in the successful realisation of benefits from IS/IT investments is being able to manage the acceptance of IT by users and how they consider it to be useful. The combination of the continued rise in IS/IT investments and high failure rates has led many researchers to suggest there is a theory-practice gap concerning IS success (Pfeffer and Sutton, 2000; Breu and Peppard, 2003). This research contributes to this business issue by providing new practical insights to support varying levels of perceived usefulness beliefs that might exist among organisational IT users.

Secondly, this thesis contributes to the IS literature by providing insights on whether the same IT culture archetypes can be identified in settings that are different to those that have already been investigated. Existing studies investigating cultural archetypes through individuals' needs and motivation to use IT has mostly used student samples in educational settings (Walsh and Gettler-Summa, 2010; Walsh et al. 2010). The challenge with using student samples is that they do not account for organisational characteristics, such as the likelihood to experience the same level of mandatory requirements to use IT compared to a paid employee in a work environment.

For example, an employee might be expected to use IS/IT without which (s)he would not be able to carry out his/her job-related tasks. In some cases, organisations may even introduce punishments to increase employees' use of organisational IS/IT. Punishments expectancy such as the fear of being laid off resulting in loss of income, has been used to motivate desirable system usage among employees (Workman and Gathegi, 2007; Xue et al. 2011; Liang et al. 2013). On the other hand, such penalties are unlikely to be effective in student settings, where staff and university administrators need to ensure high student satisfaction rates on their programs. Hence, outcomes from studies using student samples may not readily generalise to organisational settings and employees.

This study focuses exclusively within an organisational setting, thereby providing an opportunity to compare/contrast how the identification of IT culture archetypes may differ from those observed in student samples. It is likely for example, that hierarchies and power structures that exist in an organisation may influence the cultural archetypes identified. In turn, these structures exert influence on individuals' behaviours within organisations, such as their adoption and use of IT (Jasperson et al. 2002; Tong et al. 2017; Xu et al. 2018). Hence, by shifting the focus from an educational to an organisational setting, this study contributes to a more comprehensive understanding of how the context of a study might influence the identification of IT culture archetypes.

Thirdly, this study has portrayed the relevance of the IT culture as a useful concept to explain how culture might influence individuals' perceived usefulness beliefs. The IT culture literature represents a small but growing strand of the IS literature that is used to understand the needs and motivational factors that describe individuals' IT usage behaviours (Walsh et al. 2010). Most studies in the IT culture literature have predominantly focused on the identification of IT culture archetypes. On the other hand, technology acceptance (Davis, 1989; Davis, 1993; Venkatesh et al. 2003) represents a well-established theory in the IS literature. Despite its extensive coverage, there is currently a dearth of studies investigating the cultural aspects of technology acceptance at the individual/group level (Bagozzi, 2007). From a theoretical perspective, this research demonstrates how IT culture provides an individual-level understanding of the cultural antecedents to perceived usefulness beliefs.

1.4 Research Objectives

Considering the lack of research in terms of investigating the cultural antecedents of perceived usefulness beliefs, this study takes an exploratory approach that is encapsulated in two key research objectives. The first objective is to identify IT culture archetypes and compare/contrast results with those already observed in the IT culture literature. The second objective follows from the first to identify the relationship between each IT culture archetype and perceived usefulness. The two research objectives of this thesis are thus outlined below:

RO 1: *to identify archetypal patterns amongst IT users in a public UK organisation*

RO 2: *to investigate the influence of cultural archetypes identified in (RO1) on perceived usefulness.*

Both objectives are addressed based on an empirical study in a public organisation in the UK. The research approach adopted for addressing the questions listed above is quantitative analysis and it relies on using survey data. The research objectives were answered using different multivariate analytical approaches. The first research question was answered through a cluster analysis of the dataset, while the second research question was answered using a multiple regression analysis approach. A general overview and structure of the thesis is presented in the next section.

1.5 Thesis Structure and Organisation of the Thesis

This section outlines the organisation of this thesis, which consists of six chapters. In the current chapter, I have illustrated the background and motivation of the study, as well as its significance and research objectives. The thesis, inscribed in the field of information systems application and use, investigates the cultural antecedents of perceived usefulness from an IT culture perspective.

Chapter 2 positions the thesis in its research domain by providing a literature review of the related research on culture and IS success at the individual level. First, it provides a background of the culture literature with emphasis on the overview of the culture literature at the national, organisational and the individual levels. This review then focuses on culture at the individual level from the IT culture perspective. Empirical studies that have utilised this lens in the IS literature are discussed and a critique of the IT culture literature is then provided. Following a discussion of the culture literature, it was relevant to select a measure of IS success at the individual level of analysis, and perceived usefulness is introduced as a measure of choice. Finally, the chapter concludes with an outline of the theoretical reasons to expect how cultural archetypes influence perceived usefulness beliefs

Chapter 3 discusses the methodological approach that is adopted for this research. The chapter explores the positivist perspective on information systems adopted in this thesis. Details concerning the design of the study, as well as the collection of empirical data are also provided. This chapter also includes a discussion of the demographic characteristics of the sample data, as well as the reliability tests that were conducted as part of the data preparation.

Chapter 4 sets out to identify the IT culture archetypes that exist in a UK public organisational context. This process is conducted using a multivariate cluster analysis approach. The resulting clusters are then interpreted, and appropriate labels are assigned depending on their characteristics. The results are discussed to highlight the key contributions to the IT culture literature. This is the first empirical chapter and it addresses the first research objective of this thesis.

Chapter 5 illustrates the data analysis that was conducted with reference to the second research objective, that is, to investigate the influence culture archetypes identified in the first research objective have on the perceived usefulness of IT. Drawing on the unique differences between the IT culture archetypes identified in chapter 4, the set of hypotheses testing the influence of cultural archetypes on perceived usefulness beliefs are developed and tested.

Chapter 6 concludes this thesis by summarising the results from the two empirical chapters. This is done by revisiting the research objectives that guided the study. The chapter highlights the contributions to research and practice and discusses the study's limitations and directions for future research.

1.6 Summary

This chapter lays the foundations for the thesis by outlining the background to the research problem, the motivation and research objectives, as well as the structure/organisation of the subsequent thesis chapters. As this study is based on two key research streams in the IS literature (that is, IT culture and the technology acceptance), a review of the literature that covers both streams is next presented.

Chapter Two

2 LITERATURE REVIEW

2.1 Introduction

Having explained the motivation and aims of this research in chapter one, this chapter reviews the relevant literature to identify scholarly perspectives that makes this study relevant. To achieve this, the two major streams of literature related to this research are reviewed. First, this chapter seeks to provide an overview of the culture literature, with focus on the most suitable lens appropriate for undertaking this research. Following this, a discussion of how IS success is conceptualised and measured at the individual level is provided. Finally, the research objectives of the thesis and the two-phase approach to address the research objectives are discussed.

2.2 Overview of the Culture Literature

This section will begin by considering the different definitions of culture before discussing how culture has been investigated within the IS literature.

2.2.1 Defining culture

Numerous definitions of culture currently exist. For example, Nahavandi and Malekzaeh (1988) and Schneider, (1989) refer to culture as the shared beliefs and assumptions among a group of individuals. For Key (1999), it reflects shared norms and social practices among a group of individuals. In more general terms, it has also been defined as what a group of individuals learned over a period of time, as they learn to overcome the challenges of survival existing in external environments (Schein, 2010). These definitions show that while there appears to be little consensus on how culture should be defined, there is a broad understanding that culture is a shared phenomenon. In this respect, studies have conceived culture as a trait of individuals sharing a similar nationality (Hofstede, 1980), working in the same organisation (Nahavandi and Malekzah, 1988), or even individuals belonging to the same occupation group (van Maanen and Barley, 1982)

Schein (2010) argues that culture consists of three core components encapsulated as a set of implicit and explicit values. These three core components are artefacts, values and basic assumptions (See figure 2.1).

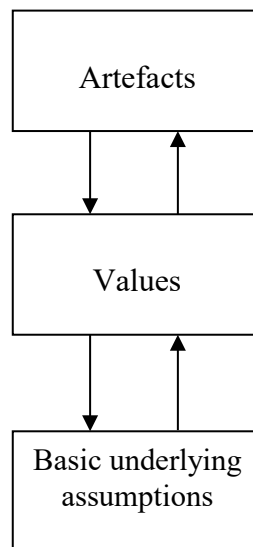


Figure 2.1: The levels of culture (adapted from Schein, 2010)

Basic assumptions are the most implicit representations of culture and are largely invisible. While they may be invisible to the point where they are even taken for granted, they influence group behaviour and can be extremely difficult to change (Schein, 2010). In addition, basic assumptions are unconsciously learned and represent cognitive structures through which a group perceive and interpret events that occur (Leidner and Kayworth, 2006). By contrast, artefacts such as visible and audible behaviours are the most explicit forms of culture. They include rules, norms, language, manners of address, rituals and emotional displays.

Despite being the most observable element of culture, behaviours may symbolise a wide variety of meanings depending on the underlying assumptions (Leidner and Kayworth, 2006). Thus, an in-depth exposure into group behaviour is important so as not to draw false conclusions about observed group behaviour (Schein, 2010). Finally, values allow the understanding of why people behave the way they do. A value is itself an enduring belief that a specific standard is preferable; it is acquired early in life and changes over a period as individuals have personal encounters with different cultures (Rokeach, 1973).

Although Schein (2010) suggests that culture can be studied through these three components, exploring culture from a values-perspective remains the most adopted approach used in the IS literature (Alavi et al. 2005; Leidner and Kayworth, 2006). These studies assert that values are closely intertwined with culture such that cultural influences can be examined by observing the values that are expressed. For the purpose of this research, the values perspective of culture is adopted to understand culture at the individual-level. The major point of consideration about culture in this section is that it represents the artefacts, values and basic assumptions that are shared by a reference group. In the IS literature, the most studied levels of culture have been organisational and national culture (Leidner and Kayworth, 2006; Giorgi et al. 2015; Kummer and Schmiedel, 2016). While both streams are rooted in the same underlying concept that is, culture, the values used to represent culture at both levels play a key differentiating factor in the way it was treated from both perspectives. In the next section, a brief of national culture is presented.

2.2.2 Culture at the national level

At the national level, culture has generally been used to represent the values that distinguish people from one country to another (Hofstede, 1980). These may also include the spoken language (Myers and Tan, 2003), myths and rituals (Broms and Gahmberg, 1983), and Hofstede's (1980) work has identified six dimensions that distinguish culture at the national level. The dimensions and their definitions are shown in Table 2.1.

Table 2.1: Dimension of national culture (Hofstede, 1980)

Dimensions	Definitions
Masculinity/femininity	the extent to which the dominant values are masculine; that is, assertiveness, strength, virility, and not caring for others, or the opposite, for feminine values, such as the quality of life or people.
Power distance	the degree to which a society accepts the fact that power in institutions and organisations is distributed unequally.
Individualism/collectivism	the degree to which individuals are expected to take care of themselves or their family in comparison to being part of social groups in which they are expected they take care of the group's individuals in exchange for their loyalty.
Uncertainty avoidance	the extent to which a society feels threatened by uncertainty and ambiguous situations and tries to avoid it.
Long term orientation	refers to future-oriented values such as persistence and thrift in opposition to past and present values such as respect for tradition and fulfilling social obligations.

In light of the multicultural landscape that characterises today's business environment, Hofstede's dimensions have generally been used as an important explanatory variable for variances in several IS phenomena across different country contexts. For example, these dimensions have been found to significantly explain individuals' IS adoption decisions across different national contexts (Png et al. 2001; Waarts and Everdingen, 2005; Steers et al. 2008). While the distinction across national contexts have provided useful insights about culture in the IS literature, they have also been adapted to explain cultural manifestations that exist at micro-levels, such as at organisational and individual levels (e.g. Karahanna et al. 2006).

This research follows the argument of Hofstede (2001) and Karahanna et al. (2006), that studies utilising national culture dimensions to investigate culture at the individual or organisational level take a reductionist approach, and do not fully capture the peculiarities that underpin culture at organisational or individual levels. As a result, several researchers have argued for the use of alternative lenses to understand cultural manifestations at these levels (Martin, 2002; Myers and Tan, 2003). These studies will now be explored starting with culture at the organisational level.

2.2.3 Culture at the organisational level

As mentioned earlier, another useful cultural lens that has enhanced the understanding of how culture influences IS phenomena is organisational culture. One of the earliest studies to conceptualise how culture is viewed at the organisational level is Smircich (1983). In this study, the author depicted two main approaches to view culture for organisational analysis. First, culture can be viewed as an observable variable. That is, something that an organisation has, and thus can be manipulated. Second, culture can be viewed as something an organisation is - implying that organisations have certain implicit values that differentiate them from others (Smircich, 1983). In general, these views highlight two distinct perspectives of culture that serve as building blocks for the definition and study of organisational culture within the IS literature. Owens (2004) has even suggested that a more nuanced definition of organisational culture must account for both

perspectives highlighted in Smircich (1983). Perhaps, the most frequently cited definition of organisational culture is by Schein (2010), where culture is defined as:

“A pattern of shared basic assumptions that the group has learned as it solved its problems of external adaption and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems” (Schein 2010, p. 18).

As seen in this definition, Schein conceptualises culture as a shared understanding of how to tackle key challenges that have been learned by ‘old members’ and are passed on to ‘new members’. However, this way of ‘perceiving’, ‘thinking’ and ‘feeling’ may not necessarily be the same among all individuals in an organisational setting (Krackhardt and Kilduff, 1990; Martin, 2002). In fact, organisational culture may be fluid due to the constant need to respond to changes and challenges in the micro and macro environments (Kappos and Rivard, 2008). Thus, some researchers have argued that culture exists at different levels, reflecting a wide range of cultural manifestations. By defining culture as *“consisting of in-depth subjective interpretations of a wide range of cultural manifestations”* (p. 120), Martin (2002) urges future studies to take the position that culture can be viewed from three perspectives within organisational settings namely: an integration perspective; a differentiation perspective; or a fragmentation perspective. A visual representation of these three perspectives is provided in figure 2.2.

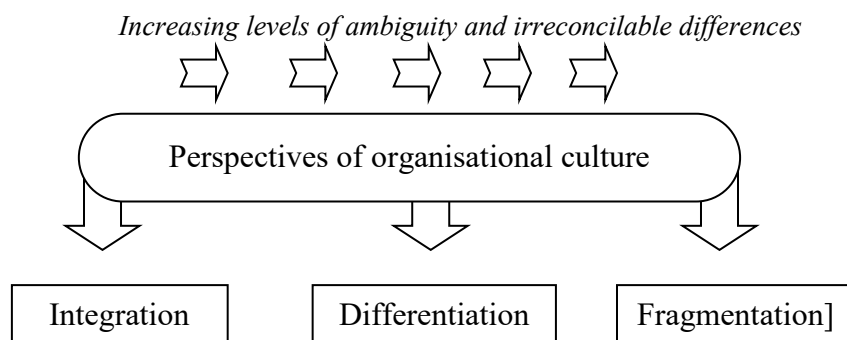


Figure 2.2: Martin’s (2002) three perspectives of organisational culture

The integration perspective draws attention to those manifestations of culture that have mutually consistent interpretations across all organisational subunits (Martin, 2002). The major premise of this view is that a broad consensus exists with respect to culture within an organisation. As a result, there is no ambiguity among organisational members because share a common interpretation (Martin, 2002). Studies that take this perspective view culture as a unifying construct that binds all organisational members together. Examples of studies that adopt this this perspective include work by Deal and Kennedy (1982), where the notion of corporate culture is explored. According to the Deal and Kennedy, corporate culture represents an organisation-wide consensus achieved via a range of widely recognised policies and procedures. Altman and Baruch (1998) highlighted this point also by identifying unique 'ways of life' that were peculiar to each of two case organisations explored in their study. Despite its usefulness, integration studies are criticised because they may not clearly explain the cultural differences that may exist at among organisational sub-groups (Rivard et al. 2011). Rather, its focus is on organisation-wide consensus and how a range of cultural displays (Martin 2002) can reinforce this. It is further argued that given the multi-cultural nature of the present-day organisation, it might be difficult to sustain organisation-wide consensus and homogeneity (Leidner, 2010).

At the other end of the spectrum to the integration perspective, the fragmentation perspective posits that inconsistencies and ambiguities are part of culture within organisations (Martin, 2002; Sveningsson and Alvesson, 2003). These inconsistencies arise in part because the fragmentation perspective views organisations as highly unstable environments and in a state of constant flux (Morgan and Ogbonna, 2008) which sometimes may be due to contextual (e.g. mergers) or situational factors (e.g. task-related). As a result, researchers who adopt this view in studying organisational culture do not seek to explain consistencies but rather to emphasise ambiguity and irreconcilable tensions (Martin, 2002; Kappos and Rivard, 2008). The presence of ambiguity in this perspective is to imply the absence of shared values among organisational members advocated by the integrative perspective.

The final perspective – differentiation – departs from the view that there are broad consensus within organisations and at the same time, comes short of acknowledging irreconcilable tensions exist among organisational members. Differentiation is depicted as an intermediate position that lies between the integration and fragmentation perspectives. The differentiation perspective acknowledges ambiguity by focusing on cultural manifestations that have inconsistent interpretations (Martin, 2002). So, although there is a salient culture across the organisation, other subcultures may still exist within the organisation. These conflicting subgroups and their differences are the focus of studies that study culture from the differentiation perspective.

Jackson's (2011) study of an IS adoption in a UK higher education college provides a good illustration of the differentiation perspective. The study investigated the unsuccessful adoption of a virtual learning environment (VLE) by interviewing 24 respondents over a period of two months after implementation. The respondents were selected across a range of individuals who through their departments were involved in the adoption process in one way or the other. Two groups – the hierarchists and fatalists – were identified as representing distinct and segregated cultural values. The hierarchists represented top management system users who had a strong inclination for power and authority, while the fatalists were represented by system users who had devoted a long service to the college. Jackson (2011) pointed out while the hierarchists viewed the implementation of the VLE as a means to "*usurp their power*" (p. 77), the fatalists doubted the value the VLE would bring to the system. According to Jackson (2011), they felt constrained and saw the system as a form of control enacted by senior management. Thus, there was unwillingness among the fatalists to engage with the new ways of work. As seen in this study, the differentiation perspective portrays an organisation as one in which there are vested and conflicting interests among groups of individuals.

With respect to organisational culture, Martin (1992) has drawn attention to three perspectives (i.e. integration, differentiation and fragmentation) through which cultural manifestations can be understood. These three perspectives provide a holistic approach to study culture within organisational settings. Rivard et al. (2011) has exemplified this by providing deep insights on an IS implementation

within the healthcare context. Rivard et al. interviewed physicians, nurses and administrators involved in three clinical IS projects, and across three different healthcare organisations. They found that four values emerged across all three case studies and played a central role in the way the IS implementation was received among the physicians, nurses and administrators. The emergent values were: quality of care; efficiency of clinical practices; professional status/autonomy; and medical dominance. Two values, quality of care and efficiency of clinical practices, were important from an integration perspective in that the physicians, nurses and administrators had shared perception of the quality of care and efficiency the IS would afford their clinical practice in general. The other two values, professional status/autonomy and medical dominance were found to be of importance from a differentiation perspective. According to Rivard et al. (2011), differentiation became salient when it emerged that hospital users themselves had varying interpretations of the usefulness of the IS and how the practices that followed its implementation were consistent with shared values of the actors (i.e. the physicians, nurses and administrators). This study illustrates the complexity of managing practices evoked by varying interpretations of culture among organisational members. Understanding these manifold interpretations of culture may therefore be useful to better prepare business leaders for managing IT-enabled change. Considering the perspectives of culture discussed above, this research study adopts the differentiation perspective for organisational culture. This means in the study of culture, this research views an organisation as a diverse set of subcultures. In that, the set of values shared within a subculture marks a unifying factor within the group, and a differentiating feature compared to values shared by other subcultures.

An alternative perspective on culture that can be considered in an organisational context is provided by Karahanna et al. (2006). These authors argue that an individual's behaviour is influenced by different cultural values ranging from the supranational through to national, organisational and even at the group-level values. These cultural layers are interrelated and portray how individual-level culture is the result of several other levels of culture. An illustration of these layers can be seen in figure 2.3.

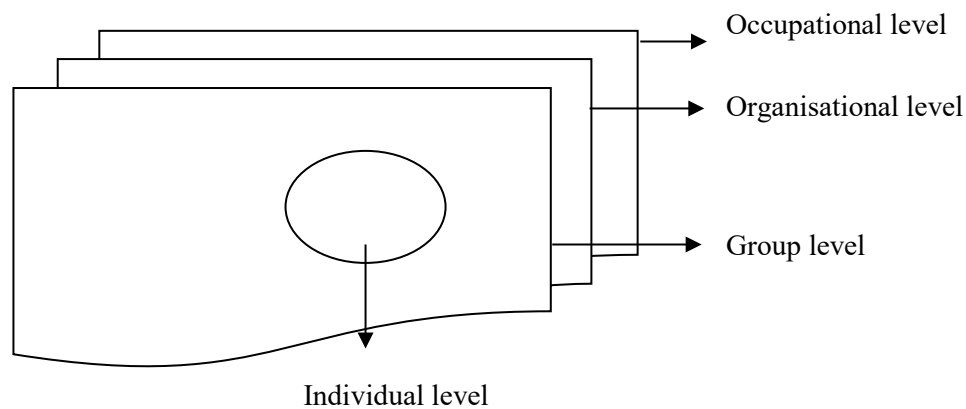


Figure 2.3: Interrelated levels of culture (adapted from Karahanna et al. 2006)

As shown in the figure, Karahanna et al. (2006) argue that at each cultural level, a set of espoused values and acceptable social practices are learnt and assimilated by individuals. The expression of behaviour observed at the individual-level reflects values and practices from each cultural layer. These layers overlap on the occupational layer as shown in figure 2.3. The occupational level draws attention to culture that exists among a group of individuals who are members of a profession (Gallivan and Srite, 2005).

At the occupational level, culture is observed when a group of individuals who work in different organisations share similar patterns of education and personal and work experiences unique to different professions (Trice, 1993; Von Meier, 1999; Jacks and Palvia, 2014). Within the context of an organisation, individuals who share these patterns are said to express values peculiar to an occupational subculture – one which is a subset of the broader culture in the organisation. For example, clinicians in a hospital holding similar attitudes with regard to the delivery of healthcare (focusing on quality of care), which may be different to the attitudes held by hospital managers (focusing on resource implications of care delivery). Rao and Ramachandran (2011) have argued that conflicts arise when the differences in occupational subcultures are not properly managed within an organisation. Von Meier (1999) portrayed the case of a technological innovation where the organisation had transitioned from operating through telephone or radio to more sophisticated computer systems, to improve their operating speed. The

findings showed that the “operators” and “engineers” used different mental modes to evaluate the implications of the new system for their work practices. This resulted in conflicting accounts by the “operators” and “engineers” within the organisation, and they represent dissenting views, which went on to influence the adoption of the new system. More recently, Jacks and Palvia (2014) used a positivist lens to validate an instrument that reflects a set of values shared among individuals who occupied IT-related occupations. As exemplified in the aforementioned studies, researchers examining culture at the occupational level seek to explain how values of a particular profession influence IT behaviours of individuals within an organisation. While the occupational perspective is valuable to understand particular sub-groups within organisations, the variety of occupations found within organisations is often high. Consequently, to gain an organisational perspective on culture, taking selective occupational focus may be inadequate.

A further level of culture that may be considered regards the presence of culture at the group level. Although one may be tempted to view this as a similar perspective to occupational culture, group-level culture is distinct in that it is not tied to a profession, and it emerges from the consideration of culture as the manifestation of tacit and explicit values shared among a group of individuals. Ravishankar et al. (2011) explain how the presence of different group subcultures influenced the alignment and success of a knowledge management system. In this study, the authors identified three subcultures: enhancing; countercultural; and chameleon. Their analysis underscored the importance of accounting for subcultural influences as a way of facilitating favourable outcomes from IS implementations.

Huang et al. (2003) investigated how inconsistencies among organisational group subcultures influenced the software development process within a banking institution. Their interviews with employees revealed the presence of group subcultures that cut across various divisions in the company. It was suggested that the complexities of subcultural differences in firms acted as a “blessing-in-disguise”, because it reminded business leaders of the complexity of implementing corporate-wide IS solutions. Thus, the authors argue that rather than viewing subcultural differences as a threat to the adoption of IT, business leaders should

view it as an opportunity to implement more inclusive policies that allows organisational members to maximise the benefits of IS/IT in general.

While the theoretical and operational constructs that underpin investigations into culture at the occupational and organisational levels are useful to draw macro-level inferences, Lee et al. (2007) argues that researchers should not assume that the set of cultural values that frame the characteristics at the macro-level (such as national, professional and organisational cultures) are the same as those of a group (subcultures) and individuals. By using national culture dimensions (see table 2.1 on page 11), their study showed that differences existed in the cultural values that influenced how individuals viewed their experience of mobile internet usage. It has been argued that individuals maintain distinct natural tendencies that influence their behaviour towards adoption and use of IS/IT resources (Barki and Hartwick, 1994). Therefore, it may be simplistic to presume that macro-level representations of culture will provide a complete explanation of cultural manifestations and associated behaviours as they lack the precision to adequately explain culture at the individual-level. This weakness in existing culture research, has encouraged researchers to focus on culture perspectives at the individual-level.

2.2.4 Culture at the individual level

A small number of frameworks have been developed to explain the cultural values that shape individual behaviour and how they may influence a variety of IS phenomena (Hofstede 1980; Yoo et al. 2011). Yoo et al (2011) have developed a cultural value scale (CVSCALE) to explain culture variations at the individual level. The dimensions used for the development of the scale were power distance; uncertainty avoidance; collectivism; long-term orientation; and masculinity. Although initially proposed to predict individual culture differences in the consumer market (Yoo et al. 2011), the CVSCALE has also adapted to different research domains such as technology acceptance (Lai et al. 2016; Shiu et al. 2015), purchase intention (Sreen et al. 2018) to mention a few.

Leidner and Kayworth (2006) highlighted how the majority of studies have drawn on Hofstede's (1980) taxonomy to investigate culture at the individual level.

Individual level culture is investigated using national culture dimensions (see table 2.1) and evidenced by the strength of the individual's perceptions of these cultural dimensions. In this view, it is assumed that members of society are culturally homogeneous such that there is low within-country variation among individuals in the society. However, Hofstede et al. (2010) has argued that national culture dimensions may not be appropriate to study individual-level cultural orientations. Besides, Dake (1992) has proposed that culture should be assessed from the individual level since culture exerts a strong influence, first at an individual level, and is then extrapolated to a group of users at the organisational-level. In addition, individuals may vary in the extent to which they exhibit particular cultural values (Gallivan and Srite, 2005; Karahanna et al. 2006).

An alternative emerging perspective regarding individual culture concerns the attitudes and values exhibited toward technology. IT culture conceptualised as the cultural dimension of IT usage has been gaining attention within the IS literature and may provide a useful perspective to help to explain IS phenomena at the individual-level (Walsh et al. 2010; Walsh 2014). Thus, the next section discusses the IT culture concept and the empirical studies that have utilised this perspective.

2.3 IT Culture

IT culture has been defined as *“the set of IT-related visible or audible behaviours, IT related values and IT related underlying assumptions shared by a group”* (Walsh et al. 2010, p. 259). It represents the level of acculturation expressed through the fulfilment of fundamental needs and motivations to use IT at individual-level (Walsh, 2014). In turn, the level of IT acculturation depends on the individuals' exposure to, and experience with IT at a given point in time. The IT culture concept is one which can be traced back to a number of human behaviour and cultural concepts, such as Social Identity Theory (SIT) (Tajfel, 1978), the virtual onion model (Straub et al., 2002) and the Spinning Top Metaphor (Walsh and Kefi, 2008) which are explained below.

SIT is part of an individual's self-concept which derives from knowledge of his/her membership of a social group (or groups) together with the value and emotional

significance attached to that membership (Tajfel, 1978, p. 63). These groups may be based on attributes such as nationality, organisation or gender. This understanding has enabled IS researchers to propose theoretical frameworks for studying cultural beliefs at an individual level (Ford et al., 2003). These cultural layers reflect how certain deeply held beliefs may shape people's views and behaviour toward uniquely identifying one 'in-group' from other 'out-groups'. So, by understanding individuals' beliefs and behaviours through the lens of SIT, it is possible to study how different cultural layers frame individuals' behaviours and also examine how each layer of cultural identity influence their activities within organisations.

The virtual onion model builds on SIT to offer a model of different layers of culture (Straub et al., 2002). The model suggests that like layers of an onion, each individual is composed of different layers of cultural identity and experiences (Gallivan and Srite, 2005). Based on external triggers (or circumstances), these cultural layers shift to define and express unique reactions common to an in-group and alien to another out-group. According to Walsh and Kefi (2008), this is the individual IT culture described as "*a modelization of the individual as a cultural being*" (p. 7). Individual IT culture offers a conceptual understanding of an individual leading to 'specific groups of people' characterised by their needs and motivation to use IT Walsh and Kefi (2008). Thus, applying the model offers a comprehensive understanding of the individual as a cultural being and may well explain different manifestations of IS/IT use in globally multicultural settings.

IT culture provides a cultural representation of IT usage patterns that may exist within an organisation. This representation is assessed through the values ascribed to IT by individuals, and these values on the other hand, are assessed through their needs and motivation to use IT (Rokeach, 1973). For an individual, the need to use IT is generally a perceived lack of something that is necessary for the focal individual. The existence of a need motivates individual behaviour towards the fulfilment of that need. The more perception of lack experienced in relation to IT usage, the more the motivation to seek the fulfilment of that need. Therefore, the presence of needs drives motivation, both of which explain the values ascribed to IT by the individual. According to Schein, (2010), values allow the understanding of why people behave the way they do.

Drawing from the IS literature, six constructs have been proposed as measures of IT culture. The constructs are: 1) power needs; 2) primary needs; 3) affiliation needs; 4) accomplishment needs; 5) intrinsic motivation to know; and 6) extrinsic motivation with identified regulation (Walsh, 2014). These six constructs make up the motivation and needs dimension used to assess IT culture. The definitions of the constructs that make up the dimensions of IT culture are listed in table 2.2. According to Walsh (2014), the motivation dimension comprises of an individuals' intrinsic motivation to know IT (INTKNOWIT) construct and an individuals' extrinsic motivation through identified regulation (EXMOTID) construct. The needs' dimension on the other hand, represent constructs which assess individuals' power needs (POW), primary needs (PRIM), affiliation needs (AFF), and accomplishment needs (ACC).

Table 2.2: IT culture constructs (Walsh and Gettler-Summa, 2010)

Dimension	Constructs	Definitions
Motivation	Extrinsic motivation with Identified Regulation (EXMOTID)	refers to IT usage through self-determined choice. One uses IT because one knows it is important for oneself in order to achieve other purposes considered important for the self.
	Intrinsic motivation to know IT (INTKNOWIT)	refers to IT usage for its inherent satisfaction. IT usage is motivated to surpass oneself and adequately master one's IT tools
Needs	Self-accomplishment (ACC)	relates to the need to overcome obstacles satisfied using IT.
	Affiliation (AFF)	relates to the need to socialise and to share with others satisfied through using IT.
	Primary (PRIM)	relates to the need to use IT that is close to an addiction; indicates a strong passion for IT
	Power (POW)	refers to the need to have prestige and influence over people's actions through one's knowledge and mastery of IT.

Having explained the core dimensions of IT culture the following section discusses the different perspectives of IT culture that have been presented in the IS literature.

2.3.1 Extant conceptualisations of IT culture

There are two main streams of literature regarding IT culture. One stream conceptualises IT culture as the culture evident within the IT function in an organisation (see Lynn Kaarst-Brown and Robey, 1999; Guzman and Stanton,

2009; Leidner, 2010). The second stream of literature has viewed IT culture as representing the culture of the IT occupational group (see Jacks and Palvia, 2014).

In terms of the first stream of literature, Kaarst-Brown and Robey (1999) showed that cultural assumptions influence how IT is managed within an organisation. The authors identified five IT culture patterns: the fearful IT culture, the controlled IT culture, the revered IT culture, the demystified IT culture, and the integrated IT culture. The cultural patterns were identified by investigating IT-related assumptions within two large insurance companies. These five patterns of IT culture were also distinct across underlying assumptions made about the IT function within the participating organisations. This study shows how organisational narratives influence IS management and governance.

Regarding the second stream of literature, IT culture has also been conceptualised as representing the culture espoused by the occupational group that is the IT workforce (Jacks and Palvia, 2014). Guzman et al. (2008) identified nine characteristics of the occupational culture of IS/IT personnel. They are: value of technical knowledge; extreme and unusual demands; complaints about others; shared satisfaction; ethnocentrism; cultural forms; unique and shared stories; weak grid dimension; and intercultural dysfunction. According to the Guzman et al., these characteristics indicate the manifestation of an occupational subculture unique to IT personnel regardless of the organisation.

A further, emerging stream of literature considers IT culture at the individual level. Here the concept of IT acculturation has been used as a potential explanatory variable to predict acceptance and usage of IT within work settings (Robins and Webster, 1999; Loch et al. 2003). In Loch et al. (2003), the authors examined the extent to which technological acculturation affects the acceptance of the Internet among individual users in the Arab world. Another similar term, technological cultivation has also been used to represent the *“cultural exposure and the experiences that individuals have with technology”* (p. 46). Hill et al. (1998) portrayed how knowledge workers based in Arab countries, (but who previously studied in western countries) exhibited a more positive attitude towards technology and often perceived technology as beneficial to their organisation. The distinction

between those who studied in western countries and those who did not, was used as an indicator of technological acculturation that had been experienced among individuals in their sample. The findings from these studies show that IT-acculturation is important in predicting the success or failure of the adoption process. While they exemplify the usefulness of IT acculturation, the identification of 'person-based' acculturation profiles and their uniqueness remained lacking in the IS literature.

The first study to provide this insight was Walsh et al. (2010), where the authors examined cross-cultural behaviours and how they influenced IT use in an organisation through users' needs and their motivation to use IT. From Walsh et al.'s perspective individual IT culture captures the cultural dimension of IT usage at the individual-level (Walsh and Gettler-Summa, 2010). At this individual level, Walsh et al. (2010) has defined IT culture as the set of values shared by a group of individuals. These values are reflected by the needs and motivation satisfied by individuals through their use of technology. By understanding these needs and motivation at the individual level, the IT culture concept can help explain the shared values, which are crucial to understanding IT usage behaviours among a group of individuals. As a result, group differentiation arises and is attributed to the unique IT usage behaviours, characterised by the needs and motivation shared by individuals in a group (Walsh and Kefi, 2008). A group of individuals, who share similar dispositions regarding IT in this way, represent an IT cultural archetype. This understanding of IT culture archetypes aligns with Martin's (2002) differentiation perspective, because they consist of individuals who share the same values about IT.

Walsh et al. (2010) created a framework that identified nine IT user profiles: studious; passionate; dangerous; interested; disciplined; frightened; disenchanted; constrained; and dodger, as members of three attitudinal groups. The attitudinal groups were: pro-active; passive; and refusal. Key findings from this study were two-fold. First, by way of a proposed framework, the study shows that organisational members tend to group following their IT culture. IT was assessed through users' needs and motivations to use IT. Second, the study further points out that the cultural archetypes creep from one profile to the other due to

interactions other archetypes. This way, business leaders can strategically manage the direction of culture creep to facilitate better return from IT implementations.

To complement her previous work on IT culture, Walsh and Gettler-Summa (2010) undertook a further quantitative cluster analysis approach to investigate the presence of IT culture archetypes. Additional profiles emerged from this analysis; that is, the ‘dodgers’ and the ‘players’. These further added to the archetypal patterns identified in Walsh et al. (2010). A further validation of the IT culture concept was provided in von Stetten et al. (2011) though here the authors did not identify unique archetypal profiles.

Building on the von Stetten et al. (2011) study, Walsh (2014) proposed a strategic path to study IT use through users’ IT culture and needs. One key finding of Walsh’s (2014) study was that highly acculturated users of IT, who could have been ‘ambassadors’ may have high situational IT needs which if not met, may result in them behaving acting out ‘nemesis-type’ characters that hinders successful implementation of organisational IT. These results suggest that IT culture can provide a useful theoretical lens to inform IS phenomena at individual-level. This in turn, can provide valuable insights needed to understand and address contemporary business challenges (Leidner, 2010). Table 2.3 summarises the various definitions of IT culture and their applications in the different literature streams.

Table 2.3: IT culture: Definitions and applications in the IS literature

IT culture concepts	Definition	Key findings
Departmental function	IT culture is used to represent the culture of the IT group within an organisation (Lynn Kaarst-Brown and Robey, 1999)	The culture of the IT group within an organisation can have both positive and negative effects on the IT-business relationship (Lynn Kaarst-Brown and Robey, 1999)
Occupational /profession	IT culture is used to represent the culture of the IT profession in general (Jacks and Palvia, 2014)	Organisations can assess the ‘cultural fit’ specially to recruit more women and minority group into the field of information systems (Guzman and Stanton, 2009)
Individual	IT culture represents the set of IT-related values shared by a group of individuals (Walsh et al. 2010)	<ul style="list-style-type: none"> • Individuals that share similar needs and motivation to use IT form specific IT culture archetypes. • Leidner (2010) argues that conflicts may occur within an organisation when there is incongruence between individuals’ IT-related values and the values of the IS/IT they use within an organisation

2.3.2 Critique of the IT culture literature

The increasing number of studies (See Lynn Kaarst-Brown and Robey, 1999; Walsh et al. 2002; Walsh 2014) indicate that IT culture is gradually becoming an important object of study among IS researchers. However, despite making several useful and important contributions the IT emergent IT culture literature remains deficient in several respects. These limitations will be discussed next.

First, existing studies have only considered IT culture concepts in the context of controlled groups (i.e. students) rather than actual employees in a work

environment. The relationship of employees in the work environment with IT may be quite different to that of students choosing to use, for example, a virtual learning environment (VLE) at a university. In the work context employees do not have the discretion to choose whether or not to use a particular IT system to complete their work tasks. Indeed, for many work tasks, it would be impossible for the employee to fulfil their work obligations without using the organisation's IT systems. By contrast, a VLE technology in a university often complements teaching methods, such as lectures and tutorials providing links to videos additional reading material and copies of lecture slides. While these resources may be important for the student learning experience, it may be possible for a student to successfully complete their study without necessarily engaging with a VLE. Thus, unless the students cannot engage with the learning process without using the VLE, for example through distance learning, the VLE does not have the same mandatory requirements that are likely to be evident in a work context. Consequently, a particular point of concern is the lack of generalisability of research conducted from student participant samples to other contexts (Sears 1986). Although the application of quantitative and qualitative approaches in the IT culture literature has enabled rigour in the existing literature, there is the risk that relying on studies involving student participants may limit the understanding of IT culture. Thus, further research is needed that considers workers' experiences of IT culture.

A further weakness of studies that have only used student participant samples concerns whether all possible IT culture archetypes have been identified. There are reasons to expect that different IT culture archetypes will emerge in different settings. A variety of factors may influence cultural patterns that emerge in different contexts. For instance, one of such factors is the industry where the study was conducted. Chatman and Jehn (1994) have showed that organisations' cultural values relate to the technological and growth characteristics of the industry they operate in. Therefore, it is possible to expect unique IT cultural archetypes owing to contextual factors in the organisation/industry being investigated.

Finally, while several studies have identified different IT culture archetypes, it is not clear whether identifying different IT culture archetypes holds any practical value. For example, while Walsh and Gettler-Summa (2010) demonstrated the

identification of archetypal patterns using a cluster analysis approach, they did not consider whether these archetypal patterns influence the uptake and application of IT. Previous studies in the IS literature have found that culture may influence the outcomes from using IS/IT (see for example Zhu et al. 2006; Rivard et al. 2011). So, it may be reasonable to presume that one practical impact that IT culture may have is on the success perceived by individuals from an IT system. However, to date no studies have attempted to examine this relationship.

Consequently, there is a need for further research to examine the role culture plays in the perceived success of IS/IT within organisational settings. IT culture offers an appropriate medium to investigate IT values, assumptions and behaviours among users, to classify them into particular archetypal groups. These IT culture archetypes may hold more positive or negative attitudes towards IS/IT and accordingly more or less inclined to engage with the long-term exploitation of benefits from IS/IT. Thus, understanding the influence of IT culture archetypes on IS success offers a path to more effective strategic use of IT in organisations. Many studies have shown that social and cultural factors may be important in influencing IS success. Thus, the next section examines the concept of IS success and how it can be measured.

2.4 Defining and Measuring IS Success at the Individual Level

The quest to measure IS success has been largely driven by the DeLone and McLean IS Success model (DeLone and McLean, 1992, 2003). It remains one of the most widely used frameworks to measure outcomes resulting from the use of an IS/IT within the IS literature. The initial model (DeLone and McLean, 1992) was developed to account for two dependent variables (i.e. IS success at the individual and organisational levels). Individual and organisational IS measures were used to investigate how IS/IT engenders improved outcomes at the individual and organisational levels respectively (DeLone and McLean, 1992).

In DeLone and McLean (2003), the authors presented an updated version of the IS success model, principally modified in several areas. First, it added an additional dimension for service quality because as noted in Petter and McLean, (2009), “*the changing nature of IS required the need to assess service quality when evaluating IS*

success” (p. 160). Second, individual and organisational impacts were coalesced to now represent net benefit. This change was in response to the criticism that IS impacts can affect levels other than individual and organisations (Prybutok et al. 1997; Petter and McLean, 2009). Thus, the net benefit of an IS is assessed through the direct and interactive effects of service quality, information quality, system quality, intended (use) and user satisfaction.

In general, researchers who have attempted to investigate IS success at the individual level have had to draw on different perceptual measures depending on the IS in question, and objective of their studies. Petter et al. (2008) points out that different types of IS require specific measures, and DeLone and McLean (2003) have emphasised the point that *“clearly, there is a continuum of ever-increasing entities, from individuals to national economic accounts, which could be affected by IS activity. The choice of where the impacts should be measured will depend on the system or systems being evaluated and their purposes”* (p. 19). Several studies have therefore sought to investigate individual IS success using measures that align to the goal of their study (e.g. Staples et al. 2002; McGill and Klobas, 2005; Wu and Wang, 2006; Zheng et al. 2013; Hsu et al. 2015).

Following from the above discussion, the current study takes the position that in order for an IT system to be considered successful, it needs to be accepted by its users. This is because an organisation is primarily a group of individuals who, though dispersed in various departments, share the common goal of using organisational IS/IT to fulfil their day-to-day tasks. A key indicator of IS/IT being accepted by users is that the systems are used by individuals and that individuals consider them to be useful.

In order to select a suitable measure for this study, it was important to select a measure that is well-grounded and had been empirically validated in a wide range of contexts in the IS literature. The reason for this consideration is due to the exploratory nature of this study – which is to investigate the influence of cultural archetypes on performance outcomes. Moreover, given that there were no studies to *a priori* guide this investigation, it appears most plausible to select a well-established measure to examine the influence of IT culture on IS success. The IS literature has generally attempted to investigate successful IT acceptance, the success of the IS/IT

and/or the extent of IT adoption at individual-level using different measures. Some of the measures that have been used include individual impact (Ifinedo et al. 2010; Aparicio et al. 2017), net benefits (Wang and Liao, 2008; Prybutok et al. 2008), and individual benefits (Boh 2008; Zheng et al. 2013; Hsu et al. 2015; Legner et al. 2016). However, perhaps the most well-established measure of IS success is perceived usefulness (Cheng, 2014; Wu and Zheng, 2014; Abbas and Hamdy, 2015; Park et al. 2015; Yang and Lin, 2015).

Perceived usefulness remains one of the most used measures of performance outcomes in the IS literature. It is grounded in the long-standing technology acceptance model (TAM) (Davis, 1989), and has been a consistently featured construct in TAM in spite of various extensions that occurred to the original model (See Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). In addition, it has been extensively used to explore different facets of individual-level adoption within different IS/IT contexts and found to contribute to the understanding of how individuals' general job performance when using organisational IS/IT can be improved (Sun and Jeyaraj, 2013; Bhattacharjee and Lin, 2015).

In terms of its usage in the broader IS literature, from an IS success model perspective, a growing number of studies that seek to measure the success of different IS/IT, have chosen to adopt perceived usefulness measures as a synonymous measure of IS success at the individual level. For example, Urbach et al (2010) used items from perceived usefulness to capture individual benefits. Sabherwal et al. (2006) also used perceived usefulness as a measure of individual impact. Similarly, Igbaria and Tan (1997) adapted perceived usefulness item measures to measure individual performance. In addition to these studies, Seddon (1997) has suggested that perceived usefulness provides a more effective measure of performance outcomes at the individual-level. Iivari (2005) has suggested that perceived usefulness covers all aspects of individual impacts. Rai et al. (2002) has considered perceived usefulness to be similar to individual impact because it is based on constructs that had initially been linked to IS success in DeLone and McLean (1992). Hence, granted that the perceived usefulness has gathered extensive coverage within the IS literature and remained generally accepted in light of current IS research, this study adopts the construct as a measure of performance outcomes.

The most common application of the perceived usefulness construct in the IS literature has been in studies that adopt the Technology Acceptance Model (TAM). TAM is widely considered to be one of the most influential and commonly used theory in information systems (e.g. Lee et al. 2003; Bagozzi, 2007; Benbasat and Barki, 2007). In the next section, we proceed by taking a step back to provide a more detailed background and definition of the perceived usefulness construct and how it has evolved with the TAM.

2.4.1 Background and perspectives on perceived usefulness from TAM

To facilitate the acceptance and continued usage of IT, researchers have been concerned with identifying the factors that explain an individual's attitudes and intentions to use IT (Swanson 1974; Baroudi et al. 1986). Perceived usefulness has been established as one of the most relevant predictors of an individual's intention to use IT (Davis, 1989; Saeed and Abdinnour-Helm, 2008; Shiau and Chau, 2016). It underpins how individuals form behavioural intentions towards IS based on an appraisal of how it will improve their job tasks. Within the IS literature, it is one of the most common measures that have been used to assess performance outcomes from IS/IT in general. Building on intention models, researchers have investigated individuals' subjective perceptions of the factors which are believed to influence their use of IS/IT in general. One example – the theory of reasoned action (TRA) (Ajzen and Fishbein, 1977) - explains the inter-relationships between individuals' attitudes, behaviours and subsequent actions across a variety of domains.

Based on the TRA, an individual's decision to engage with IS/IT is based on perceived outcomes expected from using the IS/IT in question. However, one of the key assumptions of TRA was that every individual had volitional control over their behavioural outcomes, which according to Ajzen, (1991) is not always the case. To cater for this shortcoming, Ajzen (1985, 1991) introduced the theory of planned behaviour (TPB) to cater for behaviours over which individuals have little or no volitional control. Compared to TRA, TPB includes behaviour control as an additional factor that influences intention (Ajzen, 1985). Perceived behavioural control refers to one's perception of control over behaviour and is assumed to reflect the obstacles that one encountered in past behavioural

performances. According to the TPB, individual performance is determined by the 'intent' to perform that behaviour. In turn, intent results from attitudes toward the behaviour that are shaped by subjective norms about engaging in the behaviour, and perceptions about whether the individual will be able (or not,) to engage in the expected behaviour (Ajzen, 1985).

Building on these foundational theories, the concept of perceived usefulness first emerged in the seminal study by Davis (1989). This study was the first to provide what has become the generally accepted definition of perceived usefulness. It has been defined as "*the degree to which users believe that using a particular IS/IT system will enhance his/her job performance*" (Davis 1989, p. 320). His study presented the core assumptions of the technology acceptance model (TAM) which seeks to provide further insights into the causal interplay that exists between individuals' behavioural beliefs, intention to use and actual use behaviour. Hence, it is a subjective probability based on the individual's own perception (He and Wei, 2009), and provides the most salient ex-post expectation influencing users' post-acceptance satisfaction and a significant determinant of IS continuance use (Bhattacharjee, 2001) and has been adopted by subsequent studies to measure individual performance in different contexts.

Building on the perceived usefulness concept, some studies questioned the practicality of TAM as the underpinning model, citing limited consideration of the organisational and cultural factors that influence perceived usefulness and perceived ease of use (e.g., Bagozzi, 2007). These studies argue that TAM may be overly simplistic in how it explains human behaviour and may need extending to account for additional elements. As a result, several studies have proposed extensions to the TAM by identifying and theorising the general social and demographic determinants of the core variables in the initial TAM model (e.g., Venkatesh and Davis 2000; Venkatesh and Bala 2008). These extensions typically propose additional variables that provide further insights into the determinants of perceived usefulness and perceived ease of use. The common argument in these studies was that the decision to use an IS/IT does not lie entirely with the individual user but may be influenced by contextual factors within the prevailing environment.

In response to the critique of TAM, Venkatesh and Davis (2000) developed TAM2. Venkatesh and Davis (2000) theorised how interactive relationships between subjective norm, image, job relevance, output quality, and result demonstrability influence perceived usefulness and argue that TAM2 explains perceived usefulness in terms of social influence and cognitive instrumental processes. Venkatesh and Davis, (2000) proceeded to validate their new conceptualisation of TAM by using a longitudinal research design. Despite the progress in addressing the shortcomings of TAM, the extension by Venkatesh and Davis (2000) only explained 40% in system usage. Consequently, Venkatesh and Bala (2008) proposed a further modification to TAM2 that focused on developing an integrated model of technological acceptance by incorporating determinants of perceived ease of use. Venkatesh and Bala (2008) argued that their modification delineated the *“relationships among the suggested interventions and the determinants of perceived usefulness and perceived ease of use”* (p. 302).

From a TAM viewpoint, perceived usefulness is a primary stimulus of technology acceptance (Davis 1989) and has been found to significantly influence the subsequent continual usage of technology (Bhattacharjee, 2001; Koufaris, 2002; Wu and Wang, 2005). These studies also illustrate how perceived usefulness has remained relevant in the face of changing technological innovation and in multiple contexts. For instance, TAM yields strong and consistent predictions to explanation individuals’ adoption decisions for diverse ISs, including computer applications (Davis 1989), enterprise resource planning (Costa et al. 2016), e-learning (Wu and Zhang, 2014), e-shopping systems (Cheng 2014) and most recently, in cloud computing systems (Yang and Lin, 2015).

2.4.2 Research applications of the perceived usefulness construct

Researchers have used the perceived useful construct in different ways, such as predicting user adoption intentions, mediating the relationship between intention and system utilization, or as a measure of success. For example, Yoon and Kim, (2017) found that perceived usefulness was an important factor influencing data reuse behaviours of scientists. Further studies have shown that perceived usefulness may predict user adoption intentions in m-commerce (Dai and Palvi,

2009; Zhang et al. 2012; Liébana-Cabanillas et al. 2017), mobile shopping (Ko et al. 2009; Liébana-Cabanillas et al. 2014), m-services (Mallat et al. 2009; Zampou et al. 2012). Alternatively, several researchers have used perceived usefulness to understand the relationship between intention and system utilisation in different technology contexts.

For example, Barnes and Mattson (2017) developed and tested a model to explain consumer outcomes for collaborative consumption based on an extension of the theory of reasoned action. Barnes and Mattson found that perceived usefulness acted as a mediator between economic, environment and social benefits and renting intention and intention to recommend. Further, in their study of a web-based Student Information System (SIS) Saeed and Abdinnour-Helm (2008) found that the impact of information quality and system integration on exploratory and extended usage was mediated by perceived usefulness.

As a dependent variable, perceived usefulness has been recognised as a measure of success. For example, Park et al. (2015), used perceived usefulness as a proxy measure of IS success, arguing that perceived usefulness can be considered an outcome controlled by individuals' perception of technology and therefore therefore considered "*as an outcome of the underlying psychological processes*" (p. 320). Alsabawy et al. (2016) used perceived usefulness as a measure for the success of e-learning systems arguing that the construct's well-established role in generating system utilisation would be a strong proxy for system success. Scherer and Hatlevik has used perceived usefulness to focus on the benefits of ICT, while Lankton et al. (2015) uses perceived usefulness as a measure of the perceived value of using an IT. Further, Floropoulos et al. (2010), argued perceived usefulness was a better measure of IS success than system usage because system usage in their case was close to mandatory. A summary of studies that use perceived usefulness as a dependent variable is provided in Table 2.4.

Table 2.4: Research using perceived usefulness as a dependent variable

Author(s) and context of Research	Research objective	Independent variables tested	Data collection and analysis	Summary findings
Park et al. (2015); Disaster experience of hospital employees	The study examined how an individual's disaster experience affects his or her perceptions of sociotechnical safety factors (risk, information assurance, resilience) and perceived usefulness of hospital information systems (HIS)	Perceived systems risk (-) Information assurance (ns) Ease of use (+)	Consists of two studies: surveys (N = 103) and N = 179, PLS	The results show that the disaster experience changes the relationships among the perceptual factors that affect perceived usefulness.
Lankton et al. (2015); Trust in technology	The study investigates whether users perceive that technologies differ in humanness and whether having a technology's humanness match the type of trusting beliefs (human-like and system-like trust,) produces stronger influences on outcomes	Human-like trust (+) System-like trust (+)	Consists of two studies: surveys (N = 495) and N = 229, PLS	Human-like trust (that is, competence, benevolence and integrity) has a positive and significant influence on perceived usefulness.
Alsabawy et al. (2016); e-learning systems in academic settings	The goal of this study is two-fold: first, it focuses on identifying factors that impact the perceived usefulness of e-learning systems based on students' perspectives. Second, it investigates the mediating role of service delivery quality between IT infrastructure services, system quality, information quality and perceived usefulness	Information quality (+) System quality (+) IT Infrastructure services (+) Service delivery quality (+)	N = 720 enrolled in online courses at an Australian university, SEM	The impact of IT infrastructure services, system quality, and information quality on perceived usefulness is fully mediated by service delivery quality.

+ positive and significant relationship to perceived usefulness; - negative and significant relationship to perceived usefulness; ns: not significant

Table 2.4: Research using perceived usefulness as a dependent variable (contd.)

Author(s) and context of Research	Research objective	Independent variables tested	Data collection and analysis	Summary findings
Floropoulos et al. (2010); the Greek taxation information system (TAXIS)	To assess the success of TAXIS (a mandatory information system), by developing an e-Government IS success model.	Information quality (+) System quality (+) Service quality (+)	Data was collected from 340 users of TAXIS, Regression	The results indicated that service quality, information quality and system quality are significant positive determinants of perceived usefulness, derived when using TAXIS
Huang et al. (2008); Instant messaging	To investigate the potential effects of using emoticons in instant messaging communication	Enjoyment (+) Personal interaction (+)	Data was collected from 216 students in a large university in Midwest US.	Results showed that the user of emoticons felt a positive effect on perceived usefulness
Hussain et al. (2007), e-government context	This study is being conducted in order to investigate the influence of technological factors on four IS success dimensions (system quality, information quality, user satisfaction and perceived usefulness)	IS facilities (+) User support (+) IS integration (+) IS structure (+) IS competency (+)	Data were gathered from 201 users from four electronic government (EG) agencies in Malaysia	Results indicate that all the technological factors are significantly correlated with the four IS success dimensions, including perceived usefulness
Scherer and Hatlevik (2017); Students' profiles of ICT use	This study explores how primary school students perceive the negative consequences of using ICT (i.e., discomfort and distraction) in relation to the use of ICT for school and leisure purposes, their self-beliefs, and the perceived usefulness of ICT	ICT use lessons (+) Discomfort from ICT use (-) Distraction by ICT (-)	Total of N = 1640 students from 105 schools, SEM	Perceived usefulness and ICT self-efficacy are positive outcomes of ICT. And ICT distraction is related to less positive perceptions of the usefulness of ICT.

+ positive and significant relationship to perceived usefulness; - negative and significant relationship to perceived usefulness; ns: not significant

The studies reviewed above highlight the well-established use of perceived usefulness as a construct in the technology acceptance research. They highlight that using perceived usefulness as a dependent variable is an acceptable approach to assess the success of IS/IT system. In Seddon's (1997) re-specification of the DeLone and McLean (1992) model, perceived usefulness was tested and observed to be a more effective measure of IS success compared to system usage (Seddon 1997). The rationale Seddon argues is that using 'system use' as a measure of IS success is to implicitly assume "*a positive (often linear) relationship between time spent using a system and the benefits it provides*" (p. 242). Besides, in contexts where usage is mandatory, such as in hospitals (Park et al., 2015) or taxation (Floropoulos et al. 2010), the extent of system use conveys little information about the usefulness of the system. Thus, perceived usefulness was adopted as the dependent variable for this study.

2.4.3 Critique of the technology acceptance literature

Despite its acknowledged strengths, the technology acceptance literature can be critiqued in a number of respects. For example, Venkatesh and Davis (2000) call for more research that explores the possible antecedents of perceived usefulness. In addition, Bagozzi (2007) questions the foundation for the linkage between intention and behaviour and whether usage behaviour adequately captures the benefits of use. Bagozzi also argues that there are many reasons for why people may choose to act to use information and that these are not adequately reflected in the technology acceptance literature. One particular area of weakness as Bagozzi points out, is "*...that technology acceptance research has not considered group, cultural, or social aspects of decision making and usage...*" (Bagozzi 2007, p. 247). Culture influences individuals through its manifestations, that is assumption, values and behaviours (Leidner and Kayworth, 2006; Walsh et al. 2010). Moreover, IS researchers have recognised culture as a key factor in explaining performance outcomes among organisational IT users (Jackson, 2011; Zhang et al. 2014). Bagozzi (2007) argues that one way culture can offer unique insights into the technology acceptance research is by exploring individual-level differences between cultures. The ability to manage these individual differences may have an important influence on the adoption of IT. However, to date consideration of

cultural factors that may influence perceptions of perceived usefulness remains a crucial gap in technology acceptance research.

This study aims to address this gap through investigating the social and cultural antecedents and predictors of perceived usefulness. The values, assumptions and behaviours espoused by users who have similar inclinations towards IT may influence how they ultimately view IT (Tajfel, 1978) and its usefulness. IT culture offers an appropriate medium to investigate IT values, assumptions and behaviours among users and to classify them into archetypal groups. These IT culture archetypes may hold more positive or negative attitudes towards IS/IT and accordingly may view the usefulness of IT differently. Thus, understanding the influence of cultural archetypes on perceived usefulness offers a path to more effective approach to manage performance outcomes within organisational settings. The findings can then be used to infer the levels of acceptance and in turn, likely intention to keep using the technologies in question - based on their IT archetypes.

2.5 Research Objectives

Following a review of the relevant literature, this section presents the research objectives for the study. Each research objective is discussed in detail in two separate sections. The specific analytical methods that were used to answer each research objective are discussed in the final section.

2.5.1 Exploring dimensions of IT culture archetypes in a UK public-sector organisation

The IT culture concept (Lynn Kaarst-Brown and Robey, 1999; Leidner and Kayworth, 2006) has been used to understand the distinct cultural patterns associated with IT usage at the individual-level. It can be used to reveal unique characteristics based on individuals' needs and motivational attributes that can be described as their IT culture archetype. While the broad notions of needs and motivation have been found to influence individuals' use of IT, few studies have attempted to identify individuals' specific IT culture archetypes by understanding individuals' needs and motivation to use IT.

Walsh et al. (2010) used a qualitative approach based on 54 interviews conducted in corporate (that is, small-to-medium enterprises) and societal settings. IT culture patterns revealed varying levels of IT-related needs and motivation. The study identified eight IT culture archetypal patterns: the studious; the interested; the disciplined; the frightened; the disenchanted; the constrained; the players; and the dodgers. These cultural patterns were refined in a later study in Walsh and Gettler-Summa (2010), where the authors identified two further archetypes using multivariate cluster analysis. In summary, both Walsh and Gettler-Summa (2010) and Walsh et al. (2010) are the only studies that have attempted to identify IT culture archetypes using their needs and motivational characteristics. So far, nine IT culture archetypes have been identified in the literature. Table 2.5 shows the summary of these archetypal patterns and their needs and motivational attributes satisfied through IT usage.

Table 2.5: User typologies reflecting the cultural dimension of IT usage

S/N	Archetypal profiles	Needs satisfied through IT usage	Motivation to use IT
1	Studious	AFF, ACC, PRIM	INTKNOWIT, EXMOTID
2	Interested	AFF	INTKNOWIT, EXMOTID
3	Dangerous	AFF, POW, ACC, PRIM	INTKNOWIT, EXMOTID
4	Disciplined	AFF, ACC, PRIM	INTKNOWIT, EXMOTID
5	Frightened	AFF	INTKNOWIT, EXMOTID
6	Disenchanted	AFF, ACC	INTKNOWIT, EXMOTID
7	Constrained	AFF	EXMOTID
8	Players	AFF, PRIM	INTKNOWIT
9	Intrinsic-dodgers	None	INTKNOWIT
10	Amotivated-dodgers	None	None

AFF: affiliation needs; ACC: self-accomplishment needs; PRIM: primary needs; POW: power needs; INTKNOWIT: intrinsic motivation to know IT; EXMOTID: extrinsic motivation through identified regulation | sources: Walsh and Gettler-Summa, (2010); Walsh et al. (2010)

Despite these findings, it is unclear whether the archetypal patterns identified in table 4.1 are generalisable to other empirical settings. Davison and Martinsons (2016) have urged researchers to consider the constraints of the contextual environment in theory development. According to the authors, “*if the aim (of a study) is to extend an existing theory, then identifying and selecting a different context (compared to previous studies) is imperative*” (p. 247). With respect to the current IT culture literature, the identification of IT culture archetypes has not been clearly delineated in specific contexts to explain how the formation of IT culture archetypes might be influenced by factors in the prevailing environment the study is carried out.

In the same light, differences in IT culture archetypes may also be informed by some demographic attributes held by respondents in the sample. For instance, the

demographic details in Walsh and Gettler-Summa (2010) showed a large representation of respondents aged 20 – 30 years old (that is, 62% of the entire sample). There is not enough empirical data to be confident that the IT culture archetypes that emerged in Walsh and Gettler-Summa's study will persist across different groups of people (e.g. a much older population). Further, existing studies have been predominantly conducted in education settings. There is little evidence that examines whether the same archetypal patterns will persist in an organisational context. Therefore, while contextual differences may contribute to the archetypal patterns that emerge in a study, there is limited understanding of the impact context plays in the IT culture archetypes that are identified.

Also, closely aligned with the above argument is the notion that individuals, irrespective of the profession and department they occupy within an organisation, can be members of the same IT culture archetype (Walsh et al. 2010). This is because the membership of archetypal patterns represents typologies of individuals who share a unique level of IT-related needs and motivation to be fulfilled through IT usage. Hence, it is less likely that the membership of IT culture archetypes will be due to the profession or department occupied by users within the organisation and more due to how users have a tendency to group based on their needs and motivation to use IT. The membership of IT culture archetypes within an organisational setting should therefore consist of individuals in various departments and profession. Walsh et al. (2010) has alluded to this in their study by identifying archetypal patterns using interview data collected from individuals in various professions and in different settings. Although the membership information of each cultural archetype was not clearly mentioned, the authors noted that education and gender played no significant role (See Walsh et al. 2010). There is little indication in the study of how the membership of the IT culture archetypes may distributed across the departments within an organisation. Hence, research is needed to provide empirical evidence to test this proposition.

In sum, the current IT culture literature is lacking in terms of its consideration of how contextual factors might influence the different cultural archetypes that have so far been identified. Indeed, the unique characteristics in the prevailing environment might limit the chance to identify other IT culture archetypes. Further,

it is also unclear whether IT culture archetypes persist across different contexts and therefore there is insufficient evidence to present precise hypotheses of which archetypes might emerge from this study. Thus, the first objective of this study was to undertake exploratory research to identify the IT culture archetypes that may be evident in an organisation. The first research objective was:

RO 1: to identify cultural archetypes among IT users in a UK public-sector organisation

2.5.2 Linking IT culture and perceived usefulness beliefs

While the identification of IT culture archetypes in a new context presents a useful incremental contribution to the IT culture literature, a further aim of this study was to explore the value of IT culture concept. In other words, is knowledge of the IT culture archetypes in an organisation useful for organisational decision makers? To explore this aim, this study explores whether users that manifest different IT culture archetypes differ in their perceptions of the perceived usefulness of IT.

There are theoretical reasons to expect a link between IT culture and perceived usefulness. At the most basic level, the current IT culture literature has proposed three attitudinal groups based on the archetypal patterns that have been observed in different studies (Walsh et al. 2010; Walsh and Gettler-Summa, 2010). These include: the proactive attitudinal group; (2) the passive attitudinal group; and (3) the refusal attitudinal group. Analysis of these attitudinal groups as presented in Walsh et al. (2010) portray how individuals in the pro-active groups may be more likely to seek opportunities to exploit an IS/IT investment. Individuals in the passive groups may comply but not innovate with IS/IT, while cultural archetypes in the refusal group were found to be the least likely to engage with IS/IT to the extent that they obtain meaningful outcomes within their job roles. A summary of the three attitudinal groups and the archetypal patterns that compose each group are detailed in table 2.6.

Table 2.6: IT culture archetypes and their attitudinal groups

Attitudinal groups	IT cultural archetypes	Cultural dispositions
Pro-active	Studious	This group possesses significant self-accomplishment IT needs and motivation to learn IT. They voluntarily partake in IT projects within organisations. (Walsh et al. 2010).
	interested	
	Dangerous	
	Passionate	
Passive	Disciplined	Only mandatory involvement in IT. (Walsh et al. 2010)
	Frightened	
	Disenchanted	
	Constrained	
Refusal	Intrinsic-dodgers	No involvement in IT; This group possess no IT need (Walsh 2009; Walsh et al. 2010)
	Amotivated-dodgers	

In addition, Walsh et al. (2010) found that individuals in the pro-active group were those who participated voluntarily in new IT projects. They demonstrated initiative to engage with IT and were motivated to master IT towards accomplishing their goals; they also supported organisational IT implementation. In this thesis, it is argued that individuals in the pro-active group have a positive perception of IS perceived usefulness for two reasons. First, they are more likely to experience stronger intention to learn and pursue mastery of IS/IT. This is due to the presence of high self-accomplishment and power needs that characterise the archetypal patterns in the proactive group compared to those in the passive and refusal groups (See Walsh and Gettler-Summa, 2010). Second, pro-active individuals are more likely to pursue satisfaction from learning and mastering new IS/IT (Walsh, 2009) because they understand the benefits that come from learning and mastering IS/IT for personal and organisational goals. Individuals with pro-active attitudes identify opportunities, take action on them, demonstrate initiative, persevering even in the face of setbacks according to Bateman and Crant, (1993).

For those in the passive attitudinal group i.e. disciplined, frightened, disabused and constrained (See table 1), these individuals “*must be compelled to use IT by their needs for affiliation (i.e. communication, socialization) and peer group*

conformity” (Walsh et al. 2010, p. 266). Hence, except under certain situations within the contextual and situational IT environment, individuals in the passive group will be less inclined to use IS/IT. Walsh (2014) has showed that one of such contextual situations may be the position held by the individual within the organisation. For example, it is likely that senior managers would perceive more contextual IT needs compared to employees who work on the shop floor in an organisation.

With regard to how such attitudes are reflected in IT usage at a particular point in time, it is argued in this thesis that archetypes with passive attitudes will possess a negative perception towards how useful they find IS/IT. Finally, with regards to individuals in the refusal attitudinal group, they have no fundamental needs towards IT. They avoid the use of IT at all costs and do not experience any motivation whatsoever to use IS/IT (Walsh et al. 2010). Hence, to envisage the influence of cultural archetypes on perceived usefulness, the three attitudinal groups encapsulate attitudinal representations to IT that provide justifiable reasons to expect a link between different IT culture and perceived usefulness beliefs.

The second reason there may be a link between IT culture and perceived usefulness is reflected in the IS/IT skillset (that is, knowledge of IS/IT) possessed by different individuals. Participation in training and ensuring users have the right skill has been found to influence perceived usefulness beliefs (Agarwal and Prasad, 1999). From an IT culture viewpoint, IT culture archetypes with high levels of self-accomplishment needs are more likely to express willingness to learn and improve their skill of IT in general (Walsh et al. 2010). Because such individuals have a greater awareness of the functional potential of IS/IT, they are more likely to explore more efficient means of utilisation within their job roles. It is also plausible to expect that those cultural archetypes with lower self-accomplishment needs are less likely to learn and engage in improving their IT skill. For instance, the dodgers in Walsh et al. (2010) who were characterised as being “*completely IT amotivated*” (p. 267) exemplified this type of usage behaviour.

Analysis of how individuals perceive the potential value from using IS/IT in their job role is the third reason there may be a link between IT culture and perceived usefulness. As pointed out by Klusón (1988), “*values are part of a particular way*

of life and form the satisfaction of needs of a particular social group...and naturally, of the individuals that belong to them” (p. 50). IT cultural archetypes are in themselves manifestations of individuals who express different IT-related needs and motivation to use IT. Hence, the values ascribed to IS/IT will be different for each IT culture archetype, in that value may be reflected by the presence of a set of needs and the motivation expressed to ensure those needs are fulfilled through IT usage (Walsh et al. 2010). As a result, the higher the need to use IT shared by individuals in an IT culture archetype, the greater the likelihood that those individuals espouse higher levels of perceived usefulness from IS/IT.

Therefore, from an IT culture perspective, the presence of needs is a symbol of the values ascribed to IT, and it is possible to understand the values attached to IT by the needs expressed by different IT culture archetypes. In other words, the realisation of a need is a factor that implies a value relationship among members of a particular archetypal pattern. Taken together, the proactive, passive and refusal attitudinal groups represent different IT culture archetypes that may significantly affect perceptions of IS usefulness. Thus, the second research objective was:

RO 2: to investigate the influence of cultural archetypes identified in (RO1) on perceived usefulness.

2.5.3 Addressing the research objectives: A two-phase approach

To investigate the two research objectives presented in the previous sections a two-phase approach was adopted. Having identified a suitable case study organisation, a questionnaire survey was then administered to collect data from users across the organisation. The questionnaire survey included items that measured IT culture and perceived usefulness. The first research objective (RO1) which concerns the identification of IT cultural archetypes were achieved by applying a multivariate cluster analysis technique to cluster the dataset collected through a questionnaire survey. After clustering, the characteristics of each archetypal pattern were reviewed in relation to the existing literature. The result of this process was to develop suitable descriptive labels that encapsulated the key features of each IT culture archetype identified. This process and the associated findings are presented in chapter four.

The second phase then proceeds to address the second research objective (RO2) – that is, to investigate the influence of cultural archetypes on perceived usefulness. The key characteristics of the IT culture archetypes identified from the first phase are contextualised in the existing IS literature and their relationships with perceived usefulness is theorised. This theorisation enabled the development of a series of hypothesis that were tested using multiple regression analysis. This process and the associated findings are presented in in chapter five.

2.6 Summary

This chapter has reviewed the two main streams of research literature that provide the foundation to this study – that is, the literature on IT culture and perceived usefulness. The review has revealed that IT culture is understudied, and that very few studies have applied the IT culture perspective to provide insights on perceived usefulness beliefs. Previous research in the IT culture domain has tended to focus on identifying IT culture archetypes, rather than investigating the efficacy of the IT culture archetypes for understanding IT acceptance and adoption decisions. Therefore, a theorisation of the relationship between individuals' IT culture archetypes and perceived usefulness was presented. It is argued in this study that IT culture may be a useful theoretical lens to explore why different individuals have varied usefulness perceptions of IS/IT, as it may affect the utilisation IS/IT resources that have been deployed within an organisation. Different perceptions of perceived usefulness of IS/IT may lead to under-utilisation of IS/IT resources, which could in turn lead to limited gains from IS/IT investments. In the next chapter, this thesis proceeds with a discussion of the research strategies and methods adopted to address the research objectives set out in this chapter. The process of data collection and description of the sample are also presented.

Chapter Three

3 METHODOLOGY

3.1 Introduction

This chapter provides a detailed description of the methods deployed in this study. It proceeds with a discussion of the philosophical underpinnings and research strategy of the thesis. The research methods and the design of the survey tool is also described. In addition, efforts implemented to ensure ethical guidelines were followed through the entire process of undertaking the study are also highlighted. Finally, this chapter ends with a brief discussion of the demographic characteristics of the data collected, as well as the validity and reliability tests that were conducted.

3.2 Philosophical Perspectives

The philosophical perspective guides the researcher's decision concerning the methods and data collection approaches used to undertake a particular study (Guba and Lincoln, 1994). In general, research philosophy draws attention to the way in which the researcher views the world (Saunders et al. 2009). It represents a worldview that defines for the researcher, the nature of the world, the researcher's place in it, and the range of possible relationships to that world (Guba and Lincoln,

1994). Making the right choice with respect to the research philosophy selected is thus vital to successfully answering the research questions posed by a study (Blaikie, 2009). This is because it shapes the set of assumptions that guides the researcher on the collection and analysis of data, determines the condition and assumption surrounding how the researcher carries out the research (Neuman and Robson, 2012).

According to Neuman and Robson (2012), three main paradigms are used in social science research. These include: positivism, interpretivism and critical realism, with each shaping the logic of methods used for a study. These three paradigms will be examined in further detail for their suitability to the proposed research, and the positivist position will be proposed as the appropriate perspective for the research conducted in this thesis.

3.2.1 Positivism

This study aligns with the positivist perspective which aims to establish law-like relationships among a set of variables (Neuman and Robson, 2012). Positivism represents a deductive approach to research that is commonly used in the information systems field. Within IS research, Orlikowski and Baroudi (1991) for example found that 97% of IS research articles published between 1983 and 1988 used a positivist framework. This has also been observed with studies that have been published in prestigious IS conferences that have taken place more recently (Córdoba et al. 2012; Stein et al. 2016). In Córdoba et al. (2012), the authors show that studies in the IS literature have consolidated the use of positivist research to study and manage IS phenomena. With positivism, the emphasis is on developing a hypothesis (or a set of hypotheses) based on existing theory, and then testing it (or them,) to gain evidence to support the theoretical lens adopted (Malhotra and Birks, 2003). The role of studies that take this view is to test theories and provide material for the development of laws (Bryman, 2015).

Positivism presumes that human experience of the world reflects an independent reality, and that this reality provides the foundation for human knowledge (Weber, 2004). The approach makes some fundamental assumptions with respect to the methodology of empirical research. The general assumption with positivism is that

social reality is objective and subjective to theoretical explanation. Therefore, the positivist paradigm argues that reality is external, objective and independent of social actors such as the researcher (Saunders et al. 2009). Scientific research should therefore formulate and test formal propositions that typically portray a subject matter in terms of independent and dependent variables within the context of the study (Lee and Lings, 2008). Hence, there is emphasis on gathering factual data while also ensuring rigor and validity of variables investigated (Malhotra and Birks, 2003). Furthermore, the researcher takes a series of necessary steps to ensure that variables are measured in a consistent manner that avoids bias and subjectivity. Almost entirely associated with the positivist approach is the use of quantitative research methods, such as using a survey methodology to gather data from a target population (Saunders et al. 2009).

3.2.2 Interpretivism

Unlike positivism, the interpretive perspective or interpretivism has a subjective outlook to the nature of reality which is social constructed and dependent on the researcher. According to Williams, (2000), interpretivists aim to “*interpret the meanings and actions of actors according to their own subjective frame of reference*” (p. 210). Such interpretations are done via in-depth investigations of small samples of reference. The logic of interpretation that follows such investigations will require a strict reference to whole – that is the context, data and influence of all variables experienced during investigation; including not only observed behaviours but meanings of behaviours. Interpretive researchers tend to use qualitative research methods such as narrative research; case study; grounded theory; ethnographic research; and phenomenology according to (Creswell, 2014).

For interpretive researchers, social reality is subjective and assumed to be constantly changing due to variations in individual accounts (Malhotra and Birks, 2003). This perspective is usually employed by researchers to investigate areas where little is known. It entails gathering anecdotal evidence about a particular research area using structured and/or unstructured data. The validity of a study conducted from an interpretive perspective is determined by the extent to which the researcher can obtain sufficient evidence to demonstrate a plausible

representation of interpretations, and whether theories generated (Neuman and Robson, 2012). As a context-specific approach to research, data collection activities associated with this perspective includes the collection of interviews, observations, note-taking etc.

3.2.3 Critical realism

Critical realism simultaneously confronts the drawbacks of both natural and social science perspectives (Zachariadis et al. 2010). Bhaskar (1978) offers three layers of reality: the real; actual; and the empirical. The real refers to underlying mechanisms and structures which cannot be observed but exist and are enduring. The actual refers to events which are caused by the real while the empirical domain is made up of events experienced through either direct or indirect observation and is the only domain positivism and interpretivism focus on (Bhaskar, 1978). One distinguishing factor of the critical realist from the positivist and interpretivist is the logic of inference called retrodution (Bhaskar, 1978). Retrodution allows researchers to move between the knowledge of empirical phenomena and the real where unobservable structures and mechanisms exist (Downward and Mearman, 2006).

As a philosophical perspective, it offers a reality which is objective but interpreted through social conditioning (Bhaskar, 2011). On the one hand, it shares the deterministic view to research also espoused by positivist researchers, while also aligning with constructivists' view of reality that characterise interpretive researchers on the other hand (Bhaskar, 2011). One distinction between critical realism and positivism lie in the way causation is perceived. While positivism accounts for causation through the observation of events, critical realism is concerned with the mechanisms that drive causation, and understand how the mechanisms work (Bhaskar, 2011). This allows critical realism to incorporate methodological assumptions owing from drawbacks presented by positivism and interpretivism. Thus, critical realism offers a methodological option that is fit-for-purpose and can be adapted depending on the subject matter using quantitative or qualitative approaches to research. Although it has been touted as one which addresses the shortcomings of positivist and interpretive studies, the critical realist

perspective does not lend itself to specific methodological techniques. As a result, some concerns have been raised on how it may be applied to various data analysis techniques (See O'Byrne, 2007; Zachariadis et al. 2010).

In summary, three different world views and their associated methods of inquiry have been discussed. To investigate the effects of cultural archetypes on perceived usefulness beliefs, this study aligns with the positivists' paradigm. This philosophical worldview fits with the goal of this study because of its deductive approach to consider reality as objective and external to social actors (Saunders et al. 2009). As a result, realities are mediated through inferences drawn from hypothesis testing using responses from a representative sample. In line with the positivists' paradigm, this study has articulated a set of research objective in sections 2.5.1 and 2.5.2 it aims to investigate. To recall, these research objectives are as follows:

RO1: to identify cultural archetypes among IT users in a UK public-sector organisation, and

RO 2: to investigate the influence of cultural archetypes identified in (RO1) on perceived usefulness.

In both sections, the IT culture concept was used '*a priori*' to formulate a set of expectations about the identification of cultural archetypes, and their relationship perceived usefulness beliefs. It was therefore assumed that respondents' responses to quantifiable measures of IT culture and perceived usefulness variables represented the reality of IS/IT users within their organisation. To enable this process, the positivists perspective is formally linked to quantitative research methods which describe different data collection approaches. These will now be discussed further in the next section.

3.3 Quantitative Research Methods

Conducting quantitative research lends itself to a variety of research methods. In this section, a discussion of the most common approaches used to conduct quantitative research is examined. Neuman (2014) suggests that there are three categories of

quantitative research methods namely: experimental research; secondary research; and survey research.

3.3.1 Experimental research

Mainly adopted by researchers in the natural sciences (e.g. chemistry and physics), experimental research allows the researcher to focus sharply on cause and effect (Neuman, 2014). It is based on the positivism approach, and it allows “*researchers to isolate and target the impact that arises from one or a few causal variables*” (p. 202). While the strength of experimental research is its control and rigour in establishing evidence for causality, one limitation is that it is rarely appropriate for research questions that require the researcher to examine the impact of several variables all together (Bryman, 2015). Rather, at any given time during an experiment, only one or two hypotheses are being tested with a few variables (Neuman, 2014). In addition, researchers should consider that experiments are often complex, thus requiring a lot of time and cost compared to other quantitative research methods.

3.3.2 Secondary analysis

Secondary analysis involves re-analysing data that have been previously collected by other researchers (Neuman, 2014). According to Kane (1985), it follows a form of desk research that entails researching and analysing data/statistics that have been put together by others about a particular topic. One advantage of it is that it is usually the cheapest and easiest type of research that can be conducted (Neuman, 2014). Also, it is relatively inexpensive, and it permits comparisons across groups, nations or time. Researchers using this approach have no control over the quality of the research; therefore, validity and reliability of such studies might be at stake (Johnston, 2017). In addition, existing statistics and secondary data are not entirely trouble-free as they may have been errors during the process of data collection.

3.3.3 Survey research method

A survey is a structured questionnaire given to a target sample of a population, with the purpose of eliciting specific information from respondents that addresses a set of research objectives (Malhotra et al. 2012). It includes several questions designed with the intent of measuring specific variables, and the questions may be asked verbally, in writing or made available via an online link to be assessed via an IT device (such as a computer). There are several advantages and disadvantages of conducting survey research. In terms of its advantages, surveys compared to other forms of gathering data afford the researcher the opportunity to reach large sample of the population at a low cost (Neuman and Robson, 2012).

Online surveys for example can be conducted by sending the survey's online link to the email accounts of respondents. Several survey platforms have now begun to make surveys compatible for mobile and hand-held devices rather than just computer settings alone. According to Malhotra et al (2012), these devices offer new possibilities for data collection by providing portability and accessibility to data. The reach of survey method thus affords the possibility of reaching more respondents. As a result, it is extensive in its usefulness to describe the characteristics of a large population (Neuman and Robson, 2012). This makes the survey method ideal for scientific studies where high levels of reliability and validity are required (Fricker and Schonlau, 2002).

With regards to its disadvantages, Brace et al. (2006) highlights that there is the possibility that researchers may ask questions using complex terminologies or making them too long. These are likely to cause problems in interpretations from the respondent's perspective, thus increasing the likelihood that the wrong answer is provided. Respondents may also fail to understand a question because they do not have the right competence to do so. In light of these disadvantages, researchers have highlighted best practices which if followed can minimise their incidence. Saunders et al. (2007) have advised researchers to pre-test the questionnaire. According to the authors, it also ensures that the resulting dataset satisfies the criteria of the analytical techniques that will be used. It also makes sure issues related to wording and sequence of questions, as well as the design of the survey are resolved (Oppenheim, 2000).

3.3.4 Case study research

Another research method considered for this study is the case study research approach. Case study research continues to be an essential form of inquiry in the field of information systems (Yin, 2012, Tsang, 2014). It has enjoyed increased acceptance by IS researchers because of its usefulness to investigate phenomena that remain largely unexplored (Dube and Pare, 2003). It has been defined by Yin (2012) as an empirical investigation that narrates a contemporary issue within its real-life context. Although often associated with interpretivist paradigm, case studies can also be applied to other paradigms (Myers, 1997, Pare, 2014); although the adopted paradigm will influence the way it is designed and executed in a study (Coombs, 2017). Despite its wide-ranging application, several shortcomings characterise studies that use the case study approach. Yin (2013) identifies three common shortcomings namely; the lack of rigour, generalisation, and that it takes too long often resulting in massive, unreadable documents. In addition, Myers (1997) notes that data collection and analysis are often influenced by the researcher perceptions, hence leading to questions of validity regarding the claims made by such studies.

This section has summarised various methods available when conducting quantitative research. It was necessary to contemplate the range of possibilities for data collection prior to deciding which research method will be adopted to investigate the research objectives for this study. Having reviewed the merits and demerits of each method/strategy available, this study will employ the survey research method by means of an online questionnaire to potential respondents. In line with the positivist paradigm adopted, the dominant logic of the survey research design is generalisation (Gable, 1994), where inferences drawn about the concerned population is based on the responses collected from a representative sample of the same population. This position on surveys assumes that reality can be established objectively and independent of the researcher (Saunders et al. 2009). Besides, the online survey approach was viewed as the most viable strategy for this study because it is cost effective and has the advantages of higher efficiency in cost compared to other types of data collection strategies (for example, interviews and observations) (Sekaran and Bougie, 2016). The next section provides a detailed description of the survey design.

3.4 Survey Design

To address the objectives of this research, it was decided to identify a case site using a questionnaire to collect data. The survey was intended to be administered to a wide range of individuals who engage with some form of IS/IT application to fulfil their day-to-day job tasks. Issues regarding the development of the survey design are provided in this section. Last, this section also explains the process of administering the survey to the participating organisation, including details about the content of the questionnaire, choice of respondents, distribution and pre-testing of the survey.

3.4.1 Structure and content of questionnaire

A draft questionnaire was developed to capture measures relevant to the objectives of this study. A full copy of the project information sheet, communication plan and the survey questionnaire was shared with the organisation (see Appendix 1). The project information sheet provided the organisation with an overview of the study and the level of involvement requested. The communication plan included drafts of separate emails that were to be sent as reminders throughout the duration of the data collection phase. The questionnaire opens to an introductory letter informing participants of the goals of the study and the expected duration it would take to complete the questionnaire.

The reliability of the items representing each construct was conducted by assessing their internal consistency. A common approach used to assess internal consistency is the Cronbach alpha test (Hair et al. 2010). According to Cohen et al. (2003), it describes the degree to which the items used to measure a construct correlate with the together. Ideally, scores on the Cronbach alpha test should be at least 0.7 if internal consistency is present, with a Cronbach alpha value of 0.6 indicating weak consistency among the items (Hair et al. 2010). A description of each section in the questionnaire follows below:

Section 1: IT Culture questions

This section was intended to collect information that would allow the assessment of individuals' IT culture archetypes (the study's first objective). Items to identify IT culture archetypes were adapted from Walsh (2014), and all statements were anchored on a Likert-type scale ranging from (1) strongly disagree to (7) strongly agree. Also, several demographic variables were collected in order to establish the department and the occupations respondents worked. In summary, respondents were asked to indicate the extent to which they agreed/disagreed with 18 statements that assessed six needs and motivational constructs relevant for the identification of IT culture archetypes.

Affiliation needs satisfied through IT usage

Respondents were asked to complete three questions to measure the extent to which they experienced affiliation needs fulfilled through IT usage. These questions enquired into the extent to which they use IT devices (that is, computers, smartphones or tablets), to stay in touch with friends, and socialise with people. The reliability analysis, using the alpha coefficient (α), showed a strong reliability 0.831.

Self-accomplishment needs satisfied through IT usage

Respondents' self-accomplishment needs satisfied through IT usage were measured by asking them to indicate the extent to which they obtained satisfied from improving mastering of apps or software they use. Questions assessing whether they obtained satisfaction from improving mastery of apps or software they use, even if they have to spend hours doing so. The reliability analysis, using the alpha coefficient showed a strong reliability 0.863.

Power needs satisfied through IT usage

Power needs satisfied through IT usage were measured by three items asking respondents to indicate the extent to which they felt their knowledge of IT allowed them to be better respected, gave them authority with people or a feeling of superiority. The reliability analysis, using the alpha coefficient showed a strong reliability 0.893.

Primary needs satisfied through IT usage

Three questions measured primary needs satisfied through IT usage. Respondents were asked to indicate the extent to which they spend a lot of time on IT, the extent to which they find it hard to control the time spent, and whether they find it hard to stop when using IT. The reliability analysis, using the alpha coefficient showed a strong reliability 0.809.

Extrinsic motivation with identified regulation to use IT

Extrinsic motivation with identified regulation was investigated using three different items about whether respondents use IT to improve the quality of their work, to do tasks correctly or have exchanges with people with whom they work. They reliability analysis, using the alpha coefficient showed a weak reliability at 0.612. Based on the item-total statistics table, the reliability increased to 0.684 by dropping EXMOTID2. On the basis that internal consistency was weak, it was concluded that EXMOTID2 should be dropped. Due to the increased alpha coefficient, it was decided to drop EXMOTID2.

Intrinsic motivation to know IT

Respondents' intrinsic motivation was measured by asking them to indicate the extent to which they like to discover new apps or IT and the extent to which they find IT interesting. Reliability analysis was then performed on these three items to measure their alpha coefficient. The reliability analysis, using the alpha coefficient showed a strong reliability 0.865.

Section 2: Perceived Usefulness

The questions in this section were collected to understand perception of usefulness experienced by users from using IS within their job roles. Participants were asked to indicate the 'main IT application' they used regularly within their job roles. A list of systems used in the organisation was provided in a single choice option setup. The list of systems had been provided upon request by the gatekeeper. Gatekeepers are individuals who provide access to the research site and represent those through which the research is conducted (Creswell, 2012). Six IS/IT applications were preloaded for respondents to select from, with an empty textbox provided for those respondents whose IS/IT application was not on the list. The reliability analysis, using the alpha coefficient showed a strong reliability 0.906.

The preloaded applications were obtained from the gatekeeper and they represented the major application used by individuals in various departments within the organisation. They were then asked to rate the extent to which using the system has made them more productive, enabled quicker access to information, made it easier to achieve results needed on the job, improved performance and facilitated more informed decisions in their job role. Perceived usefulness was measured by asking participants to indicate their agreement with these statements on a scale of 1 = strongly disagree to 7 = strongly agree. The statements were adopted from Davis (1993).

Section 3: Demographic details and other comments

In this section, participants' background, more specifically their gender, age range, education and department were also collected. In addition, they were asked to select the main IT application used to complete key day-to-day tasks in their job roles. Respondents were asked to indicate how long they had been using the system. Finally, respondents were also given the opportunity to make additional comments about the research or general thoughts they wanted to make based on the questions they had just answered.

3.5 Data Collection

3.5.1 Choice and overview of site

The use of cluster analysis that was adopted for this study, requires a sufficient sample size to obtain a sufficient grouping of individuals who share the same attributes into distinct cultural archetypes. Mooi and Sarstedt, (2011) have said there is no definitive procedure to determine the ideal sample size for cluster analysis. On this wise, Dolnicar (2002) has suggested that 2^y cases (where y refers to the number of clustering variables,) can be used to determine the minimal sample size required for cluster analysis. Due to these considerations, I sought an organisation which should afford a large sample size to guarantee that substantial clusters will result from the analysis. Besides, it was also important to ensure that

the selected organisation consisted of a range of individuals and departments interacting with IS/IT in a variety of ways to fulfil their work tasks.

The case site chosen for this study was a public local government council within the UK – Derby city council. The target respondents were users within the organisation, who regularly applied some form of IT application to fulfil their day-to-day job tasks. The council is made up of three directorates through which a range of services are provided to the community. Due to their large organisation structure, the activities of local councils such as Derby city council are grouped into directorates which consist of departments that provide a range of services to the community. The structure of the council can be found in table 3.1 below. As seen in the figure, the three directorates encapsulate the range of services offered, and each directorate has a management structure with the head being the chief executive officer (CEO).

The organisation and governance directorate include the range of departments that are responsible for finance, HR and legal services within the council. This directorate also includes the IS department through which the day-to-day IT operations of the council are managed. The communities and place directorate as the name implies are responsible for a range of services and they function through a range of departments such as property and housing, planning and transportation and the environment and regulatory services department. Finally, the people services directorate encapsulates the departments that are responsible for delivering a range of services including public health, social care, adoption and disability related services. An important point to note is that, as with other organisations of this nature, councils are known to implement a wide range of IS /IT to meet the needs of services provided.

Table 3.1: Structure of case site (Derby city council, 2016)

Derby city council		
Organisation and Governance	Communities and Place	People Services
<ul style="list-style-type: none"> • Finance • Governance • Strategic Services & Customer Management • Information Systems 	<ul style="list-style-type: none"> • Highway • Regeneration, Property and Housing • Strategic Partnerships, Planning and Transportation • Communities, Environment and Regulatory Services • Leisure, culture and tourism 	<ul style="list-style-type: none"> • Public health • Adult Social Care • Integration and Direct Services • Specialist Services • Learning and Skills • Early Help and Children's Safeguarding • Integrated Commission

3.5.2 Pre-testing the questionnaire

As advised by Churchill and Iacobucci (2006), a pre-test the questionnaire is crucial to the development of an effective questionnaire survey. It was important to design the questionnaire to ensure outcomes such as incomplete responses or even lack of responses/participation of respondents is mitigated. The importance of this procedure has prompted some studies to suggest that data collection should never proceed without an adequate pre-test of the questionnaire (for example, Churchill and Iacobucci, 2006). An introductory statement was used to describe the purpose of the survey and its relevance. Next, the survey was administered among a sample of 10 PhD students to pre-test the survey questionnaire. This step helped to assess how the questionnaire would perform under actual conditions of data collection (Creswell, 2012). Issues regarding the ordering of the questions, the length of the questionnaire, errors in questions were noted and resolved at this

stage. No major issues regarding the completion of the survey questionnaire were observed at this stage, except for a few grammatical errors.

It is important to make a note on the actual tools that were used to collect the survey data. While both online and paper surveys are well-established approaches that could have been employed, online surveys offer far-reaching accessibility as most online platforms have been optimised to be used on various IT devices. It also affords the ability to view real-time results and preliminary analysis based on data that is being collected. In addition, online surveys are preferred for reasons, such as ease of data cleaning, organising, and guaranteeing anonymity in order to gather genuine feedback respondents (Dillman et al. 2009; Singh et al. 2009). On the other hand, paper surveys typically take more time to administer across a large sample. Design capabilities such as drop-down arrows also present a limitation for paper surveys. In light of these advantages and disadvantages, the survey was conducted using Qualtrics - a secure online survey platform. An online account was requested and setup through the university's Qualtrics license.

In addition, to reduce problems associated with common method bias, the questions were edited to remove ambiguity; double-barrelled questions were also split (Podsakoff et al. 2003). To avoid further issues of common method bias, a limited number of questions were negatively worded to reduce the chances that respondents would repeat the same answers for questions that appeared similar (Podsakoff et al. 2003). The order of the questions in the study was randomised to avoid a situation where respondents recognise and react in a similar way to different constructs assessed in the survey. To ensure the appropriate wording of each question, source items were adapted to suit the case site for this study. Throughout this process, no technical problems with respect to downloading, setup or assessing the data collected was encountered. The process followed to administer the survey within the organisation will now be discussed in the next section.

3.5.3 Sampling and distribution of questionnaire

Following the pre-test and setup of the questionnaire on the Qualtrics platform, the weblink was shared with the gatekeeper in the organisation in order to review the survey items and ensure that these were relevantly worded and easily understood by individuals in the organisation (MacKenzie et al. 2011). Upon review, it was requested that three items should be dropped because they appeared similar to other items in the list. The final list of dropped items following this process is found in table 3.2. All other items were included in the final questionnaire that was administered (See Appendix 1).

Table 3.2: List of dropped items

Constructs		Items
Perceived Usefulness	PU6	Using the IT system allows me to accomplish tasks more quickly
	PU7	Using the IT system gives me greater control in performing my job tasks
	PU8	Using the IT system improves the quality of work I do in my job role

It was agreed that the survey would be administered starting April 2016 over a six-week period. With regards to the distribution of the survey across the organisation, the gatekeeper advised against rolling out the survey to all aspects of organisation due to the disruptions it may cause across the different departments. Moreover, I was not granted access to a complete email list of all IT users. Accordingly, the proposal to distribute the survey to all IT users was rejected by the gatekeeper. It was important that this study did not disrupt the day-to-day operations of the case site to meet the ethical requirements of the research. Hence, it was thus agreed that the link to the online survey will be shared with all IT users who contacted the IT department to resolve their IT-related issues. As a result, the snowball sampling technique was thus used to gather responses from for the study.

Responses to the survey were anonymous and monitored on a weekly basis. The target respondents were IT users within the organisation who regularly applied

some form of IS/IT application to fulfil their day-to-day job tasks. In addition, the gatekeeper played a pivotal role in ensuring IT users who consulted the helpdesk were provided with the link to the online survey and followed-up with the reminder emails when necessary. As an incentive to take part in the survey, the council offered a participation incentive, namely five £20 Amazon vouchers that were offered to five randomly chosen participants in the survey. The use of incentives has been suggested as a very useful technique to motivate participants and thus increase response rates (Mao and Benbasat, 2000). This helped galvanise participation in the survey, considering that at the end of the first four weeks of administering the survey, 372 responses had been administered. Of this number, 102 incomplete responses were deleted, resulting in a total of 270 useable responses. Hence, from a total of 372 IT users who were initially approached to complete the questionnaire, this represented a response rate of 72.5%.

In addition to mindfully protecting the rights of the research participants, researchers should anticipate and address ethical issues related to their study (Neuman, 2014; Creswell, 2014). I also ensured that participants were informed of the general purpose of the study through the introductory page of the survey questionnaire and the communication plan provided to the gatekeeper of the organisation. In addition, it was important that this study did not disrupt the day-to-day operations of the case site. Thus, the advice of the gatekeeper was followed, and the questionnaire was only administered to IT users who contacted the IT helpdesk during the data collection period. The anonymity and confidentiality of all participants was also ensured. When discussing the results of the survey with the gatekeeper, only fictitious names or aliases were used. In summary, this section showcases that good ethical practices were followed through different stages of this study. In the next section, I present the demographic characteristics and initial reliability tests that were carried out on the collected data.

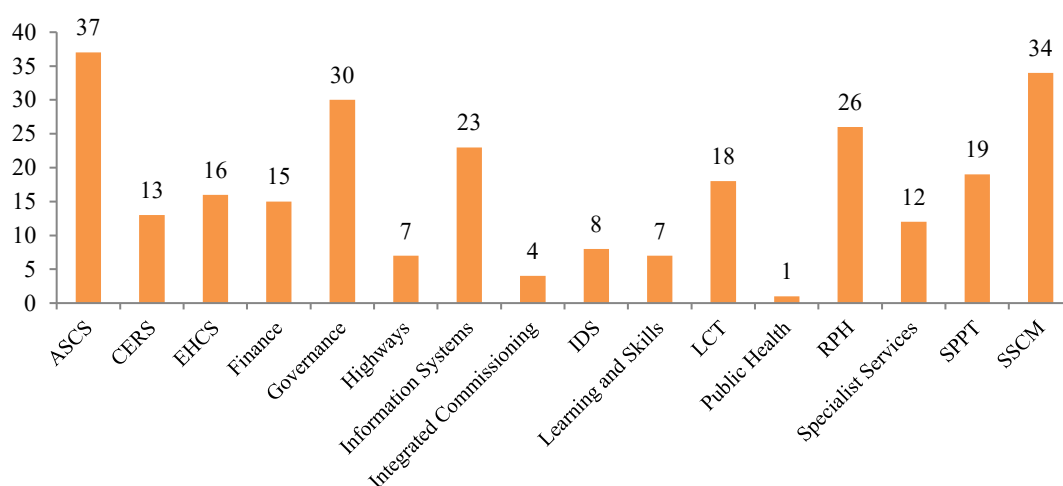
3.6 Demographic Characteristics of Sample and Reliability Tests

The sample consists of 65% females and 35% males. The age group between 51 – 60 years were over-represented, making 30% of the entire sample. This is hardly surprising, given that councils are characterised as having a high percentage of older

employees in their workforce. The 31–40 years and the 41-50 years' age groups were the most represented age groups in the sample. Employees in non-managerial positions made up almost two-thirds of the sample (64.8%), while 35.2% stated that they occupied managerial positions within the council. Most respondents had at least a high school diploma/A-level. With regards to IS/IT systems used within their job roles, the most experience reported was between 6 months-2 years (27.8%). A summary of the demographic characteristics is provided in table 3.3. Finally, the distribution of respondents across the departments in the council is portrayed in figure 3.1.

Table 3.3: Demographic characteristics of the sample

Demographic variables	Frequency	Percentage (%)
<i>Gender</i>		
Female	176	65.2
Male	94	34.8
<i>Age</i>		
15 – 20	11	4.1
21 – 30	37	13.7
31 – 40	64	23.7
41 – 50	70	25.9
51 – 60	81	30.0
61+	7	2.6
<i>Education</i>		
PhD or DBA	1	0.4
Master's degree	29	10.7
Bachelor's degree	106	39.3
High School diploma, A-levels	115	42.6
Apprenticeship	19	7.0
<i>Experience with IT application</i>		
Under 6 months	32	11.9
6 months – 2 years	75	27.8
2 – 5 years	49	18.1
5 – 8 years	28	10.4
Over 8 years	86	31.9
<i>Position</i>		
Managerial	95	35.2
Non-Managerial	175	64.8
Total	270	100



Key: ASCS: Adult Social Care Services; CERS: Communities, Environment and Regulatory Services; EHCS: Early Help and Children's Safeguarding; IDS: Integration and Direct Services; LCT: Leisure, Culture and Tourism; RPH: Regeneration, Property and Housing; SPPT: Strategic Partnerships, Planning and Transportation; SSCM: Strategic Services and Customer Management

Figure 3.1: Total number of respondents by departments

As seen in figure 3.1, the composition of employees who participated in the survey is mixed as they consist of people who work in various departments across the council. The highest responses were received from employees in the ASCS department (n = 37), followed by the responses received from the SSCM (n = 34) and governance departments (n = 30). The least responses came from public health department (i.e., one response), while only four responses were received from individuals in the integrated commissioning department.

Non-response bias was computed for the total population of early and late respondents. Of the 270 usable responses, 246 responses were returned during the period the survey was administered, and a further 24 responses were obtained after a two weeks' extension. Those who responded during the initial administration of the survey were denoted as early respondents, while late respondents referred to those who responded during the extension period. The Kolmogorov-Smirnov (K-S) was used to test for nonresponse bias. The null hypothesis of this test states that the sample distributions of the two groups (that is, the early and late respondents) are the same. If the significance level is less than 0.05, the null hypothesis is rejected. The significance levels as seen in table 3.4 indicate that the two independent groups are statistically similar. Thus, non-response bias should not be a problem in the quantitative data collected for the present study (Armstrong and Overton, 1977).

Table 3.4: Result of test for non-response bias

	Full sample (n = 270)		Early respondents (n = 246)		Later respondents (n = 24)		Kolmogorov– Smirnov test	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	z-score	p-value
INTKNOWIT	5.35	1.10	5.32	1.08	5.55	1.20	0.605	0.857
EXMOTID	6.05	0.86	6.03	0.86	6.20	0.91	0.764	0.609
ACC	5.10	1.28	5.10	1.28	5.00	1.29	0.519	0.933
AFF	5.34	1.24	5.33	1.25	5.43	1.13	0.627	0.827
PRIM	4.35	1.50	4.38	1.49	4.04	1.59	0.657	0.781
POW	3.81	1.54	3.97	1.50	3.85	1.53	0.540	0.951
PU	5.24	1.20	5.26	1.19	5.06	1.34	0.568	0.903

Since a single data source was used to measure the variables, the risk of common-method bias was also anticipated. Following Podsakoff et al. (2003), several steps were taken to minimize this risk during the survey instrument design and execution. First, the items in the survey were clearly worded to ensure respondents could easily understand them. Second, the items were tested for clarity in the pre-testing phase. Third, the respondents remained anonymous to decrease evaluation apprehension. Also, the quantitative data resulting from the survey responses was tested for common method bias using Harman's single-factor test on SPSS v24. An exploratory factor analysis without any rotation showed that the largest variance explained by one factor was 35%. Since the one factor did not account for more than 50% variance, common method bias was deemed unlikely (Podsakoff et al. 2003).

Next, an Exploratory Factor Analysis (EFA) was conducted to test the underlying constructs for a set of measured items (Brace et al. 2006). EFA is essential to determine underlying constructs for a set of measured variables (Brace et al. 2006). EFA allows researchers to establish how many factors exist for a set of items. It is applied to establish whether the items matched the variables measured, and it uses both Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity to ensure the data is suitable for principal component analysis (Hair et al. 2010). As a measure of factorability: a KMO value below 0.5 is unacceptable; 0.5 is poor; 0.6 is acceptable; and a value closer to 1 is better (Brace et al., 2006). Bartlett's test shows that the data is factorable if the p -value is less than 0.05 (Brace et al., 2006).

To establish the number of factors to be extracted, the size of the eigenvalues, scree plot, and cumulative percentage of variance explained were analysed (Hair et al. 2010). Initially, a solution of five factors was observed at an Eigen value of 1. However, when the line plot - showing changes in Eigen values for increasing number of factors extracted - was constructed (see figure 3.2), a solution of seven factors was observed. Beyond seven factors, the line plot appears to taper off indicating a solution of seven factors is acceptable. This solution was adopted because it meant that the percentage of cumulative variance explained (78.96%) was higher compared to if five factors were extracted. Thus, potential model

specification problems associated with extracting too few factors during EFA are avoided (Treiblmaier and Filzmoser, 2010).

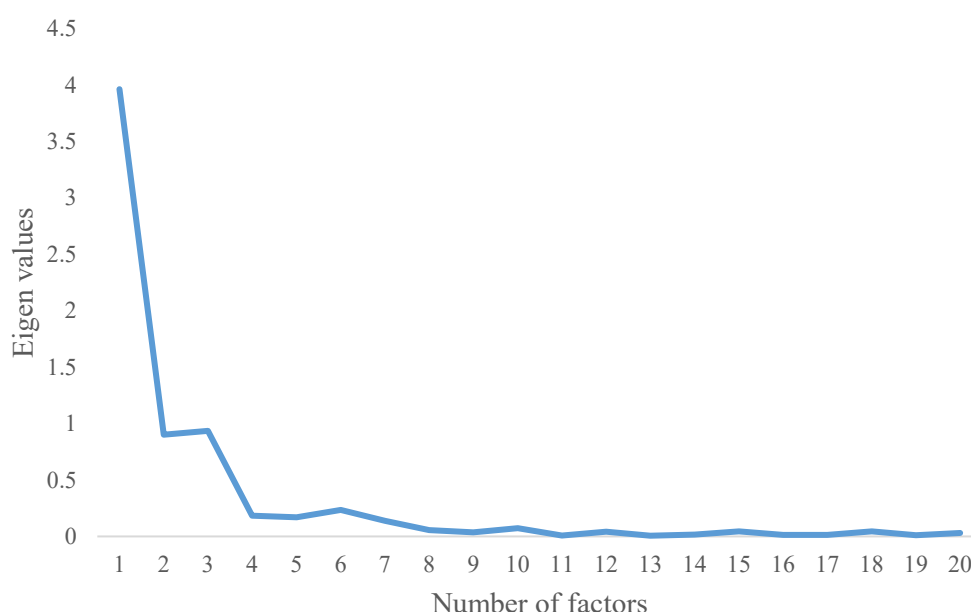


Figure 3.2: Number of factors to extract

Following from the initial exploratory analysis, a principal component analysis using Varimax rotation was conducted using 0.5 as the minimum factor loading. Seven factors were extracted and table 3.5 shows that all items loaded on their respective factors. The Keiser–Meyer–Olkin (KMO) measure of overall sampling adequacy was 0.859 with approximate chi-square λ^2 (231, $N = 269$) = 3884.517, $p < 0.001$, supporting the results of the factor analysis. These results indicate an acceptable instrument design (Hair et al. 2010). Construct validity was also assured using composite reliability (CR), Cronbach alpha and average variance extracted (AVE) values.

As table 3.6 indicates, the estimated values were above the recommended thresholds of 0.7 for CR and 0.5 for AVE (Bagozzi and Yi, 1988) except for the AVE score for ACC. AVE for this construct was 0.476 though this is still close to the acceptable minimum of 0.5. Fornell and Larcker (1981) have pointed out that an AVE score greater than 0.4 is still acceptable if the composite reliability is higher than recommended thresholds. Besides, tests for reliability and validity for the same construct were found to be well above the accepted recommended thresholds. To

ensure internal consistency using Cronbach's alpha, EXMOTID2 was deleted. This ensured an acceptable Cronbach alpha that was close to the acceptable minimum of 0.7. In addition to the AVE, CR values, the Cronbach's alpha values and the test of association for each construct have also been provided in table 3.6.

Table 3.5: Results of factor analysis

	1	2	3	4	5	6	7
PU 5	.889	.098	.081	.012	.023	.006	.152
PU 1	.849	.101	.103	.078	.090	-.047	.192
PU 2	.833	.084	.145	.074	.057	.205	.030
PU 4	.832	.062	.132	.036	.039	-.075	.114
PU 3	.804	.084	.061	.055	.003	.243	-.011
PU 6 dropped during creation of instrument							
PU 7 dropped during creation of instrument							
PU 8 dropped during creation of instrument							
POW3	.068	.862	.127	.108	.156	.145	-.001
POW1	.131	.853	.200	.056	.123	.166	.040
POW2	.112	.836	.158	.018	.134	.216	.022
INTKNOWIT2	.183	.164	.857	.112	.040	.116	.129
INTKNOWIT3	.157	.193	.837	.067	.113	.227	.046
INTKNOWIT1	.174	.293	.677	.204	.203	.311	.037
AFF2	.075	.028	.053	.879	.037	.139	.107
AFF3	.006	.096	.001	.814	.077	-.123	.271
AFF1	.111	.049	.235	.798	.177	.111	.069
PRIM1	.111	.098	.069	.004	.871	.147	.104
PRIM2	-.009	.253	.069	.168	.853	.175	.035
PRIM3	.081	.200	.325	.415	.601	-.083	.141
ACC1	.040	.337	.244	.089	.129	.797	.083
ACC2	.226	.334	.328	.003	.167	.712	.187
ACC3	.122	.496	.313	.074	.220	.536	.025
EXMOTID3	.153	-.043	.018	.222	.109	.158	.815
EXMOTID1	.257	.096	.182	.222	.090	.023	.770
EXMOTID2 deleted due to low Cronbach alpha							

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Table 3.6: Construct reliability, validity and correlation matrix

Constructs	Mean (S.D)	INTMOTKNO	EXMOTID	POW	AFF	PRIM	ACC	PU	α	CR	AVE
INTKNOWIT	5.346 (1.095)	1							0.865	0.836	0.632
EXMOTID	6.046 (0.863)	.920**	1						0.682	0.772	0.628
POW	3.959 (1.496)	.497**	.158**	1					0.892	0.887	0.723
AFF	5.339 (1.239)	.306**	.450**	.186**	1				0.824	0.870	0.691
PRIM	4.698 (1.339)	.409**	.311**	.420**	.374**	1			0.809	0.824	0.616
ACC	4.743 (1.272)	.649**	.292**	.658**	.206**	.447**	1		0.863	0.727	0.476
PU	5.239 (1.201)	.359**	.378**	.247**	.172**	.187**	.308**	1	0.906	0.912	0.724

** . Correlation is significant at the 0.01 level (2-tailed).

α : Cronbach alpha | CR: composite reliability | AVE: Average Variance Extracted

3.7 Summary

This chapter has described the methodological considerations and the research design used to address the objectives of this study. The philosophical underpinnings and ethical considerations of this research as well as efforts implemented in the selection of site, and how validity and reliability of findings were ensured are also described. Two major requirements had to be met by the case site to address the objectives of this study: first, it had to be conducted in a large organisational context within the UK. This was important in order to ensure sufficient groups of individuals who share similar IT dispositions could be clustered into distinct cultural archetypes. Second, the case site had to include a wide range of individuals who use varying IS/IT applications to fulfil their day-to-day tasks. This study chose to utilise a survey questionnaire to address the research objectives as it facilitated the means to reach many individuals in a timely and cost-benefit manner. In the next chapter, I proceed to address the first research objective – that is, to identify the different IT culture archetypes that exist in the case site.

Chapter Four

4 EXPLORING IT CULTURE ARCHETYPES: EMPIRICAL EVIDENCE FROM A UK PUBLIC- SECTOR ORGANISATION

4.1 Introduction

This chapter set out the procedure to identify IT culture archetypes – the first objective of this research. In the next section, the steps taken to identify IT culture archetypes through a multivariate cluster analysis are explained in detail. The chapter ends with a discussion of the results and significance for the IT culture literature.

4.2 Cluster Analysis and Validation

To identify IT culture archetypes, cluster analysis remains the most common approach to classify a large number of cases into relatively homogenous groups (Hair et al. 2010; Balijepally et al. 2011). It allows for the much simpler interpretation of different archetypal patterns and their descriptive characteristics. Prior to proceeding with the cluster analysis, the Mahalanobis distances were computed to identify cases that are dissimilar from others (Tabachnick and Fidell

2006). This was an important step, since it is widely acknowledged that cluster analysis is highly sensitive to outliers (Ketchen et al. 1996; Balijepally et al. 2011).

Following this procedure, only one outlier was found, and this was removed from the final sample used for clustering. To investigate IT culture archetypes in the dataset, two rounds of cluster analysis were conducted. Guided by Hair et al. (2010), a combination of hierarchical and non-hierarchical methods was used to cluster the dataset. In the first stage, a hierarchical agglomerative clustering (HAC) was carried out using Ward's technique to examine the number of clusters in the dataset. The agglomerative approach was used to compare each observation in the sample to ensure the most similar clusters are joined successively until only a single cluster remains (Hair et al. 2010). Hence, it starts off with as many clusters as are cases in the dataset. It then reviews the collection of clusters and merges clusters in pairs based on the distance between them. At each step, the two clusters that merge are those that result in the smallest increase in the overall sum of coefficient (Norusis, 2012). Ward's technique was used to minimise the total within-cluster variance hence ensuring homogeneity among cluster cases and maximise heterogeneity between clusters (Hair et al. 2010).

The agglomeration schedule, as seen in table 4.1, shows the change in coefficient for each collection of clusters that are paired. To explore the most parsimonious number of clusters within the dataset, the change in cluster coefficients for 1 to 12 cluster solutions was calculated (Norusis, 2012). I then plotted and inspected a line plot of the change in coefficient obtained from the resulting agglomeration schedule (See figure 4.1). This ensured an optimal solution for the number of clusters in the dataset could be observed (Vaghefi et al. 2017). Based on this procedure, a five-cluster solution was deemed the most descriptive of the data. As seen in the figure 4.1, the line plot tails off with very little difference in coefficient from six to twelve cluster solutions. This solution was also confirmed using the resulting dendrogram obtained from the HAC.

Table 4.1: Hierarchical agglomerative schedule

Stage	Cluster 1	Cluster 2	Coefficient	Change in Coefficient	Number of Clusters
257	8	29	796.025	29.266	12
258	5	7	834.817	38.792	11
259	3	66	874.473	39.656	10
260	25	56	916.416	41.944	9
261	1	26	960.817	44.401	8
262	2	14	1010.531	49.714	7
263	8	25	1068.630	58.099	6
264	2	5	1180.902	112.272	5
265	1	3	1296.164	115.263	4
266	1	8	1462.737	166.572	3
267	1	2	1835.309	372.572	2
268	1	24	2447.211	611.902	1

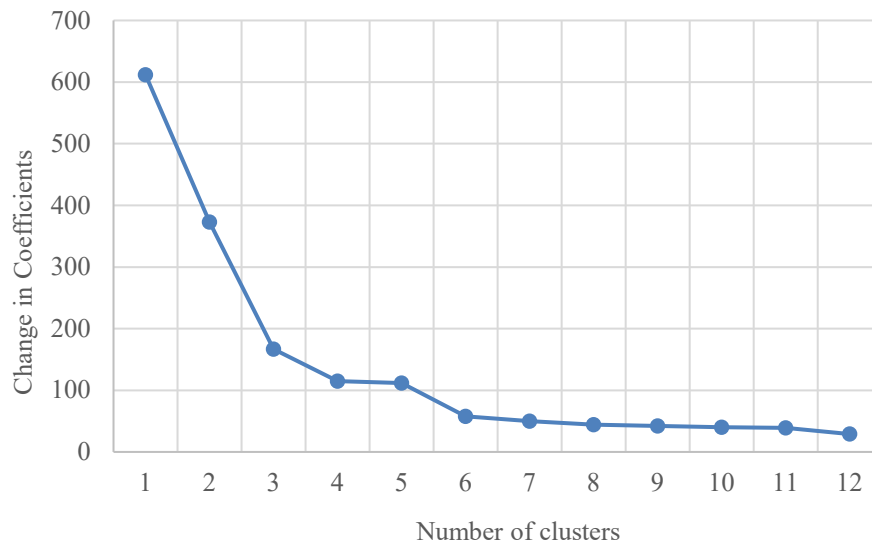


Figure 4.1: Line plot used to identify number of clusters

In the second stage, I applied the non-hierarchical cluster method of K-means to obtain the final cluster centres. The change in cluster centres converged after eight iterations, thus providing evidence that a five-cluster solution was stable for the dataset (Baliyepally et al. 2011). Furthermore, the mean scores of the six cluster variables were investigated within each cluster. In addition, an ANOVA test to check

the null hypothesis regarding the differences in the cluster centroids was also conducted. The F-values as shown in table 4.3 are significant at $p < 0.001$ portraying that all clustering variables were relevant in differentiating the clusters in the dataset. Furthermore, the table also indicates that self-accomplishment ($F = 151.06$, $p < 0.001$) and power needs ($F = 154.19$, $p < 0.001$) had the greatest influence in the formation of the five clusters.

According to the results obtained in table 4.2, the chosen five-cluster solution comprised of a group (Cluster 1) of 25 users (9%) characterised by having the lowest mean scores on self-accomplishment needs compared to the other clusters, although they showed higher mean scores on extrinsic motivation and affiliation needs. A second group (Cluster 2) comprised of 34 users (13%) who have considerable mean scores on extrinsic motivation, although they had the lowest mean scores on primary needs of all five clusters. The third group (Cluster 3) comprised of 68 users (25%) characterised as having above-average mean scores on all needs and motivation variables. The fourth group (Cluster 4) comprised of 72 users (27%) who have the highest mean scores on all variables compared to the other four clusters. Finally, the fifth group (Cluster 5) was comprised of 70 users whose mean scores on the clustering variables are above average except on power needs.

Table 4.2: Descriptive statistics and differences between the five cultural profiles

Variable	Clusters					ANOVA	
	1 (n=25)	2 (n=34)	3(n=68)	4(n=72)	5(n=70)	F	η_p^2
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)		
INTKNOWIT	3.75(0.93)	4.36(0.92)	5.60(0.71)	6.23(0.74)	5.23(0.78)	64.20	0.49
EXMOTID	5.78(1.00)	5.22(1.11)	5.63(0.67)	6.61(0.45)	6.36(0.60)	33.07	0.33
POW	2.12(0.82)	3.44(0.86)	4.27(0.72)	5.71(0.88)	2.77(0.85)	154.19	0.70
PRIM	3.92(0.96)	2.99(0.99)	5.01(0.94)	5.81(0.90)	4.36(1.15)	54.61	0.45
AFF	5.35(0.96)	3.41(1.18)	4.91(0.87)	6.12(0.84)	5.89(0.75)	64.55	0.49
ACC	2.11(0.79)	4.12(0.74)	4.98(0.71)	5.96(0.67)	4.50(0.69)	151.06	0.70
Number (%)	25 (9)	34 (13)	68 (25)	72 (27)	70 (26)		

Note: The F values are significant at $p < 0.001$, η_p^2 = Effect size: small = 0.10, Medium = 0.20, Large = 0.30 (Gignac and Szodorai, 2016)

As a follow-up to the cluster analysis, a one-way analysis of variance (ANOVA) was employed to see if respondents in the five clusters differed in their mean scores on all the needs and motivational variables. Once the ANOVA test identified a significant difference among the five clusters, the post-hoc Bonferroni test was then performed between all possible pairs of clusters to see where differences might lie. The statistical significance was set at 0.05. The results of the Bonferroni test revealed that two clusters (Clusters 2, 4) exhibited contrasting characteristics with respect to their levels of needs and motivational variables. On the one hand, cluster 4 had significantly higher mean scores on all needs and motivational variables ($p < 0.05$) compared to other clusters, except with respect to extrinsic motivation and affiliation needs. On the other hand, Cluster 2 had significantly lower mean scores on all variables at the 5% significance level, except with respect to extrinsic motivation and self-accomplishment needs.

When compared to intrinsic motivation, pair-wise comparisons across all clusters were found to be significantly different except for the comparison between clusters 3 and 5. Similarly, with respect to the pair-wise comparison based on their primary needs and self-accomplishment needs mean scores, all clusters were found to be significantly different except for comparison between clusters 1–5 and clusters 2-5 respectively. The most insignificant results were obtained when the clusters were compared based on their extrinsic motivation and affiliation needs mean scores. Finally, all pair-comparisons on the mean scores reported for power needs were significant. This confirms earlier results shown in table 4.2 that the most significant variable in distinguishing between the clusters is power needs. The results of the pairwise comparisons have been summarised in table 4.3. Each row in the table shows the results of pairwise comparisons between clusters. The post-hoc comparisons (Bonferroni) that were not significant are also included. For example, 2-5(ns) indicates that there were no significant differences for self-accomplishment needs between clusters 2 and 5.

Table 4.3: Comparison of mean scores across the five clusters

Variables	Clusters					Post-hoc ($p<0.05$)
	1	2	3	4	5	
INTKNOWIT	3.75*	4.36*	5.60*	6.23*	5.23*	3-5 (ns)
EXMOTID	5.78*	5.22*	5.63*	6.61*	6.36*	1-3 (ns); 2-3(ns); 4-5(ns)
POW	2.12*	3.44*	4.27*	5.71*	2.77*	
PRIM	3.92*	2.99*	5.01*	5.81*	4.36*	1-5(ns);
AFF	5.35*	3.41*	4.91*	6.12*	5.89*	1-3(ns); 1-5(ns); 4-5(ns)
ACC	2.11*	4.12*	4.98*	5.96*	4.50*	2-5(ns)

Note: * Significantly different at $p<0.05$; ns: not significantly different at $p<0.05$

Table 4.4 shows the similarity/differences between the characteristics corresponding to each cluster. As seen from the table, the dangerous users appear to be the most influenced by the needs and motivation to use IT.

The guidelines provided in Walsh and Gettler-Summa (2010) was used to interpret the mean scores in the ANOVA table (table 4.6). Following, a mean score of ‘5’ (somewhat agree) was used as a mark-up level, since all variables were measured on a Likert scale from 1 (strongly disagree) to 7 (strongly agree). For example, a mean score of 5 and above on AFF (that is, affiliation needs) for a cluster, would indicate that users in that cluster seek the fulfilment of affiliation needs through IT usage. To describe the characteristics of each archetypal pattern emerging from the sample, the demographic characteristics of each cluster identified were analysed. The results are provided in table 4.5.

Table 4.5: Demographic attributes of clusters

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
	n = 25	n = 34	n = 68	n = 72	n = 70
Gender					
Male	20%	32%	41%	47%	23%
Female	80%	67%	59%	53%	77%
Age					
15 - 20	4%	0%	3%	7%	4%
21 - 30	12%	0%	13%	21%	14%
31 - 40	16%	3%	22%	32%	30%
41 - 50	24%	38%	32%	15%	26%
51 - 60	40%	53%	28%	21%	26%
61+	4%	6%	2%	4%	0%
Position					
Managerial	10	12	26	21	25
Non-Managerial	15	22	42	51	45
Education					
PhD or DBA	0%	0%	0%	1.4%	0%
Master's	32%	18%	10%	4%	7%
Bachelor's	44%	50%	31%	35%	46%
High School/A-Level	24%	29%	53%	44%	43%
Apprenticeship	0%	3%	6%	15%	4%

Note: values in parenthesis represent percentages of the total across all clusters.

4.3 Interpreting Emerging Clusters

In this section, the potential archetypal patterns based on the mean scores of the clusters are identified. The analysis was conducted using results of the cluster analysis and descriptive statistics for each cluster. The results are interpreted by evaluating the theoretical rationale for the clusters, examining the mean scores of the variables for each cluster, and developing a label that uniquely describes each cluster. Table 4.6 shows the five clusters and their interpretations based on the mark-up level.

Table 4.6: Interpretation of final cluster centres based on the mean scores

Variables	Clusters				
	1 - Social users	2 – Compliant Dodgers	3 - High Intensity users	4 - Dangerous users	5 – Interested users
1 INTKNOWIT	Low	Low	High	High	High
2 EXMOTID	High	High	High	High	High
3 POW	Low	Low	Low	High	Low
4 PRIM	Low	Low	High	High	Low
5 AFF	High	Low	Low	High	High
6 ACC	Low	Low	Low	High	Low

4.3.1 Cluster 1 - social users

This group comprises of individuals that have low scores on all variables except extrinsic motivation and affiliation needs (see table 4.6). These users recognise the need to improve the quality of their work and to communicate with people with whom they work. Additionally, individuals in this cluster use IT to meet their socialisation needs. In order words, they seek to communicate with their colleagues and share with others through their use of IS/IT systems. From the broader literature, individuals whose usage of IS/IT systems are driven by the need to fulfil affiliation needs seek socialisation and close relationships with others (McClelland, 1985). They seek organisational settings where they can develop and maintain relationships with colleagues using IS/IT systems (Harrell and Stahl, 1983). As pointed out by the Harrell and Stahl (1983), *“individuals with large affiliation needs are motivated to establish and maintain warm, friendly relationships with their colleagues and associates. Such individuals will frequently sacrifice other opportunities and rewards to establish and maintain such relationships”* (p. 150).

Based on these characteristics and their need/motivation attributes, this cluster was labelled **social user** and they encompass the smallest cluster in the sample. The needs and motivational characteristics of individuals included in cluster 1 represent a new IT culture archetype that has not emerged in prior studies. In terms of the needs they seek to fulfil through IT usage, the social users had the lowest mean scores for power needs and self-accomplishment needs, compared to the other

clusters. In addition, they hold the second lowest mean scores with respect to primary needs. On the other hand, they have the second highest mean scores with respect to both extrinsic motivation and affiliation needs. Concerning their demographic characteristics, most of the “social users” are comprised of females (80%). This is in line with previous studies that have found females to be more associated with using technology for social affiliation compared to men (Hoffman, 1972; Chen, 2012; Morris et al. 2005). They mainly consist of individuals in the 41-50years and 51-60years age group (91%).

4.3.2 Cluster 2 – compliant-dodgers

This group comprises of individuals who have the least needs and motivation to be fulfilled through IT usage in the sample. They reported low scores on all needs and motivation variables, apart from the dimension of extrinsic motivation through identified usage (see table 4.6). For these individuals, IT usage is important to fulfil only extrinsic goals such improving the quality of their work and having exchanges with people with whom they work. This motivation is primarily driven by the need to meet the demands of their job, and not by any of the four needs assessed in the cluster analysis.

The absence of needs to be satisfied through IT usage suggests that these individuals would rather not use IT except in unavoidable circumstances such as to improve the quality of their work. Hence, they tend to be late adopters of IS/IT. their need and motivation characteristic bears some resemblance to the dodgers that emerged in Walsh et al. (2010) study, and the intrinsic-dodgers in Walsh and Gettler-Summa (2010). The two dodger categories identified in both studies were characterised as not exhibiting any of the four needs (that is, power, self-accomplishment, affiliation and power needs,) through their use of IT. In comparison, individuals in cluster 2 do not exhibit any of the four needs variables through their IT usage. Hence, this group of users are dodgers, although they are extrinsically motivated. This shows their IT usage is primarily driven by identified regulation such as improving the quality of their work and communicating with colleagues. Hence, their IT usage is one that is characterised by a compliant behaviour. Thus, this cluster was labelled the **compliant-dodger**.

With respect to the demographic characteristics of this archetype, table 4.5 shows that they mostly comprised of respondents who are in the older age groups (that is, 41-50years, 51-60years and 61+years). In total, respondents in the older age groups represented 97% of the total number of users in this archetype. Compared to other four archetypes, this is the only group where the percentage of individuals in the older age groups is higher than those in the younger age groups.

4.3.3 Cluster 3 – high intensity users

The high intensity users are characterised as having high mean scores on primary needs fulfilled through IT usage. This means that for this group of users, IT usage has become instilled into their day-to-day lives. They get engrossed in their use of IT such that they do not see time passing by and find it hard to stop. In addition to the high mean scores on primary needs, they also exhibit intrinsic and extrinsic motivation. This means they are intrinsically motivated to fulfil their primary needs through IT and also recognise the usefulness of IT to complete job-related tasks and to improve the quality of their work.

A similar archetype has been identified in a previous study. In Walsh and Gettler-Summa (2010), the authors identified the passionate users' archetype who exhibited a combination of high primary and affiliation needs using IT. Similar patterns of IT usage behaviour can lead to an unhealthy IT addiction (Turel et al. 2011), and extant studies have identified the proliferation and affordability of technology as one the reasons for high intensity IT usage behaviours (Harris et al. 2012; Köffer et al. 2014; Lalicic and Weismayer 2016). For these types of users, Argarwal and Karahanna (2000) have shown that their engrossed use of IT is based on subjective enjoyment with IT. However, compared to the passionate users, individuals in Cluster 3 differ in that they do not exhibit affiliation needs. So, they still exhibit high levels of IT usage though it is not driven by affiliation needs. As a result, individuals in this cluster were labelled as the **high intensity user** because of the high levels of engagement they express when using IT.

With regards to the demographic characteristics of the passionate users, table 4.5 shows that the high intensity users' archetype had the highest percentage of males

compared the other archetypes. They also comprised of the largest number of respondents who reported that they occupied managerial positions within the council. Finally, over 80% respondents were aged between 31-60 years old.

4.3.4 Cluster 4 – dangerous users

This group of users comprises of individuals who have high mean scores on all four needs variables. They exhibit primary needs to be fulfilled through IT usage. Thus, they have a strong passion for IT such that they cannot envisage their day-to-day life without the use of IS/IT. They also exhibit affiliation needs portraying that they also seek to socialise and communicate with friends and colleagues using IS/IT. The high mean scores they have on accomplishment needs means that individuals in cluster 4 obtain satisfaction in mastering IT even if they spend lots of time doing so. In addition, they have high power needs to be fulfilled using IT showing that they seek to experience the superiority and authority that comes with obtain increasing their knowledge of IT. In terms of their motivational characteristics, individuals in cluster 4 experience intrinsic and extrinsic motivation. That is, they recognise how IT usage improves the quality of their work. There is also an intrinsically motivated drive fulfil their accomplishment, primary, power and affiliation needs.

Compared to the archetypal patterns that have emerged in previous studies, in a previous study, Walsh et al. (2010) has shown that dangerous users exhibit high affiliation needs. In an updated study, Walsh and Gettler-Summa (2010) argued that are similar to the studious users in that they also exhibit affiliation, primary, self-accomplishment needs, as well as intrinsic and extrinsic motivation. The main difference they argued is that the dangerous users in addition, exhibit power needs. In another study, Walsh et al. (2010) has provided empirical evidence showing that the self-accomplishment needs of the dangerous users make them attracted by IT and to actively initiate their own participation in any IT project. In addition, they particularly identify dangerous users as those who “*may often abuse IT in such a way as to satisfy a power need*” (p. 265). These studies show that the dangerous users are the only group of users that exhibit power needs. Notably, of all five clusters, cluster 4 is the only group to exhibit high power needs to use IT. Hence,

cluster 4 bears striking resemblance to the description of the dangerous users in the literature. Based on these comparisons, individuals in this cluster were labelled as the **dangerous user** and they represent the largest cluster in the sample. They actively engage in IS/IT projects and may even use their involvement in IT to satisfy a need for superiority (Walsh et al. 2010). However, their involvement does not always produce positive outcomes as Khan and Ferneley (2010) reports that dangerous users may at times create a false impression about their knowledge of IT, to the extent that they “bad mouth” the technology to others and derail the diffusion process.

With respect to the demographic characteristics associated with this cluster, users in the dangerous archetype were mostly comprised of individuals in the younger age groups (that is, the 15-20years, 21-30years and 31-40years age groups); in total, they made up 70% of all users in this archetype. Compared to the other four archetypes, this is the only group where the percentage of individuals in the younger age groups is higher than those in the older age groups.

4.3.5 Cluster 5 – interested users

Representing the second largest group, this group consists of individuals who have high affiliation needs to be fulfilled through IT usage. As a result, they seek the use of IT to socialise and keep in touch with friends. They are motivated to use IT for pleasure, but also recognise how it helps to meet other extrinsic goals. This cluster is similar to cluster 1 where individuals in the group have high affiliation needs and extrinsic motivation. However, the distinct feature with this cluster is their significantly high intrinsic motivation to know IT. Their mean score on is significantly different from all other clusters except cluster 3 (the passionate users).

In terms of existing archetypal patterns, this cluster is similar to the interested users in Walsh and Gettler-Summa (2010). They have similar characteristics compared to the social users who have an extrinsic motivation through identified regulation and affiliation needs satisfied through IT usage. In addition, the difference with archetypal pattern is that while they have high affiliation needs, they also hold an intrinsic motivation to know IT. They are generally interested in IT and like to

discover new apps. In general, intrinsically motivated individuals have been found to more likely engage and discover the innovative uses of IS/IT system features that support their job tasks (Ke et al. 2012). Hirst (1988) argues that intrinsic motivation for these individuals may even increase when they realise the opportunity serves to gratify their self-determined needs. Based on the similarity to in characteristics to Walsh and Gettler-Summa (2010) and Walsh et al. (2010), individuals in this cluster were labelled as the **interested user**. With respect to the demographic characteristics associated with this cluster, the interested users were mostly females (77%) in the 41-50years (26%) and 51-60years (26%) age group.

Finally, a cross-tabulation of the five archetypal patterns against the departments in the council was conducted to examine how each archetype is spread across the different departments in the organisation. The results are portrayed in table 4.7. The least represented department was the public health department, where only one respondent was recorded for the survey. On the other hand, respondents from the adult social care services (ASCS) and the Strategic Services and Customer Management (SSCM) were the most represented department in the sample. The interested users had the most representation across all departments in the council (i.e. 16 departments) compared to the social users and compliant dodgers' categories – both of which had the least composition across all departments (i.e. 12 departments). In general, the table shows that all archetypes consisted of IT users who occupied a range of departments in the council. This finding supports the underpinning argument of IT culture (Walsh et al. 2010) – that the composition of IT culture archetypes will transcend specific subgroups or departments, but will emerge based on their needs and motivation to use IT. Having discussed the features and provide a matching label for each cluster, a summary briefly describing each of the clusters and their key characteristics is provided in table 4.8.

Table 4.7: IT culture archetypes and their member distribution across departments

Departments	Clusters				
	Social users	Compliant dodgers	High intensity users	Dangerous users	Interested users
ASCS	3	4	13	5	12
CERS	1	4	3	2	3
EHCS	5	2	2	5	2
Finance	0	1	5	6	3
Governance	4	3	8	9	6
Highways	1	1	3	0	2
Information Systems	0	0	5	14	4
Integrated Commissioning	0	0	1	0	3
IDS	1	1	2	2	2
Learning and Skills	1	0	2	2	2
LCT	1	1	4	6	6
Public Health	0	0	0	0	1
RPH	3	6	4	5	7
Specialist Services	1	4	2	2	3
SPPT	2	2	2	8	5
SSCM	2	5	12	6	9

Key: ASCS: Adult Social Care Services; CERS: Communities, Environment and Regulatory Services; EHCS: Early Help and Children's Safeguarding; IDS: Integration and Direct Services; LCT: Leisure, Culture and Tourism; RPH: Regeneration, Property and Housing; SPPT: Strategic Partnerships, Planning and Transportation; SSCM: Strategic Services and Customer Management

Table 4.8: Characteristics of cultural archetypes

Cultural archetypes	Description
The social user	These individuals are highly interested in using IT to communicate and associate with others. They also recognise the importance of using IT to fulfil job-related outcomes and have regulated their behavior to accommodate the demands of such IT usage.
The compliant-dodgers	While these individuals may not be interested in IT, they recognise the importance of using IT to fulfil job-related outcomes and have regulated their behavior to accommodate the demands of such use.
The interested user	Individuals in this cluster welcome the opportunity to learn something new about IT and are interested in using IT to communicate and associate with others. However, these users regulate their behavior to meet the demands of IT usage to fulfil job-related outcomes.
The high intensity user	These individuals exhibit a motivation to learn and understand something new about IT. However, in contrast to the interested users, they exhibit an addictive behavior in their use of IT, to the extent that they spend a lot of time using IT and become absorbed by the pleasure they derive when doing so.
The dangerous user	These individuals are highly interested in IT. They are devoted learners and actively engage in IT to learn and understand new things. However, their IT usage is motivated by the need to satisfy a power need. In other words, they use their mastery of IT to improve their image within the organisational hierarchy.

4.4 Summary

This chapter has presented the procedure followed to identify IT culture archetypes. It has given a brief description of the steps taken to address the first research objective using a multivariate cluster analysis approach. Using the mean scores attributed to each cluster, the interpretation showed that the sample can be grouped into five IT culture archetypes (that is, the interested users; the compliant-dodgers; the social users; the high intensity user; and the dangerous users), while their differences were confirmed using the Bonferroni post hoc test. The IT culture archetypes identified in this study have also been reviewed in relation to the existing literature. The implications of these results are discussed in chapter six.

Although the identification of IT culture archetypes provides a greater understanding of the needs and motivations of users toward IS/IT, they do not offer any insight on perceived usefulness beliefs - the goal of the second research question. Consequently, the second stage of this study intends to explore the influence of cultural archetypes on perceived usefulness beliefs. The next chapter is dedicated to this purpose. In this chapter, the influence of cultural archetypes (identified in this chapter) and perceived usefulness is theorised in detail. These relationships are then tested using a multiple regression analysis.

Chapter Five

5 THE INTERPLAY BETWEEN IT CULTURE AND PERCEIVED USEFULNESS

5.1 Introduction

In this chapter, the second research objective is addressed by investigating the influence of cultural archetypes (identified in chapter four) on the perceived usefulness of IT. The analysis was resumed by revisiting the results obtained in chapter 4, where the IT culture archetypes present in the dataset were identified. The effects of cultural archetypes on perceived usefulness was tested using a multiple regression model, where each IT culture archetype is represented by a dummy variable. The considerations involved in conducting a multiple regression analysis with dummy independent variables are further discussed in the next section. Following this section, hypotheses are developed that propose the influence of each IT culture archetype and perceived usefulness beliefs. Next, the hypotheses are tested through a multiple regression analysis. The regression estimates obtained are then discussed to conclude the chapter.

5.2 Dummy Variables and Reference Category Selection

In this section, attention is drawn to important considerations taken with respect to the use of a multiple regression with independent categorical variables. It involved a regression model using the IT culture archetypes as independent categories to predict perceived usefulness – a continuous data variable. The analysis also included control variables, which are discussed in greater detail in section 5.4. First, because the independent variable was a categorical variable consisting of five unique IT culture archetypes, dummy variables were created to represent each of the five archetypal patterns. With respect to this point and how it applies to the analysis conducted, further details showing how the data was prepared for analysis is provided in section 5.4.1.

The second consideration involves the selection of a reference category. Regression models that use categorical independent variables require, one of the dependent variables (in this case, cultural archetypes) as a reference category for performing the analysis and interpreting the regression coefficients. The reference category is used as a baseline against which the regression estimates of the other dependent variables are compared. In essence, the regression coefficient obtained is then interpreted as the difference between each cultural archetype and the cultural archetype selected as the reference category. This procedure is consistent with prior studies (Chan and Lai, 2011; Åkerman, 2015; Joshi et al. 2017) that have followed a similar analytical approach.

When selecting a reference category, Starkweather (2010) has suggested that it can be determined arbitrarily, since it only affects the interpretation of the regression coefficients attributed to the dummy variables. However, Hardy (1993) provides two key recommendations when selecting a reference category. First, that it should be a well-defined category rather than a category that lacks detailed specificity. Second, that the reference category should not be the one with the fewest or largest cases (Hardy, 1993). As seen in section 4.3 of the previous chapter, all the cultural archetypes are well-defined, and their characteristics are anchored by relevant studies in the IS literature including the new archetypes – the social and high

intensity users. However, based on Hardy's (1993) recommendations, it was considered that the social users and the compliant-dodgers were not suitable to be used as a reference category because they consisted of the fewest number of cases. On the other hand, the results section 4.3 also showed that the interested users and the dangerous users consisted of the highest number of cases.

Therefore, based on Hardy's (1993) twin considerations, the high intensity user IT culture archetype was selected as the reference category. It is the most balanced of all the archetypes in fulfilling the two recommendations. First, it is the least influenced by size since with respect to the number of cases, it is the most equidistant from the extremes (that is, the archetype with lowest and highest number of cases). In addition, as already discussed in section 4.3.3, the IT use behaviour of the high intensity users has been widely recognised in IT addiction literature (Turel et al. 2011; Vaghefi et al. 2017). Vaghefi et al. (2017) argues that IT addiction such as expressed by the high intensity users tend to follow from a disproportionate use of IT. According to Vaghefi et al. (2017), IT addiction embeds four elements: feelings of dependency; excessive use; failure to stop; and the manifestation of significant negative outcomes. In addition, Turel et al. (2011) posits that users who experience IT addiction tend to have distorted biases that modify their perceptions of reality. Both studies equally suggest that IT addictions impose negative consequences on users, such as reduced wellbeing, lower performance and technostress. The aforementioned studies show that compared to the high intensity users represent a well-grounded archetype in the IS literature; thus, it was best suited to be used as a reference category in the regression model. As a result, it represents the best choice for comparison; rather than comparisons against clusters containing the lowest and highest number of cases (Starkweather, 2010).

5.3 Hypothesis Development

This section theorises the influence cultural archetypes identified in chapter 4 have on perceived usefulness. First, it proceeds to establish the factor(s) that distinguish each archetype and explains how these factors might influence perceived usefulness beliefs. However, the basis for hypothesising is the cluster difference between each cultural archetype and the reference category. Hence, the theorisation will also

compare each archetype to the reference category – that is, the high intensity users. To compare the cultural archetypes, the notion of IT acculturation – which reflects the level of IT-related needs and motivation manifested by the cultural archetypes – is called upon (Walsh, 2014). Cultural archetypes found to manifest more IT-related needs and motivation are proactive and perceived by managers to have a supporting influence during new IT implementation (Walsh et al. 2010). The following subsections now elaborate on the hypotheses that will be tested in this chapter.

5.3.1 Dangerous users and perceived usefulness

A distinguishing feature of the dangerous users' IT culture archetype is that they exhibited high power needs satisfied through IT usage. This characteristic differentiates them from the other IT culture archetypes as the only group that sought to use IT to portray a positive image of themselves (See table 4.5 in chapter four). Hence, the need for power through IT usage was linked to an implicit desire to exude an image that elicits respect and superiority among individuals in their social system (See Walsh et al. 2010).

Image has been defined as “the degree to which use of an innovation is perceived to enhance one's status in one's social system” (Moore and Benbasat 1991, p. 1989). It stems from Rogers' (1995) study of factors that explain how, why and at what rate innovation and technology spread among members in a social system. According to the author, five characteristics - relative advantage, compatibility, ease of use, image, and perceived risk – significantly influence an individual's willingness to accept an innovation. Image is considered as an independent variable from among Rogers' (1995) original relative advantage characteristics. According to Agarwal and Prasad (1997), image captures the perception that using an innovation will enhance the social status of the adopter. From this perspective, it is argued that image encapsulates a core characteristic of the dangerous users' IT culture archetype, in that their use and mastery of IS/IT is driven by the need to achieve a status symbol within their social system.

Within the IS literature, a number of studies have investigated the role of image in predicting perceived usefulness. In a study of 222 physicians in the US, Mun et al.

(2006) examined the key constructs that helped to explain and predict technology acceptance. An integrative approach was used to develop the research model that incorporated the technology acceptance model, theory of planned behaviour and innovation diffusion theory. Results from Mun et al.'s (2006) study showed that image had a positive effect on perceived usefulness. By implication, their results show that technology implementation within organisations may be more successful if it contributes to enhancing the image of the user.

Furthermore, in the proposed extension of the technology acceptance model (that is, TAM2), Venkatesh and Davis (2000) proposed five main variables as antecedents to perceived usefulness, one of which was image. The authors pointed out that if members of a social group believe that an individual should use an IS/IT, performing such action would enhance the individual's status and superiority among the group members. The set of hypotheses theorised by Venkatesh and Davis (2000) were tested in both voluntary and mandatory work settings. Results of their regression analyses showed that in both settings, image had a positive influence on perceived usefulness. Using structural equation modelling, Siamagka et al. (2015) also explored the relationship between image and perceived usefulness. They developed and tested a conceptual model based on the technology acceptance model and resource-based theory. The model was tested using data collected from 105 B2B organisations. Siamagka et al. (2015) also reported that their results demonstrated that image had a positive effect on perceived usefulness. Further, in their study of individualism-collectivism among Jordan's m-commerce users, Faqih and Jaradat (2015) confirmed the hypothesis that image had a positive influence on the perceived usefulness to use m-commerce in Jordan. The results of the study suggested that image can provide a valuable point of reference for designing and developing appropriate practical interventions and techniques to enhance users' perception to adopt m-commerce technology (Faqih and Jaradat, 2015).

In this study, assessing how individuals score on six sources of IT-related needs and motivation derives IT culture archetypes. These sources comprise 1) power needs, 2) primary needs, 3) affiliation needs, 4) self-accomplishment needs, 5) intrinsic motivation and 6) extrinsic motivation). The results in chapter four

revealed that dangerous users scored highly on all six sources of IT-related needs and motivation compared to all the other IT culture archetypes identified. Hence, the dangerous users are most IT-acculturated cluster compared to all clusters obtained from the cluster analysis. Although Walsh (2014) has cautioned that such users might prove complex to manage in organisational settings, the more sources of needs exhibited by individuals, the more likely they are to exhibit favourable perspectives to IT (Au et al. 2008; Lee, 2016). For example, such characteristic makes them the most likely to support IT initiatives within organisational settings such new IT implementation and fostering knowledge sharing among organisational IT users (Walsh et al. 2010; Teo et al. 2011). By contrast, the high intensity users only score highly on three sources of IT-related needs and motivation, namely primary needs, intrinsic motivation and extrinsic motivation. Therefore, it can be surmised that the dangerous users show higher levels of IT-acculturation compared to the high intensity users, it would be expected that users that manifest the dangerous IT culture archetype would also hold higher levels of perceived usefulness beliefs compared to the high intensity users.

Hypothesis 1: Employees that manifest the dangerous IT culture archetype will have higher perceived usefulness beliefs compared to employees in the high intensity users' archetype

5.3.2 Compliant-dodgers and perceived usefulness

Previous studies in the IT culture literature have observed different types of the dodgers' IT culture archetype (Walsh and Gettler-Summa, 2010; Walsh et al. 2010). However, the compliant-dodgers' IT culture archetype observed in this study exhibits distinct needs and motivational characteristics that differentiated them from those that had emerged in previous studies – see discussion in section 4.3.2 in chapter four. The compliant-dodgers' IT usage behaviour was influenced by an extrinsic motivation to meet the demands of their job, and not by power needs, primary needs, self-accomplishment needs, or affiliation needs. The compliant-dodgers represent a group of individuals whose attitudes and behaviours towards IT are influenced by extrinsic rather intrinsic factors. More specifically, they use IT because it is seen to be vital to meet the demands of their job in terms

of improving the quality of their work and having exchanges at with work colleagues. Hence, the use of IT in the context of this study is effectively one of a mandatory behaviour requirement premised on the demands of completing work tasks. Essentially, these individuals only choose to adopt an IS/IT because they would be unable to complete their work tasks without using the IS/IT. Thus, the social system within the organisation imposes a compliant effect that informs the workers use of IS/IT (Schepers and Wetzels, 2007).

One social factor that may explain the use behaviour of the compliant dodgers is subjective norm. Drawn from the theory of planned behaviour, subjective norm represents an individual's perception that salient social referents think s/he should or should not perform the behaviour in question (Fishbein and Ajzen, 1975). It has been used to improve the understanding of user adoption behaviours within voluntary and mandatory IS/IT settings (Venkatesh and Davis, 2000; Venkatesh et al. 2003), and has been explored in terms of its relationship to perceived usefulness in a wide range of studies. According to Teo et al. (2008), the reference to 'social referents' in Fishbein and Ajzen's definition above, can be traced to the supervisor the individual reports to, and the group in which s/he belongs within an organisational setting. Through the influence of these social referents, Venkatesh and Davis (2000) have argued that an internalisation occurs such that the individual incorporates the referent's belief into their own belief structure. This influence is similar to that experienced by the compliant dodgers whose IT usage behaviours are determined by contextual factors in the organisational environment. Hence, by reviewing the link between subjective norm and perceived usefulness, it is possible to theorise the relationship between compliant-dodgers and perceived usefulness.

Within the IS literature, Venkatesh and Davis (2000) hypothesised subjective norm as a factor that may influence an individual's perceived usefulness of IS/IT and ultimately their intention to use the system in question. Through their theorisation of TAM2, Venkatesh and Davis (2000) argued that users' perceptions of usefulness may increase in response to persuasive social referents. Moreover, this increase is regardless of whether the context is a voluntary or mandatory IT environment. The hypothesis was tested in both mandatory and voluntary organisational settings using longitudinal data collected regarding four different organisational systems.

Subjective norm was found to have a positive and significant effect on perceived usefulness.

Ayouby et al. (2012) observed similar findings in a Jordanian setting, where the authors explored the cultural factors that may influence the adoption of internet technologies. Teo et al. (2008) also found subjective norm had a positive influence on perceived usefulness in their study of teachers' attitudes toward computers. More recent works within the IS literature have also confirmed subjective norm as a useful predictive variable that influences perceived usefulness. Venakatesh and Bala (2008) presented and tested a comprehensive integrated model of the determinants of individual-level IT adoption and use. The study used longitudinal data collected from four organisations over a five-month period. Results showed that subjective norm was positively related to perceived usefulness.

The aforementioned studies suggest that subjective norm is positively linked to perceived usefulness. Since subjective norm represents a key explanatory factor, it is argued that social influence may introduce a compliance effect. Such effects have been shown to positively influence usage intention when the use of an IS/IT is perceived to be mandatory (Venkatesh and Davis, 2000). Hence, it is hypothesised that the compliant-dodgers are likely to exhibit positive perceived usefulness beliefs contingent upon the presence of significant subjective norm organisational influences.

In line with the arguments presented for hypothesis one, it is expected that the level of IT-related needs and motivation exhibited by a cultural archetype reflect its IT-acculturation. Hence, the more the sources of IT-related needs and motivation attributed to a cultural archetype, the higher the level of perceived usefulness beliefs. Consequently, cultural archetypes that show low levels of IT-related needs as well as motivation to use IT can be expected to perceived lower levels of perceived usefulness beliefs than archetypes that exhibit a variety of needs and motivation to use IT. The results of the cluster analysis show that the compliant-dodgers' archetype only scored highly on extrinsic motivation to use IT, compared to high intensity users that exhibited primary needs, intrinsic motivation and extrinsic motivation. Therefore, the level of perceived usefulness beliefs held by

the compliant-dodgers' IT culture archetype is expected to be lower than users manifesting the high intensity IT culture archetype. Hence, it is hypothesised that:

Hypothesis 2: Employees that manifest the compliant-dodgers' IT culture archetype will have lower perceived usefulness beliefs compared to employees in the high intensity users' archetype

5.3.3 Interested users and perceived usefulness

The interested users' IT culture archetype exhibited high levels of intrinsic motivation to know IT. This represents the characteristic of using and discovering new app/software for enjoyment and satisfaction (Vallerand et al. 1992; Pelletier et al. 1995). This type of intrinsic motivation may lead to several activities such as exploration, curiosity, learning and wanting to experience something new about IT (Walsh et al. 2010).

In terms of key characteristics that distinguish users in this IT culture archetype, the first is that interested users portray a high level of intrinsic motivation to know IT. A number of studies have demonstrated how the intrinsic component of motivation is significantly related to positive outcomes. For instance, Lee et al (2005) investigated students' acceptance of an internet-based learning medium (ILM) by integrating a motivational perspective into TAM. The authors used data collected from 544 undergraduate students at a university in Hong Kong. Perceived enjoyment – “*the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated*” (p. 1099) – was used as a proxy measure of intrinsic motivation to use the ILM. Their results showed that intrinsic motivation (measured using perceived enjoyment) had a significant and positive relationship with attitude and intention to use IS/IT. Similarly, Yan and Davison (2013) demonstrated the mediating role of intrinsic motivation between knowledge seeking and knowledge contributing behaviour. The authors used data from 430 users of Web 2.0 applications to test their model. While the mediating role was not found to be significant, perceived enjoyment in helping others was found to be positively related to knowledge contributing behaviour.

Mun and Hwang, (2003) have also used perceived enjoyment as a proxy measure of intrinsic motivation to investigate whether intrinsic motivation influences perceived usefulness. The authors extended TAM by incorporating motivational variables to predict the use of web-based information systems. Using data collected from 199 respondents for their study, Mun and Hwang, (2003) showed that perceived enjoyment had a positive and significant link to perceived usefulness. By implication, the study showed that intrinsic motivation might play a significant role in determining the individuals' perceptions of usefulness of a Web-based IS. Hence, they suggest practitioners could foster successful technology acceptance by creating a learning environment where perceived enjoyment is encouraged.

In addition, Zhou and Lu (2011) have explored how intrinsic motivation influences perceived usefulness for individuals using a mobile IM platform. Zhou and Lu (2011) proposed a model to investigate factors that influence loyalty among instant messaging users. Intrinsic motivation was captured by measuring users' perceived enjoyment of using the instant messaging (IM) service. To test the model, data was collected from 223 individuals who regularly used common Mobile IM platforms in China. Results showed that intrinsic motivation had a positive relationship with perceived usefulness, which in turn, positively influences loyalty to a mobile IM service provider.

The aforementioned studies exemplify how intrinsic motivation serves as an antecedent to positive outcomes in different organisational settings and IS outcome measures. As seen, there is evidence to suggest that intrinsic motivation to know IT might influence positive perceptions of usefulness. It is argued that individuals who exhibit intrinsic motivation to know IT are aware that they can use IT to broaden their knowledge about various forms of IS/IT available to them, and the different approaches they may use the IS/IT to experience positive outcomes. The interested users "*welcome any new IT tool with ease...because they enjoy learning about IT*" (p. 265). Li et al. (2013) has shown that employees with intrinsic motivation to know IS/IT are more likely to engaged in an innovative use of IS/IT in a bid to fulfil their work objectives. According to Li et al. (2013), IT usage behaviours vary based on employees' orientations of how implemented IS/IT systems are to be used to achieve work objectives. However, while enjoying using

and learning about new IS/IT, users that manifest the interested IT culture archetype come short of becoming captivated by IS/IT tools compared to the high intensity users.

In comparison to the interested users, while the high intensity users exhibit similar motivations to use IT, they differ in terms of the needs satisfied through IT usage. As seen in table 4.5 in chapter four, the high intensity users exhibit an IT usage behaviour that is influenced by primary needs, while the interested IT users are influenced by affiliation needs. Hence, the high intensity users exhibit a usage behaviour that is close to an addiction. Such behaviour is known in the IS literature and has been attributed to negative outcomes such as overload and stress (Tarafdar et al. 2015; Vaghefi et al. 2017). On the other hand, the interested users exhibit affiliation needs that have been linked to more positive outcomes. For example, affiliation needs have been linked to enhanced team leadership abilities (Lee, 2004; Casey-Campbell and Martens, 2009), as well as the increased abilities to achieve team-level outcomes (Beal et al. 2003). This difference in the needs satisfied through IT usage for both interested and high intensity users make it reasonable to expect that the level of perceived usefulness beliefs will likely be higher for interested users than for high intensity users. Based on these arguments, this study proposes the following hypothesis:

Hypothesis 3: Employees that manifest the interested IT culture archetype will have higher perceived usefulness beliefs compared to employees in the high intensity users' archetype

5.3.4 Social users and perceived usefulness

With respect to the social users' IT culture archetype, results of the cluster analysis in chapter four indicate that these individuals have high levels of affiliation needs fulfilled through IT usage and that they exhibit extrinsic motivation to use IT. Affiliation needs represent the need to socialise and to have close relationships with others and to share with others through IS/IT systems (McClelland, 1985). Prior research has suggested that individuals with high affiliation needs are attracted to

work environments where they can develop and maintain friendly relationships with colleagues (Harrell and Stahl, 1984; Chiou et al. 2015).

Within organisational settings, individuals with high affiliation needs seek to cooperate with fellow team members to fulfil team-related activities (Yamaguchi, 2003). Having high levels of affiliation needs motivates individuals to be sympathetic and accommodating towards each other (Schmidt and Frieze, 1997). Hence, the presence of individuals with high affiliation needs within an organisation is likely to enhance rapport between team management and leadership (Lee, 2004). Casey-Campbell and Martens (2009) found that in team-related settings, social users exhibit a strong motivation to adapt and support team goals. The level of adaptation in team-related settings may in turn, contribute to the realisation of team outcomes (Evans and Jarvis, 1986; Beal et al. 2003). Social users are therefore likely to readily adapt to contexts where team members must draw on a range of skills to fulfil work-related tasks in a coordinated manner. Hence, by reviewing the link between affiliation needs and perceived usefulness, it is suggested that the social users are likely to exhibit positive perceived usefulness beliefs.

The other characteristic of the social users is that they exhibit extrinsic motivation to use IT – similar to the compliant-dodgers. This means that in addition to fulfilling their affiliation needs, the social users use IT because it is pertinent to improving the quality of their work and having exchanges with colleagues at work. Therefore, the decision to adopt and use an IS/IT by the social users is premised on demands of completing work tasks within the organisation. Based on this characteristic, it is argued that aside affiliation needs, subjective norm may well also explain the IT use behaviour of the social users. In line with evidence provided in section 5.3.2 on the link between subjective norm and perceived usefulness, it is hypothesised that the social users are likely to exhibit positive perceived usefulness beliefs. When considered together, it is expected that the unique characteristics of affiliation needs, and extrinsic motivation will engender positive perceived usefulness beliefs for the social users.

In comparison to the social users, while the high intensity users exhibit extrinsic motivation to use IT, they differ in that they also exhibit an IT usage behaviour that

is influenced by intrinsic motivation to use IT and primary needs. However, unlike the social users, they are not influenced by affiliation needs (see table 4.5). This difference in the needs and motivational characteristics of the high intensity and social users emphasises the difference in IT acculturation between both IT culture archetypes. When considering how the users who manifest the social user IT culture archetype score in terms of needs and motivation to use IS/IT, it is evidence that the high intensity users have more sources of IT needs than the social users. Hence, it can be said that the high intensity users have higher levels of IT acculturation compared to the social users. It has been argued in previous sections that users that manifest high level of IT acculturation are likely to exhibit higher levels of perceived usefulness of IS/IT. Thus, it would be expected that high intensity users exhibit higher levels of perceived usefulness beliefs than social users. Based on these arguments, this study proposes the following hypothesis:

Hypothesis 4: Employees that manifest the social IT culture archetype will have lower perceived usefulness beliefs compared to employees in the high intensity users' archetype

5.4 Data Preparation: Dependent, Independent and Control Variables

In this section, the process of preparing the dependent, independent and control variables to be used in the regression model is discussed. Prior to performing the analysis of a given study, the raw data needs to be cleaned and prepared for analysis (Hair et al. 2010). To prepare the dataset, SPSS v. 24 was used to create separate dummy variables for each IT culture archetype. Hence, dummy variables were created to represent each of the IT culture archetypes identified in the sample. These five dummy variables are the independent variables to be incorporated to the regression model.

To measure perceived usefulness, the average respondent score on five items was calculated. As a reminder (see section 3.4.1 in chapter 3), the items used to measure perceived usefulness are: 1) using the IT system has made me more productive in my job role; 2) using the IT system has improved my performance on the job; 3) using the IT system has helped me make more informed decisions in my job role;

4) using the IT system has enabled quicker access to the information I need for my job role; and 5) the main IT application I use has made it easier for me to achieve the results I want to fulfil my job tasks. The Cronbach's alpha value of the five items was 0.906, indicating that the items were all measuring the same concept, that is, perceived usefulness. Finally, six demographic variables (age; experience; education; gender; the IS/IT system used by the user; and position) were used to control for the effects of IT culture on perceived usefulness beliefs. The description of the dependent and independent variables is provided in table 5.1.

Table 5.1: Variable definitions

Variable	Variable code	Description
<i>Dependent variable</i>		
Perceived usefulness	PU_AVRG	Average score for the perceived usefulness items
<i>Independent variables</i>		
Interested users	IntUsers	1 if the user has membership the interested users cluster, 0 otherwise
Compliant-dodgers	CompDodgers	1 if the user has membership the compliant-dodgers users cluster, 0 otherwise
Social users	Social	1 if the user has membership the social users cluster, 0 otherwise
High-Intensity users	HighIntUsers	1 if the user has membership the high-intensity users cluster, 0 otherwise
Dangerous users	DangUsers	1 if the user has membership the dangerous users cluster, 0 otherwise

One important aspect to consider in a multiple regression analysis is the sample size of the data. The sample size directly influences the statistical power of the results in terms of significance and generalisability. The generally accepted rule is that the ratio of observations to independent variables should never fall below 5:1 (Hair et al. 2010). The data met this requirement with the ratio of independent variables to cases being 24:1, clearly exceeding the recommended threshold.

5.5 Analysis and Results

Table 5.2 presents the inter-correlations among all the variables in the model. Pertaining to the archetypal patterns, most of their correlations were significant at

5% with perceived usefulness except for interested user IT culture archetype, which was not significant ($r = 0.043$, $p > 0.05$). The correlations between the control variables and perceived usefulness yielded mostly insignificant coefficients except for experience ($r = 0.241$, $p < 0.01$). Table 5.3 presents the multivariate regression results for hypotheses testing. Hierarchical multiple regression analysis using SPSS v. 24 was adopted to explore the influence of cultural archetypes on perceived usefulness.

Prior to interpreting the model, it was necessary to assess multicollinearity issues. The presence of multicollinearity was tested using the variance inflation factor (VIF) scores of each variable in the model. VIF scores greater than 10 are deemed unacceptable and should be removed from the model (Hair et al. 2010). For both regression models in the analysis, the multicollinearity among all the independent variables were well below the threshold value (that is, $VIF = 10$), which confirms that the analysis does not suffer from a multicollinearity problem.

Next, the regression coefficients and p-values for all models in the table were reported. To assess the model fit, three statistics, R-squared, the overall F-test and the Root Mean Square Error (RMSE) were calculated. R-squared is the percentage of variance explained by the model; F-test assesses whether the fit of the intercept-only model is significantly reduced compared to the overall model; and RMSE measures the standard deviation of the residuals. The control variables (gender, age range, education, position, experience and the IT system) were first tested against the dependent variable (PU). As seen from Table 5.3, the variables explained 10.2% of the variance in perceived usefulness. The F value is 4.97 ($p < 0.001$) and the coefficients of age range ($\beta = -0.184$), position ($\beta = 0.08$) and experience ($\beta = 0.245$) were all significant at 5%, 10% and 1% respectively. This was followed by a test of the IT culture archetypes (i.e. SocialUsers, CompDodgers, DangUsers and IntUsers). The dummy variables for the archetypes were included in model 2, and all hypotheses (that is, H1 – H4) were tested. The results of the multiple regression analysis are reported in table 5.3.

Table 5.2: Inter-correlations between model variables

	Gender	Agerange	Education	Position	Experience	ITSystem	Social	CompDodgers	DangUsers	IntUsers	PU_AVRG
Gender	1										
Agerange	-0.019	1									
Education	.160**	-.187**	1								
Position	0.084	-.230**	.279**	1							
Experience	-0.088	.341**	0.007	-0.099	1						
ITSystem	.210**	0.022	0.111	0.098	-0.025	1					
Social	0.100	0.065	-.214**	-0.034	-0.069	0.029	1				
CompDodgers	0.021	.283**	-.131*	-0.003	0.087	-0.031	-.122*	1			
DangUsers	-.156*	-.182**	.176**	0.073	0.119	-0.107	-.194**	-.230**	1		
Interested	.150*	-0.083	-0.005	-0.010	-0.077	.155*	-.190**	-.226**	-.359**	1	
PU_AVRG	-0.010	-0.075	0.069	-0.081	.241**	-0.069	-.209**	-.149*	.236**	0.043	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 5.3: Regression results

Variables	Dependent variable: perceived usefulness			
	Model 1		Model 2	
	β	VIF	β	VIF
Intercept	5.252 (0.000)		5.17 (0.000)	
<i>Control variables</i>				
Gender	0.060 (0.694)	1.08	0.173 (0.256)	1.14
Agerange	-0.184 (0.004)	1.22	-0.105 (0.107)	1.35
Education	0.099 (0.298)	1.14	-0.017 (0.863)	1.25
Position	-0.275 (0.080)	1.13	-0.239 (0.119)	1.15
Experience	0.245 (0.000)	1.15	0.213 (0.000)	1.19
ITSystem	-0.042 (0.329)	1.06	-0.038 (0.366)	1.09
<i>Independent variables</i>				
Social			-0.705 (0.010)	1.34
DangUsers			0.424 (0.029)	1.58
CompDodgers			-0.432 (0.077)	1.42
IntUsers			0.130 (0.504)	1.57
HighIntUsers			Baseline	
F	4.97***		5.37***	
R ²	0.1022		0.1724	
Change in R ²			0.070	
RMSE	1.15		1.11	

Note. The table shows the regression coefficients and p values in parentheses

*** Significant ($p < 0.001$); ** Significant ($p < 0.05$ level); * Significant ($p < 0.10$ level)

Hypothesis one predicted that employees that manifest the dangerous IT culture archetype would have higher levels of perceived usefulness beliefs than the high intensity users. Table 5.3 shows that the regression coefficient ($\beta = 0.424, p < 0.05$) for dangerous users is positive and significant. This means that compared to the high intensity users, the dangerous users exhibit a significantly higher level of perceived usefulness beliefs concerning IT. Thus, hypothesis one is supported.

With regards to hypothesis two, it was theorised that employees that manifest the compliant-dodgers' archetype would have lower levels of perceived usefulness beliefs than the high intensity users. The results in table 5.3 indicate a significantly negative coefficient for the compliant-dodgers' IT culture archetype ($\beta = -0.432, p$

< 0.05). This means that compared to the high intensity users, the compliant-dodgers are associated with lower levels of perceived usefulness beliefs about IT. Hence, there is strong evidence to support hypothesis two.

Next, hypothesis three proposed that employees manifesting the interested IT culture archetype would have higher levels of perceived usefulness beliefs compared to the high intensity users. The results show that while the coefficient representing the interested users' archetype was positive ($\beta = 0.130$), this relationship was not significant, ($p > 0.10$). This means that the difference in perceived usefulness beliefs between the interested and high intensity users was not significant. Hence, there is little evidence to support hypothesis three and it is rejected.

Finally, hypothesis four predicted that employees that manifested the social users' IT culture archetype would have lower levels of perceived usefulness beliefs compared to the high intensity users. The regression results in table 5.3 show a negative and significant ($\beta = -0.705$, $p < 0.05$) coefficient for the social users in relation to the reference category – the high intensity users. This means that the high intensity users exhibited a significantly higher level of perceived usefulness beliefs about IT than the social users. Hence, there is strong evidence to support hypothesis four.

In general, the results indicate that perceived usefulness beliefs are sensitive to the different IT culture archetypes exhibited by individual users. As shown in support of hypothesis one, employees manifesting the dangerous IT culture archetype have significantly higher levels of perceived usefulness beliefs than high intensity users. Furthermore, the support of hypothesis two indicates that employees who exhibit the compliant-dodgers' IT culture archetype hold significantly lower levels of perceived usefulness beliefs than those in the high intensity users. In addition, the support of hypothesis four suggests that social users hold significantly lower levels of perceived usefulness beliefs than high intensity users. As shown in the lack of support for hypothesis three, there is no evidence to suggest a difference in the levels of perceived usefulness beliefs between interested and high intensity users. A summary of the hypothesis testing results is provided in table 5.4.

Table 5.4: Results of hypotheses testing

H1	Employees in the dangerous IT culture archetype will have higher perceived usefulness beliefs compared to employees in the high intensity users' archetype	Supported
H2	Employees in the compliant-dodgers' IT culture archetype will have lower perceived usefulness beliefs compared to employees in the high intensity users' archetype	Supported
H3	Employees in the interested IT culture archetype will have higher perceived usefulness beliefs compared to employees in the high intensity users' archetype	Not supported
H4	Employees in the social IT culture archetype will have lower perceived usefulness beliefs compared to employees in the high intensity users' archetype	Supported

5.6 Summary

This chapter set out the procedure that was followed to investigate the interplay between IT culture and perceived usefulness. First, it provided a description of the regression model that was used to conduct the analysis, as well as the reasoning behind selecting the high intensity users' cluster as the reference category. Next, four hypotheses were developed in order to test the effects of IT culture on perceived usefulness. Following the description of the dataset preparation an overview of the main results derived from the analysis of the data was presented. The following chapter provides an integrated discussion of the results from the two-step analysis before providing the main conclusions from this study. It also provides the limitations of the study and considerations for future work in this area.

Chapter Six

6 DISCUSSION AND CONCLUSION

6.1 Introduction

In this chapter, a detailed discussion of the research objectives in relation to the results obtained in the previous empirical chapters is presented. The chapter begins by providing an overview of research objectives for the study. Following this overview, the results are contextualised in the extant literature and in so doing, the contributions to theory and practice from this study are demonstrated. The limitations of this study, as well as directions for future research are also discussed. The chapter ends with concluding remarks.

6.2 Research Objectives

This study had two research objectives, repeated here for clarity.

RO 1: *to identify cultural archetypes among IT users in a UK public-sector organisation*

RO 2: *to investigate the influence of cultural archetypes identified in (RO1) on perceived usefulness.*

To address these objectives, a survey was undertaken at a local council located in the East Midlands region of England. The survey was administered to IT users across the whole council and data were collected regarding users' needs and motivations to use IT as well as their beliefs regarding the perceived usefulness of the IS/IT that they used. The respondents were IT users who regularly applied some form of IS/IT application to fulfil their day-to-day job tasks. In total, 270 useable responses were received and provided the basis for the data analysis. The following sub-sections consider the results from the analyses in relation to the literature and in so doing articulate the main contributions of the study.

6.3 Identifying Cultural Archetypes: Empirical Evidence from a UK Public-Sector Organisation

Multivariate cluster analysis was utilised to examine the applicability of IT culture archetypes to organisational IT users within a UK public-sector organisation. Following the suggestions of Balijepally et al. (2011), both hierarchical and non-hierarchical clustering methods were used. Specifically, Ward's hierarchical cluster analysis was performed to identify the optimal number of clusters. This number was determined by analysing the change in cluster coefficients in the agglomeration schedule (see section 4.2 of chapter four). Overall, the cluster analysis supported a five-cluster solution as it generated the largest difference among clustering coefficients. Based on this optimal solution, a non-hierarchical k-means cluster analysis was then performed to assign employees into groups of clusters. The five-cluster solution was validated by the significant ANOVA-based F-values, and details of the five-cluster solution have also been summarised in table 4.2 in chapter four.

Using the mean scores attributed to each cluster, the interpretation showed that IT users could be grouped into five IT cultural archetypes (that is, the interested users; the compliant-dodgers; the social users; the high intensity users; and the dangerous users). Based on the five cultural archetypes that were identified, two new cultural patterns (that is, the social users and the high intensity users) emerged, that had not been identified in the previous IT culture literature. The results suggest that the particular characteristics of the contextual environment that the users work or live in may influence the cultural archetypes held by those users. This is demonstrated

in the results obtained from the cluster analysis, where power needs played a significant explanatory role in differentiating the archetypal patterns that emerged from the analysis and is explained in-depth below.

A notable feature of the five archetypal patterns identified in this study was the importance of power needs to several of the IT culture archetypes. In the IS literature on power and culture, there are examples of how the organisational structures through hierarchies have generally influenced the manifestation of power among organisational IT users. For example, Khan and Ferneley (2010) investigated the case of an IS implementation from a rhetorical discourse perspective within a UK Health Service Trust. Empirical evidence from this study showed how the clinical leads (who acted as middle level managers) were the first to adopt the system and then used persuasive rhetoric drawing upon the clinicians' sense of purpose, to influence their use of the system. Hence, the clinical leads exhibited power needs fulfilled through their use of the IS because of the leadership role they occupied within the organisation. They were keen to be first adopters of the IS system to fuel a sense of responsibility and superiority over the clinicians. Another example in the IS literature concerns the role of IT champions within organisations. Peters et al. (2002) notes that IT champions are *"middle or senior management figures in the organisation who display leadership qualities and who project vigorously their vision for using IT"* (p. 24). Their use of IT is to seek fulfilment of their power needs, which projects a sense of authority and superiority over other organisational users. Due to the critical role they play in facilitating diffusion and successful implementation of IS among groups of users in the organisation, business leaders aim that IT champions are granted control over as much technical and political decision (Beath, 1991). Rockart (1988) points out that promoting such avenues for the IT champion engenders successful implementation of mission-critical systems. However, in situations where these situational needs are not met, a potential conflict might arise leading as Walsh (2014) has suggested to a nemesis-type influence – where the diffusion and implementation of IT might be jeopardised.

By contrast, a study of IT culture in an academic context found power needs to be an insignificant differentiator of the archetypes that were identified (Walsh and Gettler-Summa, 2010). A key difference between the Walsh and Gettler-Summa

(2010) study and studies by Khan and Ferneley (2010) and Peters et al. (2002), is that the data in the former study was collected from students. Compared to the work context, student environments have very low level of hierarchies in place - students simply being part of a single year group. On the other hand, almost all the organisational work environments are likely to have some level of hierarchical power dynamics in place (Dhillon, 2004). Thus, it is argued that characteristics in the study context may well explain cultural archetypes that are identified.

A further notable insight from the stage one results was the identification of new IT culture archetypes. In addition to the dangerous, dodgers and interested IT culture archetypes that have been identified in the previous literature, the results of this study suggest that two new archetypes also exist: that is, the high intensity and social users. Not only did the empirical analysis validate the existence of these archetypal patterns, it also showed that these groups of users exhibited unique characteristics distinct from the IT culture archetypes that have already been identified.

The high intensity users find it hard to control their use of IT because of the desire to satisfy their primary needs through IT usage. As a result, these users find it hard to control the time they spend using IT devices. Hence, these users may have a technology-related addiction resulting from use of technology. They experience an addiction in their use of IT to the extent that IT usage has permeated their everyday lives. Within the IS literature, technology-related addictions have begun to attract the attention of research in recent years (See for example, Turel et al. 2011; Cheung et al., 2013; Vaghefi et al. 2017). This emerging concept has been used to represent a maladaptive dependency and the obsessive-compulsive usage of IT (Tarafdar et al. 2013; Lee et al. 2014). It represents “*a user’s psychological state of maladaptive dependency on IT use that is manifested through the obsessive-compulsive pattern of IT-seeking and IT-use behaviors that take place at the expense of other important activities*” (Xu et al. 2012). In line with these definitions, it is suggested that high intensity users exhibit an obsessive use pattern with IT in general, manifested by the levels of primary needs they seek to fulfil when they use IT.

The social users exhibit high levels of affiliation needs fulfilled through IT usage and extrinsic motivation through identified regulation. Identified regulation refers to

IT usage that occurs primarily because of its usefulness to fulfil tasks related to day-to-day job roles rather than to obtain any intrinsic value. The combination of these attributes portrays a set of unique characteristics of IT usage behaviour that distinguish social users from other IT culture archetypes. The presence of affiliation needs satisfied through IT usage shows that these individuals are interested in using IT to establish and maintain social interactions with other people and groups. The results of the analysis show that affiliation needs are an overriding need exhibited by the social users. Combined with extrinsic motivation through identified regulation, the results suggest that while the social users are more likely to be cognitively absorbed in work settings that support their IT use behaviours, they accept the responsibility of regulating their IT usage behaviour as required in work settings.

From an organisational perspective, the presence of the high intensity and social users has different implications for IT management. For the high intensity users, research has shown their addiction can lead to frequent interruptions and loss of focus to work tasks (Tarafdar et al. 2013; D'Arcy et al. 2014; Srivastava et al. 2015). Foerde et al. (2006) argues that these shifts in attention are not only mentally taxing but can also lead to workplace interruptions and loss of concentration especially in situations when attention is diverted to non-work activities. For example, these users have been found to be more likely to experience a constant nudge to respond spontaneously to prompts on internet platforms such as social media and instant messages (Hofman et al. 2012). Even when it pertains to work-related activities such as attending to emails, high intensity users are prone to the adverse effects such as email overload, due to the psychological pressure they face to respond quickly to email messages (McMurty, 2014; Jackson et al. 2001). This can in turn lead to reduced performance and technostress within organisational settings (Ayyagari et al. 2011; Srivastava et al. 2015). It is therefore suggested that managers should understand the stressors that can accentuate these addictive behaviours in order to provide personalised guidance to reduce their negative effects within their organisations.

With respect to the social users, research indicates that these users are likely to manifest themselves as active users of social networking sites (Ding et al. 2011;

Chiou et al. 2015). For example, they are likely to maintain multiple social media profiles in general (Constantinides and Stagno, 2011). This uptake has been fuelled by their adaptation into more personalised and less costly devices according to Von Krogh (2012). As a result, organisations are increasingly pressured to take employees' changing communication behaviours in account (Von Krogh, 2012). Within organisational settings, social users exhibit the need for a sense of belonging such as to be recognised as part of the group (Casey-Campbell and Martens, 2009). Hence, it is likely that they will benefit from work settings that foster increased group interaction and communications, through the use of enterprise 2.0 software applications (Von Krogh, 2012) such as enterprise social software platforms (Kuegler et al. 2015).

6.4 The Interplay between IT culture and Perceived Usefulness

Having identified the different IT culture archetypes that can exist, the second objective of this study was to examine the relationships between these IT culture archetypes and perceived usefulness. In so doing, it was envisaged that the efficacy of the IT culture concept could be explored. In other words, does knowing the IT culture archetypes within an organisation matter in terms of understanding the usage of IS/IT? To investigate this objective, four hypotheses were developed and tested in the previous chapter. The results revealed several insights regarding the relationship between IT culture archetypes and perceived usefulness and are discussed next.

First, employees that manifested the dangerous IT culture archetype exhibited higher levels of perceived usefulness beliefs than the high intensity users. With respect to the cultural archetypes identified in this thesis, the dangerous users exhibit more needs and motivation to use IT compared to the other cultural archetypes. This result is consistent with the observations about the acculturation levels of the dangerous users (Walsh et al. 2010; Walsh 2014). Walsh (2014) argued that individuals who have higher levels of IT acculturation seek to fulfil more needs and motivation to use IT compared to individuals with lower levels of IT acculturation. Walsh et al. (2010) identified different IT culture archetypes and found that the most IT-acculturated cultural archetypes exhibit proactive behaviours towards IT. Hence, it

is suggested the most IT-acculturated archetype is likely to exhibit the highest level of perceived usefulness beliefs compared to the other cultural archetypes identified in the study.

Second, the results in chapter five show that users who exhibit the compliant-dodgers IT culture archetype scored lower perceived usefulness beliefs compared to the high intensity users. In other words, users that could be described as compliant-dodgers believed the IS/IT that they used at work was less useful compared to users that could be described as high intensity users. One possible explanation for this result can be obtained from studies that have reported on the link between subjective norm and perceived usefulness beliefs. The compliant-dodgers in this study represent a group of individuals who are extrinsically motivated to use IT. Their IT usage is determined by the demands of their job, with the goal of improving the quality of their work. Hence, the work setting imposes a subjective norm that informs compliant dodgers' IT usage behaviour. Although studies have found subjective norm to be positively linked to perceived usefulness (e.g., Avouby et al. 2012; Teo et al. 2008; Venkatesh and Bala, 2008), Hartwick and Barki, (1994) have cautioned that this positive relationship may attenuate over time as users gain increased experience with IS. Hartwick and Barki (1994) argue that initially users' beliefs about a system are vague and uninformed, until they become more experienced in the use of the IS. For example, Venkatesh and Davis (2000) showed that while subjective norm initially had a positive effect on perceived usefulness, this effect reduced over time as the users gained experience using the system. Therefore, in this study compliant-dodgers may exhibit perceived usefulness beliefs that are contingent upon the level of experience they have gained from using an IS. This may explain why compliant-dodgers have lower perceived usefulness beliefs compared to the high intensity users.

Third, the results also showed that as hypothesised, employees that manifested the social IT culture archetype exhibited lower perceived usefulness beliefs compared to the high intensity users. In other words, much like the result obtained with the compliant-dodgers (Hypothesis 2), employees that could be described as social users believed that the IS/IT that they used at work was less useful compared to users that could be described as high intensity users. The social users were found to exhibit IT

use behaviours characterised by high affiliation needs and extrinsic motivation to use IT. Utilising results from previous studies, it was argued that affiliation needs and extrinsic motivation both engender a positive relationship with perceived usefulness. It was therefore hypothesised that while the social users would exhibit positive perceived usefulness beliefs, it was expected to still be lower than the level expressed by the high intensity users. Their levels of acculturation, referring to their needs and motivation to use IT consists of primary needs, intrinsic and extrinsic motivation, all of which stimulate positive perceived usefulness beliefs (Zhou and Lu, 2011; Li et al. 2013). Not only do high intensity users experience higher levels of acculturation, they are influenced by needs and motivational factors that lead to higher perceived usefulness beliefs compared to the social users. Thus, supporting hypothesis 4 in section 5.3.4.

Finally, with respect to the hypothesis that was not supported, results showed that there were no significant differences between employees that manifested the interested and the high intensity IT culture archetypes with respect to the level of perceived usefulness beliefs. The interested users represent those employees who exhibited affiliation needs as well as intrinsic and extrinsic motivation (see section 4.3.5). One explanation can be gleaned from Vaghefi et al. (2017), where the authors have shown that IT addiction exists in a spectrum rather than a dichotomy of addict/non-addict categories as traditionally assumed. Using propensity and severity as dimensions of IT addiction, the authors identified five ideal types: the addict; the fanatic; the highly engaged; the regular, and; the thoughtful. While these five user profiles are susceptible to develop IT addiction, Vaghefi et al. (2017) have cautioned that only a small proportion of users fall into the *“high or very high liability to IT addiction and exhibit severe excessive and compulsive use behaviours”* (p. 153). It is therefore likely that while the high intensity users are highly engaged IT users, they still fall short of exhibiting an excessive use behaviour which would lend itself to negative outcomes as hypothesised in section 5.3.3 of chapter 5.

6.5 Summary of Contributions to Theory and Practice

Following from the discussion of results in the previous section, this thesis proposes several contributions to the IS literature and to practice. Each of these areas of contribution is now discussed in the following parts of this section.

6.5.1 Summary of contributions to theory

The two new IT culture archetypes identified in this thesis represent the first contribution to the IS literature. To recall, the social and high intensity IT culture archetypes were identified. This result is important because it sheds light into the question of whether the same IT culture archetypes can be identified in settings that are different from those used in previous studies. Using their need and motivational attributes, Walsh and Gettler-Summa (2010) had identified nine different IT culture archetypes, although there is not enough empirical data to be confident that they will persist across different groups of individuals. For example, their study had used data that consisted mainly of respondents aged 20 – 30 years (62% of the sample). Perhaps, it is likely that the cultural archetypes identified their study was influenced by the relative size of this age-group. Existing studies in the IS literature exist that have long-established and documented how age plays a significant role in how individuals will engage in a variety of IT use contexts and technologies (e.g. Morris and Venkatesh, 2000; Pan and Jordan-Marsh, 2010; Siriaraya and Ang, 2012; Tams et al. 2014; Liébana-Cabanillas et al. 2014; Vošner et al. 2016; Macedo, 2017).

Against this background, only 13% of respondents in this study were aged 21 – 30 years, with the 51 – 60 years' age-group (30%) and the 41 – 50 years' age-group (26%) being the most represented in the sample. In fact, as seen in table 3.3 in chapter 3, almost 60% of respondents were aged 41 years and above. These figures show that based on the age statistics, the sample used for this research is different compared to the sample used in Walsh and Gettler-Summa (2010). Besides, this age demographic is not widely surprising, as local councils in the UK are known to increasingly have a higher percentage of older employees in their workforce (see Matthews, 2010). Hence, it is argued that the sample used for this research reflects an older workforce compared to Walsh and Gettler-Summa (2010) that consisted

of a higher percentage of younger respondents. Given this disparity in age characteristics, how might the presence of the social and high intensity IT culture archetypes be explained in an organisation consisting of mostly older employees? Prior research has offered some empirical evidence to suggest reasons why these cultural archetypes were identified.

With respect to the social users, studies have shown that older users are more likely to be affected by social influence compared to younger users (Morris and Venkatesh, 2000; Venkatesh et al. 2003). This social influence consists of subjective norm and affiliation needs effects for the social user IT culture archetype as explained in section 5.3.4 in chapter 5. In a longitudinal study of users' adoption of technology over a 5-month period, Morris and Venkatesh (2000) have showed that compared to younger employees, the influence of subjective norm and perceived behavioural control on adoption decisions are stronger among older employees compared to younger employees in organisational settings. Also, older users have been found to be more influenced by affiliation needs fulfilment when using technology than younger users (Kim and Han, 2009; Koivisto and Hamari 2014). In addition, subjective norm was stronger in affecting the adoption decision of older users compared to their younger counterparts in Venkatesh et al. (2003). Due to their lack of exposure to IT, they are also more likely to weigh the perceived ease of using a technology compared to younger users in the workplace (Venkatesh et al. 2003; Burton-Jones and Hubona, 2006). In other words, because older workers on average, have less exposure to technology, they are most likely to consistently rely on social organisational support such as trainings to navigate their understanding and use of technology in the workplace.

Furthermore, another reason it is plausible to expect older employees could be social users is based on the gender and age characteristics of this cultural archetype as portrayed in table 4.5 in chapter 4. The table shows that not only did the social user IT culture archetype have the highest percentage of females (80%) compared to the other cultural archetypes, 68% of users in this group were aged 41 years and above. Hence the social user IT culture archetype consists mostly of older female users of technology in the council. This demographic characteristic for the social user IT culture archetype is not surprising because it is supported by studies that

have shown how older female users' adoption and use of technologies are more likely to be influenced by affiliation needs fulfilment. For instance, in general, studies have also found that compared to men, women's adoption and use of technology are driven more by affiliation needs (Venkatesh et al. 2003; Chen, 2012). In turn, Morris et al. (2005) have also shown that gender differences in technology perceptions become more pronounced among older users such that instrumental factors like the usefulness of technology are more important to older men than older women. Given that subjective norm and affiliation needs influence the adoption decisions of older employees as portrayed in the aforementioned studies, it is not far-reaching that this study renders the presence of the social user IT culture archetype.

With respect to the high intensity IT culture archetype, recall that a distinguishing characteristic of this group is that they exhibit high primary needs to use IT. In other words, these users cannot resist the amount of time they spend using IT. As a result, they have an addiction that is exhibited by the amount of time they spend using IT. The notion that the high intensity IT culture archetype was identified in this study may initially appear a surprise, given that all too often older users are stereotypically treated as inactive users of technology (e.g. Sohaei and Iahad, 2014; Durick et al. 2013), with some studies arguing that they are more likely to be technophobic (Morris et al. 2007; Dickinson and Hill, 2007) in their attitude towards technology.

However, previous studies have provided valuable insights about older users' adoption and use of technology that may well explain why this archetype was identified in this study. For example, drawing from a survey of smartphone usage among EU users, Boulos et al. (2011) has highlighted how smartphone adoption levels are currently spread across the different age groups between 16 – 61+ years. In addition, Barker (2009) has shown that older users also actively use social network platforms to communicate with peer group members, and to tackle loneliness by participating in online support communities afforded by the platforms (Pfeil et al. 2009). Drawing on the result of a social network analysis of teen and senior groups, Zaphiris and Sawar, (2006) also showed that older users *"can be as active as younger users of computer mediated communication and can*

form more stable and interactive groups” (p. 420). Using the case of social network blogs, Chan-Olmsted et al. (2013) has argued that while younger users are driven by hedonic impact of using social media like social networks sites (e.g. wikis, forums, personal blogs), older users view these sites as means to connect with content/communities they are interested in. These studies provide useful evidence to suggest why it is plausible to expect the high intensity user IT culture archetype.

In addition, it is argued that the distinction in technology usage between younger and older age-groups may well depend on what motivates their use of technology. The cited studies portray how older users appear to be more purposeful users of social media platforms compared to younger users. In other words, *“older users tend to perceive the information-centric social media such as wikis, blogs, and online forums to offer more connectedness utility”* (Pfeil et al. 2009, p. 166). Such understanding regarding the adoption and use behaviour of older users are vital even as the recruitment of older individuals in the workforce is expected to increase (Tams et al. 2014). Hence, studies like Tam et al. (2014) have called for more research to better understand age-related impacts more carefully across various IS phenomena. Such studies, they argued will allow the development of more effective managerial policies based on better understandings of IT usage among older users.

A second contribution this research makes is to highlight how unique characteristics in the context of a study are likely to influence IT culture archetypes that are identified. Contrasting the evidence presented in this study with existing research (see Walsh and Gettler-Summa, 2010) reveals the emergence of new IT culture archetypes due to the different levels of power needs to use IS/IT. As pointed out earlier in section 6.3, power needs may vary depending on the contextual environment of the study. Therefore, this study demonstrates how characteristics in the context of a study are an important consideration when identifying IT culture archetypes. A limitation in the IT culture literature is demonstrated in its limited investigation of the needs and motivation that influence IT usage behaviour in organisational settings. Rather, studies have predominantly investigated cultural archetypes using student samples/settings where compared to

organisational settings, there are much less mandatory requirements and work expectations tied to the use of a particular IS/IT.

Owing to this gap in the IT culture literature, this study contributes to a broader understanding of the IT culture concept by situating our investigation in an organisational context where hierarchies and several power dynamics exist compared to the educational environments of students. The research reported in this thesis therefore contributes to the IT culture literature by portraying how power needs played an explanatory role in differentiating the archetypal patterns that emerged. Based on this result, it is suggested that future IT culture research should consider how the unique features in the study context may influence the IT culture archetypes that emerge from their studies.

Third, the results provide further insights regarding the IT attitudes and behaviours that influence perceived usefulness beliefs held by organisational IT users. In contrast, most studies in the IS literature have examined perceived usefulness as part of models that explain adoption and use (Ko et al. 2009; Liébana-Cabanillas et al. 2014; Yoon and Kim, 2017), for example by explaining how perceived usefulness influence adoption decision in m-banking. Much less research has focused on antecedents to perceived usefulness beliefs within organisational settings (exceptions for example are Husain et al. 2007; Floropoulos et al. 2010; Park et al. 2015). On the other hand, previous studies have drawn on culture theory to explain how organisational groups may respond to IT within their work (Straub et al. 2002; Kappos and Rivard, 2008; Walsh et al. 2010; Jackson, 2011; Ravishankar et al. 2011). These studies provide valuable insights into how IT is incorporated into organisational group practices, and how these group practices are uniquely shaped by their social interactions with IT. Yet, there is limited investigation on the influence of cultural factors on perceived usefulness at the individual-level.

In response to Bagozzi's (2007) call for studies to consider the cultural aspects of technology acceptance research, this study has shown how individuals who share similar dispositions concerning IT manifest different levels of perceived usefulness beliefs. By looking at the individual level, it is therefore possible to provide more nuanced explanations of perceived usefulness beliefs that would otherwise not be

possible with a focus at the group or organisational level. Besides, it is argued that different IT culture archetypes exist across groups of individuals and organisations, so it is only at the individual level that a true reflection of the attitudes and beliefs held by users about IT can be built. As a result, it is possible for business leaders to provide more tailored remedial actions that focus on the needs of each archetype, and not group or organisational needs.

Finally, this study illustrates the influence of IT culture to close the theory-practice gap concerning IS success. The theory-practice gap concerning IS success has continued to generate debate within the IS literature (e.g. Pfeffer and Sutton, 2000). In general, the theory-practice gap refers to the discrepancy between what is known about IS success in the literature and what is practiced within organisational settings. Breu and Peppard, (2003) and Pfeffer and Sutton (2000) suggest the theory-practice gap exists partly because research have mainly focused on 'knowing what' rather than 'knowing why'. Therefore, efforts made in the IS literature to improve IS success are often confronted with reluctance from business leaders who are repelled by not knowing how to translate findings from such research into established processes within their organisations (McDermott, 2000; Breu and Peppard, 2003; Doherty et al. 2012). If the theory cannot be translated into practice, how effective then is IS research in producing competent practitioners?

To bridge this theory-practice gap, this study shows how management theories like IT culture can be combined with perceived usefulness to help managers improve their strategies and interventions, thereby increasing the likelihood of IS success their organisations. A key factor in ensuring IS/IT success within an organisational setting is being able to manage individuals' acceptance and usage of IS/IT throughout the lifecycle of an IS/IT investment. Research has shown that perceived usefulness is a primary determinant of intentions to use a technology (Davis, 1989; Subramanian and Girish, 1994). While both IT culture and perceived usefulness have been well discussed in the literature, no study has combined both approaches to bridge the theory-practice gap concerning IS success.

6.5.2 Summary of contributions to practice

The research presented in this thesis is also of significant value to business leaders involved in managing organisational IS/IT-related resources. It suggests practical recommendations that inform how business leaders can manage different usage patterns in their organisation to maximise perceived usefulness beliefs. The results from this study show that rather than use a one-size-fits-all approach, it is beneficial for business leaders to embrace a diversified strategy that responds to the needs and motivation of IT users within their organisation. Such insights are more likely to assist managers to better align users' support/training, thereby minimising potential attitudinal barriers that may detract appropriate use of IS/IT resources. In other words, identifying cultural archetypes allows for more tailored and targeted training/support sensitive to the needs and motivations of staff. Therefore, given the results of this study for example, how might we expect that business leaders to improve perceived usefulness beliefs for the social, high intensity, dangerous, interested and compliant-dodgers cultural archetypes within an organisation?

First, with respect to the social users, recall that these are individuals who are interested in using IT to communicate and associate with others due to their high affiliation needs. They also recognise the importance of using IT such that they have regulated their behaviours to accommodate the demands of using IT to fulfil job-related outcomes. It is suggested for these users, that business leaders incorporate enterprise social software platforms to encourage them to be able to socialise with other organisational users. This approach is likely to facilitate a means for these individuals to communicate and collaborate with other organisational IT users when they need to get help and support for organisational IS/IT resources. This approach is supported by research that has shown that enterprise technologies such as social software platforms/sites, company intranets, discussion boards and blogs create room for self-expression and interaction and organisational socialisation between individuals.

For instance, Oshri et al. (2007) has portrayed how technology can play an important role in facilitating socialisation in distributed/virtual settings. Appropriate use of technology can enable knowledge sharing which is vital to receive the much-needed support when navigating the use of an IS/IT to fulfil

work-related tasks (Sher and Lee, 2004; Hsu and Lin, 2008; Hwang et al. 2018). When employed to the right task and in the right setting, Kuegler et al. (2015) have shown that ESSPs can have a positive impact on employee performance. Specifically, their results showed that ESSPs can be used to support social relationships within teams, which in turn improves the ability to improve their work efficiency. Ellison et al. (2015) has also shown that such social use of software platforms is positively linked to increased job performance through the formation of important relationships such platforms afford. These examples portray the usefulness of incorporating platforms that are likely benefits social users within an organisational setting.

Second, with respect to the high intensity users whose IT use behaviour is driven by high primary needs to use IT (see section 4.3.3 in chapter 4), we point out that these individuals are at risk of an exhibiting an excessive IT usage behaviour. Due of the consequence associated with such behaviour (Turel et al. 2011; Vaghefi et al. 2017), it is important that controls are in place to ensure that the IT use of these group of individuals do not reach levels that lead to negative outcomes such as stress, work-exhaustion and burnout. This study suggests that one of such controls that could be applied is to install a software application on every computer that would limit how much time these users spend on their computers. The application could be configured to shut down once it is passed office hours. It might also be useful to allow employees configure a software that provides a pop-up message on the computer when they resume for work each day. Employees can then configure such applications to alert them at different times of the day. The software could also include a timer showing the continuous amount of time that has been spent using the computer by the user. Users are then able to check this and control the amount of time they spend on the computer by standing up at different intervals.

By employing persuasive systems design (Oinas-Kukkonen and Harjumaa, 2009; Oinas-Kukkonen et al. 2010; Stewart and Kohl, 2013) such as suggested above, scholars are finding these strategies (aimed at controlling addictive behaviours) can lead to desired outcomes (e.g. Wohl et al. 2014; Vargheese et al. 2016), even when utilised in organisational settings (Corbett, 2013). For instance, Wohl et al. (2014) has described how gambling addictions become controlled using a standard pop-

up message tool to remind electronic gambling machine players of a pre-set monetary limit. Similarly, Vargheese et al. (2016) has modelled how persuasive strategies can be employed by a virtual agent to encourage social interaction/activities among older adults at risk of social isolation. Within organisational settings, Corbett (2013) demonstrates how a carbon management system can be used to persuade employees to perform ecologically responsible behaviours. These examples provide support for the use of persuasive systems to control addictive behaviours.

With respect to the dangerous users, recall that these individuals are highly interested in IT. They are devoted learners and actively engage in IT to learn and understand new things. However, as shown described in section 4.3.4 in chapter 4, their IT usage is motivated by the need to satisfy a power need. In other words, they use their mastery of IT to improve their image within the organisational hierarchy. It is suggested that when business leaders look to encourage the system usage among organisational members, they could rely on the positive word of mouth from the dangerous users. Using positive word of mouth from dangerous users also serves to improve to enhance their image before other organisational IT users. Such positive word of mouth is useful to increase the uptake of technology by other organisational members (Venkatesh and Brown, 2001; Cheng and Huang, 2013).

Despite its potential to engender support of other organisational members, ensuring positive word of mouth from dangerous users is not straightforward. Depending on the context of study, studies have portrayed different antecedents to positive word of mouth. For example, in e-commerce contexts, studies have found that loyal customers are more likely to engage in positive word of mouth (e.g. Palvia, 2009), while Cheung and Lee (2009) show in the context of virtual communities, that it is satisfaction plays a significant role. From a needs perspective, Walsh (2014) has further argued that supportive users may exhibit un-supporting behaviours when their situational IT needs are unmet. Hence, it is suggested that dangerous users are likely to provide valuable positive word of mouth to the extent that business leaders ensure their situational IT needs of using the system are met.

Finally, for the compliant-dodgers whose use behaviour is explained by subjective norm, it is argued in section 5.3.2 (chapter 5) that these users are influenced by the salient social referents around them (Fishbein and Ajzen, 1975). While these individuals may not be interested in IT, they recognise the importance of using IT to fulfil job-related outcomes and have regulated their behavior to accommodate the demands of such use. Hartwick and Barki (1994) have shown that the influence of subjective norm on perceived usefulness is reduced with increased system experience. Against such a backdrop, it is recommended that business leaders can apply behavioural controls to influence use behaviours of the compliance-dodgers. This may be in the form of explicit rules and supervision from a manager for example, imposed procedures on how tasks are to be completed within an organisation (see Govindarajan and Fisher, 1990; Liang et al. 2013; Mukhopadhyay et al. 2016; Khansa et al. 2017) or punishment expectancy when noncompliant IT usage are exhibited (Burgurcu et al. 2010; Xue et al. 2011). Such controls have been shown to deliver positive outcomes in different studies.

For instance, Boss et al. (2009) has found that acts of specifying policies and evaluating behaviours are effective in convincing individuals that security policies are mandatory. Lowry and Moody (2015) found that the degree to which an individual perceives that compliance with a new Information Security Policies (ISP) is compulsory or expected by organisational management, increases the intent to comply with a new ISP. In addition, Liang et al. (2013) punishment expectation can induce an IT compliance behaviour among employees in an organisation. These examples portray how perceptions of mandatoriness can be effective in motivating individuals to take security precautions. While the application of behavioural controls can influence positive outcomes as shown in the studies mentioned above, caution should be applied as some studies have also warned that it may lead to negative outcomes.

It is likely that the increased demand to use IS/IT are likely to put too much pressure on compliant-dodgers if they are not properly managed and supported. Alder and Borys (1996) has warned that it may lead to loss of creativity and innovation, prompting Khansa et al. (2017) to suggest that managers should also consider the commitment of their employees when implementing technological

measures. They argued that some employees may respond to such policies with negative feelings such as having perceptions of unfairness and loss emotions. Hence, it is argued that managers employ behavioural controls to the extent that it does not constrict the behaviours of compliant-dodgers in the workplace. Inspired by the findings of Liang et al. (2013) discussed above, it is suggested that managers should ensure a balance of punishment and reward expectancy policies are employed to motivate compliant-dodgers in their organisation.

6.6 Limitations of the Study

As with any research project, there are a few limitations to this study that should be considered when interpreting its results. First, the study is based on data captured at a single point in time. Hence, the results of the empirical study only represent a snapshot of individuals' perceptions at the time the study was conducted. However, I argue that this study has provided in-depth understanding of how cultural archetypes influence perceived usefulness beliefs. This limitation can be overcome with the use of longitudinal research designs for example, to enable predictive validity of the clusters.

Another limitation of this study is in its utilisation of a quantitative approach. This may have limited the ability to obtain a more in-depth understanding of the cultural archetypes that emerged – such as with the case of the high intensity and interested users (see section 6.4). While it was initially planned that both qualitative and quantitative approaches would be applied for this research, this was not possible due to time and resource constraints. As an interesting finding, it is therefore suggested that future studies explore the non-significant result regarding this hypothesis by adopting qualitative data collection approaches using interviews and observation for example (Yin, 2013). Such approach is likely to enhance our understanding of the nuances that might exist between the high intensity and interested use IT culture archetypes.

In addition, the data and results obtained in this study are based on only one case organisation. Hence, there is limitation in generalising the specific results obtained. However, the approach adopted and the learning from this study can be generalised

to other contexts such as other local councils in the UK. Also, due to the self-reported nature of the data collected, this study may be at risk to bias due to common methods variance. In order to test for common methods variance, the Harman one-factor test recommended by MacKenzie et al. (2003) was conducted. The largest factor explained only 35%, indicating that common method bias problem did not exist in the present study. In addition, the survey questions were also pre-tested with ambiguous and potentially confusing items edited based on the feedback obtained. Finally, the average variance extracted for extrinsic motivation through identified (EXMOTID) was 0.476 which was marginally below the recommended threshold of 0.5.

6.7 Directions for Future Research

This thesis attempted to identify IT culture archetypes in a UK public-sector organisation, and then explored the influence of cultural archetypes on perceived usefulness. However, there is need for future research in this area, and some potential directions are discussed below.

First, to bolster the generalisability of this line of inquiry, future research could replicate the empirical strategy used in this thesis across different organisations and industries to gain a more generalisable perspective on the effects of cultural archetypes on perceived usefulness beliefs. For example, there is need for more studies investigating cultural archetypes in more local councils. The multiple regression model tested in this research should be replicated in different samples before any generalisation is made. Such studies will further deepen the understanding of the cultural archetypes that can be identified in public-sector organisations. Since the model was tested in only one public-sector organisation, it would benefit from being applied to more local councils in the UK.

Also, from a methodological standpoint, future research should consider using methods that would allow investigation of how causal relationships between IT culture archetypes and perceived usefulness might change over time by adopting a longitudinal approach to data collection. This allows an investigation of the effect of cultural archetypes on perceived usefulness over a long-time horizon to detect

possible patterns of reverse causation, since as noted with the case of the compliant-dodgers for example, the passage of time are likely to influence the effect of cultural archetypes on perceived usefulness beliefs.

In addition, the methodological limitation of this research could be overcome by incorporating mixed data collection approaches to ensure a combination of data collection approaches. For instance, future studies could ensure qualitative data collection approaches such as observations and interviews are utilised alongside survey questionnaire. Despite the possible explanation for the unsupported hypothesis provided in section 6.4, it is likely that future studies adopting mixed data collection approaches can provide clearer explanation of the differences between the interested and high intensity user IT cultural archetypes.

In addition, the context of our study was a public-sector organisation – a sector that implements a wide range of IS for users in various roles and departments. This work can be extended to private-sector organisations such as banks and manufacturing, where a specific IS are likely to be used across several departments within the organisation. By further controlling for the IS/IT, such studies can minimise the confounding effects resulting from the impacts of using different IS/IT and are likely to provide a better explanation of the effects of cultural archetypes on perceived usefulness.

Finally, while there are several measures of IS success, none of these were included within this study. There is a need to explore how the relationships tested in this research might be extended to include IS success measures. As a result, future studies could investigate how the influence of cultural archetypes on perceived usefulness can be extended to measure IS success. Another more comprehensive manner may be for future studies to incorporate individual, organisational and system-related measures of as proposed by DeLone and McLean (2003). The relationships tested in this study could be extended by using perceived usefulness as an antecedent to IS success measures at the individual level for example. By integrating this research agenda with IS success measures, it would be interesting to study the influence cultural archetypes have on the nuanced facets of IS success measures.

6.8 Concluding Remarks

This thesis has demonstrated the usefulness of integrating two concepts (IT culture and perceived usefulness) to extend the understanding of the beliefs and attitudes individuals hold towards IS/IT systems. From a theoretical perspective, the results shed light into how IT culture is important to explain the effective use of IS/IT within organisational settings. As organisations continue to seek the adoption of IS/IT to maximise performance, research that examines individuals' perceived usefulness beliefs becomes increasingly salient.

This study has added insight to both IS theory and practice. The results emphasise the importance of cultural factors in managing IT use behaviours. A clear focus on IT users and their corresponding IT culture archetype is of paramount importance. To date, there has been little theoretical application of the IT culture concept to understand the needs and motivational attributes of IT users within an organisational context. In addition, IT culture is relevant in understanding individuals' perceived usefulness beliefs. It requires a focus on the complex interplay of individuals' IT-related needs and motivation to gain a holistic and more specific view of individuals' perceived usefulness beliefs within an organisational setting. This study has linked two research streams and provided new insights through its dual objectives. It has explored and hopefully outlined a path that future studies can build upon.

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Appendix

PROJECT SUMMARY – IT BENEFITS REALISATION STUDY



Have you ever wondered how to motivate individuals to exploit Information Technology (IT) for additional benefits? Do you ever wonder where to target future IT developments to maximise Return on Investments? These questions represent part of a broader research study being undertaken by Loughborough University, and you have a unique opportunity to receive cutting-edge knowledge in this area. It is believed that findings from this study will help your organisation not only answer these questions, but also receive insights to facilitate successful exploitation of benefits from future IT investments.

BACKGROUND AND OBJECTIVES

Organisations today continue to make substantial investments in IT in order to realise a set of benefits. However, very little is known about the extent to which individual users will be able to successfully use IT for benefits realisation, and how business/IT leaders can motivate such use levels. The objective of this study is therefore to survey a group of users of the same technology, and profile which users are likely to really exploit benefits from IT, which users would be fairly uninterested in exploiting benefits from IT, and any groups in between.

The payback to your organisation would be a profile of the users based on the likelihood to make the most of IT investments. These insights will give you knowledge of where to target future IT developments or enhancements within your organisation to maximise Return on Investment. Also, Insights will also be gained on actions that can be taken to motivate IT exploitation among the various user profiles emerging.

BENEFITS TO YOUR ORGANISATION

By participating in this research project, you will receive:

- a management summary of key findings,
- detailed (anonymised) survey result of your own workforce (statistics, quotes etc.), and
- recommendations on how to enhance benefits realised among emerging user profiles within your organisation.

HOW WILL WE COLLECT DATA?

The data collection process will follow a two-step procedure and may take 2-3 months. The steps involved are:

- Step 1 – Qualitative survey
 - ✓ This section will involve a discussion with IT/business leaders on the way IT is used and managed within your organisation.
- Step 2 – Quantitative survey
 - ✓ Employees will be invited to respond to a questionnaire which will be available online.
 - ✓ At the beginning and during this process, awareness and follow-up emails will be sent to employees informing them about the survey and its importance to them and the organization.

HOW YOU CAN SUPPORT US

You will only need to:

- meet us for a briefing on how IT is used in your organisation, while we answer any questions you may have about the project;
- support the study by explaining its nature and importance to your IT users (e.g. with an awareness email – of which we will be happy to provide a draft – prior to the study)
- send out the online survey to a representative sample of users in your organisation.

Participation is voluntary for all individuals and there will be no costs for your organisation other than the time commitment as mentioned above.

SPONSORSHIP AND THE RESEARCH TEAM

This research project is sponsored by the Centre for Information Management (CIM) group in the Business School of Loughborough University and will be supervised by Dr. Crispin Coombs and Prof. Neil Doherty. The actual research is carried out by Kayode Odusanya, who is a Doctoral researcher at Loughborough University.

CONTACT

For further information about the study, please contact Kayode Odusanya by either email or phone.

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Phone: +44 (0) 7767972807

Communication plan

Pre-notice email (draft #1) | Sent: 2/3 days before study commences

Dear colleagues

Maximising value from our current IT services and future IT investments is of high importance to Derby city council.

This is why we decided to participate in an international study on how organisations can maximise benefits from IT investments. Researchers from Loughborough University are conducting a survey in this area, and their research project focuses on managing the attitudes and expectations IT users within organisational settings. The results of this study will support participating IT organisations to address maximising IT value more effectively.

Within the next few days, all employees at Derby city council will be receiving an email with a link for the survey. We would greatly appreciate it if you could take the time to complete it. By doing so you will help ensure that we will get the best possible results out of this study and support us in further improving our IT services.

Thank you in advance for your cooperation.

Sincerely, NAME (Member of Management)

Access information email (draft #2) | Sent to commence administration of survey

Dear colleagues

Here is the access information for the online survey we notified you about a few days ago. Today, little is known about the attitudes and expectations IT users have within organisational settings. Thus, we are asking you for your support. Your thoughts about your own IT experiences will be of great help to find out more about this increasingly important topic.

Below you will find a link to the survey which is the same for all participants. The research team will keep all data strictly confidential. Results will only be fed back to participating organisations on an aggregate level which will not allow individual recognition of answers.

Please proceed as follows

- a) click on the following URL: <please insert URL here>
- b) answer the survey (which will take 10-15' on average)

Please note the closing date of DD.MM.2016

Should you have any questions about Derby city council's participation in this survey, you can reach NAME on NUMBER. For all information about the study itself, you will find contact details in the survey.

Thank you very much.

Sincerely,
NAME (Mgmt or HR)

Reminder email (draft #3) | Sent 7days after survey has started

Dear colleagues

About a week ago we sent you the access information for a survey about maximising benefits from IT investments.

Many of you have already responded to this survey. This is much appreciated as your input is of great importance to learn more about the attitudes and expectations IT users within organisational settings. Thank you very much to all those who have already participated.

However, there are still some people who have not yet answered the survey. A high response rate is essential to get accurate and representative results. We would therefore kindly ask those of you who have not yet responded to participate before the closing date (DD.MM.2016). Once again, please be assured that this survey is anonymous and that the research team will keep all data confidential.

To access the survey, please proceed as follows

- a) click on the following URL: <please insert URL here>
- b) answer the survey

Should you have any questions or concerns about the council's participation in this survey, you can reach NAME on NUMBER. For all information about the study itself, you will find contact details in the survey.

Thank you very much for your cooperation.

Sincerely, NAME (same as in email #2)

Final contact (draft #4) | Sent 21 days after survey has started (3 days before the end of survey)

Dear colleagues

Over the last three weeks, a research team from Loughborough University has conducted an online survey on IT Benefits within Derby city council. The study is now drawing to a close, and this is the last contact that will be made with individuals who are yet to participate in the survey.

We are sending this final email because of our concern that people who have not responded yet may have different IT-related attitudes and expectations than those who have answered. Hearing from everyone in this small sample helps assure that the survey results are as accurate as possible. Once again, we want to assure that the research team will keep the data of this survey strictly confidential. If you have not yet responded, we kindly ask you to do so before the closing date (DD.MM.2016).

Finally, we would like to warmly thank all those of you who have participated for your time and cooperation. Your data will contribute to better understand Maximising value within Derby city council. We will keep you informed about next steps into this direction as soon as the results of the study are available to us.

Thank you very much.

Sincerely, NAME (same as in email #2)

Introductory letter

Dear participant,

Getting the most from IT-enabled changes

Thank you very much for your interest in taking this survey. This questionnaire is part of an innovative study to assist organizations maximize value from their IT investments.

In total, the survey should take you between 10 - 15 minutes to complete. All data will be kept strictly confidential and only be used for research purposes.

For more information on the project and its scope or any further questions, please contact Kayode Odusanya at k.odusanya@lboro.ac.uk or +44 (0) 7767972807

Thank you very much.

Sincerely,

Professor Neil Doherty, Dr. Crispin Coombs, Kayode Odusanya
Centre for Information Management
School of Business and Economics
Loughborough University

Survey questionnaire

SECTION 1							
Please indicate the extent to which you agree or disagree with the following statements. (We use the terms 'IT' and 'IT devices' to refer to computers, smart phones or tablets)							
These questions assess your interest in IT							
Items	strongly disagree – strongly agree						
I use IT devices (e.g. computers, smartphone, tablet etc.) to stay in touch with my circle of friends	1	2	3	4	5	6	7
Using an IT device allows me to have exchanges with people with whom I like.	1	2	3	4	5	6	7
I need IT to communicate and socialize with people.	1	2	3	4	5	6	7
I obtain satisfaction when I improve my mastery of software I use	1	2	3	4	5	6	7
Mastering new apps or software gives me satisfaction.	1	2	3	4	5	6	7
Even if I have to spend hours mastering new apps or software that I have to use, the satisfaction I get from doing so is worth it.	1	2	3	4	5	6	7
I like to show that I have good knowledge of IT, as this allows me to be more respected by the people I know.	1	2	3	4	5	6	7
Being good with IT gives me some authority with people that are close to me, and I like that.	1	2	3	4	5	6	7
Being good with IT gives me a feeling of superiority that I like.	1	2	3	4	5	6	7
When I'm using my IT device, I don't see time passing by and I find it hard to stop.	1	2	3	4	5	6	7
I find it hard to control the time that I spend on IT devices (e.g. computer, smartphones, or tablets etc.)	1	2	3	4	5	6	7
I spend a lot of time on IT.	1	2	3	4	5	6	7
IT use improves the quality of my work.	1	2	3	4	5	6	7
I need to use IT if I want to complete some of my tasks correctly.	1	2	3	4	5	6	7
Using an IT device allows me to have exchanges with people with whom I work.	1	2	3	4	5	6	7
I like to discover new apps or software.	1	2	3	4	5	6	7

I find some aspects of IT interesting.	1	2	3	4	5	6	7
IT interests me.	1	2	3	4	5	6	7

SECTION 2

Please indicate the main IT application you use on the job by clicking an option below or typing in the text box provided below:

Customer Relationship Management (CRM)

HR/Payroll

Social Care

Revenue and Benefits

School support

Asset Management

Others

Items	strongly disagree – strongly agree						
Using the IT system has made me more productive in my job role	1	2	3	4	5	6	7
Using the IT system has improved my performance on the job	1	2	3	4	5	6	7
Using the IT system has helped me make more informed decisions in my job role	1	2	3	4	5	6	7
Using the IT system has enabled quicker access to the information I need for my job role	1	2	3	4	5	6	7
The main IT application I use has made it easier for me to achieve the results I want to fulfil my job tasks	1	2	3	4	5	6	7
Using the IT system allows me to accomplish tasks more quickly	1	2	3	4	5	6	7
Using the IT system gives me greater control in performing my job tasks	1	2	3	4	5	6	7
Using the IT system improves the quality of work I do in my job role	1	2	3	4	5	6	7

SECTION THREE

Demographic information

Are you?

☐ male

☐ female

Please select the age range you belong to:

☐ 15 – 20

☐ 21 – 30

☐ 31 – 40

☐ 41 – 50

☐ 51 – 60

☐ 61+

Please indicate your highest degree

☐ PhD or DBA

☐ Master's degree

☐ Bachelor's degree

☐ High School Diploma, A-levels

☐ Apprenticeship

Please type in your department in the text box below (e.g. Finance, Legal, Planning, Commissioning, IT etc)

How long have you used the main IT application (indicated above) in your current job role?

☐ Under 6 months

☐ 6 months – 2 years

☐ 2 – 5 years

☐ 5 – 8 years

☐ Over 8 years

You have now reached the end of the questionnaire. Your contribution is much appreciated. Thank you very much for your time.