Environmental and organisational drivers influencing the adoption of Unified Communications technology in South Africa

A thesis presented to

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by

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Preface

This report is not confidential.

The author would like to thank the following people for their valuable assistance in completing this study:

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- My wife and family for their enduring patience and support.

I certify that except where noted, this report is my own work and all references have been accurately reported.

Michael Brian Pinnock

Abstract

Even though Information technology (IT) adoption has been widely studied most of this research has been conducted from within a limited set of perspectives. This study used a combination of perspectives as lenses to understand the factors that enable the adoption of unified communications in South Africa. It posits that pressures derived from social contagion theory such as the institutional perspective, management fashion theory, efficient choice perspectives, as well as organisational innovativeness and other specific South African pressures could influence organisational predisposition to adopt unified communications (UC) technology. Both interview and survey based research was carried out to test this theory. The locus of adoption that was studied was organisational level adoption. A mixed method approach was undertaken from a positivist epistemological position. Following a first round of qualitative data collection, existing factors from literature where validated and emerging factors were evaluated and included where appropriate. These were used to develop an integrated firm level structural model that was compared to two other models derived from literature. A questionnaire was developed and validated which could be used to collect data for all three models. Following a pilot study, data were collected from CEOs, CIOs, CFOs and other decision makers and influencers in 331 representative organisations spanning South Africa. All three models where tested for reliability and validity using Cronbach's alpha and exploratory factor analysis respectively. The hypotheses generated by each model were tested in turn using a two-stage approach that first involved correlation testing and then multiple linear regression testing. Results showed that as more perspectives were combined in a model, the more predictive power the model had, but with diminishing returns. The integrated model was then refined but limited improvement was found due to the way that the model was constructed as well as the operationalization of certain variables. These results provide strong support for certain variables as predictors of adoption intention. These include one element of the management fashion perspective namely the perceived progressiveness of unified communications. The results also provide strong support for variables associated with the organisational innovativeness perspective. Other variables all contributed to the explained variance but did not individually stand out. All super-ordinate constructs where statistically significant in all of the models to at least the 95% level. These results also show that the lack of dynamism of South African organisations as far as unified communications adoption may have been true in the past but appears to be diminishing. In spite of this, the results also show that some South African factors that are a product of South Africa's regulatory history still play a strong role in hindering adoption. These findings indicate that building models using a multi-perspective approach is appropriate when studying the adoption of complex technologies, such as UC. This may be particularly true where they are subject to network externalities, have dependencies on other layers of technology, and are intertwined with organisational processes.

Table of Contents

Table of Figures

List of Tables

1. Introduction

1.1. Background to Research Problem and Problem Description

Convergence has been a highly discussed topic since the late 1990s (Berger, 2003). It covers a broad sweep from telecommunications, broadcasting and media convergence. All types of convergence share a common cause namely the trend from analogue to digital forms that has made convergence possible. This trend has allowed different types of content to be stored in the same format and delivered through a wide variety of technologies (Wild, 2006). The communications sector has not been spared and it is predicted that the number of communications vendors in the world will halve in the next five years (Jacobs, 2010). This is because formerly distinct markets each with distinct vendors are merging and causing a massive consolidation in the communications industry.

Both a result and a driver of this convergence and consolidation has been product and service consolidation in enterprise communication including telephone systems, messaging systems and video communication. Unified Communications (UC) is a relatively new term used to describe this phenomenon (Aberdeen Group, 2008; Datamonitor, 2008; Elliot & Lock, 2007; Kerravala & Hamilton, 2004). Earlier literature still refers to converged communications technologies and IP convergence. Unified Communications (UC) is a direct result of the convergence of communications and applications and has come to represent converged IP services in enterprises (Elliot & Blood, 2009).

The study of convergence and unified communications in organisations is important because the financial impact on them will be large as they generally have significant investments in communications infrastructure from multiple vendors. This vendor and technology consolidation is not unique to IT (information technology) environments but is part of a larger pattern of the convergence of technologies that were formerly apart (Berger, 2001).

Communications convergence, particularly converged IP services such as UC, are viewed by governments as being important because of the role they can play in economic growth and social development. “It has the potential to impact on all segments of society – it can shape the delivery of government services (education and health included), redefine the way businesses operate and provide individuals with as yet unimagined information and communication services” (Wild, 2006, p. 2).

Unfortunately, even though UC is seen as important, South African organisations have appeared slow to adopt it (Neilson, 2010; Smit, 2007). The status quo is one where South Africa lacks much of the dynamism seen at both a national and an organisational level in other global markets (Esselaar, Gillwald, & Stork, 2006; Tobin & Bidoli, 2006). This could be linked to restrictive regulations that were aimed at protecting the South African incumbent fixed line operator Telkom. Some researchers have viewed this as an impediment to the growth in both the economy and employment (Melody, Currie, & Kane, 2006).

It would then appear that the organisational adoption of converged IP services such as UC would be a key area of IS research especially in the South African context. However, even though Information technology (IT) adoption has been widely studied most of this research has been conducted from within a limited set of perspectives (Fichman, 2004). Organisational adoption has been less widely studied than individual adoption (Basole, 2008; Fichman, 2004). The focus appears to have been on well-understood IT innovations rather than on disruptive or emerging ICT such as UC technologies (Basole, 2008). This is possibly because these types of adoptions are difficult to study because they are subject to network externalities and are intertwined with organisational processes (Fichman, 1992; Markus, 1987; Nelson & Winter, 1982). These network externalities can be inter-organisational or intra-organisational and can create feedback loops.

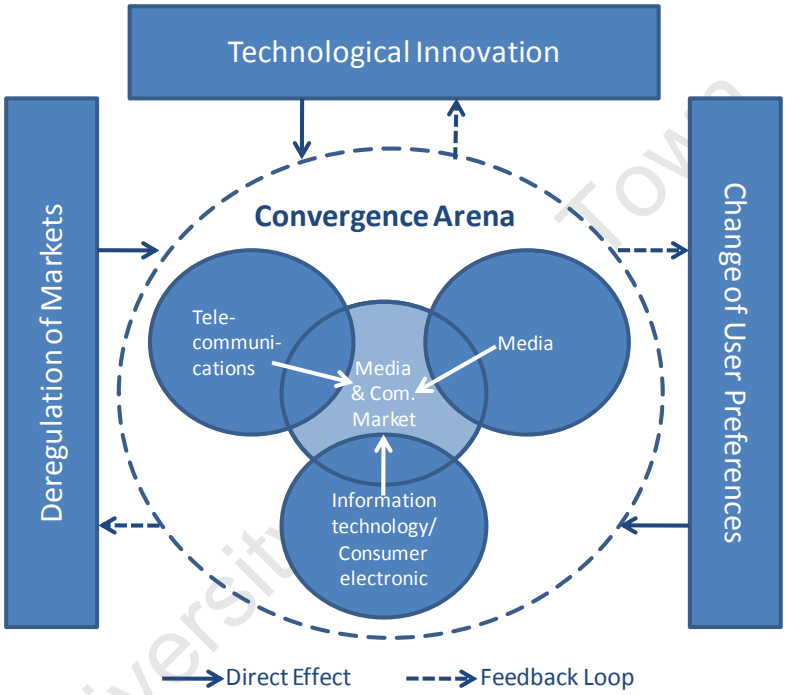
Wirtz (2001) describes the transformational effects of feedback loops between various components of convergence in an economy (see Figure 1 below).

However there are indications that some of the feedback loops described by (Wirtz, 2001) are muted in the South African context. This implies that South Africa will not benefit to the degree that it can in the hoped for from a networked economy that results from convergence drivers and feedback thereof. This implies that the facilitation of national economic growth and participation in the global information or knowledge society described by Wild (2006) will either not happen or be reduced.

All organisations play a role in the networked economy and the degree to which they adopt UC (and other aspects of converged IP services) has implications on the role that they can play in that economy

The limited evidence at hand suggests that a significant number of organisations continue to delay the adoption of converged communication technologies for various reasons. If adopting UC is indeed a condition for full and effective participation in the global economy and information society (Wild, 2006) then this implies that many South African organisations will continue to participate in a partial and ineffective way in the global economy and information society.

Figure 1: Feedback Loops



1.2. Purpose of the Research

The primary purpose of this research is to study organisational adoption of converged IP services (specifically unified communications technology) in South African organisations. The adoption studied will be primary (organisational) adoption which is defined and discussed in section 1.5 below. Most studies of primary adoption are from just a single theoretical perspective but this study intends to evaluate and expand an existing model of technology adoption, which considers simultaneously the efficient choice, management fashion, institutional, organisational innovativeness as well as South African perspectives of factors influencing adoption. It aims to create an integrated model and use this model to gain a better understanding of the numerous aspects surrounding the topic. The proposed research framework for the study can be found in section 3.4.

1.3. Objectives of the Research and Research Questions

1.3.1. Objectives

The objectives of this research are as follows:

- Identify the drivers that influence the adoption of unified communication technologies in South Africa.
- Determine if the factors that influence adoption are the same in South Africa as other countries by comparing results, where possible, of similar research.
- Determine if South African organisations are still slow to adopt UC.
- Evaluate and expand an existing extended model of technology adoption which considers simultaneously the efficient choice, management fashion, institutional and technological perspectives of factors influencing adoption
- Use the model to gain a better understanding of the aspects surrounding the topic.
- Find out if South Africa has some specific factors which are a product of the context of the South African regulatory history that continue to negatively influence the adoption of convergence technology
- Determine the validity of extending the technology adoption model to include the organisational innovativeness perspective as well as any others relevant to the South African context.
- Identify additional moderating variables.
- Identify possible areas for future research.
- Serve as a baseline for a future longitudinal study to determine if the specific South African factors inhibiting adoption are diminishing over time.

1.3.2. Research Questions

The research questions can be stated as follows:

- To what extent do the factors described in the initial model proposed by Teo, Wei, & Benbasat (2003) predict the adoption of unified communications?
- Are the hypotheses generated by the initial model all valid?

- Does the addition of the factors described in the extended model (Basaglia, Caporarello, Magni, & Pennarola, 2008), to the factors in the initial model, improve the extent of the predicted adoption of unified communications?
- Are the hypotheses generated by the extended model all valid?
- To what extent do the factors in the integrated model improve the extent of the predicted adoption of unified communications?
- Are the hypotheses generated by the extended model all valid?
- What rearrangement of factors would improve the predictive powers of the integrated model?

1.4. Justification and Importance of the Research

Past studies of organisational adoption of innovations have yielded huge insights on the subject of how potential adopters can more effectively evaluate technological innovations and manage the process of assimilating them (Fichman, 2004). These studies can provide useful guidance to consultants, government agencies, vendors, and others in their efforts to promote the diffusion of innovations. A recent report from the World Bank states that countries that adopt policy frameworks that enable convergence among computing services, media and telecommunications will enhance the impact of ICT on economic development (Singh & Raja, 2009). This research will contribute to the understanding of the factors that impact adoption.

The study of diffusion of certain components of UC such as VoIP or Instant Messaging within organisations can be an instance of a more general phenomenon regarding technology adoption. It can be argued for example that the factors influencing the adoption of VoIP will be strongly correlated with the factors influencing the adoption of Fixed Mobile Convergence technology (Aberdeen Group, 2008). Therefore the results of the research can potentially be used to predict diffusion of other related technologies.

Both telecommunications operators as well as equipment and software vendors would have a direct commercial interest in the results of the study as they pertain to the South African enterprise market as well as other market segments. There is renewed commercial focus on UC and a great deal of recent market activity in South Africa (BMI-T, 2010; Pleasant, 2011)

The results of the BMI-T 2007 SA telecoms corporate survey (Smit, 2007) as well as the BMI-T 2010 SA internet service report (Neilson, 2010) indicate that there are factors at play in South Africa that are at odds with trends in most of the rest of the world. It can

be argued that the slow adoption of UC services by a large proportion of South African companies will possibly hinder potential economic growth and evade competitive advantage for these organisations on the global stage.

The intention is that the research is cross sectional. Over time, it may be useful to determine if the uniquely South African factors diminish with the increasing liberalisation of the telecommunications industry. This research could serve as a baseline for such a future longitudinal study to determine this.

1.5. Scope of the Research

A review of current literature on various aspects of convergence and IP convergence shows that it covers a wide variety of topics ranging from broadcasting to telecommunications. The perspectives range from media oriented perspectives of convergence through to legal and regulatory perspectives of communications technology operations. A useful subset of converged communications applications is that of Unified Communications (UC) (Elliot & Blood, 2009; Aberdeen Group, 2008; Datamonitor, 2008; Kerravala & Hamilton, 2004)

Unified Communications (UC) is a relatively new term and there are several definitions in the trade and popular media (Aberdeen Group, 2008; Datamonitor, 2008; Elliot & Lock, 2007; Kerravala & Hamilton, 2004). Unified Communications (UC) applications are classified in Table 1 below into communication areas (Elliot & Lock, 2007). It is argued that these communication areas contain most of the technology elements in the lists of converged communication technologies and applications found in the literature. For the purposes of the research into organisational adoption in South Africa, it is proposed to focus on only the following communication areas: Live Communication (excluding video telephony); Messaging; and Clients and Endpoints. The reasons for choosing this subset are firstly that studying all the components of Unified Communications would be unwieldy. Secondly, Elliot and Lock (2007) of Gartner have deemed the chosen components to be of high importance. These are also directly linked to elements of high importance for Unified Communications planning.

Table 1: Unified Communications Elements in Scope

Communication Area	Sub-Communication Area	Included in Scope of the research
Live Communications	Voice (Mobile and Fixed)	Yes
	Instant Messaging (IM)	Yes
	Video Telephony	No
Live Conferencing	Separate Conferencing (Audio, Web or Video)	Yes
	Audio Web Conferencing	Yes
	Converged Conferencing	Yes
Messaging	E-Mail	Yes
	Voice Mail	Yes
	Unified Messaging	Yes
	Short Message Service (SMS)	Yes
Clients and Endpoints	Desktop Communicator Clients	Yes
	Soft phones and Session Initiation Protocol (SIP) phones	Yes
	Wireless Phones and Mobile Devices	Yes
UC Support Applications	Notification Applications	No
	Rich Presence Engine	No
	Personal Assistant	No
	Communication-Enabled Business Process (CEBP)	No
Related Markets	Mobility Solutions	No
	Collaborative Solutions	No
	Contact Centres	No

Adoption and diffusion are closely related in the literature. Adoption refers to the decision by an organisation to make use of an innovation. Diffusion refers to the accumulated level of users of an innovation in a market (Rogers, 2003). At an organisational perspective, some authors distinguish between the organisational decision to adopt the innovation (primary adoption) and the individual innovation adoption by users inside the organisation sometimes referred to as secondary adoption and subsequent internal diffusion (Fichman, 2000; Frambach & Schillewaert, 2002). For the purposes of the research it is proposed to focus on the primary adoption decision.

The focus of this research will be on only the primary adoption of unified communication technology in South Africa. More specifically it will be focused on the intention to adopt unified communication technology by firms in South Africa. The locus of adoption studied will be organisations and not end users.

1.6. Organisation of Dissertation

The remainder of this document is organised as follows:

The dissertation is broken down in major sections and subsections. Section 2 provides a review of the literature on technology adoption, convergence issues and specifically unified communications. It brings all these themes together in the South African context. Section 2 also highlights the gaps in the available literature.

Section 3 covers the research design itself. This section provides a comprehensive overview of the purpose, underlying philosophy and approach to theory to be used in the research. The research model, research questions and hypotheses are presented in this section. The actual research strategy including method, data collection, sampling strategy and research instrument are then presented.

Section 4 covers the collection and analysis of the qualitative data. This section provides details on the actual data collection experience and a general description of the sample. It also provides an overview of the qualitative analysis methods used, the descriptive statistics of the sample, the results and analysis of the collected data and further hypothesis creation.

Section 5 provides a review of the collection and analysis of the quantitative data. This section provides details on the actual data collection experience. It also provides descriptive statistics related to the survey respondents and their organisations.

Section 6 covers the testing of the quantitative data. This is divided into tests for the three respective models. Each model is tested for reliability and validity. Finally an Eigen value analysis is performed on each model.

Section 7, 8 and 9 consist of statistical testing of each of the models and relate to the correlation analysis, multiple regression analysis and hypothesis testing respectively.

Section 10 proposes a refined model based on the results of the statistical tests in sections 7,8 and 9.

The thesis concludes with section 11, which covers the conclusions related to the model testing, key findings as well as the implications for theory and practice. The limitations of the research are set out as well as suggested future research.

2. Literature Review

2.1. Introduction and Context

The increasing penetration of society and the economy by new innovative information technology has attracted both academic and corporate interest over the first decade of the 21st century (Basole, 2008; Messerschmitt, 1996; O'Donnell, 1996; Wirtz, 2001). Since the middle of the 1990s, the advance of the Internet has led to a transformation of corporate strategy, which has been reflected in the increasingly widespread use of terms such as industry convergence, virtual corporations and e-commerce (Picot, Reichwald, & Wigand, 1997). Such transformations are particularly pronounced for firms involved in the media, telecommunications and Internet economy because of the impact of convergence in these technologies and markets (Wirtz, 2001).

Information technology (IT) innovation and adoption has been widely studied and is usually focused on identifying the factors that either hinder or promote the adoption and diffusion of new IT-based processes or products. Most of this research has been conducted from within a limited set of perspectives whereby innovations are assumed to be of benefit to the adopting organisation and that the actual adoption process is a rationally based process (Fichman, 2004). Organisational adoption has been less widely studied than individual adoption but has been attracting increasing attention (Basole, 2008, Fichman, 2004).

In spite of the increased attention over the last few years, the focus has been on established and already well-understood ICT rather than on disruptive or emerging ICT such as unified communications technologies (Basole, 2008). There are several possible reasons for this. Firstly, these types of emerging technologies are often subject to network externalities (Fichman, 2001). This means that the value to any single user is a function of the size of the network of other users (Elliot & Blood, 2009; Markus, 1987). Secondly, the innovations can be intertwined with organisational routines. This means that any individual's interaction must fit within some larger organisational or inter-organisational process (Jacobs, 2010; Nelson & Winter, 1982). One of the implicit assumptions of classical diffusion theory is that users are adopting innovations for their own independent use. This is clearly not the case with some of these types of technologies where the locus of adoption is not always at the individual level (Fichman, 1992).

Fichman (1992) cites several of the components of UC as being strongly subject to network externalities. In addition, an emerging feature of UC is the concept of

communication enabled business processes (CEBP), which tightly couples UC and organisational processes. (Jacobs, 2010, Schoeller, Whiteley & Chi, 2011). This suggests a single theoretical perspective will be inadequate to capture all of the drivers and barriers to adoption of these types of technologies.

Several theoretical frameworks have been used to study the organisational adoption phenomenon but usually from only a single theoretical perspective. There is a lack of adoption studies encompassing multiple theoretical perspectives (Basole, 2008; Fichman, 2004). A relatively recent study by Basole (2008) of prestigious and highly ranked journals across a wide range of disciplines from information and computer sciences through to economics and management journals shows a steady increase in studies of enterprise adoption of IT with a significant increase in the years up to 2006. However, little attention seems to have been paid to emerging and disruptive ICT such as converged communication technologies (Basole, 2008).

The available literature suggests that UC is an important topic in many ways from its impact on economic growth to its transformation of corporate strategy (Basole, 2008; Messerschmitt, 1996; O'Donnell, 1996; Wild, 2006; Wirtz, 2001). However, the impact and adoption of UC technology in South Africa appears to be fraught with problems (Berger, 2001; Esselaar, Gillwald, & Stork, 2006; Tobin & Bidoli, 2006; Wild, 2006). These same difficulties appear to occur at an organisational level in South African organisations (Neilson, 2010; Smit, 2007).

2.2. Outline of the Literature Review

The literature review is divided into three themes. The first theme is organisational adoption of technology. The second theme relates to the issue of the appropriateness of an integrated approach to the study of UC. The second theme also relates to unified communications and its part in the wider technology and market convergence. Finally, the third theme integrates the previous three themes by focusing on the organisational adoption of UC technology in South African organisations.

Theme 1: Organisational technology adoption shows how the field has attracted increasing interest. A background to organisational technology adoption is provided followed by several theoretical frameworks that have been used to study the phenomenon.

Theme 2: An examination of several frameworks in the previous theme shows that none cover all the relevant perspectives of technology adoption in an environment with

network externalities and complex inter-dependencies. This section examines why an integrated approach would be appropriate for the study of UC and IP convergence technologies. It is also important to define UC. Unified Communications and Convergence, provides several definitions of different types of convergence. The review defines and then focuses on communications convergence in organisations. Due to the diverse types of technologies that fall within the definition of communications convergence, a taxonomy is required to categorise the lists of technology that are exposed in the literature. A subset of converged communications technology namely unified communications (UC) technology is defined for the purpose of the proposed research.

Theme 3: Integrating UC and technology adoption in the South African context, brings the previous three themes together by highlighting related studies and identified gaps in the literature. The drivers of convergence are outlined followed by a discussion of how these drivers are muted in the South African context. The necessity of research in this area is discussed.

2.3. Theme 1: Organisational Technology Adoption

2.3.1. The Importance of Organisational Technology Adoption

Technology adoption has been widely studied and there are a large number of studies in the information systems field (Brown & Russell, 2007). Most of these studies have focused on user adoption issues employing such theories as the technology adoption model (TAM) and perceived characteristics of innovation (Plouffe, Hulland, & Vandebosch, 2001). These theories are not entirely appropriate when examining innovations that are adopted by organisations rather than by individuals because certain key factors are not taken into account (Gallivan, 2001). Organisational technology adoption is a field that has been of increasing interest to both researchers and practitioners (Basole, 2008; Fichman, 2004; Frambach & Schillewaert, 2002). The cross-disciplinary nature of the topic means that articles are published in journals focusing on a range of academic disciplines ranging from strategic management, marketing, organisational sciences, economics, computer science and information systems (Basole, 2008; Frambach & Schillewaert, 2002).

Fichman (2004) notes that the majority of organisational innovation adoption research has been done within a dominant paradigm. This paradigm closely aligns with what Abrahamson (1991) refers to as the efficient choice perspective. This is that organisations that have a greater quantity of innovation related needs and abilities are

expected to exhibit a greater quantity of innovation. This quantity of innovation is expressed in terms of greater frequency, earliness or extent of adoption. These approaches have yielded huge insights on the subject of how potential adopters can more effectively evaluate technological innovations and manage the process of assimilating them (Fichman, 2004). The study of organisational adoption has also provided useful guidance to consultants, government agencies, vendors, and others in their efforts to promote the diffusion of innovations.

Figure 2 below shows the results of a study by Basole (2008) of publications in prestigious and highly ranked journals pertaining to the study of enterprise adoption of ICT innovations.

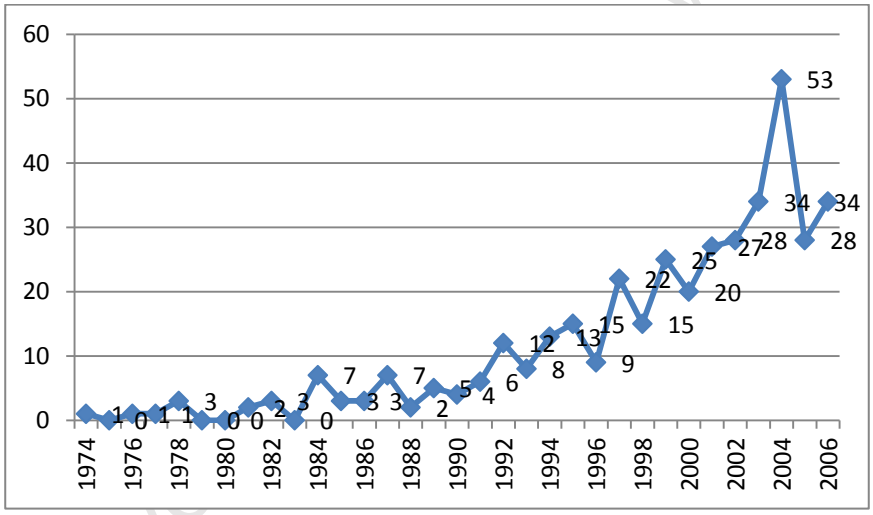


Figure 2: Distribution Trend of Enterprise Adoption Publications

This study highlights the increasing interest in organisational technology adoption from the mid 1970s to the present day. This interest can be attributed to the increasing importance of ICT in enterprises (Basole, 2008). Some researchers have suggested that the study of enterprise adoption is exhausted but the results of the survey depicted in Figure 2 above indicate that there are several unexplored avenues. The results also indicate that little attention has been given to emerging and disruptive ICT that includes unified communications (UC) technologies (Basole, 2008).

2.3.2. Definitions of Adoption and Diffusion

Adoption and diffusion are closely related in the literature. Adoption refers to the decision by an organisation to make use of an innovation. Diffusion refers to the

accumulated level of users of an innovation in a market (Rogers, 2003). At an organisational perspective, some authors distinguish between the organisational decision to adopt the innovation (primary adoption) and the individual innovation adoption by users inside the organisation sometimes referred to as secondary adoption and subsequent internal diffusion (Fichman, 2000; Frambach & Schillewaert, 2002). For the purposes of the research it is proposed to focus on the primary adoption decision, specifically the intention to adopt.

2.3.3. Background to Organisational Technology Adoption

The initial focus of studies of enterprise adoption of innovations was not specifically focused on ICT innovations, but of innovations in general. In 1962, Rogers (2003) reviewed over 4,000 studies on the innovation diffusion literature. The work: *Diffusion of Innovations* (Rogers, 2003) first published in 1962 is considered a seminal work on the innovation-diffusion literature (Abrahamson, 1991; Frambach & Schillewaert, 2002; Wolfe, 1994). Rogers (2003) states that from the 1950's to the late 1980's, the innovation-diffusion literature was focused on the following three main concerns:

1. What processes and contextual factors affect innovations rates of diffusion?
2. What characteristics differentiate early from late adopters?
3. How does the structure of networks affect the sequence of adoptions?

Figure 3 below (from Fichman, 2004) shows the different but related types of independent and dependant variables that are typical in this kind of research.

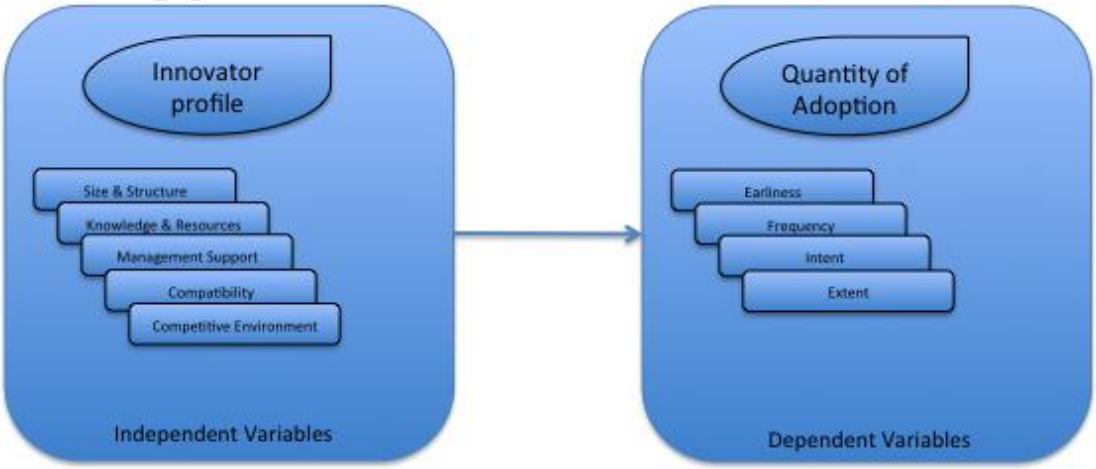


Figure 3: Dominant Paradigm for IT Innovation Adoption

These questions received a great deal of attention during the post World War II era and the subsequent dominance of the US economy (Abrahamson, 1991). It was deemed important to be able to determine issues such as what caused resistance to diffusion in order to help spread beneficial innovations (Abrahamson, 1991).

However several authors believe that these perspectives in the literature on the diffusion of innovation contained pro-innovation biases (Abrahamson, 1991; DiMaggio & Powel, 1983; Rogers, 2003). This refers to the assumption at all innovations are benefical by definition. The ultimate outcomes and impacts of the adoption of an innovation were rarely studied which was due to both the difficulty of measurement as well as the implicit pro-innovation bias.

Pro-innovation biases perpetuate the assumption that all innovations and the diffusion of innovations will benefit adopters. A corollary to this assumption is that adopters make rational, technically efficient and independent choices (Rogers, 2003). This is known as the efficient choice (EC) perspective (Abrahamson, 1991). The problem with the efficient choice perspective is that it ignores the sceptical view that technically inefficient innovations can also diffuse in organisations via coercion or fads and fashions (Abrahamson, 1991, 1996; DiMaggio & Powel, 1983).

Abrahamson (1991,1996) states that from the 1990s to the present the innovation-diffusion literature has been focused on the following main concerns in addition to the 3 questions above namely:

1. How do technically inefficient innovations diffuse?
2. By what processes are efficient innovations rejected?

Abrahamson (1991, 1996) advances a typology that focuses attention on the efficient choice perspective as well as three other less dominant perspectives. Abrahamson (1991, 1996) argues that all four perspectives may apply at various times under different conditions. The imitation focus dimension implies that there are conditions under which organisations might imitate other organisations decisions' to adopt technically inefficient technologies or even to imitate the rejection of technically efficient technologies. The outside influence dimension highlights the Forced-Selection perspective whereby organisations are compelled to adopt or reject a technology (Abrahamson, 1991; DiMaggio & Powel, 1983).

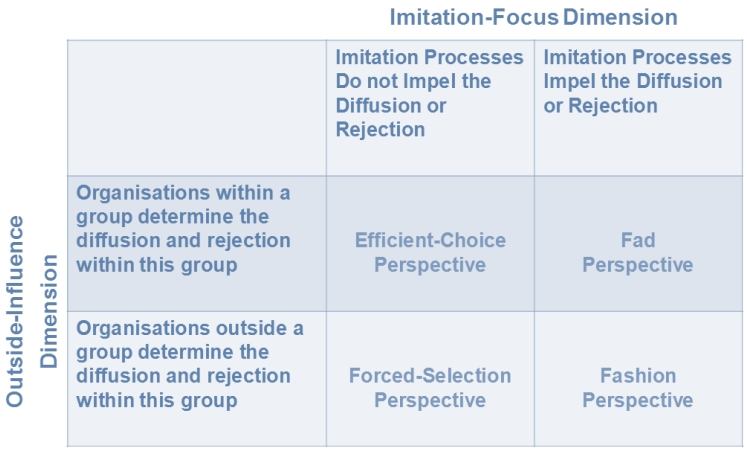


Figure 4: Explaining the Diffusion and Rejection of Technologies

These four types of explanations would explain the diffusion or rejection of innovations among groups of organisations that closely match the assumptions underlying these explanations. However, these four types of explanations would not explain the diffusion or rejection of innovations among groups of organisations with characteristics that do not match these underlying assumptions. Abrahamson (1991) suggests that researchers exploit paradoxes between the EC perspective and the Fashion Perspectives to develop new explanatory theories.

2.3.4. Organisational Technology Adoption Frameworks

The organisational adoption literature is characterised by models that focus on only a single perspective, e.g. the efficient choice EC perspective. These models sometimes incorporate minor elements of other perspectives, but seldom capture more than a single perspective properly.

Frambach and Schillewaert (2002) integrate the main findings of organisational adoption literature across different disciplines and develop a more comprehensive framework of organisational adoption that encompasses multiple perspectives. It also incorporates both primary and secondary adoption. Figure 5 depicts the primary adoption phase of Frambach & Schillewaert's (2002) model.

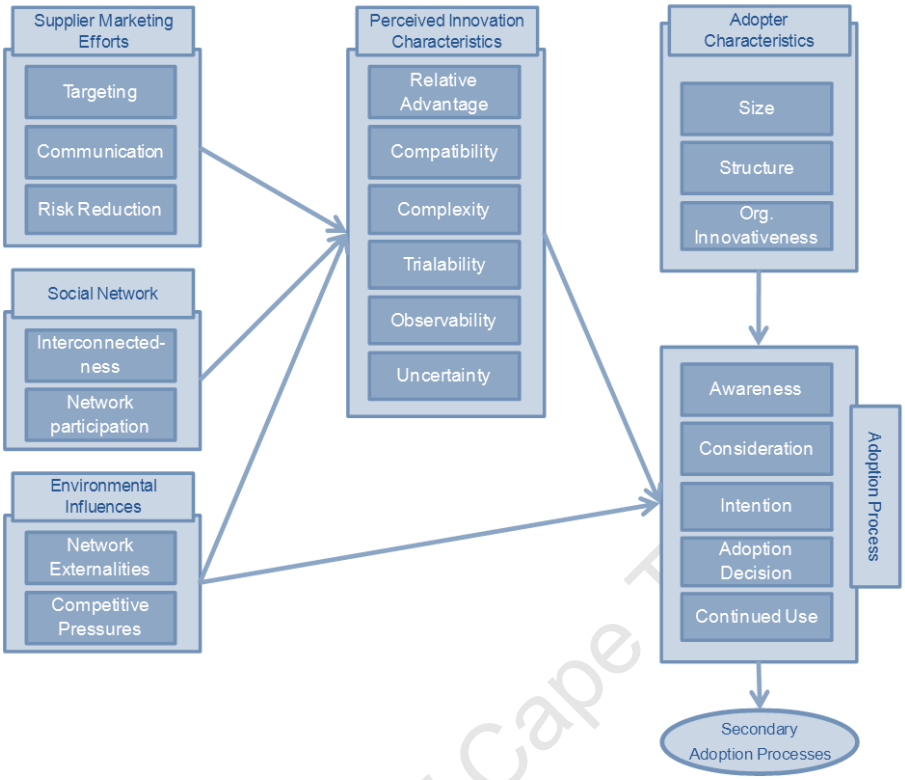


Figure 5: A Conceptual Framework of Organisational Innovation Adoption

Frambach and Schillewaert's (2002) framework incorporates external factors such as: supplier marketing efforts; social network and environmental influences and does embrace aspects of the fashion perspective. The framework also incorporates the perceived characteristics of the innovation as well as the characteritsics of the adopting organisation. It appears to be a comprehensive model that could be used to research organisational adoption of ICT. However, current research using this model has been largely in marketing and management adminstration literature with no studies found specifically focusing on the adoption of ICT. It is included in this review as a useful reference for many of the factors that impact adoption.

Comprehensive frameworks that are tried and tested in the field of research into the adoption of ICT by organisations are hard to come by. Several frameworks encompassing a single theoretical perspective have been found. Tornatzky and Fleischer's (1990) framework appears more comprehensive and may provide a useful starting point to look into organisational adoption of convergence technology as it highlights the specific context in which the adoption process takes place (Tornatzky & Fleischer, 1990). In the Tornatzky and Fleischer framework, there are three elements that influence the process by which innovations are adopted. They are (1) the external

environmental context, (2) the technological context, and (3) the organizational context (Chau & Tam, 1997).

Several related studies on primary ICT adoption at an organisational level were examined. Most are positivist and quantitative in nature and have used and expanded on existing models of technology adoption. Some of this research has focused on the diffusion of innovations perspective (Rogers, 2003). This perspective focuses on the characteristics of ICT that either inhibit or encourage adoption.

Some research was found on the organisational innovativeness (OI) perspective (Wolfe, 1994), which examines the organisational characteristics of innovation adoption decisions. Related to this were several studies cited by Basaglia, Caporarello, Magni, and Pennarola (2008) on the Efficient Choice (EC) perspective.

Table 2: Summary of Organisational Primary Adoption Theory

Frambach and Schillewaert's (2002) perspective	Tornatzky and Fleischer's (1990) perspective	Institutional Perspective (DiMaggio & Powel, 1983)	Management Fashion Perspective (Abrahamson, 1991, 1999)	Organisational Innovativeness Perspective (OI) (Wolfe, 1994)	Efficient Choice Perspective (EC)
External Factors -Supplier marketing efforts -Social Network -Environmental Influences	External environmental Context	Mimetic pressures, Normative pressures, Coercive pressures	Fashion setters Perceived progressiveness		
Adopter Characteristics	Organisational context			Organisational dispositional innovativeness Leading edge status	
Perceived Innovation Characteristics	Technological context				Perceived internal benefits

The institutional perspectives on adoption have focused on the importance of institutional environments to organisational structure and actions. This extends to the predicted relationships between institutional variables and the adoption of technology by organisations (Teo, Wei, & Benbasat, 2003). Three types of institutional pressures are distinguished between, namely mimetic, coercive and normative pressures (DiMaggio & Powel, 1983). Mimetic pressures relate to how an organisation conforms to competitor organisations. Coercive pressures relate to how organisations respond to organisations upon which they are dependant e.g. government, suppliers, parent companies or customers. Normative pressures relate to how organisations that have

direct and frequent communication start to show similar behaviours (DiMaggio & Powel, 1983). The management fashion perspective holds that managers need to create the appearance of economic rationality and progress. The view is that there is a management fashion market of fashion setters and fashion consumers (Abrahamson, 1996).

Table 2 above attempts to illustrate how each of the perspectives of technology adoption relates to the External factors, Adopter characteristics and Perceived Innovation Characteristics proposed in the Frambach and Schillewaert (2002) framework. Some studies have developed diffusion and adoption models with the objective of joining the institutional perspective and the management fashion perspective (Fichman, 2000).

2.4. Theme 2: Is an Integrated Approach Appropriate for the Study of UC?

2.4.1. Choosing Well Validated Models

One of the objectives of this research is to determine if combining multiple perspectives into a single model is appropriate. In order to do this one would need to find strongly validated models that have been used for the study of IS phenomena that have similar characteristics to UC. This would allow the comparison of the initial models with the integrated model. Two such models were found. The initial model was developed by Teo et al., (2003) for the study of FEDI. The adoption of FEDI was found by Teo et al., (2003) to be subject to network externalities and intertwined with organisational routines. This appears to be an appropriate initial model to evaluate for the adoption of UC as UC exhibits similar characteristics which are discussed below.

A second model that extended the perspectives of the initial model was developed by Basaglia et al., (2008) for the study of VoIP. VoIP is an element of UC as is discussed in section 2.4.3.3 below and also appears to exhibit similar characteristics to UC. The intention is to compare the initial model developed by Teo et al., (2003) which includes the institutional perspective to an extended model. The extended model developed by Basaglia et al., (2008) combines the institutional perspective, management fashion perspective and efficient choice perspective. This model can in turn be compared to an integrated model (which will need to be developed) which combines the institutional perspective, management fashion perspective, efficient choice perspective as well as the organisational innovativeness perspective.

2.4.2. Matching UC and Adoption Perspectives to Adoption Models

Only the efficient choice perspective makes the assumption that organisations each make independent assessments of an innovation and decide to adopt based on the inherent merits of the technology. However, there are at least four other mechanisms that can lead to adoption decisions being influenced from outside the organisation (Fichman, 2004). Each of these situations needs to be captured by different perspectives in an integrated model of adoption. The first mechanism is discussed by Arthur (1996), when a technology is subject to positive network externalities or other forms of increasing returns to adoption, it is important for managers to consider the actions of other adopters when evaluating an innovation's merit because, the value of using the technology increases in proportion to the size of the eventual adoption network. This is true for certain components of UC such as VoIP and Instant Messaging. This first mechanism is captured in the initial model (Teo et al., 2003).

Secondly, when a technology connects a networked community of firms, such as in a supply chain management situation, the adoption decision of any one firm will depend on the firm's role and position in the collaborating community (Teo et al., 2003). This is an expected outcome of UC once it has become widely adopted. However, there are limited reports of inter-organisational adoption of UC (Jacobs, 2010). This second mechanism is captured in the initial model (Teo et al., 2003).

The third mechanism to be considered concerns interrelated adoption decisions that arise from social contagion. Unified Communications and convergence technologies in general appear to be very over-hyped. The relative novelty of the systems as well as a range of unanswered technical and organizational questions are a concern (Elliot & Blood, 2009). The current UC market situation is characterized by a distinct technology push on the part of the UC vendors. This appears to be most notably from providers from the collaboration software domain, as well as those from the IP infrastructure sector who are pushing their products onto the market (Riemer & Taing, 2009).

These coercive and normative factors appear on a wider scale as well. Convergence is viewed by governments as being important because of the role it can play in economic growth and social development. "It has the potential to impact on all segments of society – it can shape the delivery of government services (education and health included), redefine the way businesses operate and provide individuals with as yet unimagined information and communication services" (Wild, 2006, p. 2). This third mechanism is captured in the extended model (Basaglia et al., 2008).

The fourth mechanism is management fashion. There is an implicit assumption in most of the literature that the adoption of UC and Convergence would be beneficial to the country and to organisations within it. An example of such a pro-innovation bias comes from Wild (2006) who states "Adapting to convergence is a condition for full and effective participation in the global economy and information society" (Wild, 2006, p. 2). Pro-innovation biases perpetuate the assumption that innovations and the diffusion of innovations will benefit adopters who have made rational, technically efficient and independent choices (Rogers, 2003). DiMaggio & Powel (1983) note that the problem with the efficient choice perspective is that technically inefficient innovations can diffuse in organisations via coercion, fads and fashions.

As argued by Abrahamson and others, knowledge entrepreneurs such as consultants, academics, and business gurus have a vested interest in creating demand for innovations such as UC. These agents will actively promote the idea as being leading edge or best practice. This will result in a wave of media attention which influences managerial interest and impacts on organisational adoptions (Abrahamson & Fairchild, 1999; Abrahamson, 1996; Abrahamson, 1991). There is an increasing number of professional research reports, seminars and white-papers on UC and UC adoption best practices emerging. This fourth mechanism is captured in the extended model (Basaglia et al., 2008).

From Table 2 above, it is clear that the initial model and the extended model cover the efficient choice perspective plus the four mechanisms outlined above. However, this still leaves out the key area of adopter characteristics namely the organisational innovativeness or organisational characteristics (Frambach and Schillewaert, 2002; Tornatzky and Fleischer; 1990, Wolfe, 1994).

It can therefore be argued that an integrated model that draws from prior research, using well-validated models, which measure these four mechanisms as well as the efficient choice perspective is appropriate for the study of the intention to adopt unified communications. In addition it would be appropriate to examine the organisational innovativeness perspective (Wolfe, 1994) and determine if it is appropriate to integrate it with the model.

2.4.3. Definitions of Convergence and Unified Communications

Up till now, it has not been necessary to clearly define either the term convergence or unified communications. However, it will become necessary to do so in order to clearly state what the concepts are that are being studied, and more importantly what they are

not. Even though the common thread of convergence can be seen to be the coming together of things that were formerly apart, and it is known that convergence covers all the forms and fruits of interlinking new technologies, processes and practices (Berger, 2001), one still requires a more formal definition of convergence. The problem is that convergence and unified communications "means different things to different people and there is no one accepted definition." (Mtimde, 2006, p. 17). Definitions of convergence and unified communications are shaped by the context in which they are offered (Wild, 2006).

It is first necessary to define convergence which is the super-set and then define unified communications which is a sub-set of converged IP technologies.

There are broadly two definitions of convergence, either (i) technological or communications convergence (encompassing telecommunications and IT convergence) or (ii) media or content convergence. (Berger, 2003; Wild, 2006).

2.4.3.1. Definition of Communications Convergence

It has been widely recognised for over ten years that computing and telecommunications technologies are converging. (Messerschmitt, 1996). The currency of the term "communications convergence" arose with the Internet era. It is a child of the 1990s and celebrated as part of the Internet (Berger, 2003). Communications convergence refers to the trend whereby technologies with distinct functionalities evolve to having overlapping functionalities (usually with the advantages of all of them) (Wild, 2006). Convergence of IP networks, sometime referred to as unified IP networks carrying data, voice and video is increasingly becoming a reality (Ernest-Jones, 2004).

2.4.3.2. Definition of Media or Content Convergence

Convergence in the media refers to the removal of entry barriers across the IT, telecoms, media and consumer electronics industries, creating one large 'converged' industry (Wild, 2006). Competition in the media since the middle of the 1990s has been characterised by two processes. Firstly a large number of pioneer firms introducing innovative media products and services that offer substantial advantages to consumers. Secondly established companies specialising in one or more of the media and communications markets moving into new sectors. (Wirtz, 2001). Figure 6 which is modified from (Berger, 2003) illustrates how media and content convergence is related to technology and communications convergence. However, for the purposes of this literature review, this definition of media and content convergence merely provides

context and will be largely ignored in favour of the technology and communications definition of convergence and its role in organisations.

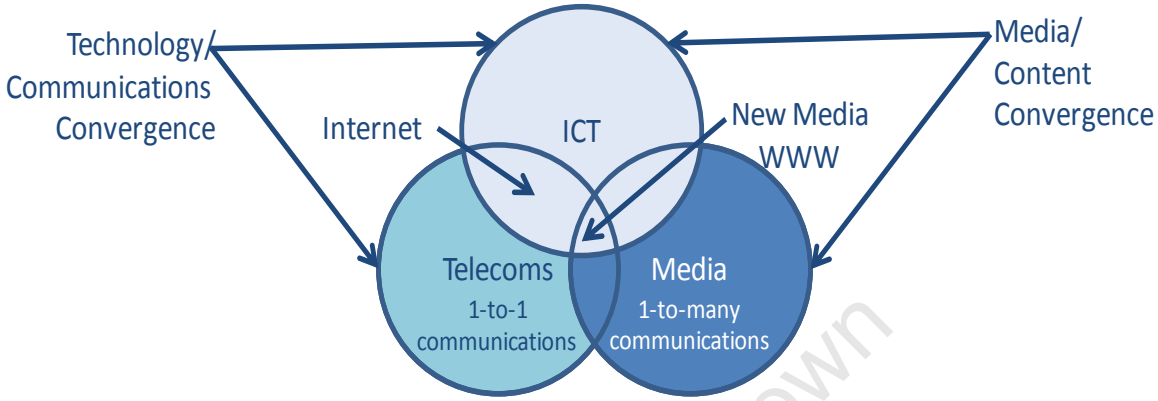


Figure 6: ICT, Telecomms and Media Convergence

2.4.3.3. Definition of Communications Convergence and UC in Organisations

Several authors (Aberdeen Group, 2008; Datamonitor, 2008; Elliot & Lock, 2007; Kerravala & Hamilton, 2004) indicate that Unified Communications (UC) is a new term with many definitions in the trade and popular media. UC appears only to have come into use after around 2005. Much of the earlier literature (and even literature well past 2007) refers to converged communications technologies interchangeably with UC. The proposed research is to determine environmental and organisational drivers influencing the adoption of UC technology in South African organisations. It is important to distinguish between converged communication technologies in general and UC in particular. UC is a subset of converged communication technologies. Therefore a further clarification of the kinds of converged communication and unified communication technologies adopted by organisations is required.

Communications convergence in organisations is characterised by the kinds of communications applications used by organisations coming together (Tobin & Bidoli, 2006). These are typically broken down into the broad categories of voice, data and video technologies (Ernest-Jones, 2004). Usually this also includes the integration of consumer electronic, computing, and telecommunication devices – on a single, broadband IP delivery platform (Tobin & Bidoli, 2006).

Typically lists of these converged communication technologies and applications used in organisations include: VoIP and IP Telephony; PC-based distance learning solutions; Video conferencing; Live web casting; Video streaming; Collaboration and team-

management software (such as 'white boards' and collaborative meeting software); Security surveillance; Contact centre applications; Remote multimedia access (Basole, 2008; Datamonitor, 2008; Ernest-Jones, 2004; Kerravala & Hamilton, 2004; Tobin & Bidoli, 2006). Figure 7 below depicts the range of communications applications and associated communicating devices used in organisations today (Kerravala & Hamilton, 2004).

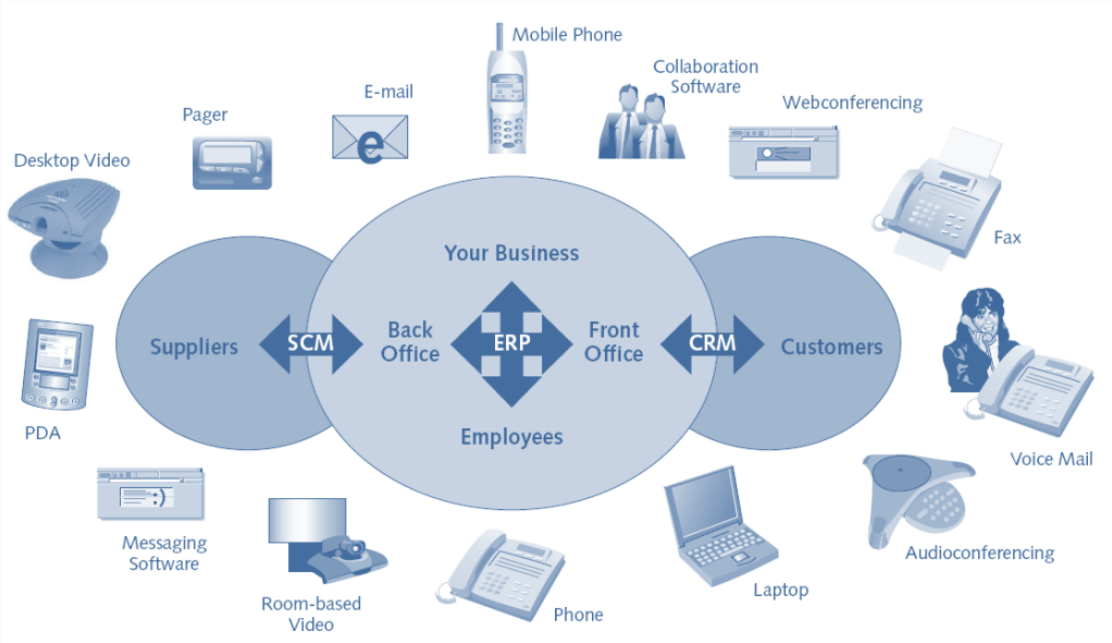


Figure 7: Communications Needs of Organisations

Essentially the list becomes subjective because almost any form of communications technology that uses IP as an underlying delivery method could be classified as a converged communication application or technology. A useful subset of converged communications applications is that of Unified Communications (UC) (Aberdeen Group, 2008; Datamonitor, 2008; Kerravala & Hamilton, 2004)

"Unified Communications (UC) is evolving from a concept to a more mature solution stack. However, there is still a lot of confusion in the market about what actually constitutes UC" (Datamonitor, 2008, p. 1). A useful definition is provided by Gartner who define UC products (equipment, software and services) as those that "enhance individual, workgroup and organizational productivity by enabling and facilitating the control, management, integration and use of multiple enterprise communication methods. UC products achieve this through the convergence and integration of communication channels (that is, media), networks, systems and business applications, as well as through the consolidation of controls over them." (Elliot & Lock, 2007, p. 3). UC products may be made up of a stand-alone product suite or a portfolio of integrated applications and platforms.

Unified Communications applications are classified by Elliot and Lock (2007) of Gartner in Table 3 below into "communication areas".

Table 3: Classification of Unified Communications (UC) Elements

Communication Area	Sub-Communication Area	Overall Maturity	UC Maturity	Importance to UC Planning	Included in Scope of the research
Live Communications	Voice (Mobile and Fixed)	High	Medium	High	Yes
	Instant Messaging (IM)	Medium	High	High	Yes
	Video Telephony	Medium	Low	Low	No
Live Conferencing	Separate Conferencing (Audio, Web or Video)	High	Medium	Low	Yes
	Audio Web Conferencing	Medium	Medium	Medium	Yes
	Converged Conferencing	Low	Low	High	Yes
Messaging	E-Mail	High	Medium	High	Yes
	Voice Mail	High	Low	Medium	Yes
	Unified Messaging	Medium	Medium	Medium	Yes
	Short Message Service (SMS)	High	Low	Medium	Yes
Clients and Endpoints	Desktop Communicator Clients	Low	Low	High	Yes
	Soft phones and Session Initiation Protocol (SIP) phones	Low	Low	High	Yes
	Wireless Phones and Mobile Devices	Medium	Low	High	Yes
UC Support Applications	Notification Applications	Low	Low	Medium	No
	Rich Presence Engine	Low	Low	High	No
	Personal Assistant	Low	Low	Medium	No
	Communication-Enabled Business Process (CEBP)	Low	Low	Medium	No
Related Markets	Mobility Solutions	Medium	Low	High	No
	Collaborative Solutions	Medium	Low	Medium	No
	Contact Centers	High	Low	Low	No

It is argued that these "communication areas" contain most of the technology elements in the lists of converged communication technologies and applications found in the literature. The taxonomy above, while subjective, provides an indication of the relative importance of each of the technology elements. For the purposes of the research into

organisational adoption in South Africa, it is proposed to focus on only the following communication areas: Live Communication (excluding video telephony); Messaging; and Clients and Endpoints.

2.4.4. Drivers of Convergence

"The fact that convergence is a technical possibility does not explain why convergence is taking place now." (Hoogenboezem, 1999) There are several early forms of convergence particularly between telecommunications and broadcasting that did not catch on, so the question is why now? The driving forces behind current convergence are to be found in structural changes in the economy (Hoogenboezem, 1999). Wirtz (2001) suggests that the most significant of these drivers can be classified into three groups namely: Technological drivers; Deregulation and Demand-related drivers.

Several authors (Berger, 2003; Ernest-Jones, 2004; Hoogenboezem, 2002; Messerschmitt, 1996; Tobin and Bidoli, 2006; Wild, 2006; Wirtz, 2001) identify digitalisation; intelligent network infrastructures based on IP and the technical convergence of media platforms as the primary technology drivers of convergence. The trend from analogue to digital forms has made convergence possible because digitalization allows different types of content to be stored in the same format and delivered through a wide variety of technologies (Wild, 2006). Deregulation and liberalisation in various countries across the world in both media and communications markets has been taking place since the middle 1990s (Hoogenboezem, 1999). By allowing cross-sector competition and liberalising regulations originally written around vertical integration, the business environment as been transformed. (Wirtz, 2001). Several authors (Berger, 2001; Wirtz, 2001) also argue that changes in user preference have led to this cross-sector demand. Figure 1 derived from Wirtz (2001) describes the direct effect of the drivers as well as the feedback loop effect on convergence.

2.5. Theme 3: Organisational Adoption of UC and Convergence in the South African Context

The aim of the next section is to discuss relevant studies that combine intra-organizational, external factors, adopter characteristics and perceived innovation characteristics. The section integrates the themes of convergence as well as technology adoption into the South African context, and brings the previous themes together by highlighting related studies and identified gaps in the literature.

2.5.1. Convergence Adoption in South African Organisations

When compared to other countries, South Africa has a unique combination of characteristics such as a diverse population, a large wealth gap, different tastes for different market sectors dictated by race, income, gender and age. (Hamilton, Neilson, Smit, & Falconer, 2007)

The same drivers of convergence seen in the global context can be seen in the South African context at a national policy and economic level. However, the direct effect and the feedback loops appear to be muted in some areas (Mtimde, 2006; Neilson, 2010; Tobin & Bidoli, 2006; Wild, 2006; Berger, 2001). The deregulation of markets has led to a degree of competition (Tobin & Bidoli, 2006) but effective implementation of the deregulation process is contentious (Esselaar, et al., 2006; Horwitz & Currie, 2007). Certain technological drivers such as mobile technology have had a large impact in South Africa (Esselaar et al., 2006). However, ubiquitous accessible broadband networks are seen by some authors (Wild, 2006) as a necessary condition for the effective participation in the converged network economy (Singh & Raja, 2009). It is argued that competition in an environment marked by convergence leads to faster-paced innovation and improved products and services for consumers, at lower costs. (Singh & Raja, 2009; Wild, 2006). The lack of low cost broadband seems to have muted the feedback effect in South Africa (Esselaar et al., 2006). Similarly, demand side drivers are lacking with only a small percentage of South Africans connected to the Internet and even less connected via broadband.

At an organisational level a similar skewed effect can be seen. In a 2007 survey of corporate telecoms by BMI-T, key findings were that over 60 percent of companies surveyed had no plans to adopt VoIP in the next 2 years. Less than 20% of companies had adopted VoIP for various types of calls (Smit, 2007). However 40% had some form of Telkom cost saving package and a further 14% had plans to implement one within a year (Smit, 2007). This can be contrasted with the results of the Economist Intelligence Unit Survey of 2004 conducted 3 years earlier in Europe and America where 57% of companies believed that IP convergence would have a significant impact on their business and 56% believed that IP technology was critical or important for achieving the organisations strategic business objectives over the next 5 years (Ernest-Jones, 2004). A later independent market study on UC&C adoption conducted by BMI-T in 2010 indicated that the South African figure had increased to 61% for VoIP adoption. This study was however conducted with primarily technical respondents (BMI-T, 2011). It can be contrasted with a 2008 survey conducted worldwide by British Telecom (BT) that indicated similar adoption rates two years prior to this (Blum, 2008). This indicates that South African organisations are starting to catch up but are still lagging behind certain international peers possibly by as much as 2 years.

The processes associated with adoption or non-adoption of technology by organisations are discussed in the next section.

2.5.2. Problem Statement

Restrictive regulations that were aimed at protecting the South African incumbent fixed line operator Telkom have resulted in high tariffs and limited bandwidth availability. This has been an impediment to the growth in both the economy and employment (Horwitz & Currie, 2007; Melody, Currie, & Kane, 2006). The telecoms sector has been wracked by controversy and developments have been characterised by a range of unintended policy outcomes and costly licensing and regulatory disputes (Esselaar, et al., 2006; Horwitz & Currie, 2007).

Even though the South African ICT sector has come a long way since the early 1990s, the status quo is one where South Africa lacks much of the dynamism seen at both a national and an organisational level in other global markets (Esselaar, et al., 2006; Tobin & Bidoli, 2006). There are indicators that some of the feedback loops described by (Wirtz, 2001) are muted. This implies that South Africa will not benefit to the degree it can in the hoped for networked economy that results from convergence drivers and feedback thereof. This implies that the facilitation by the convergence process of national economic growth and participation in the global information or knowledge society described by (Wild, 2006) will either not happen or be reduced.

All organisations play a role in the networked economy and the degree to which they adopt convergence technologies has implications on the role that they can play in that economy. The limited evidence at hand suggests that a significant number of organisations continue to delay the adoption of converged communication technologies for various reasons. If adapting to convergence is indeed a condition for full and effective participation in the global economy and information society (Wild, 2006) then this implies that many South African organisations will continue to participate in a partial and ineffective way in the global economy and information society. It appears that bandwidth costs and other factors may be slowing the adoption in South Africa (Smit, 2007).

2.6. Related Studies and Identified Gaps in the Literature

2.6.1. Related Studies on UC and Convergence

Given the importance of the topic, it is surprising that very little research has been done in the area of converged communications technology adoption and diffusion within organisations (Basole, 2008). A literature survey indicates that few articles on the subject have been published in major IS or computer science journals from the mid 1990s to the present day (Basole, 2008). In sharp contrast, several thousand articles have appeared in popular literature as well as hundreds in trade and management research publications such as Gartner, Forrester and Yankee during the same period.

There appears to be a gap between development in IS research and the observed changes in corporate and other organisations with regard to convergence and UC adoption. One of the objectives of this research would be to fill this gap.

A survey of the literature related to convergence adoption and UC adoption in particular revealed that there is limited research related to convergence but this mostly consists of either media convergence research; or convergence policy research mostly focused on telecommunications and regulation; or convergence technology research related to specific technical aspects of voice or video technology over IP; or even economic research related to the impact of convergence technologies.

Many studies were found on the adoption of VoIP and broadband for example (Naidoo, Kaplan, & Fransman, 2005; Tusi, 2007; Zhang, Chan, & Fang, 2004) but these typically had the individual rather than the organisation as their unit of analysis.

Some literature was found specifically on UC such as Riemer & Taing's (2009) study on UC which was really just a high level introduction to UC and its' concepts used to illustrate its relevance for corporate practice using typical application scenarios. Several similar papers were found that illustrated aspects of UC such as unified messaging (Clark, 1999), presence (Jennings, 2006; Riemer & Klein, 2009), voice mail (Rosenberg, 2005) and in some instances tentative steps to integrate these elements (Lazar, 2006).

There was a great deal of literature related to UC adoption in organisations from research firms such as Gartner (Elliot & Blood, 2009; Elliot & Lock, 2007), Forrester (Schoeller, Whiteley, & Chi, 2011) and Aberdeen (Borg, 2009). These however, did not adopt a strictly rigorous academic approach.

2.6.2. Related Studies on Organisational Adoption of Convergence or UC

Two studies were found that adopted an organisational perspective on the adoption of convergence. One was on VoIP adoption in Italy (Basaglia, et al., 2008) and another was on VoIP and convergence adoption factors in South Africa (Tobin & Bidoli, 2006).

The studies of which the author is aware, except for Basaglia et al., (2008), only take into account a single theoretical perspective. Basaglia et al., (2008) develop a theoretical framework that considers simultaneously the institutional, management fashion and efficient choice perspectives for understanding the drivers of the technology adoption process. However, Basaglia et al., (2008) do not appear to address the organisational innovativeness context. Basaglia et al., (2008) focus only on the adoption of VoIP but fail to define it clearly or break it into its component categories such as VoIP-trunking for least cost routing or Telecoms access, IP Telephony or VoIP related contact centre applications.

Basaglia et al., (2008) also do not explicitly analyse the technological context defined by Frambach & Schillewaert (2002) and Tornatzky and Fleischer (1990). They study the cost reducing and complexity reducing features of technology but ignore other factors. Certain factors such as relative advantage, compatibility, complexity and cost are listed as factors important to adoption within the technological context (Brown and Russell, 2007; Datamonitor, 2008; Frambach & Schillewaert, 2002).

Teo et al., (2003) explicitly include perceived complexity as a modifying factor for mimetic pressures but this is excluded from the framework proposed by Basaglia et al., (2008) who use complexity simply as an external factor. No other technological or perceived innovation characteristics appear to be considered. As discussed previously, the organisational innovativeness perspective is also ignored.

The only directly related South African literature unearthed in the literature survey was on VoIP and convergence adoption factors in South Africa (Tobin & Bidoli, 2006). This study has the advantage that it covers VoIP as well as other convergence technologies but also has several shortcomings. Some of these shortcomings are in the choice of diffusion model (Moore's Chasm Model) as well as that the presentation of the

statistical analysis of the results of the survey appears questionable. It was a consideration to use this study as the basis for a longitudinal study, but due to the weaknesses described above it was decided to use it as contextual and comparative information only. The list of converged communication technologies suggested by Tobin & Bidoli, (2006) has been incorporated into the section 2.4.3.3 and is covered in Table 3 in the previous section.

2.7. Summary

The literature review was divided into three themes. The first theme related to organisational adoption of technology. The second theme related to the issue of the appropriateness of an integrated approach to the study of UC. The second theme also related to unified communications and its part in the wider technology and market convergence. Finally, the third theme integrated the previous three themes by focusing on the organisational adoption of UC technology in South African organisations and identified the gaps in the literature.

The available literature indicates that convergence and unified communications are important topics. Convergence also covers a wide array of topics broadly covering Media, Telecommunications and ICT. The focus of this literature survey was on communications convergence and UC. However, it appears that convergence adoption in South Africa is problematic at many levels. One of these levels is organisational adoption. A large proportion of organisations appear to be slow to adopt converged communication technology such as UC in spite of previous research suggesting the benefits of such adoption. A subset of converged communications technology namely unified communications (UC) technology is defined for the purpose of the proposed research because it is a relatively well-defined area that covers most of the technologies exposed in the literature.

Technology adoption (in general) has been widely studied. Organisational adoption has been less widely studied but has been attracting increasing attention. In spite of the increased attention over the last ten years, the focus has been on established and already well-understood ICT rather than on disruptive or emerging ICT such as converged communication technologies (Basole, 2008). Several theoretical frameworks have been used to study the phenomenon but usually from only a single theoretical perspective. There is a lack of adoption studies encompassing multiple theoretical perspectives.

Integrating convergence and technology adoption in the South African context brings the previous two themes together by highlighting related studies (Basaglia, et al., 2008; Teo, et al., 2003; Tobin & Bidoli, 2006). The gaps in the literature are evident by the lack of related studies particularly in the South African context. The necessity of the research is highlighted by the research problem, which is that the degree to which South African organisations adopt converged communication technologies may have implications for the role that they can play in the global networked economy.

The research objective is to study UC technology adoption in South African organisations and determine the factors that influence the adoption of converged communication technology. This study intends to evaluate and expand an existing extended model (Basaglia, et al., 2008) of technology adoption, which considers simultaneously the efficient choice, management fashion, institutional and technological perspectives of factors influencing adoption.

It is believed that the proposed methodology and results will achieve the stated objectives. This understanding of the factors that influence adoption will increase knowledge in the South African context. The factors and proposed integrated model will also add to knowledge with regards to diffusion and the adoption of complex technology such as UC.

3. Research Design

3.1. Purpose

The purpose of the research is firstly confirmatory. Hair, Anderson, Tatham, and Black, (1995) define confirmatory studies as those that are seeking to confirm a pre-specified relationship. They suggest that exploratory studies involve the definition of possible relationships in only the most general form, which are then estimated through the use of multivariate techniques (Straub, Gefen, & Boudreau, 2005; Hair et al., 1995).

The research was intended to confirm a pre-specified relationship between constructs in the initial and extended models that are described in section 3.4 below. There are exploratory aspects to the research as well because it relooked at the work done by Tobin and Bidoli (2006). This was because there is a lack of information on the research topic in the South African context. The intention was to extend the model further and use certain statistical techniques to estimate other relationships that might occur. If these relationships were significant the intention was to create an integrated model that incorporated all aspects of both the initial model, the extended model and any factors emerging from the research.

3.2. Underlying Philosophy

The research has been undertaken from a positivist epistemological position. Fitzgerald and Howcroft (1998) point out that the debate between the appropriateness of interpretivist and positivist research approaches is an on-going one in the IS field. They argue for a view that each approach has its' strengths and weaknesses and that each approach is not necessarily mutually exclusive. However, the integration of competing approaches in a single research study is problematic (Myers, 1997; Newman & Robey, 1992; Walsham, 1995) and at best a pluralist approach could be employed (Fitzgerald & Howcroft, 1998).

There appears to be a trend in IS research whereby interpretivist approaches are strongly justified but positivist approaches are simply noted (Walsham, 1995). However, justification of a positivist approach in this case may be needed because of the relative infancy of the area of research. Typically topics with limited prior empirical work initially lend themselves to exploratory, qualitative, interpretivist and possibly inductive approaches in order to generate more knowledge and theory (Brown & Russell, 2007; Walsham, 1995). However, in this instance the research is building on prior positivist

research by Teo et al. (2003); Basaglia et al. (2008); and Tobin and Bidoli (2006) in different but related areas. The prior research was heavily dependant on statistical analysis of reasonably large samples and it was intended to attempt to duplicate this approach. In order to accommodate the relative lack of information in the South African context, the research employs positivist qualitative methods as well.

A positivist research philosophy is thus employed because it allows both a quantitative and qualitative analysis of the data without requiring the accommodation of more than one epistemological position within the one study (Myers, 1997; Straub et al., 2005) and thus avoids a contentious integration or pluralist approach.

Combining qualitative and quantitative approaches is frequently referred to as a mixed method approach. Mixed method approaches are justified when the study is of a preliminary nature and there is limited prior empirical work on the topic (Brown & Russell, 2007). This mixed method approach then seems to be appropriate because of the need to link back to the prior quantitative positivist research of Basaglia et al. (2008); Teo et al. (2003) and Tobin and Bidoli (2006) but also take into account the relative infancy and limited prior empirical work on the adoption of converged communication technologies, specifically unified communications, in South Africa.

This research relies heavily on quantitative positivist research methods and techniques. Straub et al. (2005) describe quantitative positivist research as an approach that allows IS researchers to study the interaction of humans and computers and answer questions about this interaction. Quantitative positivist research methods rely on statistical techniques to falsify the null hypothesis, which then logically follows that the theoretical hypothesis is supported (but not proven).

Qualitative positivist methods on the other hand include many of the same methods as critical and interpretivist research (Myers, 1997). Drawing from Brown and Russell (2007), the reasons for the use of qualitative methods in the research was to gain a richer understanding of some of the participants perceptions as well as to uncover other relevant factors not considered in the initial model proposed by Teo et al., (2003) and the extended model proposed by Basaglia et al., (2008).

3.3. Approach to Theory

The research uses institutional theory (Powel & DiMaggio, 1991); management fashion theory (Abrahamson, 1991, 1999); and efficient choice theory (Abrahamson, 1991, 1999) as lenses to attempt to understand the factors that influence the adoption of

unified communications (UC). These lenses are applied to the external environmental context, and the organisational context. Therefore, the approach to theory is based largely on deductive reasoning because an existing framework has been identified to analyse the factors that influence the adoption of unified communications technology. The largely quantitative approach was used in data collection and analysis of results associated with the proposed theoretical model in section 3.4 below.

It was proposed to integrate the initial model proposed by Teo et al., (2003) and the extended model proposed by Basaglia et al., (2008) into an integrated model. This integrated model would include organisational innovativeness theory (Wolfe, 1994) and the technological perspective as well since factors associated with these theories and perspectives appear to be factors that influence adoption in South Africa. Therefore, there was also some limited inductive reasoning applied in the sense that qualitative methods were employed to help identify further factors and relationships specific to South Africa that were used to extend the framework and eliminate overlaps where necessary. The qualitative approach was also used to replicate and validate some of the discovery work done by Tobin and Bidoli (2006).

3.4. Research Models

The theoretical model used in the research is derived from two primary sources: a study by Teo et al., (2003) “Predicting intention to adopt inter-organizational linkages: an institutional perspective” and a study by Basaglia et al., (2008) “Environmental and organizational drivers influencing the adoption of VoIP”.

Teo et al., (2003) focus only on institutional theory and develop a model (referred to in this paper as the initial model) using constructs for mimetic pressures, normative pressures and coercive pressures. They also use the impact of perceived innovation complexity as an additional modifying or influencing construct. Figure 8 below is replicated from the study and shows the sub constructs for each of the major constructs. Except for perceived extent of adoption among suppliers, Teo et al., (2003) found all other constructs to be significant in their model when tested against the institutional pressures that organisations faced and their intention to adopt financial electronic data interchange (FEDI) (Teo et al., 2003).

This initial model appears appropriate for the study of FEDI but what about Unified Communications technologies or elements of Unified Communications such as VoIP (Voice over IP)? Basaglia et al., (2008) adapt and extend the model used by Teo et al., (2003), as well as others, to study VoIP adoption, which is a component of unified

communications. Their model is referred to as the extended model in this paper. This suggests that these two models could be appropriate for the study of unified communications.

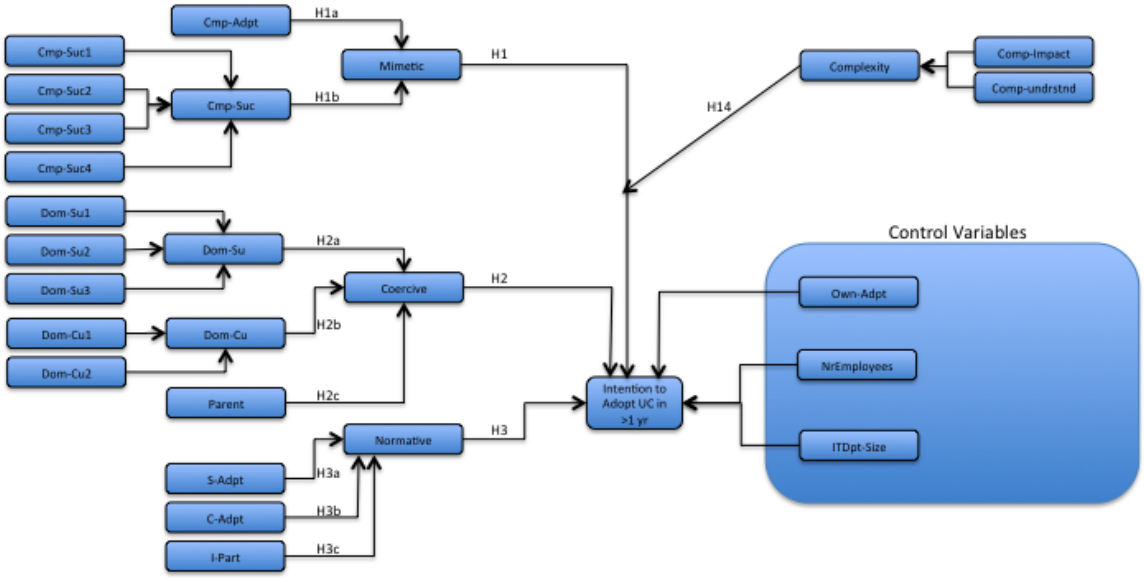


Figure 8: The Initial Research Model (Teo et al., 2003)

Basaglia et al., (2008) take Teo's initial research model which is based on institutional theory and add the following two perspectives to it: management fashion perspective and efficient choice perspective. Figure 9 below is replicated from the 2008 study and shows the sub constructs for each of the major constructs. It shares similar sub-constructs to Teo et al., (2003).

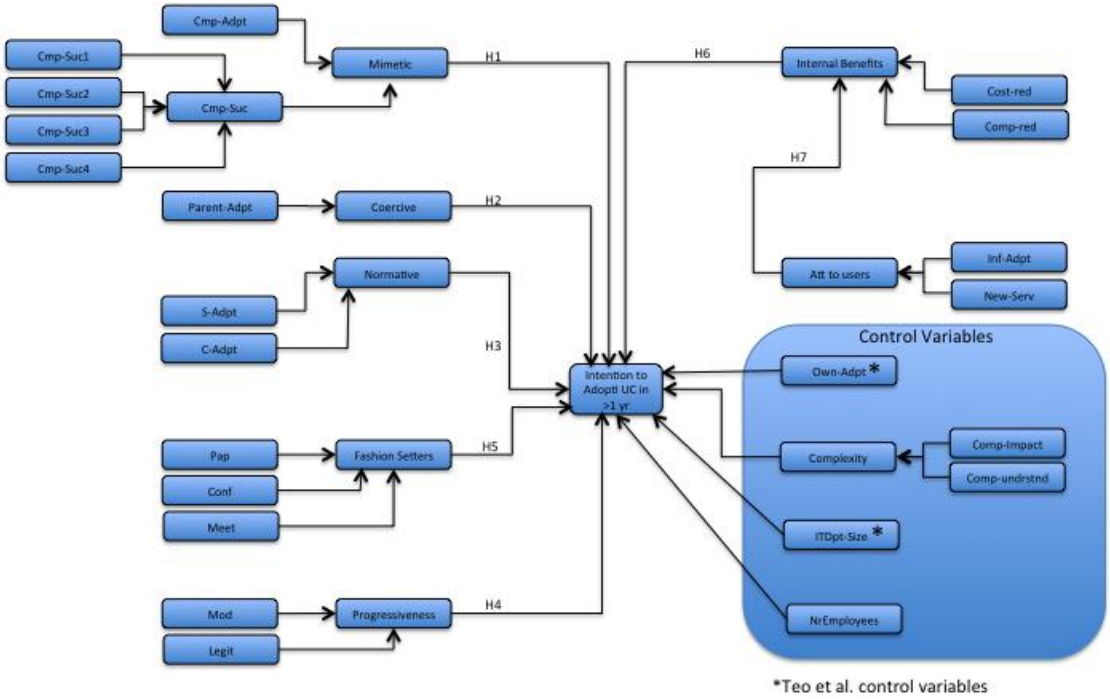


Figure 9: The Extended Research Model - (Basaglia, et al., 2008)

The proposed integrated research model used in this study is depicted in Figure 10 below. The integrated model takes the initial model and the extended model and adds certain additional constructs as well as attempts to find overlaps between the various theories and perspectives that inform the models. Additional constructs that are added to the model arise from organisational innovativeness theory (Wolfe, 1994) and the technological perspective (Tornatzky & Fleischer, 1990). These include groups of factors associated with concepts such as risk, cost, organisational culture, technological alternatives, end-user pressure, organisational maturity, organisational structure and complexity.

There are several overlaps that arise between the various theories of organisational adoption. This then inevitably spills into the various theoretical models. For example in the initial model, Teo, et al., (2003) already had a construct measuring perceived complexity that sat outside of the institutional perspective but modified the effect of mimetic pressure. However, Brown and Russell (2007) describe complexity as an aspect of the technological perspective along with cost. Basaglia, et al., (2008) capture an element of user pressure by measuring informal adoption and the ability to provide new service to users. However, it appears necessary to measure additional factors related to user pressure (Kettinger & Lee, 2002; Leonard-Barton & Deschamps, 1988)

Tobin and Bidoli (2006) also describe several factors that they believed are specific to South Africa that might inhibit adoption. These included bandwidth cost, complexity and regulatory uncertainty. The proposed integrated model appears to accommodate these but further research is needed to confirm this.

It was not clear at the early stages of the research whether these new concepts would be independent variables or moderating variables or if they are even significant. One of the research objectives was to determine this. In addition, the qualitative research was expected to expose additional factors that could be important independent or moderating variables in the model.

The research hypotheses are outlined in Section 3.7. These are illustrated in Figure 10 below. It was expected that the model may need to be refined and that these constructs may be reduced in number. An analysis of the proposed integrated model presented later in section 6 suggested that there may have been redundancies and overlaps between some aspects of normative pressures and the management fashion perspective. The links between the constructs derived from the organisational innovativeness perspective and the efficient choice perspective may also be redundant.

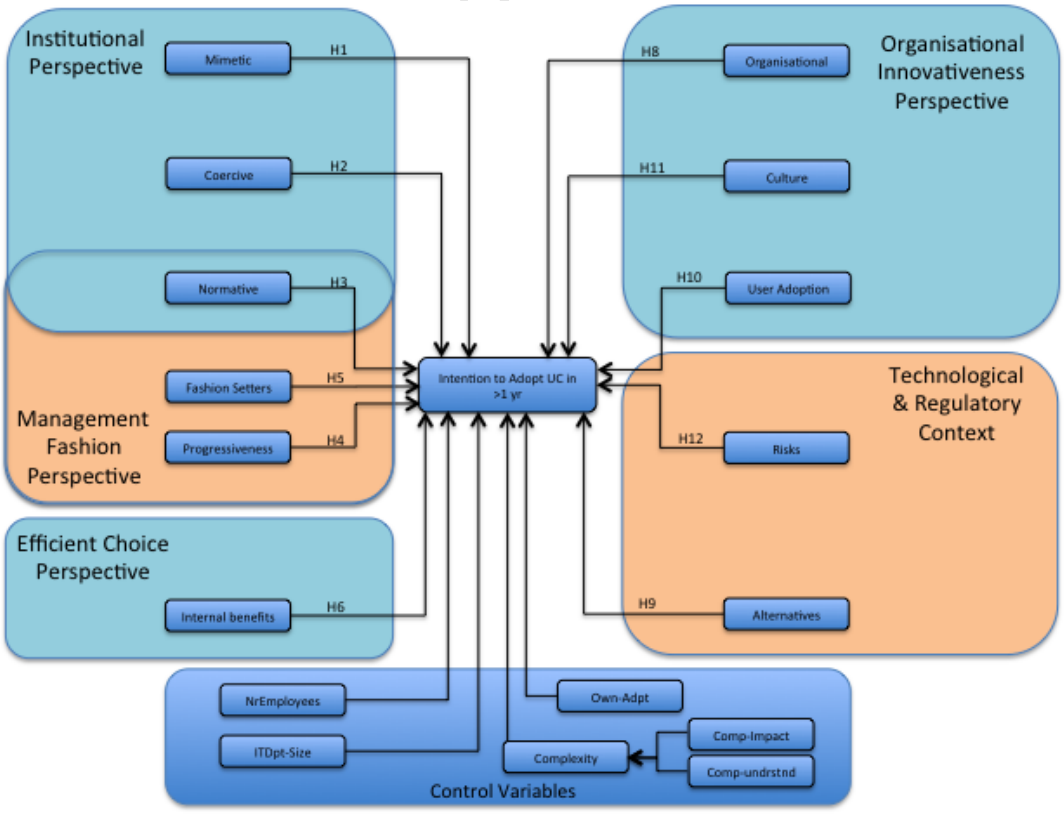


Figure 10: Proposed Integrated Research Model

Figure 10 above indicates that the proposed integrated model can be depicted with a reasonable degree of parsimony. It appears to work towards achieving a balance between richness and parsimony described by Plouffe, Hulland, & Vandebosch, (2001). However, during the combination of several models into an integrated model the overall complexity is likely to be high.

3.5. Research Objectives

The objectives of this research are to identify the drivers that influence the adoption of unified communication technologies in South Africa. It is also necessary to determine if the factors that influence adoption are the same in South Africa as other countries by comparing results, where possible, of similar research. If possible, it should determine if South African organisations are still slow to adopt UC. The research should evaluate and expand on the extended model. It should also use the model to gain a better understanding of the aspects surrounding the topic of the adoption of UC in South African organisations. It is necessary to find out if South Africa has some specific factors which are a product of the context of the South African regulatory history that continue to negatively influence the adoption of convergence technology.

It is also an objective to determine the validity of extending the technology adoption model to include the organisational innovativeness perspective as well as any others relevant to the South African context. In addition, it should identify additional moderating or influencing variables not exposed in the literature. Lastly, it should identify possible areas for future research. The research should be set up in such as way as to serve as a baseline for a future longitudinal study to determine if the specific South African factors inhibiting adoption are diminishing over time.

3.6. Research Questions

The research questions can be stated as follows:

- To what extent do the factors described in in the initial model proposed by Teo, Wei, & Benbasat (2003) predict the adoption of unified communications?
- Are the hypotheses generated by the initial model all valid?

- Does the addition of the factors described in the extended model (Basaglia, Caporarello, Magni, & Pennarola, 2008), to the factors in the initial model, improve the extent of the predicted adoption of unified communications?
- Are the hypotheses generated by the extended model all valid?
- To what extent do the factors in the integrated model improve the extent of the predicted adoption of unified communications?
- Are the hypotheses generated by the extended model all valid?
- What rearrangement of factors would improve the predictive powers of the integrated model?

3.7. Preliminary Research Hypotheses

The preliminary research hypotheses, illustrated in Figure 8, Figure 9 and Figure 10, are posed in the alternative form (the null hypothesis H_0 is that there is no effect). This section only outlines the high level hypotheses. A more detailed list of each hypothesis and its attendant corollaries is presented in Appendix A – Research Hypotheses.

3.7.1. Initial Research Model Hypotheses

Drawing from Teo et al., (2003) the following hypotheses emerge:

- $H_1$1: Greater mimetic pressure will lead to a greater intent to adopt UC.
- $H_1$2: Greater coercive pressure will lead to a greater intent to adopt UC.
- $H_1$3: Greater normative pressure will lead to a greater intent to adopt UC.

3.7.2. Extended Research Model Hypotheses

Drawing from Basaglia et al., (2008), the following hypotheses emerge:

- $H_1$4: Greater perceived progressiveness will lead to a greater intent to adopt UC.
- $H_1$5: Greater fashion setter pressure will lead to a greater intention to adopt UC.
- $H_1$6: Greater perceived internal benefits will lead to a greater intent to adopt UC.
- $H_1$7: Greater attention toward users will lead to greater intent to adopt UC.

3.7.3. Integrated Research Model Hypotheses

Drawing from Tobin and Bidoli (2006), the Organisational Innovativeness Perspective, Brown and Russell (2007) as well as the qualitative research process which is described in detail in Section 4 below:

- $H_1$8: Perceived organisational innovativeness will lead to a greater intention to adopt UC.
- $H_1$9: The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC.
- $H_1$10: Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC.
- $H_1$11: Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC.
- $H_1$12: Negative perceptions of the organisational risks associated with UC will lead to a lower intention to adopt UC.

3.7.4. Influencing, Control and Moderating Hypotheses:

Drawing from Tobin and Bidoli (2006):

- $H_1$13: Perceived alternatives will have a more significant impact on intention to adopt UC when perceived risk is higher than when it is lower.

Drawing from Brown and Russell (2007) and Teo et al., (2003):

- $H_1$14: Mimetic pressure will have a more significant impact on intention to adopt UC when perceived complexity is higher than when it is lower.

Drawing from Damanpour (1991):

- $H_1$15: The larger the IT Department the more likely the organisation will be to adopt UC.

3.8. Research Strategy

3.8.1. Data Collection

In support of the mixed method approach, both quantitative and qualitative data were gathered. Initial qualitative interviews were conducted with key interviewees. Tobin and Bidoli (2006) interviewed 12 people who were of good standing in terms of reputation and experience in the telecommunications sector in South Africa. It was proposed to interview a subset of this group. This would have been to verify the validity of the factors stated by Tobin and Bidoli (2006) which influence the adoption of converged communication technology in South Africa.

In practice this was difficult to achieve due to availability of interviewees. A different group of interviewees in good standing was chosen (see section 4.2 which is a general description of the sample). The interviews were all open-ended and semi-structured. None of the interviews were telephonic (as was initially expected) and all ended up as face-to-face interviews.

The survey method was used to test the model because it provides a basis for establishing generalisability. The survey method also allows for replicability and also has statistical power (Teo et al., 2003).

The questionnaire was adapted from strongly validated existing research instruments. This was refined to better suit the South African context. The questionnaire was built up largely from questions administered on a seven point Likert scale taken from research instruments developed by Basaglia et al., (2008) and Teo et al., (2003).

3.8.2. Sampling Strategy for Qualitative Component

Key interviewees were selected by means of purposive, non-probability sampling. Interviewees were selected based on their reputation and experience in the telecoms and converged communications sector. The interviewees were either CIOs, IT managers or key influencers such as IT architects in the telecommunications discipline.

Table 4: Key Issues associated with Sampling Strategy for Qualitative Research

Key Issue	Description
Sampling Technique	Purposive, non-probability sampling.
Target population	All South African organisations or firms.
Sampling frame	Senior individuals with deep experience in the telecommunications sector in South Africa including several CIOs, IT managers and IT architects.
Possible problems with sampling frame	The sampling frame is composed of individuals who have good reputations and experience in the telecommunications sector. They are unlikely to be very representative of a typical South African CIO who is likely to have far less detailed knowledge of the industry sector and so may have different biases. It was unclear at the planning stages of the research how many of these interviewees would be available for interview.
Sampling unit	Individual interviewees
Size of sample and return rate	The sample size was 5 and was smaller than the 12 people interviewed by Tobin and Bidoli (2006) due to difficulties associated with accessing all of the interviewees.
Cost and permission	Permissions were obtained from each interviewee. Costs were relatively high due to the researcher residing in Cape Town and some of the interviewees residing in Johannesburg.

3.8.3. Sampling Strategy for Quantitative Component

Respondents were selected by means of probability, cluster sampling. The sampling frame was the Internet Solutions customer base. This database has contact names, roles and contact numbers, physical and e-mail addresses. The sampling frame consists of several thousand customers and is large enough to provide an estimate with sufficiently high precision provided there is low sampling error or systematic bias.

Table 5: Key Issues associated with Sampling Strategy for Quantitative Research

Key Issue	Description
Sampling Technique	The sampling strategy proposed was cluster sampling.
Target population	The target population is all South African organisations or firms.
Sampling frame	Internet Solutions customer base.
Problems with sampling frame	Problems with the sample were that due to the nature of the Internet Solutions client base, certain types of organisations such as micro and small enterprises as well as local, provincial and national government departments were under represented in the sample. In addition, Internet Solutions network of branches is focused on the major centres in South Africa, which means that organisations based in smaller towns were under represented. Another potential problem with the sampling frame was avoided. This related to hosting the questionnaire online. A means was found to avoid the self-selection effect of unsolicited responses from individuals who may not be CIOs or senior managers. The UCT Select Survey ASP system has several mechanisms such as login credentials, reports per user, IP address tracking and many others to mitigate this problem. In the end the survey was directed via e-mail to the respondents and only one instance of an unsolicited (partial) response was detected and removed.
Sampling unit	The sampling unit consisted of a key individual at each Internet Solutions customer who was likely to have an influence on or be responsible for technology adoption decisions such as the CIO, facilities manager or network managers.
Size of sample and return rate	Similar international studies Teo et al., (2003) had return rates of lower than 20%. Of that there was further discard rate of 5-10% based on data integrity issues. Basaglia et al., (2008) used computer assisted telephonic interviews and so achieved a much higher hit rate. In excess of 2000 invitations to respond were sent out and a return rate of over 500 was achieved. There was a higher discard rate (due to incomplete returns) than similar studies possibly due to the length of the survey instrument. This was consistent with the return rates achieved in the international studies with similar methodologies.
Cost and permission	Permission was obtained from Internet Solutions to use the database free of charge on condition that respondents were kept anonymous.
Other sampling issues	Multiple viewpoints from within the same organisation were often acquired. “Viewpoints of different individuals are particularly important in the

Key Issue	Description
	institutional context because they are entrenched simultaneously in both similar and different web of values, norms, rules, beliefs and taken for granted assumptions." (Teo, et al., 2003, p. 29). A statistical technique such as multiple one-way analysis of variance of all exogenous constructs can determine if there are significant differences that may introduce any adoption bias. It has not been established if acquisition of different viewpoints from within a single organisation creates any conflicts with the management fashion and efficient choice perspective. Different viewpoints from parent and child organisations were also actively sought to determine coercive pressures.

3.9. Research Instrument: Qualitative Component

In order to confirm the findings of Tobin and Bidoli (2006) and determine additional factors specific to the South African context, qualitative data were gathered by doing semi-structured interviews. Please refer to appendix C for the detailed questions and themes for the semi-structured interviews.

A pilot was also conducted to determine the validity of the semi-structured interview instrument to resolve issues such as time limitations. The author personally conducted all the interviews either in person or telephonically.

3.10. Research Instrument: Quantitative Component

3.10.1. Survey Instrument

The quantitative research instrument is based on those used by Teo et al., (2003) and Basaglia et al., (2008). It has been modified to suit the South African context by changing certain language and including additional contextual questions. In addition, a definition of Unified Communications and descriptions of relevant components of Unified Communications components (elements) were included in the survey instrument to improve the validity of the responses. The approach was to use the UCT SelectSurveyASP system of online electronic forms to collect the data. Please refer to Appendix B – Survey Questionnaire to see a representation of the final form of the online questions.

Initially there was a conflict between the desire to collect richer data and a reduction in the response rate because the survey would take too long to complete. It is possible to collect richer data by using the matrix response technique offered in the SelectSurveyASP system to obtain responses on the various components of UC. A process of conceptual validation as well as a pilot was conducted to determine if the latter approach was too cumbersome, or reduced the liklihood of a high return rate.

Please refer to section 3.10.3 for details on the validation approaches used. All respondents were offered access to the results of the analysis, but individual submissions have been kept anonymous. Only aggregate data and analysed data in the final thesis was made available.

3.10.2. Operationalising Constructs

The table below provides a summary of the constructs for each perspective in the model. The section following Table 6 provides detail on how each of these constructs is operationalised. Appendices have been created with further detail only for Mimetic and Coercive pressure where there are three tiers of constructs i.e. a super-ordinate construct has constructs and these have sub-constructs in turn. Please refer to Appendix E – Operationalising Mimetic Pressure and Appendix F – Operationalising Coercive Pressure.

Table 6: Summary of Perspectives and associated Super-ordinate Constructs

Perspective	Super-Ordinate Constructs	Type of Construct	Constructs
Institutional Perspective	Mimetic Pressure	Formative	Extent of adoption by competitors (Cmp-adpt); Perceived success of adoption by competitors (Cmp-suc)
	Coercive Pressure	Formative	Conformity with parent corporations practices (Parent); Perceived dominance of supplier adopters (Dom-su); Perceived dominance of customer adopters (Dom-cu)
	Normative Pressure	Formative	Extent of adoption among suppliers (S-adpt); Extent of adoption among among customers (C-adpt); Participation in associations promoting UC (I-part)
Management Fashion Perspective	Fashion Setter's Pressure	Formative	Exposure to media (Pap); Particiaption in conferences (Conf); Participation in meetings with CIOs discussing UC (meet);
	Perceived Progressiveness	Formative	Perceived extent of modernity of the adoption of UC (Mod); Perceived extent of legitimacy of UC (Legit)
Efficient Choice	Perceived Internal Benefits	Formative	The extent to which UC is perceived to reduce costs (Cost-red) The extent to which UC leads to a reduction in complexity

Perspective	Super-Ordinate Constructs	Type of Construct	Constructs
Perspective			(Comp-Red).
	Attention towards users	Formative	The perceived extent that UC adoption leads to the possibility to offer new services to users (NewServ); The existing informal adoption of UC technology by users (InfAdpt)
Organisational Innovativeness	Expected effects of user adoption	Formative	The expected usefulness of UC to users (Useful); The expected ease of use of UC for users (Ease);
	Perceived organisational innovativeness	Reflective	The percieved innovativeness of the organisation (Innov); A perceived high number of white collar workers (WhitCollar); Organisation has a high number of knowledge workers (Knowl); Organisation is highly collaborative (Collab); The perception that the organisation is an early adopter (Early-Adpt)
	Perceived Organisational Culture	Reflective	The perception that UC does not fit with the organisational culture (Comp-Cultr); The perception that the organisation is not ready or mature enough to adopt UC (Comp-Mature);
Technological	Perception of Risk	Reflective	The perception that the adoption of UC introduces a security risk (Risk); The perception that there are not enough UC standards and vendor interoperability (Standards); The perception that the scarcity of UC skills increases the risk associated with UC adoption (Skills);
	Perceived Alternatives to UC	Formative	Perception that alternative approaches exist that provide a similar cost benefit (Alt-Cost); Perception that alternative approaches exist that provide a similar technical benefit (Alt-Tech);
Adoption	Intention to Adopt	Reflective	Measured whether the organisation was contemplating the adoption of UC within 12 months

3.10.2.1. Institutional Perspective: Operationalising Mimetic Pressure

Relying on Teo et al., (2003) and Basaglia et al., (2008) the mimetic pressure was operationalised as a formative construct formed from two sub-constructs measuring the extent of adoption by competitors (Cmp-adpt) and the perceived success of adoption by competitors (Cmp-suc). These two sub-constructs are not necessarily correlated. Cmp-adpt was measured as the perceived proportion of the firm's competitors that have adopted UC. An ordinal seven-point scale was used with 1 reflecting non-adoption and 7 reflecting 100 percent adoption amongst competitors. Cmp-suc was operationalised by asking respondents to indicate on a seven point Likert scale the extent to which competitors that have adopted UC had benefited greatly, and had been perceived favourably by others in the industry, their suppliers and their customers. Please refer to Appendix E – Operationalising Mimetic Pressure to view the relationship between super-ordinate constructs, constructs and sub-constructs.

3.10.2.2. Institutional Perspective: Operationalising Coercive Pressure

Drawing on both Teo et al., (2003) and Basaglia et al., (2008) the coercive pressure is a formative construct that was operationalised through three sub-constructs measuring: conformity with parent corporations practices (Parent); perceived dominance of supplier adopters (Dom-su) and customer adopters (Dom-cu). There is not necessarily a correlation between these three sub-constructs and an organisation may experience contrasting levels of dominance from these actors.

Basaglia et al., (2008) did not assess the perceived dominance of customers and suppliers because their study was specifically for VoIP and this has little relevance in a supply chain (Basaglia et al., 2008). Teo et al., (2003) studied financial EDI systems that do imply that actors in a supply chain will adopt the same technology. The latter two constructs are included to obtain an indication if UC plays a role between actors in a supply chain.

Conformity with parent corporation's practices was measured by a nominal scale indicating whether the parent company was planning on adopting UC (1=yes, 2=no, 3=no parent, 4=already adopting).

Dom-su was measured by asking respondents to indicate whether their firm's well being relied on these supplier adopters, whether they must maintain good relations with them and whether they could easily switch away from them. Dom-cu was measured using the same questions that replaced "supplier" with "customer". Please refer to Appendix F – Operationalising Coercive Pressure to view the relationship between super-ordinate constructs, constructs and sub-constructs.

3.10.2.3. Institutional Perspective: Operationalising Normative Pressure

Following Teo et al., (2003) and Basaglia et al., (2008) the normative pressure was operationalised through three sub-constructs measuring extent of adoption among suppliers (S-adpt) and among customers (C-adpt). As well as participation in industry, trade or professional bodies that discuss or promote unified communications (I-part). Normative pressure is also a formative construct and there is not necessarily a correlation between these three sub-constructs and an organisation may experience contrasting levels of normative influence from these actors.

C-adpt and S-adpt were measured and coded in the same way as Cmp-adpt. I-part was gauged by asking whether or not the respondent participated in any trade, industry or professional bodies where the respondent has been exposed to the promotion or just information on UC. The rationale is that organisations are likely to act collectively when they are members of these kinds of bodies (Teo et al., 2003).

3.10.2.4. Management Fashion Perspective: Operationalising Fashion Setter's Pressure

Relying on Basaglia et al., (2008) as well as Abrahamson and Fairchild (1999), fashion setters is a formative construct operationalised by three subconstructs namely exposure to media (Pap), Participation in conferences (Conf) and participation in meetings with CIOs discussing UC (meet). Pap is measured by asking respondents whether they read any articles in the media promoting UC. Conf is measured by asking respondents if they have attended conferences discussing or promoting UC. Meet is measured by asking respondents if they have attended recent meetings with other CIOs discussing UC. All three constructs are measured by a nominal scale indicating answers of (1=yes, 2=no, 3=don't know). There is not necessarily a correlation between these three sub-constructs and an organisation may experience contrasting levels of fashion setters influence from these different components.

3.10.2.5. Management Fashion Perspective: Operationalising Perceived Progressiveness

Drawing on Basaglia et al., (2008) as well as Abrahamson and Fairchild (1999), perceived progressiveness is assesed through two sub-constructs: perceived extent of modernity (Mod) of the adoption of UC and perceived extent of legitimacy (Legit) of UC as a way to manage communications. Seven point Likert scales were used (1=strongly disagree; 7=strongly agree). Progressiveness is assessed as a formative construct.

3.10.2.6. Efficient Choice Perspective: Operationalising Perceived Internal Benefits

Perceived internal benefit is measured as a formative construct through two sub-constructs: The extent to which UC is perceived to reduce costs (Cost-Red) and the extent to which UC leads to a reduction in infrastructure complexity (Comp-Red). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.7. Efficient Choice Perspective: Operationalising Attention toward users

Following both Kettinger and Lee (2002) and Basaglia et al., (2008), attention toward users is operationalised through two sub-constructs: the perceived extent that UC adoption leads to the possibility to offer new services to users (Serv) and the existing informal adoption of UC technology by users (inf). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.8. Organisational Innovativeness Perspective: Operationalising Expected Effects of User Adoption

The expected effect of user adoption (User) is measured as a formative construct. It is operationalised through two sub-constructs: the expected usefulness (Useful) of UC to end users; and the expected ease of use (Ease) of UC to end-users. There is not necessarily a correlation between these two sub-constructs and an organisation's users may experience contrasting levels of usefulness and ease of use. Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.9. Technology and Regulatory Perspective: Operationalising Perceived Alternatives to UC

The perceived alternatives to UC (Alternatives) is measured as a formative construct. It is measured by the perceived cost benefits of other alternative technologies or approaches (Alt-cost), the perceived technical benefits of alternative technologies or approaches (Alt-tech). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.10. Organisational Innovativeness Perspective: Operationalising Perceived Organisational Innovativeness

The perceived organisational innovativeness (Organisation) is measured as a reflective construct. It is measured by: The perceived innovativeness of the organisation (Innov); A perceived high number of white collar workers (WhitCollar); The perception that the organisation has a high number of mobile knowledge workers (Knowl); The perception that the organisation is highly collaborative (Collab); The perception that the organisation is an early adopter (Early-Adpt). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.11. Organisational Innovativeness Perspective: Operationalising Perceived Organisational Culture

The perceived organisational culture (Culture) is measured as a reflective construct. It is measured by: The perception that UC does not fit with the organisational culture (Comp-Cultr); The perception that the organisation is not ready or mature enough to adopt UC (Comp-Mature). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.12. Technology and Regulatory Perspective: Perception of Risk

The perception of risk (Risks) is measured as a reflective construct. It is measured by: The perception that the adoption of UC introduces a security risk (Risk); The perception that there are not enough UC standards and vendor interoperability (Standards); The perception that the scarcity of UC skills increases the risk associated with UC adoption (Skills). Seven point Likert scales were used (1=strongly disagree; 7=strongly agree).

3.10.2.13. Operationalising Intention to Adopt

Azjen and Fishbein (1980) indicate that it is essential to measure the following elements in order to determine intention behaviour: contemplation of the action (adoption of UC), liklihood of the action, context of the action (organisational adoption), and time (within a year). Based on both Teo et al., (2003) and Basaglia et al., (2008) the intention to adopt UC is a reflective construct that is measured by asking respondents to indicate whether they are contemplating UC adoption within a year.

3.10.2.14. Operationalising Control Variables

IT department size is measured by the total number of IT staff. Industry sector is identified as being one of a list of South African industry sectors used by Smit, (2007) in order to facilitate comparison if required in future. Organisation size was measured by the total number of employees of an organisation. Both of these are measured as an integer variable.

The existence of some UC adoption was measured by an ordinal seven-point scale with 1 reflecting non-adoption and 7 reflecting 100 percent adoption.

Perceived complexity was measured by asking the extent of the difficulty of understanding UC from two perspectives (1) the impact on organisational processes and (2) the complexity of the technology. Both of these were assessed on a seven point Likert scale (1=strongly disagree; 7=strongly agree).

3.10.3. Validity

As in Teo et al., (2003) content validity was established by requesting departmental members and colleagues to act as judges to ascertain if the constructs possess adequate conceptual validity. A further limited pilot study was conducted using the improved questionnaire.

In order to establish face validity the pilot questionnaire was developed and enabled online. It was personally administered by the author telephonically (while the respondent was online) for the first 4 responses. A further 20 responses were sought and 15 were completed. Feedback was sought as each one was completed. This was done so as to be able to clarify any uncertainties as well as to provide feedback for modification to the questionnaire based on time to complete, ambiguity and other factors.

Statistical analysis using Cronbach's alpha and exploratory factor analysis (EFA) was performed to confirm the stability and validity of the final survey instrument. Refer to section 6

The main questionnaire was administered electronically via e-mail with a unique html link to the UCT SelectSurveyASP system. Due to the fact that participants were anonymous by default it was only possible to follow up those respondents who had chosen to provide contact details to ensure that the intended recipient completed the questionnaire.

3.11. Methodological Concerns

The research model described in section 3.4 is relatively complex. It was used successfully by both Teo et al., (2003) and Basaglia et al., (2008) in order to study the adoption of relatively straightforward technologies. UC however, consists of multiple component technologies that have to be adopted in groups to be considered as a UC adoption (Datamonitor, 2008). If UC adoption is measured simply as UC adoption as opposed to measuring the adoption of each component, the validity or the research may

be compromised. Alternatively, measuring the adoption of each component in turn would have led to an untenably long questionnaire. This would most likely have compromised the return rate as well as significantly complicating the analysis process.

Hosting the survey instrument online invoked the danger of receiving unsolicited responses. This was mitigated by using the features of the UCT Select Survey ASP system but required careful monitoring.

The approach to data collection was at risk of suffering from the self-selection problem i.e. the people who responded are likely to have stronger feelings about UC than those who did not respond. This appears not to have been the case based on a comparison with a similar study conducted by BMI-T and Dimension Data in 2010 that reflected similar intentions to adopt various components of UC in South Africa (BMI-T, 2011).

The approach to data collection ran the risk of only (or largely) attracting responses from non-decision makers in an organisation. This proved not to be the case as over 80% of the responses were from decision makers. What was found was that there was an inverse correlation between the organisation size and the likelihood of a response from a decision maker. This reflects that fact that it is more difficult to get senior staff in large organisations to complete research questionnaires. There were however 265 decision makers out of 331 responses that would be likely to be classified by Rogers (2003) as boundary spanning personnel who were opinion leaders and highly cognizant of their environment.

3.12. Expected Contribution to the field of Information Systems

In terms of its contribution to IS research, the proposed work supplements previous technology adoption studies by providing new insights on organizational adoption of complex technological innovations like unified communications technology that affects many facets of a corporate IS infrastructure.

In terms of its contribution to IS practice, both telecommunications operators as well as equipment vendors may have an interest in the results of the study as they pertain to the South African enterprise market as well as other market segments. IS practitioners should have an interest in the results as they are likely to highlight behavioural differences between South African practitioners and international practitioners.

The results from this research project could be submitted to the South African Journal of Business Management, which published a report by Tobin & Bidoli (2006), which is of a similar nature. Submission could also be made to similar local and international journals of management studies and IS management journals because of the potential contribution to innovation and diffusion theory. The research has a technical focus, so journals with a similar technical focus would be appropriate as well.

3.13. Access, Privacy, Confidentiality and Ethics

It was not anticipated that there would be any ethics or confidentiality issues. The research method and procedure was based on face-to-face interviews, telephonic interviews and a survey questionnaire. The characteristics of the survey participants as far as gender, race or ethnicity is concerned are not relevant to the study and were not recorded. Only the gender, position, qualification and general age group of the interviewees for the qualitative interviews was recorded. Oral consents were obtained from the participants in the qualitative interviews. The questionnaire was anonymous and did not require a consent form but for completeness was combined with a covering letter informing participants of the nature of the research and identifying any risks as well as confirming their anonymity in any publication.

No physical, psychological, social, or legal risks to the study participants were foreseen. There was a very minor economic risk related to inside information. This was due to the nature of information that was provided that may have indicated an organisation's potential plans to adopt UC technology that could have been used as an economic advantage by the author in a fashion not dissimilar to insider trading. This risk was mitigated by the guarantee of confidentiality. The University of Cape Town's ethics committee did not deem it necessary to use third parties to extract the information and provide it to the author in a manner that ensured anonymity. Over time the value of the inside information was likely to diminish in any event.

Even using third parties, it was possible but improbable that a potential conflict of interest may have arisen should the 3rd party become aware of such an intention to adopt a technology. There were several additional ways of overcoming this issue, and indicating this possible risk on the covering/consent letter to the participants was one way of overcoming the issue.

It is intended to disseminate the research findings to participants that request it as a condition of their participation in the survey. The thesis is also likely to be published at least by the University of Cape Town library.

3.14. Project Time Frame

The research timeframe was cross-sectional as the research was intended to evaluate the intention to adopt UC at a specific instance in time i.e. the 2010 timeframe as opposed to a longitudinal study where the phenomena would be studied over an extended period of time. Figure 11 below shows the actual project timelines.

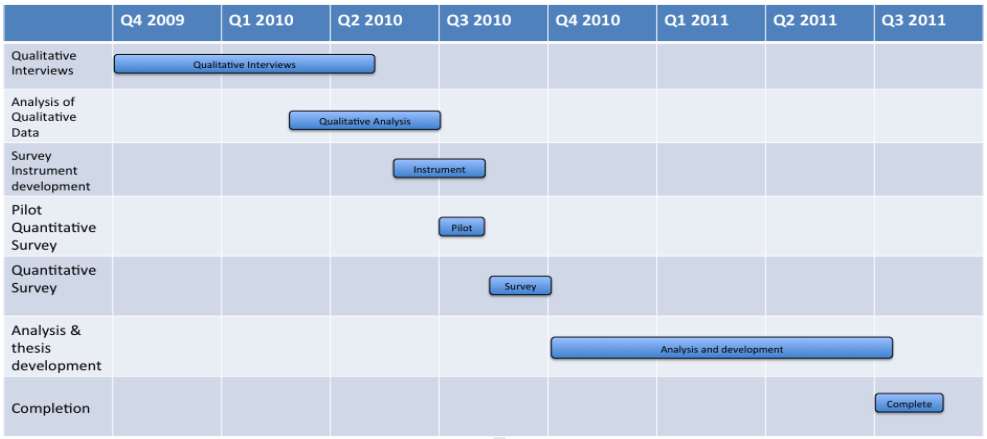


Figure 11: Project Timeframe

4. Data Collection and Analysis: Qualitative Interviews

4.1. Actual Data Collection Experience: Qualitative

The original intention was to interview the same interviewees that had been interviewed by Tobin and Bidoli (2006). This did not prove possible due to inaccessibility of most of the key interviewees selected by them. Key interviewees for this research were thus selected by means of purposive, non-probability sampling. Interviewees were selected based on their accessibility to the researcher, reputation and experience in South African information communications technology in several industry sectors.

Ultimately 5 qualitative interviews were conducted face to face. Each lasted no longer than 45 minutes. Each interview was recorded and transcribed. Key phrases were extracted soon after each interview based on responses to questions pertaining to each of the factors in the initial research model described by Teo et al. (2003) and the extended model described by Basaglia et al., (2008) as well as the South African factors described by Tobin and Bidoli (2006).

The initial interview was conducted in Cape Town with an interviewee from a financial services company. The second two interviews were conducted in Johannesburg at ICT services companies. Different perspectives were gained and the analysis using open coding appeared to vindicate many (but not all) of the choice of factors in each theoretical model described by Teo et al., (2003) and Basaglia et al., (2008) as well as many of the South African factors described by Tobin and Bidoli (2006). Certain additional emerging factors came out of each interview that did not appear in any of the theoretical models or the prior South African research. A further interview at a different financial services company was conducted and analysed and a similar pattern occurred i.e. support for the theoretical models and some support for the South African research. Additionally, almost no further emerging factors were recorded. Finally an interview with a well-respected CIO of a Western Cape based petro-chemical company was conducted to see if a different industry might change the results. Similar results were achieved and no further emerging factors occurred.

4.2. General Description of Sample: Qualitative

The table below indicates that the interviews were conducted between October 2009 and May 2010 to a group of senior male information technology executives across a variety of industry categories. The sample can in no way be said to be entirely

representative of all South African organisations but it provided the means with which to indicate if the factors represented in the theoretical models from which the integrated model is drawn could be considered relevant factors in South Africa. The interviewees were asked to describe their own organisation's ICT innovation adoption profile as well as if they had adopted UC.

Table 7: Summary of Qualitative Interview

Interview	Role	Industry	Province	Age Group	Date	Highest Qualification	Gender	Adoption profile for ICT innovations
A	IT Architect	Financial Services	W.Cape	50-60	Oct 2009	Tertiary degree (technical)	Male	Late majority generally: No formal adoption of UC.
B	CIO	ICT Services	Gauteng	40-50	Jan 2010	PhD (Eng)	Male	Early adopters generally: Have adopted UC to a wide internal network.
C	Managing Director	ICT Services	Gauteng	40-50	Jan 2010	MBA	Male	Early adopters generally: Have adopted UC to a wide internal network.
D	IT Manager	Financial Services	W.Cape	40-50	Feb 2010	Tertiary degree (commercial)	Male	Late majority generally: Have adopted UC but aimed at senior management.
E	CIO	Petro-chemical	W.Cape	50-60	May 2010	MBA	Male	Early majority generally: Piloting UC but no intention for widescale adoption

4.3. Analysis Methods

The framework for the analysis and interpretation of the data was formed by the research model described in section 3.4, the objectives of the study described in section 1.3 and the results of the study by Tobin and Bidoli (2006). A theoretical thematic analysis was used as the main technique to analyse the data. Thematic analysis has been defined as a method used to identify, analyse and report patterns or themes within the data collected in a research (Braun & Clarke, 2006). Theoretical thematic analysis provides a more detailed analysis of some aspect of the data

collected, relating them directly to the research question(s) and trying to fit them into a pre-defined coding framework (Braun & Clarke, 2006).

The technique chosen to be used by the researcher in this study was open coding, which is the process through which concepts are identified and broken down into their properties and dimensions; "properties being the characteristics that define the concept and dimensions being the range along which a property varies" (Brown, Gordon, Janik, & Meyer, 2005) . The open coding procedure also groups "lower order concepts into a higher order concept", termed a category (Brown et al., 2005).

Data analysis began with the researcher listening to the recorded interviews. The researcher then tried to conceptualise and reduce the interview data by noting down the relevant concepts, textual phrases and quotes which relate to the major components of the research model in section 3.4. Following this, each interview was transcribed into a memo format.

4.4. Descriptive Statistics: Qualitative

A detailed description of the descriptive statistics for the qualitative interviews can be found in Appendix H: Descriptive Statistics Qualitative. This appendix provides details of the incidence (i.e. the count) of concepts in each interview with a short analysis. This is a fairly quantitative approach to the qualitative data but it is important in two main respects. Firstly, it shows clearly how certain interviewees returned repeatedly to a particular topic even when triggered by an unrelated question.

Secondly, as shown in Table 8 below it shows the count (incidence) of emerging concepts from each interview. The emerging concepts are represented in the order that they initially appeared in the interviews. As can be seen, all emerging concepts were exposed by the second interview and further interviews did not reveal any further concepts.

Table 8: Qualitative - Emerging Concepts

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Organisational	Early-Adpt	1	2	1	1	0	5
Coercive	Vendor pressure	1	3	1	1	1	7
Coercive	Parent-Suc	1	0	0	1	0	2
Alt-Tech	Life-Cycle	1	2	0	0	1	4
Normative	Evangelist	2	0	0	1	0	3
Risk	Outsource	1	0	0	1	0	2
Normative	Green IT	3	0	0	0	0	3
Complexity	Legislation	2	0	0	1	0	3
Progressiveness	Org-effic	2	0	2	1	0	5
User	Useful	1	2	3	0	0	6
Organisational	Collaborative	1	1	2	2	0	6
Culture	Behaviour	1	1	1	0	0	3
Culture	Comp-Cultr	1	2	3	0	1	7
User	Ease	0	3	1	1	0	5
Organisational	Innov	0	1	2	0	1	4
Organisational	White Collar	0	1	1	0	0	2
Organisational	Knowledge Workers	0	2	1	1	0	4
Geograhic spread	NrBranches	0	1	1	0	0	2
Geograhic spread	International	0	1	1	1	0	3
Industry Category	B2B	0	2	0	0	1	3
Culture	Comp-Mature	0	4	2	0	1	7
Organisational	Supplier Status	0	1	1	0	1	3
Organisational	Mature	0	1	1	1	0	3
Organisational	Mobility	0	1	2	1	0	4

4.5. Results of Open Coding Analysis

Thematic open coding was used to facilitate the analysis. In other words, the textual phrases of the participants were laid out under each participant's name, grouped under each concept in a tabular format and coded. These textual phrases were then analysed and grouped under categories and concepts in a spreadsheet in Microsoft Excel. Emerging key concepts and categories were identified by studying the spreadsheet repeatedly and considering possible meanings and how these fit with the components of the framework for the analysis and interpretation of the data. Finally, all the categories and concepts were combined together and were illustrated through the initial, extended and integrated research models. Certain factors not covered by the initial and the extended models for the analysis and interpretation of the data were highlighted for possible inclusion in the integrated model.

The degree of support by an interviewee for a particular concept was important and a means to measure it was needed. So for example, where the concept of competitor adoption was raised with the interviewee by the interviewer or was raised by the interviewee without prompting it was counted. The number of instances of repetition of an answer or phrase related to the concept (throughout the entire interview) were

counted. Each instance was then analysed for the property (as defined by Brown et al., 2005) of "support" for the fact this this represented a valid factor that could influence the adoption of unified communications. Each of these instances was reviewed and then rated by the researcher as showing 1=Absolutely no support (strongly negative), 2=no support, 3=neutral, 4=support, 5=Strong support.

These ratings were then averaged and represented as "Emphasis". So a low emphasis below 3 would indicate that there was no support for the concept by the interviewee. A high rating of 4 or 5 would indicate some support or strong support. Some interviewees indicated varying degrees of support for the same concept within different contexts. These were simply averaged to a single measure. The results of the analysis for each of the interviews can be found in Appendix I: Results of Analysis of Qualitative Interviews .

4.5.1. Qualitative Analysis of Concepts from Mimetic Pressure

The initial research model derived from Teo et al., (2003) is based on Institutional Theory. This model uses constructs for mimetic pressures, normative pressures and coercive pressures from an organisation's clients, suppliers and competitors. DiMaggio and Powel (1983) state that mimetic pressures manifest themselves in two ways: the prevalence of a practice in the organisation's industry and the perceived success of competitors in the same industry who have achieved success.

The interviewees however, did not appear to support the view that competitor adoption pressure was a factor. "I don't think at this point in time we've really copied anyone, otherwise we'd have been further down the road" (Interviewee A). "In terms of the business there will be an influence of competitors but not IT" (Interviewee D). Interviewee C was the only one who appeared to share the view of DiMaggio and Powel (1983) and stated, "I think there's quite a bit of copying I think we tend to sell [UC] based on case studies."

This general disagreement was a bit more mixed when it came to the concept of being pressured to copy a competitor practice based on their perceived success. "If [financial services] competitors are seen to be having success then executives would put pressure on us [to adopt UC]" (Interviewee A). Interviewee B was initially opposed to the concept stating "I don't think it's so much of a competitive issue" but later made the contradictory statement that "You can stay on the old technology for a while but everyone around you will change and eventually you will be forced to change". While

interviewee E believed that the perceived success of competitors would "possibly just get it on the strategy roadmap but will not influence actual adoption directly."

The analysis did not unearth a strong sense from any of the potential adopters of unified communications that they were monitoring their environment closely and modelling themselves on similar organisations who had adopted UC. Teo et al., (2003) state that decisions to engage in a particular behaviour depend on the perceived number of similar others who have already engaged in that behaviour and created a course of action that is taken for granted in the sector and more importantly that they need to avoid the embarrassment of being perceived as less innovative or responsive than their peers. Interviewee E provides a clue as to why this may not be a strong factor in South Africa "Adoption by competitors in SA has been slow. Due to most oil companies largely pulling out of Africa, the South African operations tend to be last on the roll out list."

This may just be true for petro-chemical industry sector or it may have a wider impact across other sectors. It also remains unclear whether this might mean that South African organisations are just slower to adopt new technologies (but eventually get around to it) or if they never adopt certain technologies because of a lack of these kinds of pressures. When prompted, Interviewee E stated that "SA used to be highly innovative, for example our banking industry. But over the last 10 years mediocrity has come to be acceptable." When looking at UC specifically, Interviewee E stated, "Internet adoption in SA is low and the role of culture in how we use our smartphones and devices in our consumer and business lives has created a gap between SA and Europe. South Africans don't use their devices as much." Interviewee D, representing an organisation in the financial services sector, provided some confirmatory evidence of this when he stated "[Our company] has a policy of not being bleeding edge, so if something is less than 5 years old as a technology they won't look at it."

4.5.2. Qualitative Analysis of Coercive Pressure

DiMaggio and Powel (1983) define coercive pressure as the formal or informal pressures exerted on an organisation by other organisations upon which they are dependant. These pressures are typically in an organisation's supply chain and include pressure from their customers, suppliers, regulatory bodies and parent corporations. Drawing from Teo et al., (2003), in the context of UC adoption, it seems likely that coercive pressure would stem mainly from dominant suppliers, dominant customers and dominant parent corporations.

It appeared that most interviewees supported coercive pressure as a concept that might influence adoption of UC. When looking at supplier pressure it was stated "It could, if you look at something like email. If your service providers all have e-mail it is easier to communicate with them" (Interviewee A). Tobin and Bidoli (2006) highlighted vendor pressure as a potential issue which was echoed by Interviewee B: "Another pressure point is from the vendors. Because we are a systems integrator we are totally reliant on our vendors and our vendors push things through [to IT] and it may not necessarily be the best thing". Other non-IT organisations also rated vendor pressure as a factor: "There was coercive pressure, specifically around OCS [Microsoft's then implementation of Unified Communications]" (Interviewee D). Supplier pressure in general, that is, not just vendor pressure, also received support: "It won't be the café on the corner but, big suppliers, yes." (Interviewee A).

The validity of coercive pressure from dominant customers as a key factor influencing adoption of UC was more difficult to determine. Interviewee A, representing a large financial services organisation stated that "The same holds for key customers. If you've got competitors [who have adopted] he would rather give his business to someone who can communicate with him". However, Interviewee D, from the same industry sector felt less customer pressure: "Even the corporate customers for example in the employee benefits space....for example...like Telkom...no strangely there would be hardly any pressure. For some reason customers are scared to force Old Mutual into a corner. It's all internal supply chain. The internal customers are the business units trying to drive down costs and London trying to drive Unified Comms". In the petro-chemical industry, Interviewee E stated that their type of customer did not currently exert pressure but had the theoretical means to do so: "It might if the dealer base through the dealer council created influence".

Teo et al., (2003), posited that in the context of FEDI, dominant customers might apply pressure to adopt in order to reduce their own administrative costs and improve efficiencies. There appeared to be little evidence of this in any of the interviews. Interviewee C did state that "Key customers will be a key pressure but more key suppliers than customers. In our business where customers play a massive part is when our customers expect us to adopt the technology we are selling. I think if you take the financial services segment...for us we deal with HSBC on a global basis...why shouldn't we use technology instead of flying? But they don't ask it of us". One of the key reasons for this could be the relative infancy of the technology coupled with the high complexity of simply getting multiple technologies to work in a single organisation. Interviewee C stated that "The biggest inhibitor is the massive complexity that it entails at an operational level. For the user they are unified but at an operational level they are not unified".

DiMaggio and Powel (1983) note that subsidiaries are required to conform to practices that are compatible with the parent corporation. Teo et al., (2003), determined that parents who have adopted FEDI are likely to exert pressure on subsidiaries to do the same. Not all the interviewees agreed that pressure from parent corporations was a major factor in the adoption of UC.

Interviewee A, whose organisation is the parent company, caustically commented that "The smaller companies [in our group of companies] just tell us to [expletive deleted]-off because of the way our business model works". His sentiments were echoed by others, like Interviewee C, who stated that "I don't think there's a lot around parent organisation drive. The structure of the organisation makes a massive difference. If the organisation is too federated, they will all do it as long as its their way. They are more likely to struggle to get a business case out". Interviewee E did not feel parental pressure in his own organisation: "[there is] no coercion from Petronas [the parent organisation] because Petronas often takes its cue from Engen in these kinds of issues". However, he conceded that this may have been particular to his company and that this may be contrary to a wider industry trend when he stated: "But it is an issue with Shell and others.."

However, Interviewee D clearly felt pressure from an offshore parent organisation to adopt UC in a particular way with a particular vendor: "With this particular project...when we were looking at OCS...one of the things we discovered that the holding company in London...it's minute in terms of numbers but they are the owners. There was a huge amount of pressure for OCS and SharePoint".

Holland, Lockett, Richard, and Blackman, (1994), indicate that parent corporations with foreign subsidiaries may require these subsidiaries to adopt key technologies to reduce costs. There was limited evidence of this in the interviews. However, the overall impact of pressure from parents appeared muted in the South African context. It was difficult to determine if this was because of the relative immaturity of the technology or the South African context itself.

4.5.3. Qualitative Analysis of Normative Pressure

Teo et al., (2003) note that some researchers have observed that a proxy indicator for the fact that a practice has technical value might be the wide extent of its use. They observe that this is especially true in the case of interactive technologies (such as e-mail or EDI) that involve reciprocal interdependence. This means that the frequency of use by an organisation's customers and suppliers may create positive externalities and

increase the technical value of that innovation to the adopting organisation. They conclude that organisations contemplating the adoption of these types of technologies are likely to be influenced by normative pressure in the form of the extent of adoption among their suppliers and customers with whom they have direct ties.

There was general support for normative pressure as a key factor influencing the adoption of UC by most interviewees. The extent of adoption was seen to be key: “They do it because everybody else is doing it.... whether its going to add business value or streamline the process or reduce cost or improve things is sometimes not the most important thing” (Interviewee B). Interviewee C stated that “I think that pressure [normative pressure] is there, I think, I guess the only counter balance to that is the resistance to that. Customers will ask show me how this either saves or makes me money”.

DiMaggio and Powel (1983) state that this is not the only form that normative pressure takes. They state that organisational decision makers acquire their solutions, norms and standards from their business and professional circles. In addition key institutions that provide forums for information exchange also influence organisational behaviour with regards to the adoption of these kinds of innovations. The conclusion is that decision makers who participate in associations that promote UC are more likely to be positively influenced to adopt UC. This is supported by the following statement from Interviewee D: “The only thing that Mutual, in terms of technology, looks at is a 3 year and 5 year horizon and they look at what consultants like Gartner and McKinsey are saying”. Interviewee E took a contrarian standpoint: “There is some influence but only to the extent of putting it on the roadmap. It won’t influence adoption”. However, he conceded that his peers in the same sector may be more influenced by this aspect of normative pressure than he was: “Yes in the oil industry in general but not in the case of Engen”.

What was interesting is this was one of the few factors that appeared to touch a raw nerve. Most interviewees were willing to concede that this was a factor but all believed that it did not apply to them. “I come from a heavy engineering background SCADA systems and so on.....and we made decisions based on the business need...is there a business need, that's how we made technology decisions. In the IT industry, people are much more gullible” (Interviewee B). Interviewee A believed that, “Exposure is important” but that the influence was not as great as some made out: “Most people listen to Gartner and then forget”.

Several concerns arose from this analysis. Firstly, there was general agreement on the validity of the factors but only in as much as they applied to others. This raised the

concern of a bias that might enter the quantitative survey because respondents to the quantitative survey instrument might provide significantly different answers if the question was posed in a personal rather than a more general sense. In addition, there was a concern that the network effect of interactive technologies involving reciprocal interdependence might not be as strong with UC because of its relative infancy. The participating organisations appeared to either not have adopted at all or were mostly concerned with internal diffusion of the technology and external interoperability was of limited interest.

4.5.4. Qualitative Analysis of Fashion Setters Pressure

Basaglia et al., (2008), make the case for an extended model by showing that the adoption decision cannot be explained by the institutional perspective (captured in the initial research model) alone. Abrahamson and others have argued that the forces of fad and fashion have a powerful impact on the innovation diffusion process (Abrahamson, 1996; Abrahamson and Fairchild, 1999; Abrahamson and Rosenkopf, 1997). In the view of these researchers there are academics, consultants, business gurus and technology vendors that have an interest in generating demand for innovations even if systematic evidence of the innovation's efficacy is absent. The resulting wave of discussion and media attention creates a burst of managerial interest and organizational adoptions. As the adoption becomes more widespread, other forms of institutional pressure are often exerted on perceived non-adopters, which produces a self-reinforcing adoption cycle.

There was some support for this perspective in the interviews. Interviewee A believed that "Exposure is important" and that the influence of technology vendors is high: "I think the Ciscos,...and Microsofts, of the world have more influence than Gartner". Interviewee B was more blunt "In the IT industry…They do it [adopt UC] because it's the fashion". He tempered his stance later in the interview: "If you look at technology….it is evolving so fast…technology gatekeepers need to keep abreast of new technologies..other technologists go to these conferences and these networks start to build. In terms of driving the technologies I don't think these [conferences] directly drive adoption but they do show who is doing this and who the right partners are".

The concept of fashion setting in the guise of best practice was raised by several interviewees: "It [Participation in industry bodies] is and I think there's a fair amount of copying that happens at that level and what is perceived as best practice" (Interviewee C). "They don't look at what competitors are doing only at what Gartner recommends." (Interviewee D).

Only interviewee E believed that fashion setter pressure had become a less relevant influence on adoption but this was due to the economic downturn: “This used to be the case but the recession has impacted the effect of outside influence dramatically.” He did believe that peer pressure had some influence: “Some peer CIOs will have an influence but only so far as their organization and strategic reasons match Engen’s”. When asked which of the fashion setter pressures was the most influential he stated that: “CIO pressure carries the most weight”.

At face value, there appears to be a degree of overlap between the management fashion perspective and the second type of normative pressure that relates to organisational decision makers acquiring their solutions, norms and standards from their business and professional circles as well as key institutions that provide forums for information exchange. The nature of the interviewees’ answers to both sets of questions was similar which reinforces the possibility of overlap.

Several authors (Abrahamson, 1996; Abrahamson and Fairchild, 1999, Carson, Lanier, & Carson, 2000) describe perceived progressiveness as a key element of fashion pressure. Management fashions are described as interventions that are subject to social contagion because the are perceived to be progressive, innovative, rational and functional. Importantly they are described as aimed at encouraging improved organisational performance either materially or symbolically through image enhancement. Perceived progressiveness is usually measured by the extent to which the adoption of the technology is perceived to characterise a modern, dynamic company and the extent to which the technology is considered legitimate.

All of the interviewees except one believed that UC filled these two criteria: “I would say so [UC is modern and legitimate] Ja.” (Interviewee A). “When I joined here I was really impressed by the way the company used technology [like UC] and it created the impression for me that this was a world class organisation” (Interviewee B). “Yes, I would agree that the perception of being modern and legitimate plays a role” (Interviewee D).

4.5.5. Qualitative Analysis of User Pressure

Kettinger and Lee (2002) recognised that expected formal adoption and current informal individual adoption of an innovation may have an influence in shaping the formal decision process of primary organizational adoption. Interviewee C supported this view by raising the possibility of IT users being influenced by fashion and normative pressure and applying pressure on decision makers: “I think its more from employees saying we

are not dynamic enough, we are behind the times". This raises the possibility of a recursive and more complex relationship between fashion setter pressure, normative pressure and user pressure than is captured in any of the models under review.

Attention towards users as a factor had a high degree of support by most interviewees. "Once people realise you can work from home as efficiently or more efficiently it will start picking up" (Interviewee A). Interviewee C went further: "But the other big influence is consumer led influence, so what your finding is that whole ecosystem of things on the internet and people adopt unified comms". Interviewee B took the view that IT should not take an adversarial stance with regards to informal adoption by users: "You should use these guys as a kind of skunk works for you and together work towards adopting a new technology and that way achieve a greater success".

However interviewee D implied that this approach had its own dangers and may actually inhibit wider adoption of UC: "So without proper planning we opened up to MSN messenger which saved on voice costs but immediately went viral. So from then on Old Mutual was very careful of getting the control right. Then along came Skype and Mutual had to say no because it was about governance and control. It's about.. is the guy using it for what its supposed to be? The development of UC was driven by the wrong end of the problem. The organisation kept constantly with this mind-set of control. We stagnated because nobody could tell us definitively how to control it as an organisation".

4.5.6. Qualitative Analysis of Internal Benefits Measures

Abrahamson (1991) notes that the efficient-choice perspective assumes organizations understand their strategic preferences and thus measure an innovation's technical efficiency as the ratio of outputs to inputs. This means that given existing resource constraints, organisations are deemed to rationally choose the most efficient innovation that maximises outputs related to their strategic goals. Basaglia et al., (2008) measured this by both the potential for cost reduction and complexity reduction.

All interviewees returned to the concept of cost reduction repeatedly and agreed that it was a factor. "It's about the rate at which costs come down. In this financial climate yes, cost reduction definitely is." (Interviewee A). However, there was an array of opinions as to whether there was a clear business case for UC, Interviewee B stated that: "What the technology will do in terms of adding value to the business and is there a cost benefit case….I doubt it". Interviewee E confirmed this opinion: "The business case has most of ROI taken out of it by other projects so only the soft issues remain".

Interviewee C concurred: “If you look at productivity an FD will always show that the business case is not robust”. Only interviewee D stated that there appeared to be a cost driver linked to their own adoption of UC: “They probably spend about R40 million per year on international phone calls to places like London. But there's no voice over IP or anything... The internal pressures were purely around cost”.

There was some support for complexity reduction as a key factor but it seemed directly related to organisational context: “Reduction in complexity is linked to reduction in cost...Complexity and risk are linked...Cost and risk are linked” (Interviewee A). Interviewee C referred to it as a “massive issue”. However, Interviewee D, coming from an outsourced perspective, stated “Complexity does play a role, but we outsource the operational side so skills and complexity become the service providers problem.”

4.5.7. Qualitative Analysis of South African Factors

Tobin and Bidoli (2006) attempted to obtain a comprehensive understanding of the forces shaping the South African market that were likely to impact on the adoption of converged Internet protocol (IP) services in the SA market. Among others they stated that: high bandwidth costs; office politics, privacy, regulatory clarity, short ROI, poor quality of voice over IP, quality of service issues, risks, lack of standards, security risks, and a skills shortage were all factors that were likely to influence the adoption of technologies like UC.

Some of these still resonated with the interviewees in 2009 but many did not. Interviewee E believed that “Bandwidth will be resolved by 2012” and was not strongly contradicted in other interviews. None of the interviewees believed office politics was a significant issue. Privacy was the source of some debate: “Executives have privacy concerns but not general users” (Interviewee A). Interviewee B had stronger views: “Privacy concerns are conspiracy theories...I think it is a lame excuse for [non adoption]”.

Interviewee A echoed the view of all the interviewees when he stated: “I think it [telecommunications regulatory clarity] has gone away, because I think we understand the regulatory environment now”. However, regulatory issues related to specific industries was clearly a factor for some interviewees: “It does play a big role, I think especially now with...legislation around the confidentiality of information in [financial services]” (Interviewee A). However, interviewee D disagreed: “Financial services legislation can be a factor but no more so than in any other technology like e-mail”.

All of the interviewees referred to the poor quality of mobile calls in South Africa as having diminished earlier concerns about voice over IP quality. “If you look at cell phones, the quality is [expletive] and people are getting used to it...getting away with a less than perfect solution” (Interviewee A). Interviewee C expanded on the reason for this: “The human being adapts to poor QoS as long as you are getting services and flexibility you never had before”.

Security, UC technology standards and the skills shortage did however all appear to be possible key factors. Interviewee C remarked on the impact social media is having on security and privacy concerns: “Privacy and security are more corporate governance issues. The irony is that people will not use UC [at work] and then go home and use Facebook. That’s more a case of business keeping up with trends. Look at what we are doing generating a policy around social media.”

Standards were a key concern: “Standards, yes that’s an issue. That’s definitely an issue....it makes the decision making process difficult” (Interviewee A). Interviewee C reiterated the high complexity of integrating multiple different systems and the risk of losing functionality “I think a key issue though is standards, OCS won't have these features if you integrate with another vendor”.

The shortage of skills was understood but not perceived to be a huge problem. Interviewee A believed that “skills are scarce but are available”. Interviewee B was less confident when he said “I think for UC the skills is an issue”. But interviewee E was confident it wasn’t a problem: “Skills are not a major issue as these can be acquired in the global market place”. These views could be strongly influenced by context as was seen with interviewee D in section 4.5.6 above who didn’t believe skills were an issue because they became the service providers problem in an outsourced relationship.

4.5.8. Emerging Factors That Were Dropped

Table 8 above shows how emerging concepts were exposed with each interview. It can be clearly seen that after the second interview, no new concepts were revealed.

Several interviewees raised vendor pressure and vendor status as key issues. Teo et al., (2003) state that dependence on suppliers arises when organisations are unable to switch to alternate suppliers. It was not clear that this was true of all UC vendors in all contexts except in the context of ICT services companies where vendors would be part of their supply chain and hence exert stronger pressure. However, it was decided that vendor pressure was simply a special case of supplier pressure and was strongest in

the context of ICT services companies but was likely to be much weaker in a more general context. This fitted with the strength of responses from the non-ICT companies such as Interviewee E who said: “No but key vendors of UC may have the influence to put it on the technology agenda”. As such vendor pressure was deemed to have already been captured in the initial research model. Vendor status could be said to be part of the social contagion effect of management fashion theory and as such was already captured in the extended model.

Both interviewee A and interviewee D raised the actual and perceived success of parent adoption as a factor they believed to be key to UC adoption. Both the organisations were large financial services institutions. Both interviewees saw the perceived success of a parent organisation’s adoption as key to their ability to coerce subsidiary organisations to adopt. This however appeared to be strongly related to the structure of the organisation as interviewees in more federated structures such as interviewee C did not agree that it was a strong factor: “The structure of the organisation makes a massive difference. If the organisation is too federated, they will all do it as long as it’s their way. They are more likely to struggle to get a business case out of it. Look at the [expletive deleted]-match between Australia and the USA at Dimension Data”. This factor was also deemed to overlap to a large degree with the parental adoption factors of coercive pressure explained by DiMaggio and Powel (1983).

Technology lifecycle was raised by three interviewees and appeared to be an obvious additional factor. However, when viewed in the context of the efficient choice perspective where, given existing resource constraints, organisations are deemed to rationally choose the most efficient innovation that maximises outputs related to their strategic goals (Abrahamson, 1991). it appeared that this was already captured in the existing constructs of cost reduction and complexity reduction in the extended model. This was validated by Interviewee A, who stated that “Life-cycle is linked to risk and compexity” and Interviewee E, who stated that “Lifecycle only plays a small role.”.

Interviewee A and interviewee D both raised the issue of the role of a technology evangelist. Interviewee A raised the issue as a way of explaining their organisation’s lack of adoption of UC: “UC plays strongly in the collaboration space. The fact that we don't have a collaboration architect or evangelist [is a problem for us]”. While interviewee D explained the role of an evangelist in the adoption of UC in their organisation: “Then along comes Danny Naidoo who was a director of Microsoft and he wants OCS. He doesn't want a business case for it. He wants that collaboration that it can bring”. This was dropped after a great deal of consideration. Measures for UC-evangleism that go beyond the simple existence of such a person would be extremely difficult to operationalise. Respondents to questions on the impact on them of an evangelist posed in a quantitative survey are likely to express negative bias as to the

degree of influence of an evangelist on their decisions to adopt UC. None of the other interviewees raised this as a key factor and it was possible that it was a very context specific factor.

Green IT was raised by only interviewee directly and was not deemed to be a relevant factor. “You can use video conferencing to reduce your carbon footprint.” (Interviewee A).

There initially appeared to be a case for outsourcing being a moderating or influencing factor. Organisations that had outsourced their IT infrastructure may perceive that skills or other related risks were lower and would possibly be more likely to adopt UC than non-outsourcers. “If you look at the whole outsource model you don't require like a CCIE” (Interviewee A). Ultimately the researcher deemed that the concept was well captured in other variables related to perceptions of risk that were introduced by Tobin and Bidoli (2006) and at best this might have an impact on these variables. It was also deemed to be a very context specific factor.

Similarly, expectations of organisational behaviour were closely related to culture and these were combined into a single factor in section 4.5.9 below.

4.5.9. Emerging Factors that were incorporated into the Integrated Model

The key concepts that were carried over into the quantitative study are described in Table 9 below.

The technology acceptance model (TAM) proposes two key determinants of intentions to use technology namely perceived usefulness and perceived ease of use (Davis, Bagozzi, & Warshaw, 1989). This widely accepted model is intended for the study of secondary adoption of technology (Venkatesh, Speier, & Morris, 2002). It was therefore interesting to see that decision-maker’s expectations of users perceived usefulness and perceived ease of use emerged as possible factors.

Several respondents, who were UC-adopters, raised the issue that in spite of the fact that the business case wasn’t clear, there was still a strong expectation of the benefit of organisational efficiency, collaboration and productivity. “What you shouldn't underestimate is the role that UC plays in just getting people together... If you look at what we did with VC [video conferencing] what we found was that you need other technologies to keep people connected and drive better productivity” Interviewee C. It

came through strongly in several interviews that the interviewees believed in the value of UC. What was interesting was that some non-adopters held a diametrically opposing view: “UC is not viewed as a true opportunity” (Interviewee E). The researcher took the view that this may be a highly predictive variable and was worth including in the model and testing empirically. A similar pattern emerged for the perceived maturity of UC. This was not explicitly stated in the interviews, but the interviewees who held the strongest views against the maturity of the technology appeared least likely to adopt UC based on actual rather than stated organisational behaviour. Therefore this factor was also included. Both these variables appeared to be related, in a general sense, to perceived progressiveness, which coincided with the efficient-choice perspective and were therefore tentatively grouped under this heading for inclusion in the quantitative study.

Table 9: Emerging Concepts Defined

Category	Concept	Description
Expectations of users	Useful	The expectation by the decision maker that the users in the organisation will find UC useful.
	Ease of use	The expectation by the decision maker that the users in the organisation will find UC easy to use.
Progressive	Mature	The perception that UC is a mature technology
	Org-Effic	The perception that UC leads to organisational efficiencies.
Culture	Comp-Cultr	The perception that UC does not fit the organisational culture
	Comp-Mature	The perception that the organisation is not mature enough to adopt UC
Alternatives	Alt-Cost	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit.
	Alt-Tech	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit.
Organisational beliefs	Innov	The perception that the organisation is highly innovative
	WhiteCol	The perception that the organisation has a large number of white collar professionals
	Knowl	The perception that the organisation has many highly mobile knowledge workers
	Collab	The perception that the organisation is highly collaborative
	Early-adpt	The perception that the organisation is an early adopter

Category	Concept	Description
Control and moderating variables	NrBranches	Number of branches
	International	International presence
	B2B	The type of customer base either business or consumer or possibly both

Both the perception that UC might not fit some organisational cultures, as well as the perception that an organisation might not be mature enough to adopt UC emerged as factors. Interviewee C spoke about organisational cultures: “If you add that to the mind-shift about how people use technology...but if you consider your average working age of people in a non-IT organisation it actually goes counter to their background...The technology has a lot of promise, progressive companies adopt it but getting some of the older executives to adopt it is difficult.” Interviewee B reflected on the maturity issue: “I don’t think UC has any different technology adoption factors or attributes than any other technology...Take ERP for example....ERP has worked but there are a whole lot of other factors....are the people in the business ready for it? And is the ERP ready to be integrated into other systems? So there's a whole lot of issues...integration issues, training issues, maturity of the organisation, what other systems are available to support this”. Organisational culture does not appear to fit particularly well with any of the theory related to the initial research model or the extended model. Frambach & Schillewaert (2002) introduce the concept of adopter characteristics which may include organisational culture in its concept of organisational innovativeness. However, the culture appears to also overlap with the concept of Mindfulness (Fiol and O'Connor 2003; Swanson and Ramiller 2004), which posits that: “An organization innovates mindfully to the extent that it attends to the innovation with reasoning grounded in its own facts and specifics.” (Fichman, 2004). Culture was tentatively included as a separate category.

The theme of alternatives to UC recurred throughout the interviews. These mostly related to the past and present monopolistic behaviour of the incumbent fixed line operator Telkom. Telkom appears to engage in practices that attempt to preserve its market share at the expense of organisational adoption of some of the component technologies of UC. These practices are well documented (Gillwald, Kane and Esselaar, 2004, Gillwald and Kane, 2003, Horwitz and Currie, 2007, Melody, Currie & Kane, 2006, Roodt, 2004). Interviewee E stated it most bluntly when he said: “The legacy of a Telkom mind-set...on older Telecoms managers continues to play a big role”. Interviewee D gave the starkest account of current practices: “Yes, as you are aware that was one of the key decision factors for the Merlot project [a multi-million rand branch voice and data network refresh project]. Getting the cost saving without implementing a technology solution”. These factors appeared to be one of the few

South African factors that emerged. Although it could also be argued that these could be captured under Frambach & Schillewaert's (2002) concept of risk reduction. This only partially captures the cost and risk reduction behaviour associated with this factor though.

Wolfe, (1994) examines the organisational characteristics of innovation adoption decisions and there were several factors that emerged that could be said to be beliefs about the organisation itself. These included, whether the organisation was perceived to be innovative, the number of white collar workers, the number of mobile knowledge workers, the degree of collaboration required by the organisation and whether the organisation was perceived to be an early adopter or not. Frambach & Schillewaert (2002) introduce the concept of Organisational Innovativeness which may also capture this perspective.

4.6. Further Hypothesis Creation

Drawing from Tobin and Bidoli (2006), the Organisational Innovativeness Perspective (Wolfe, 1994), Brown and Russell (2007) as well as the qualitative research process which is described in detail in Section 4 above, the following Hypothesis were added:

- $H_1$8: Perceived organisational innovativeness will lead to a greater intention to adopt UC.
- $H_1$9: The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC.
- $H_1$10: Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC.
- $H_1$11: Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC.
- $H_1$12: Negative perceptions of the organisational risks associated with UC will lead to a lower intention to adopt UC.

4.7. Summary

Five qualitative interviews were conducted and key phrases were extracted soon after each interview. The questions that were asked pertained to factors in the initial research model described by Teo et al., (2003) and the extended model described by Basaglia et al., (2008) as well as the South African factors described by Tobin and

Bidoli (2006). Different perspectives were gained and the analysis using open coding appeared to vindicate many (but not all) of the choice of factors in each theoretical models Certain additional factors emerged that did not appear in any of the theoretical models or the prior South African research.

The factors derived from theory were kept for later empirical testing even if they were not validated by the qualitative analysis. Some of the emerging factors were dropped if they were not well supported. The known factors as well as the emerging factors were added to a proposed integrated model.

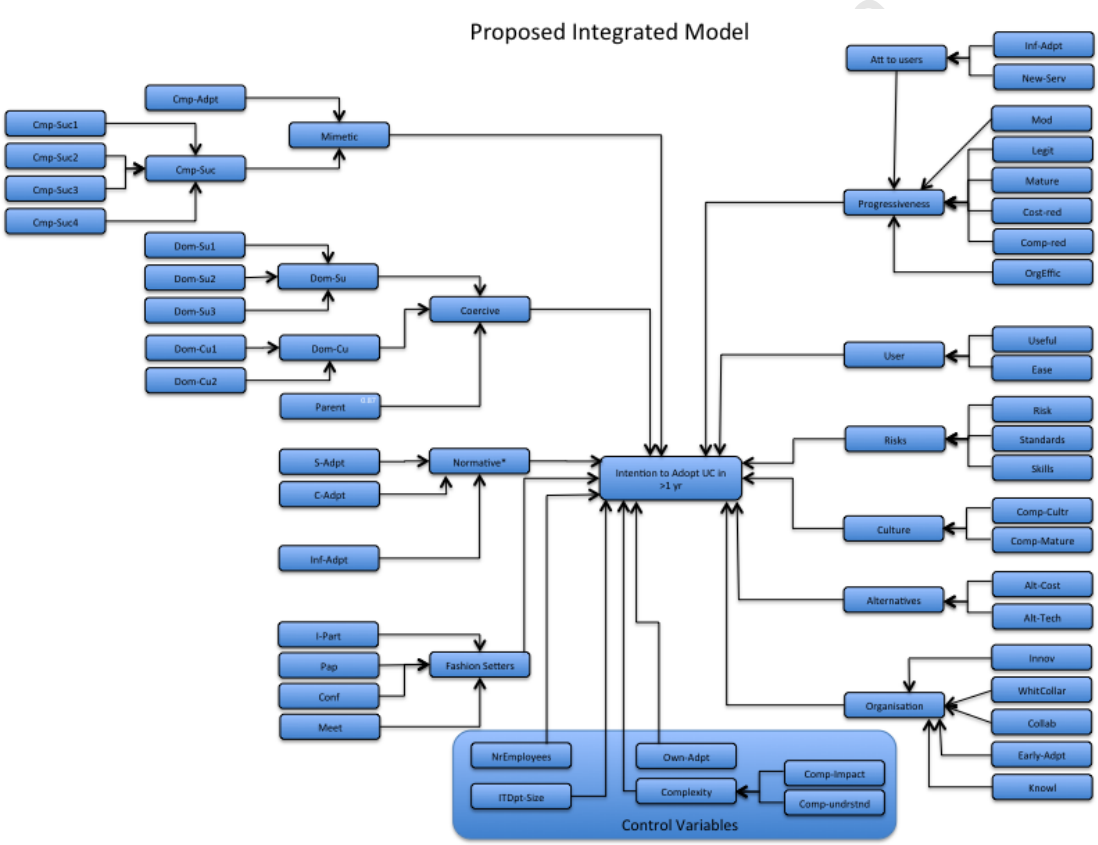


Figure 12: Proposed Integrated Model

Figure 12 above shows a proposed integrated model. The addition of emerging factors and perspectives makes it difficult to render the model with any degree of parsimony. At this point it does not achieve the balance between richness and parsimony described by Plouffe et al., (2001). However, during the quantitative analysis phase, several factors are dropped and certain items are shown to load onto the same factors. This process reduces the model's complexity somewhat.

5. Data Collected: Quantitative

5.1. Actual Data Collection Experience: Quantitative

In phase one, a pilot questionnaire was developed and was administered by the author telephonically for the first 4 responses. Respondents indicated that there was confusion associated with certain words and phrases in some of the wording of certain questions such as: "..assess your agreement with the following sentence..". These were modified to: "..indicate your agreement with the following..". Respondents also indicated discomfort with the order of certain questions as they appeared to be repetitive to the respondents. This was resolved by clustering questions around similar themes so that the perception of repetition was avoided.

In phase two, a further 20 new responses were requested via e-mail to be completed without any telephonic assistance. Feedback was sought telephonically upon completion and it was determined that all of the problems described by the first 4 respondents were resolved. The return rate was initially 7 and a further 8 out of 13 completed the survey when contacted telephonically. Minor issues such as spelling errors were resolved. More clarity was often sought for the definitions of certain of the concepts associated with unified communications and these were changed in the final instrument accordingly.

The survey was hosted on the UCT Commerce Department's Select Survey ASP system. It was initially intended to provide each respondent with a unique login for tracking and follow up purposes but it was found in phase two that this appeared to be one of the causes of a low return rate. When this feature was removed, the remaining 13 respondents, when contacted, indicated they would be more likely to take the survey. Eight of the thirteen actually did complete the survey. Telephonic follow-ups indicated that this was largely because of anonymity issues. Ironically, almost all the same reluctant respondents, when taking the final survey, entered their own personal details when asked if they wished to receive a report of final results and stand a chance to win a prize.

A major complaint from about 30% of respondents in this phase was about the time it took to complete the survey which exceeded 30 minutes in some cases. The average time to complete was however 16 minutes which appeared reasonable. It was felt that the risk of non completion was outweighed by the value of the richer data that could be collected by a longer survey instrument.

In the third phase, the link to the updated instrument was e-mailed to over 2200 respondents who were chosen from the database based on their job profiles. The profiles chosen were senior managers who would either be decision makers or influencers when it came to primary adoption of UC. The final return rate was 512 responses.

In some cases the respondents' e-mail security software flagged the invitation to respond to the survey as potential spam. Complaints and general queries were received from these respondents due to the fact that the source of the e-mail was claimed to be from the author's company e-mail address but the actual source was from the University of Cape Town e-mail domain. Most of these queries were resolved amicably but some respondents felt aggrieved at the unsolicited request. There is therefore a possibility that e-mail security software may also have contributed to a lowering of the potential return rate.

Only 331 usable responses resulted from the 551 respondents because of a relatively high abandonment rate. The average time to complete the survey was 21 minutes, which was longer than the pilot group's average of 16 minutes. The abandonment rate was relatively high i.e. 35.3% of respondents who started the survey did not complete it.

Some of the reason for the relatively high abandonment rate can be attributed to the length of the survey. However, problems with slow responses from the survey web server also may have played a role. Complaints of slow responses were received after the first invitations to participate were sent out. Further invitations to respond were then spaced out into batches of 100 to reduce load on the server over a period of several days. Requests to respond were only sent once to each potential respondent.

The 23% response rate and 15% usable responses is in line with similar studies and research methodology such as those conducted by Teo et al., (2003) and Basaglia et al., (2008).

5.2. General Description of Sample: Quantitative

5.2.1. Statistics Related to the Respondent

Figure 13 below shows the split between decision makers and influencers in the sample. Only the roles described in Figure 14 were considered to be decision makers.

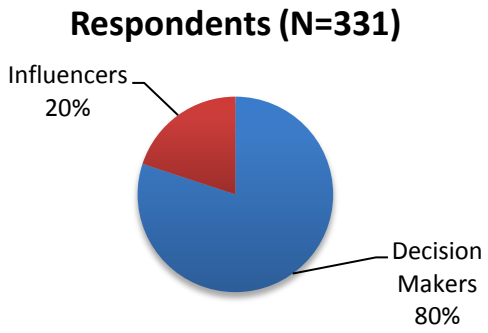


Figure 13: Survey Respondents

Drawing from Teo et al., (2003), Riemer and Taing (2009), and Basaglia et al., (2008), other roles such as architectural, consulting, advisory, security or technical roles were considered to be influencing roles rather than decision-making roles.

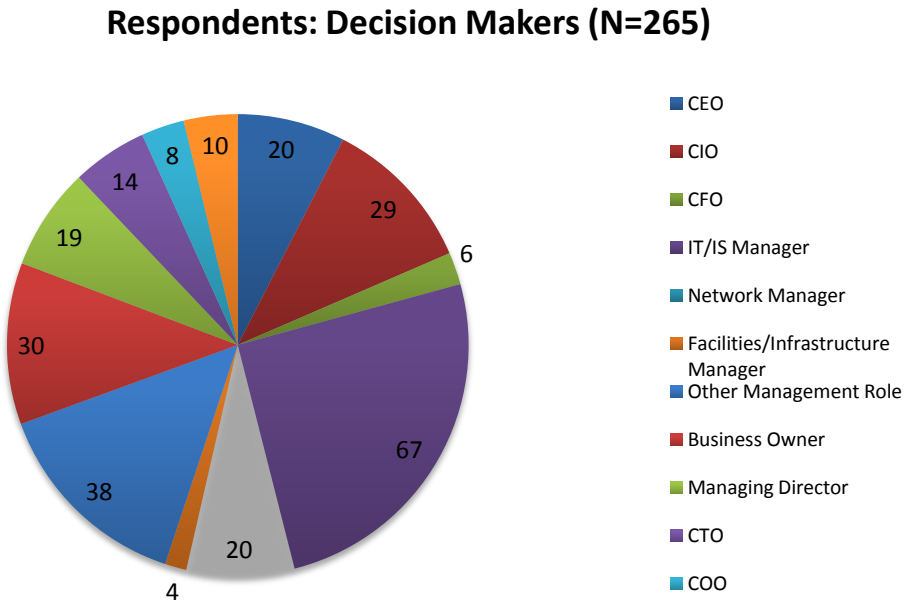


Figure 14: Respondents - Decision Makers

Figure 14 above shows the variations in types of respondents who were classified as decision makers. This included 20 CEOs, 29 CIOs, 6 CFOs and 67 IT/IS managers as well as 143 other managerial roles that are considered to be decision-making roles in the literature.

Figure 15 below shows the variations in types of respondents who were classified as influencers. There is an inverse relationship between the size of the organisation in the sample and the fact that a respondent in the sample was an influencer i.e. more influencers came from larger organisations. This reflects the fact that responses from decision-makers at larger organisations are generally more difficult to obtain for this type of research.

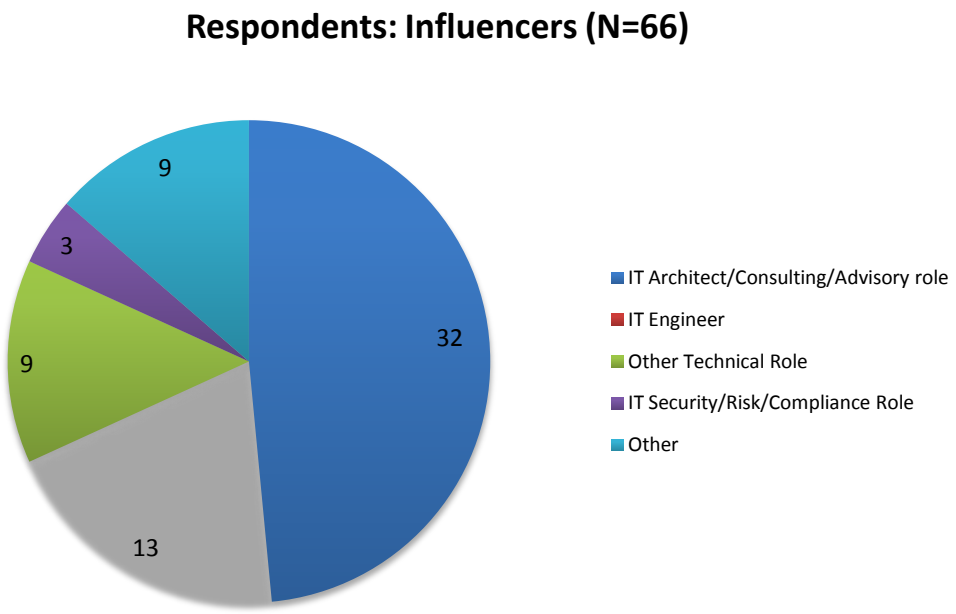


Figure 15: Respondents - Influencers

This can clearly be seen in the following correlation Table 10 where all the correlations in the table are significant at $p<0.05$. IT Department size and number of employees are proxies for organisation size, technical resources and ability to assimilate innovations (Damanpour, 1991, Teo, et al., 2003, Zmud 1984).

Table 10: Correlation Table - Organisation Size and Decision Maker Roles

	Means	Std.Dev.	DecsnMakr	ITDptSize	NrEmployee
DecsnMakr	0.80	0.40	1	-0.26	-0.21
ITDptSize	2.67	1.78	-0.26	1	0.67
NrEmployee	3.36	2.01	-0.21	0.67	1

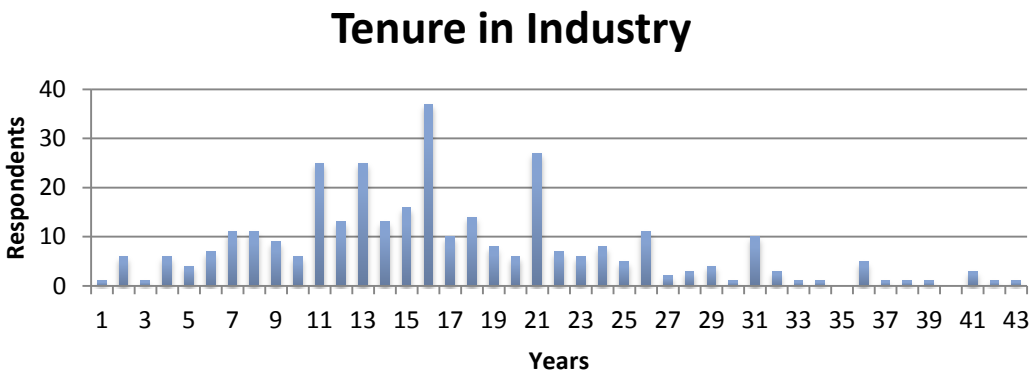
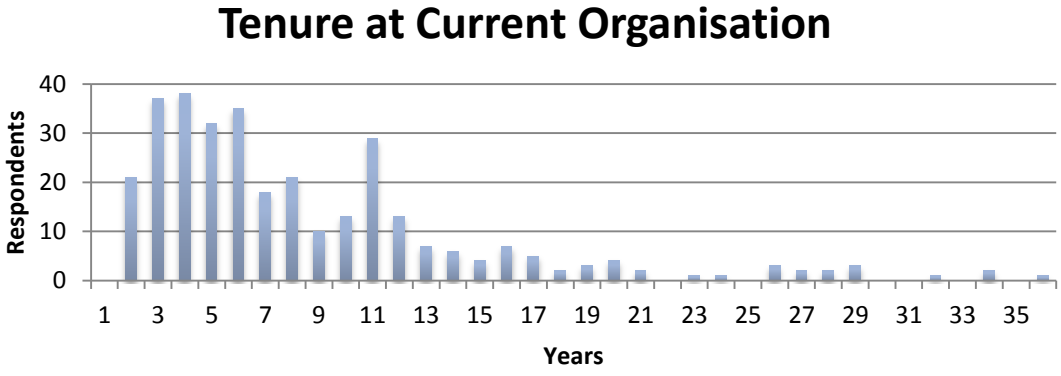


Figure 16: Tenure in the IT Industry

Figure 16 above shows the distribution of the number of years the respondents have been in the IT industry. The mean is 15.9 years and the standard deviation of the sample is 8.19, which shows that the data is fairly widely distributed from the mean. The distribution also reflects the sampling frame, which consists of individuals in senior positions in their respective organisations who are likely to have been in the industry for



a long time.

Figure 17: Tenure at Current Organisation

Figure 17 above shows the tenure of respondents at their current organisation. The mean tenure of the sample is 7.46 years and the standard deviation is 6.34. The cluster of values to the left of the distribution is consistent with the expectation that although respondents may have long industry tenure, their time spent in a particular organisation is likely to be shorter.

5.2.2. Statistics Related to the Respondent's Organisation

Figure 18 below shows the industry sectors that each respondent in the sample categorised themselves into.

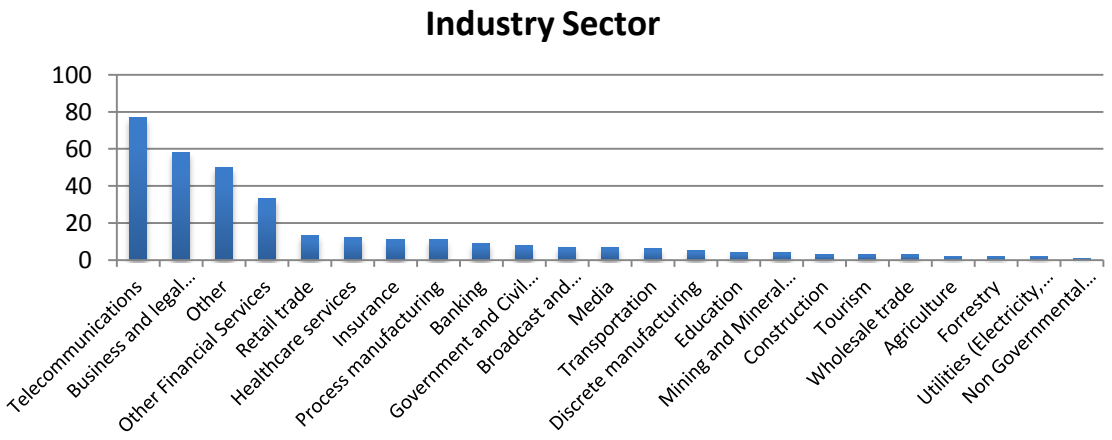


Figure 18: Industry Sector

Figure 19 below shows how the sample data compares to data drawn from both CIPRO and Statistics SA compiled by BMI-T which shows the percentage of companies in South Africa in each respective category as of 2005 (Smit & Neilson, 2006). The BMI-T 2006 analysis uses slightly fewer categories than those used in the survey instrument but it is still possible to see that Telecommunications appears significantly over-represented in the sample.

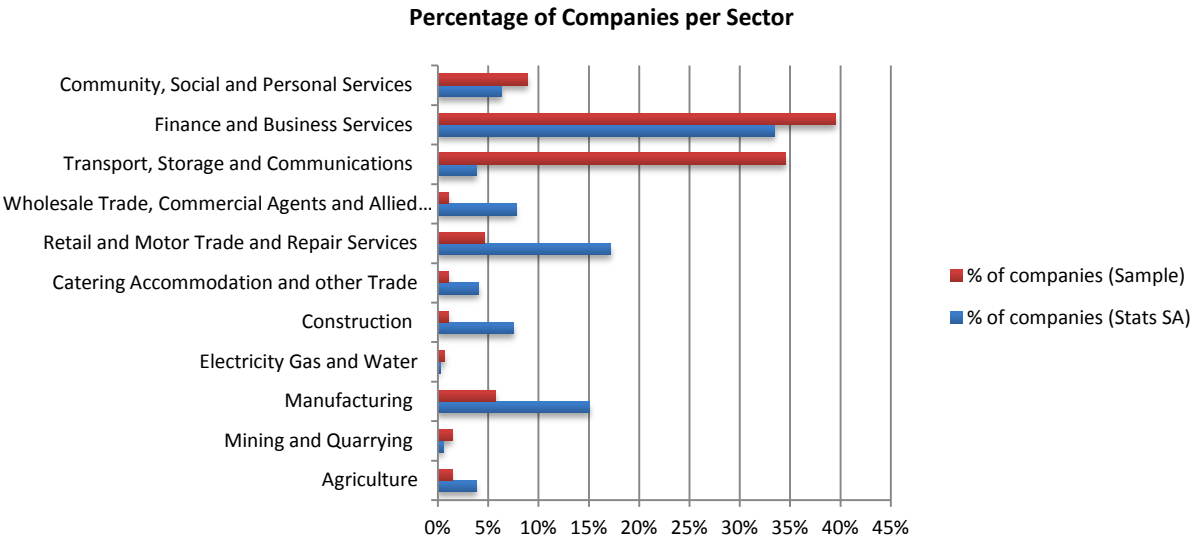


Figure 19: CIPRO & BMI-T Industry Sector Analysis

Financial, business services and mining related categories appear slightly over-represented. Manufacturing, retail services, construction and agriculture appear to be under represented. This may be because of the nature of the sampling frame which was drawn from the client base of an IT services company whose target market consists mainly of large and medium enterprises as well as some wholesale service provider (primarily Internet Service Provider) customers. The latter are likely to classify themselves as being in the telecommunications sector.

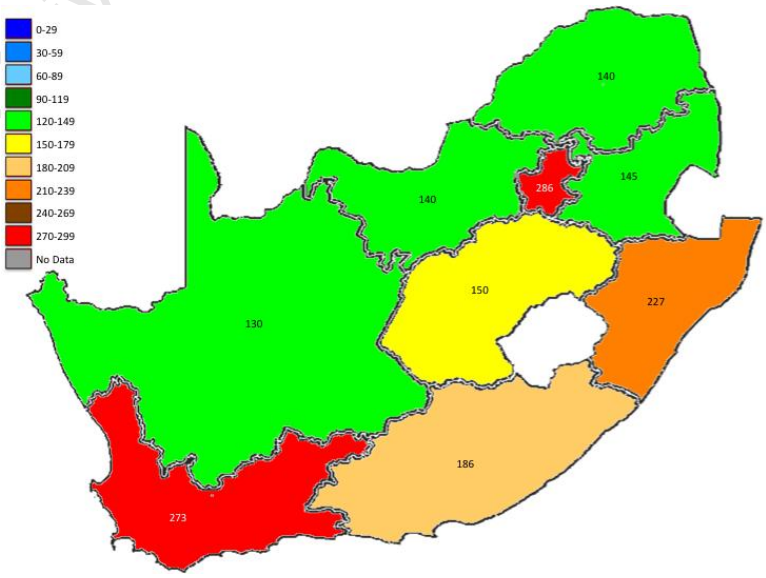


Figure 20: Heat-map

Figure 20 above shows a heat-map indicating the geographic spread of the respondents' business locations. The figures add up to more than the sample size of n=331 because many respondents had business operations in more than one province.

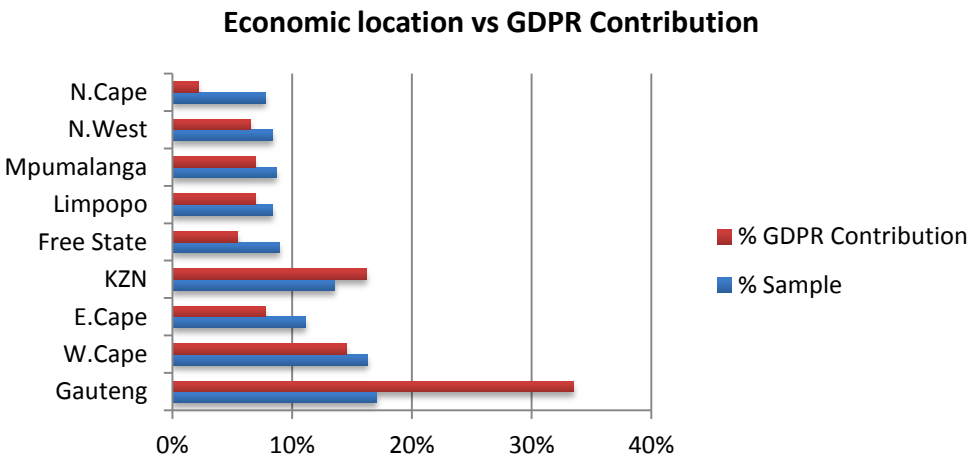


Figure 21: GDP Contribution vs. Geographic Spread

Figure 21 above is not a perfect mechanism but does serve to give a view on whether the sample either under or over-represents different provinces. It shows a comparison between the percentages of locations represented in the sample compared to the economic activity of each province represented by GDPR (Real Gross Domestic Product) contribution per province. The assumption is that each branch represents economic activity of some sort but since actual revenue per branch was not solicited it is difficult to do a direct comparison.

However, it is interesting that apart from Gauteng (which appears somewhat under-represented) and the Northern Cape (which appears over-represented) the sample seems to show a fairly close fit to the economic activity of each province in South Africa. The geographic spread of the respondents' business locations appears to correlate quite closely with the economic contribution of each province when expressed in terms of GDP. The sample therefore appears to be a fairly good representation of companies across the country.

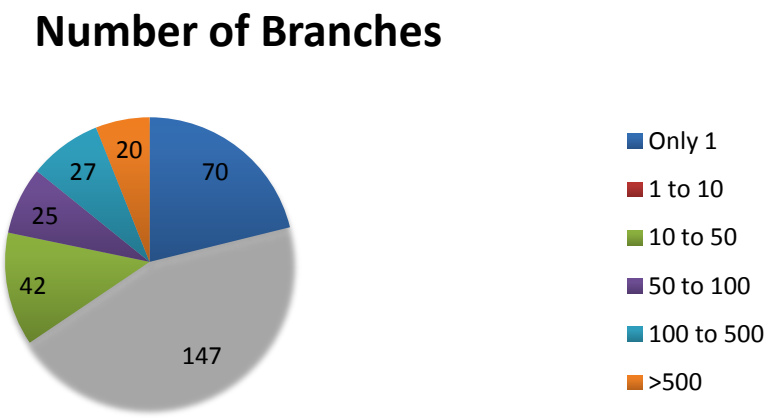
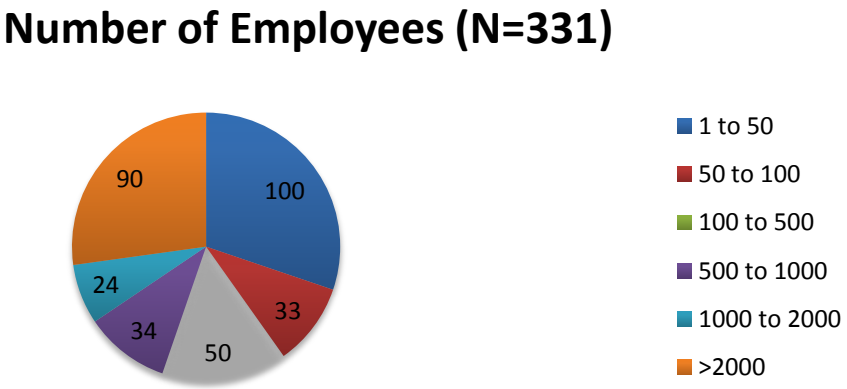


Figure 22: Number of Branches

Figure 22 above shows the number of branches for each of the respondents' organisations. 21% of the respondents' organisations had only one branch. Nearly 40% had between 1 and 10 branches. Only 34% of the respondents' organisations had between 10 and in excess of 500 branches.



er of Employees

It has been found that organisation size has a positive influence on adoption behaviour (Rogers, 2003). Larger organisations are more likely to adopt complex technologies because they possess the necessary skills and resources not only to assimilate the innovation but also to achieve the economies of scale necessary to leverage their investment (Teo et al., 2003). Figure 23 below shows the number of employees at each of the respondents' organisations that indicate the size of the organisation. Teo et al., (2003) state that organisation size is used in many innovation studies as a surrogate measure for total resources, slack resources and organisational structure. The chart above shows that 30% of the organisations in the sample appear to be small with less

than 50 employees. Just fewer than 27% appear to be large with more than 2000 employees.

Damanpour (1991) indicates that the size of the IT department represents the technical resources an organisation possesses which have been found to be important to be able to effectively assimilate a new innovation. Figure 24 shows the distribution of different IT department sizes across the sample data.

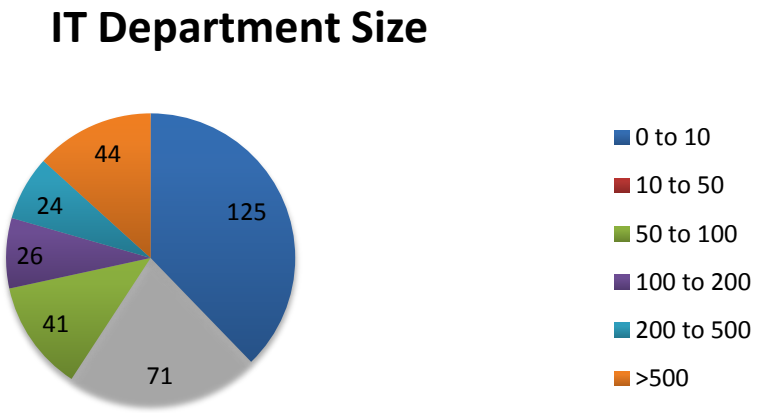


Figure 24: IT Department Size

Teo et al., (2003) state that the larger the IT department size, the broader the technological knowledge base for introducing information system innovations.

DiMaggio and Powell (1983) describe coercive pressures as the formal or informal pressures exerted on an organisation by other organisations upon which they are dependant. It appears unlikely that consumers would exert the same pressure as a dominant customer organisation that controlled scarce resources as described by Pfeffer and Salancik (1978).

During the qualitative interview, interviewees A, D and E all represented organisations that were primarily business-to-consumer organisations and all indicated that coercive pressure from customers was relatively unlikely.

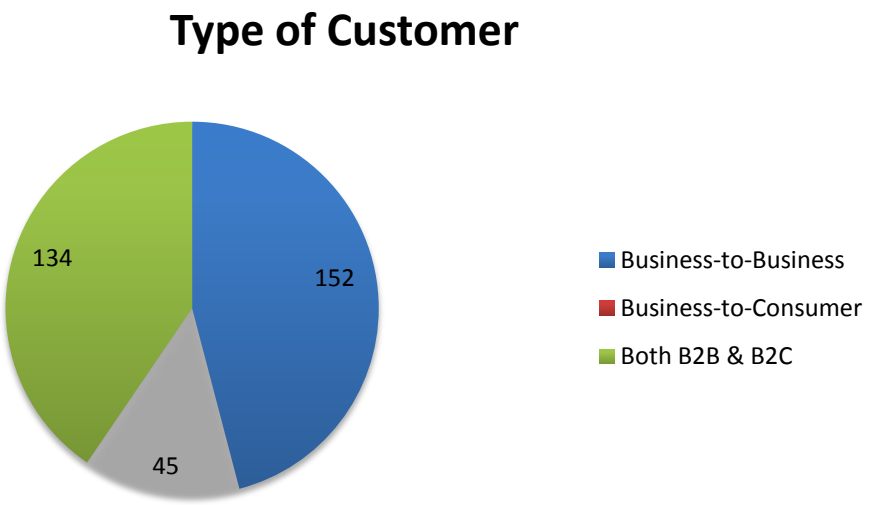


Figure 25: Type of Customer

However interviewees B and C both represented business-to-business organisations and concurred that coercive pressure from clients was an important factor. Figure 25 above shows the customer type of each of the respondents' organisations.

5.3. Descriptive Statistics for Quantitative Questionnaire Items

Table 11 below indicates the types of test items used in the questionnaire. The majority of test items were either based on a 7-point Likert scale or on a 7-point ordinal scale to facilitate comparison and sometimes aggregation of the test items into variables. In some cases it was necessary to use binary test items for yes/no questions. The only time categorical test items were used was for control, demographic or modifier variables. Interval test items and ordinal test items with a scale lower than 0-7 were not used for model test items and only used for control, modifier or demographic variables.

Table 11: Types of test items used in the Research

Type of Test Item	Description	Use in instrument
Categorical (1-n)	Example: Financial services industry =1; Retail = 2 etc	Only used for control, modifier and demographic variables
Ordinal (1-n)	Example: 1=(0 to 10), 2=(10 to 50), 3=(50 to 100), 4=(100 to 200), 5=(200 to 500) and 6=(>500)	
Interval (0-n)	Integer value in the range 0 to n	
Ordinal (1-7)	1=0%, 2=0%-20%, 3=20% to 40%, 4=40% to 60%, 5=60%-80%, 6=80% to 100%, 7=100%	Used for model test items
7 point Likert	1= V.Strongly Disagree, 2=Strongly Disagree, 3=Disagree, 4=Neutral, 5=Agree, 6=Strongly Agree, 7=V. Strongly Agree	
Categorical (binary)	1=yes 0=no	Used for some model test items

The descriptive statistics for the questionnaire items are described in the rest of section 5.3. For convenience these have been split into 4 tables.

Table 12: Codes for Questionnaire Items: Control, Modifiers and Demographics

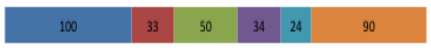
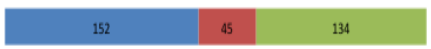
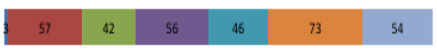
Test Item	Description	Mean	Std Dev	Type	Distribution of Data
ITDptSize	The perceived number of employees in the organisation's IT department?	2.65	1.78	Ordinal (1-6)	
NrEmployee	The perceived number of employees in the organisation	3.36	2.01	Ordinal (1-6)	
NrBranches	The number of branches or discrete geographical locations for the organisation	2.55	1.43	Ordinal (1-6)	
B2B-or-B2C	Perception of whether the organisation is primarily a B2B, B2C or both a B2B and B2C provider.	1.95	0.93	Categorical (1-3)	
Own-Adpt	Perceived extent of the respondent's organisation's own adoption of UC.	4.57	1.75	Ordinal (1-7)	
Comp-Impact	Perceived difficulty in understanding the impact of UC on organisational processes.	4.02	1.09	7 Point Likert	
Comp-undrstnd	It is difficult to understand UC from a technological point of view.	3.29	1.02	7 Point Likert	

Table 12 contains the control variables, modifier variables and demographic variables. Table 12 does not always include the demographic variables that are already described in Figure 13 to Figure 25 above. Table 12 above shows that there was a reasonable distribution of data across the range of most test items. 38% of the respondents had small or non-existent IT departments. Only 13% came from organisations with IT departments larger than 500 people. The item (Own-Adpt) indicates that more than half of respondents believed that they had exceeded 60% extent of informal adoption of UC. While 16% believed that their organisation had achieved full adoption of UC. This may contradict the findings of Tobin & Bidoli (2006) and others who believed that South African companies were lagging in their intention to adopt UC.

Table 13: Codes for Questionnaire Items: Initial Model

Test Item	Description	Mean	Std Dev	Type	Distribution of Data
Cmp-Adpt	Perceived proportion of the organisations major competitors that have adopted UC.	2.86	2.43	Ordinal (1-7)	43 43 48 91 57 34 15
Cmp-Suc1	Perceived success of the major competitors that have adopted UC: Benefited greatly	4.34	4.34	7 Point Likert	5 7 13 195 75 28 8
Cmp-Suc2	Perception that competitors that have adopted UC are perceived favourably by others	4.32	0.98	7 Point Likert	5 22 177 89 24 7
Cmp-Suc3	Perception that main competitors that have adopted UC are perceived favourably by suppliers	4.25	0.96	7 Point Likert	5 24 192 73 25 5
Cmp-Suc4	Perception that main competitors that have adopted UC are perceived favourably by suppliers	4.36	1.02	7 Point Likert	2 17 186 75 34 8
Dom-Su1	Perception that the respondents firm's well being depends on the resources of suppliers that have adopted UC	4.36	1.30	7 Point Likert	8 19 45 109 93 39 18
Dom-Su2	Perception that the respondents firm must maintain good relationships with suppliers that have adopted UC	4.79	1.16	7 Point Likert	8 20 105 103 71 21
Dom-Su3	Perception that the respondents firm cannot easily switch away from suppliers that have adopted UC	4.21	1.24	7 Point Likert	7 16 62 122 75 36 13
S-adpt	Perceived proportion of major suppliers that have adopted UC	3.69	1.68	Ordinal (1-7)	40 54 51 76 55 42 13
Dom-Cu1	Perception that the respondents firm's well being depends on the resources of customers that have adopted UC	4.49	1.40	7 Point Likert	6 18 51 100 77 48 31
Dom-Cu2	Perception that the respondents firm must maintain good relationships with customers that have adopted UC	5.15	1.26	7 Point Likert	26 11 94 85 74 59
C-Adpt	Perceived proportion of the organisations major customers that have adopted UC.	3.40	1.55	Ordinal (1-7)	42 62 73 71 50 26 7
I-Part	Respondents participation in industry, trade or professional bodies exposing them to UC info.	0.61	0.49	Categorical (binary)	128 203
Intention	Organisation's intention to adopt UC within the next 12 months	5.35	1.24	7 Point Likert	8 16 53 100 89 67

Table 13 contains the test items that correspond to the Initial model. Most items were reasonably well distributed. The items related to perceived competitor success (Cmp-Suc) had a relatively high number of neutral responses (as a percentage of overall responses) when compared to other test items.

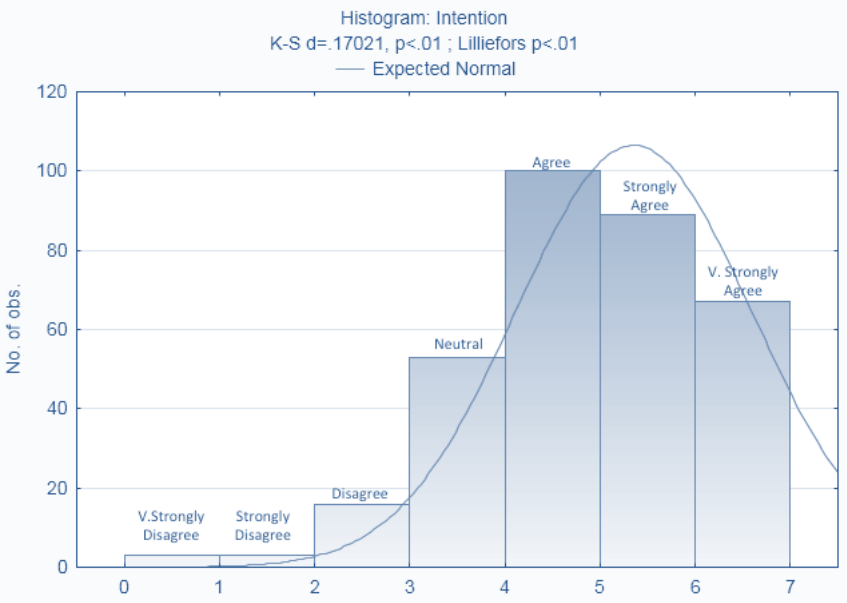


Figure 26: Histogram of the Dependant Variable

The distribution of the item (Intention) indicates that over 75% of respondents have an intention to adopt UC within the next 12 months. The median value for (Intention) was 5 as indicated in Figure 26 above. This appears to contradict the findings of Tobin & Bidoli (2006) and others who believed that South African companies were lagging in their intention to adopt UC. It may however be related to the respondents interpretation of the question which asked their intention to adopt UC overall within 12 months.

Table 14 contains the balance of the test items that correspond to the Extended model. All items appear reasonably well distributed. The item (Inf-Adpt) indicates that more than half of respondents believed that they had exceeded 60% extent of informal adoption of UC. While 15% believed that their organisation had achieved full adoption of UC. This may contradict the findings of Tobin & Bidoli (2006) and others who believed that South African companies were lagging in their intention to adopt UC. It is also possible that informal adoption is taking place in the absence of a formal planned adoption of UC.

Table 14: Codes for Questionnaire Items - Extended Model

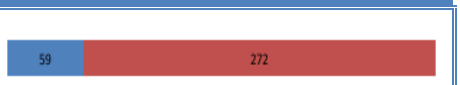
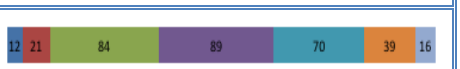
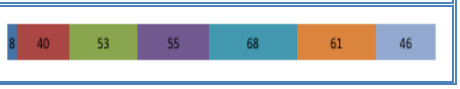
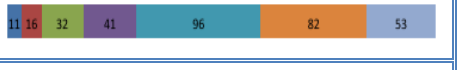
Test Item	Description	Mean	Std Dev	Type	Distribution of Data
Pap	Has the respondent read any columns online, newspapers or magazine that promoted or gave information about UC.	0.82	0.38	Categorical (binary)	
Conf	Has the respondent attended conferences that discussed UC	0.48	0.50	Categorical (binary)	
Meet	Has the respondent attended meetings with peers (eg other CIOs) that discussed UC	0.55	0.50	Categorical (binary)	
Mod	Perception that the use of UC systems represents a practice that characterises a modern, dynamic company	5.50	1.03	7 Point Likert	
Legit	Perception that UC is a legitimate way to manage communication in the industry that the respondents organisations belongs to	5.51	0.98	7 Point Likert	
Cost-red	Perception that the adoption of UC leads to cost reductions	4.96	1.25	7 Point Likert	
Comp-red	Perception that the adoption of UC leads to a reduction in infrastructure complexity	4.10	1.40	7 Point Likert	
New-serv	The perception that the adoption of UC leads to the possibility of offering new and useful services to employees	5.50	0.93	7 Point Likert	
Inf-Adpt-UC	Perception of the proportion of the organisations users who have informally adopted UC already.	4.52	1.67	7 Point Likert	

Table 15 contains the test items that correspond to the emerging factors that were derived from the qualitative analysis for the Integrated Model.

Table 15: Codes for Questionnaire Items: Emerging Factors

Test Item	Description	Mean	Std Dev	Type	Distribution of Data
Innov	Perception that the respondents organisation is highly innovative	5.46	1.33	7 Point Likert	
Whit-Col	Perception that the respondents organisation has many white collar workers	5.05	1.59	7 Point Likert	
Knowl	Perception that the organisation has many mobile knowledge workers	4.97	1.54	7 Point Likert	
Collab	Perception that the organisation is highly collaborative	5.04	1.41	7 Point Likert	
Early-Adpt	Perception that the organisation is an early adopter	4.97	1.56	7 Point Likert	
Mature	Perception that UC is a mature and enterprise ready set of technologies	4.76	1.13	7 Point Likert	

Test Item	Description	Mean	Std Dev	Type	Distribution of Data
Org-Effic	Perception that adopting UC leads to improved organisational efficiency	5.52	1.06	7 Point Likert	45 109 102 67
Ease	Perception that users will find UC easy to use	4.98	1.02	7 Point Likert	23 52 159 75 17
Useful	Perception that users will find UC useful	5.41	0.92	7 Point Likert	34 136 126 30
Alt-Cost	The perception that other approaches exist that can provide a similar cost benefit to UC	3.89	0.98	7 Point Likert	15 95 126 83
Alt-tech	The perception that other approaches exist that can provide a similar technical benefit to UC	3.80	0.96	7 Point Likert	18 108 125 70
Comp-risk	The perception that UC introduces security risk into the respondents business	4.22	1.19	7 Point Likert	16 82 75 114 35
Comp-Cultr	The perception that UC does not fit the organisation's culture	2.93	1.21	7 Point Likert	42 70 136 43 32
Comp-Skills	The perception that UC skills are scarce and thus make UC implementations risky	3.79	1.22	7 Point Likert	35 107 88 71 17
Comp-Stds	The perception that there are not enough UC standards and that this impacts vendor interoperability	4.36	1.26	7 Point Likert	15 68 75 120 32 16
Comp-Mature	The perception that the organisation is not ready or mature enough to adopt UC	3.27	1.42	7 Point Likert	39 54 115 54 46 18

Both Comp-Cultr and Comp-Mature were negatively phrased questions, but as will be seen later, these load onto the same factor in the exploratory factor analysis in Section 6.7 and this is supported in the results in the Cronbach's alpha testing done in section 6.8. These questions were thus not reversed as they were aggregated into the same variable in the integrated model.

6. Quantitative: Testing for Reliability and Validity

It is important to determine the quality of the data and the instrument before any significant statistical tests are performed. In this chapter, reliability and validity analyses are performed on the initial model, on the extended model and on the integrated model in order to determine if the sample data and the models are of a sufficiently high quality to perform further statistical tests. This would allow one to draw conclusions that will generalise beyond this particular sample to the population of interest (Costello & Osborne, 2005).

6.1. Testing for Reliability: Initial Model

According to Brown & Jayakody (2009) a widely used indicator for instrument quality is internal consistency and reliability. A recommended measure for this is Cronbach's Alpha. Cronbach's alpha measures how well items in a set are positively correlated with each other (Cavana, Delahaye, & Sekaran, 2001). Generally an alpha coefficient of 0.8 or higher is deemed acceptable. However, in the case of initial investigations, such as this, a coefficient as low as 0.6 is deemed acceptable (Cavana et al., 2001).

An item analysis was conducted on all the items relating to the constructs in the initial model and a summary of the results is displayed in Table 16. Hart, Esat, Rocha and Khatieb (2007) state that the construct being tested should contain at least 3 items in order to be eligible for item analysis. This was not the case for Dom-Cu and Complexity but these are included for completeness. This was not deemed to be a problem as these constructs formed part of the super-ordinate constructs for mimetic, coercive and normative pressure, which do meet the criteria of 3 or more items. The results of which are displayed in Table 17.

Table 16: Item Analysis for Initial Model Constructs

Dimensions	Name	Number of items	Cronbach's Alpha	Average inter-item correlation
Perceived success of competitor adopters that have adopted UC	Cmp-Suc	4	0.94	0.81
Perceived dominance of supplier adopters that have adopted UC	Dom-Su	3	0.84	0.65
Perceived dominance of customer adopters that have adopted UC	Dom-Cu	2	0.76	0.61
Perceived complexity of UC	Complexity	2	0.54	0.34

Both Cmp-Suc and Dom-Su yielded Cronbach's alpha values exceeding the threshold value of 0.8. Dom-Cu yielded a Cronbach's alpha value above 0.7. Hart (2008) states that a Cronbach's alpha value greater than 0.7 is indicative of a highly reliable set of questions underlying the construct they intend to measure. Complexity is a control variable for the model suggested by both Teo et al., (2003) and Basaglia et al., (2008). Basaglia et al., (2008) conducted a study that yielded a Cronbach's alpha of 0.78 for the identical construct in a study of a very similar technology i.e. VoIP adoption in Italy. It is however interesting that the construct did not even reach the threshold of 0.6 suggested by Nunnally (1978).

Table 17: Item Analysis for Super-Ordinate Constructs for Initial Model

Dimensions	Number of items	Cronbach's Alpha	Average inter-item correlation
Mimetic Pressure	5	0.86	0.69
Coercive Pressure	6	0.64	0.33
Normative Pressure	3	0.57	0.29

Mimetic pressure yielded a Cronbach's alpha that exceeded the threshold value of 0.8. Coercive pressure only exceeded the threshold value of 0.6 and Normative pressure (at 0.57) almost but did not quite reach the 0.6 threshold. Based on these results, some of the constructs and super-ordinate constructs can be regarded as reliable measures. However, the lower scores for the control variable (Complexity) and the super-ordinate construct (Normative) suggest that these items may not be highly representative of the construct they intend to measure. It is worth noting however, that these are both formative constructs and "due to the direction of causality with formative models, high correlation between the indicators is not expected, required, or a cause for concern." (Ronald & Lemon St, 2007, p1481)

6.2. Testing for Validity: Initial Model

Hair, Black, Babin, & Anderson (2006) suggest that factor analysis should be used when attempting to examine the underlying patterns of large number of variables and determining if the information can be condensed in smaller sets of factors with a minimum loss of fidelity. According to DeCoster (1998) exploratory factor analysis (EFA) tries to ascertain the nature of the constructs influencing a set of responses. The primary objectives of an EFA are to determine both the number of common factors influencing a set of measures and the strength of the relationship between each factor and each observed measure.

The degree of correspondence between the variable and the factor is indicated by the factor loadings. Nunnally (1978) suggests that there is evidence of construct validity if the items for each variable load onto the same factor and do not cross load onto other factors. Hair et al., (2006) state that higher loadings are generally agreed to make the variable more representative of the factor. Item communalities of 0.8 or greater are considered high (Velicer & Fava, 1998). However, Costello & Osborne (2005) indicate that, in the social sciences, more common magnitudes of communalities are between 0.4 to 0.7. They state that if an item has a communality below 0.4 then it either suggests a lack of relationship to the other items or suggests that an additional factor should be explored. Tabachnick & Fidell (2001) propose a rule of thumb for a minimum loading of 0.32 which equates to approximately 10% overlapping variance with the other items in that factor. In order to try and increase accuracy, a factor loading of 0.7 (as a cut-off value) was adopted because this appears higher than most research of this nature.

Table 18: Factor Analysis - Initial Model

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Own-Adpt	0.070	0.748	-0.012	-0.015	-0.032	0.203
ITDptSize	0.001	0.029	0.033	0.858	0.059	-0.054
NrEmployee	0.009	-0.188	0.030	0.879	0.113	-0.028
Parent-Adpt	0.050	0.187	-0.087	0.567	-0.163	0.300
Cmp-Adpt	0.304	0.796	0.056	0.011	0.020	0.030
Cmp-Suc1	0.867	0.208	0.091	-0.008	0.018	0.121
Cmp-Suc2	0.908	0.158	0.134	0.033	0.023	0.136
Cmp-Suc3	0.887	0.123	0.168	0.027	0.024	0.120
Cmp-Suc4	0.900	0.153	0.166	0.010	0.010	0.113
Dom-Su1	0.196	0.090	0.826	0.001	0.053	0.160
Dom-Su2	0.147	0.159	0.853	-0.024	0.013	0.167
Dom-Su3	0.127	0.040	0.839	0.019	-0.026	-0.010
S-adpt	0.053	0.779	0.259	-0.002	0.071	0.035
Dom-Cu1	0.125	0.101	0.195	-0.059	0.040	0.815
Dom-Cu2	0.092	0.185	0.301	-0.031	0.102	0.767
C-Adpt	0.214	0.783	0.048	0.000	-0.049	0.151
I-Part	0.122	0.066	-0.063	0.110	-0.013	0.401
Comp-Impact	-0.129	0.056	-0.054	0.077	-0.802	-0.150
Comp-undrstnd	0.071	-0.060	0.025	-0.132	-0.829	0.065
Expl.Var	3.460	2.682	2.414	1.873	1.401	1.714
Prp.Totl	18%	14%	13%	10%	7%	9%

Therefore, EFA was conducted on all the variables (except for the dependant variable, intention to adopt UC) in the initial model at a cut-off value of 0.7. Drawing from Hair et al., (2006), the Varimax Normalised Rotation method was employed to realign the factors i.e. simplify the columns in the factor matrix, in order to improve the interpretability of the data. Costello & Osborne (2005) state that the goal of rotation is to simplify and clarify the data structure. They claim that Varimax rotation is the most common choice. All factors with eigenvalues greater than 1.0 were retained this is sometimes referred to as the Kaiser criterion (Costello & Osborne, 2005). The EFA results can be found in Table 18 above which displays the factor loading results in the form of a heat map where the stronger the communalities, the stronger the colour green displayed.

Fourteen factors were initially specified but the EFA using the Kaiser criterion showed the presence of only 6 distinct factors. The results generally loaded onto the factor matching their constructs. The item loadings were all higher than 0.7 (with only 2 exceptions) and exceeded 0.8 in most cases. Costello & Osborne (2005) describe a cross-loading item as an item that loads at .32 or higher on more than one factor. No cross-loadings occurred. Mulaik (1990) and Widaman (1993) indicate that it is rare to find conditions where this kind of strong data exists with uniformly high communalities that do not exhibit cross loadings, while having several variables loading strongly on each factor.

The only two items that did not load onto factors matching their constructs were (Parent-Adpt) and (I-Part). Costello & Osborne (2005) state that there is broad consensus in the literature that retaining all factors with eigenvalues greater than 1.0 is one of the least accurate methods for selecting the number of factors to retain. They suggest using the scree test to determine the number of factors to retain. The scree test method was employed and two further variations of the EFA were then conducted, one with an Eigen cut-off value of 0.9 and one with an Eigen cut-off value of 0.8. This appeared to be where the Eigen value graph flattened out. These are shown in Appendix L: Results of Further Exploratory Factor Analysis in Table 91 and Table 92 respectively.

As can be seen from Table 92, Parent-Adpt loads onto its' own factor. It is possibly not surprising that Parent-Adpt initially loaded onto the same factor as ITDeptSize and NrEmployee because both these control variables are proxies for organisation size and it is more likely that large organisations would be associated with an organisational group with a parent organisation.

Social contagion theory described by Teo et al, (2003) and Fichman (2004) suggests that I-Part should have loaded onto the same factor as S-Adpt and C-Adpt in order to describe normative pressure. It can clearly be seen in Table 91 and Table 92 that it loads strongly onto its' own factor with no cross-loadings. As will be seen this anomaly disappears if one takes into account the fashion setters perspective which is accounted for in the extended model and integrated model in the following sections.

A further possible anomaly is clearly illustrated in Figure 27 below where Cmp-Adpt loads strongly onto the same factor as S-Adpt, C-Adpt and Own-Adpt. Cmp-Adpt is not necessarily expected to load onto the same factor as Cmp-Suc because these are both formative constructs and mimetic pressure (the super-ordinate construct) is also a formative construct and co-correlation is not necessarily expected (Ronald & Lemon St, 2007). What is peculiar is that it loads onto the factor that theory indicates would explain normative pressure. Costello & Osborne (2005) make the point that factor loadings are essentially correlation coefficients, and therefore the magnitude of the factor loadings can be understood similarly. So there is clearly a strong correlation between all the items that measure some form of adoption by either competitors, suppliers, customers or even the respondents own organisation. Not only that but these items load onto a factor that explains 14% of the variance in the independent variables in the model. This is not adequately explained in the theory that underpins the initial model and is explored further in subsequent sections.

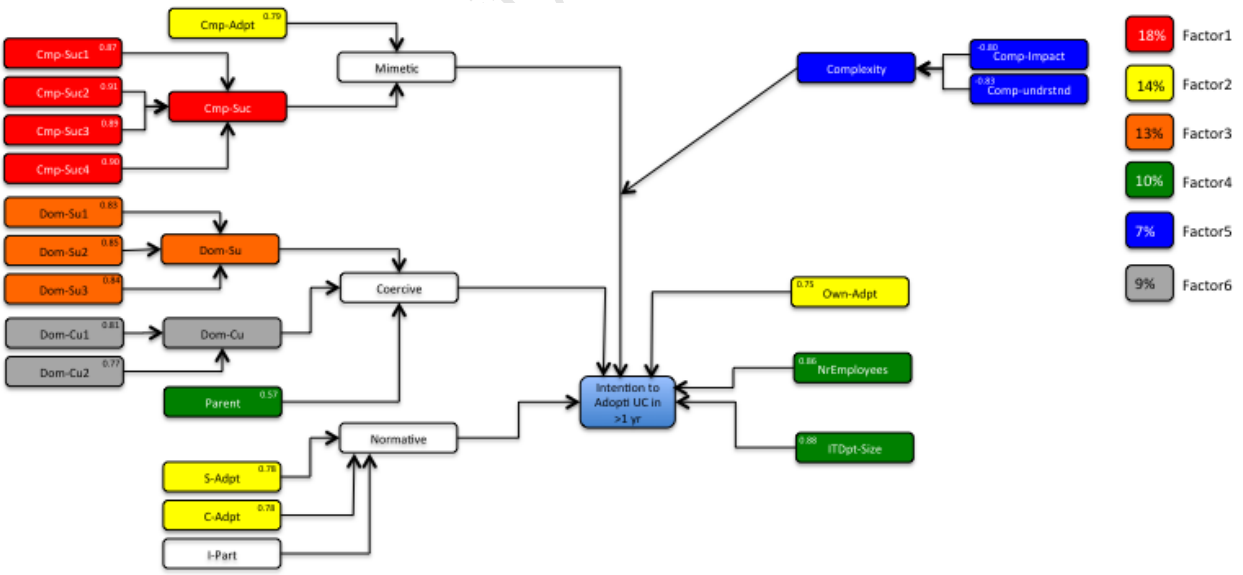


Figure 27: Factor Analysis - Initial Model

6.3. Eigen Value Analysis: Initial Model

Hart et al., (2007) state that Eigen value analysis shows the degree of the variance that is explained by each factor and accumulates this variance. The questionnaire items for the initial model loaded onto 6 factors when using the Kaiser criterion and explained 71.28% of the variance. When the Eigen cut-off was reduced to 0.8 using the scree test, the items loaded onto 8 factors and explained 80.2% of the variance. These results support the fact that the instrument tested by Teo et al., (2003) used in the initial model is a strongly validated instrument. The results of the Eigen value analysis are shown in Table 19 below.

Table 19: Explained Variance - Initial Model

	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
Factor 1	5.323	28.015	5.323	28.015
Factor 2	1.958	10.303	7.281	38.319
Factor 3	1.905	10.026	9.185	48.344
Factor 4	1.818	9.569	11.004	57.914
Factor 5	1.363	7.175	12.367	65.088
Factor 6	1.177	6.192	13.543	71.280
Factor 7	0.944	4.967	14.487	76.247
Factor 8	0.751	3.952	15.238	80.200

6.4. Testing for Reliability: Extended Model

An item analysis was conducted on all the items relating to the constructs in the extended model and a summary of the results is displayed in Table 20

The constructs for mimetic, normative and coercive pressure are similar but not all identical to those in the initial model. This is because Basaglia et al., (2008) dropped certain items when they developed the extended model. Cmp-Suc and Cmp-Adpt are the same as the initial model. Dom-Su and Dom-Cu were dropped from the Coercive construct and only Parent pressure was retained. This was justified on the basis that Dom-Su and Dom-Cu are supply chain pressures and Basaglia et al., (2008) did not believe that these would have an influence on VoIP adoption, which was the focus of their study.

Table 20: Item Analysis for Extended Model Super-Ordinate Constructs

Dimensions	Name	Number of items	Cronbach's Alpha	Average inter-item correlation
Mimetic Pressure	Mimetic	5	0.86	0.69
Coercive Pressure	Coercive	1	-	-
Normative Pressure	Normative	2	0.72	0.56
Fashion Setters Pressure	Fashion	3	0.55	0.29
Perceived Progressiveness	Progressive	2	0.82	0.70
Internal Benefits	Internal	4	0.64	0.34

Basaglia et al., (2008) also dropped I-Part from the normative pressure construct presumably because it measured similar concepts to the fashion setter's pressure construct. The constructs inherited from the initial model yielded the same alpha values exceeding the threshold of 0.8. Coercive pressure was not measurable because it consisted of only one item after the Dom-Su and Dom-Cu constructs were removed by Basaglia et al., (2008). Normative pressure yielded a value of 0.72 compared to a value of 0.57 in the initial model. This indicates that removing the I-part item improves the reliability of the construct. However, Fashion setter's pressure yielded a value of only 0.55 that indicates that the construct may be problematic.

Perceived progressiveness yielded a value in excess of 0.8 and internal benefits exceeded 0.6. A closer look at internal benefits is represented in Table 82 (in

Appendix K: Results of Item Analysis). This shows that the value can be increased to almost 0.7 by removing the item Inf-Adpt. It is interesting to note that Inf-Adpt, which is an item that was not measured in the Initial Model, also loads on the factor that explains normative pressure when an EFA is conducted in the next section.

6.5. Testing for Validity: Extended Model

An exploratory factor analysis (EFA) was also conducted on all the variables (except for the dependant variable, intention to adopt UC) in the extended model at a cut-off value of 0.7. In order to compare the results of the EFA done for the initial model, the Varimax Normalised Rotation method was once again employed as well as the Kaiser criterion described by Costello & Osborne (2005). The EFA results can be found in Table 21, which displays the factor loading results in the form of a heat map.

Strongly green coloured values indicate high correlation. 20 factors were initially specified but the EFA using the Kaiser criterion showed the presence of only 6 distinct factors. The results generally loaded onto the factor matching their constructs. The item loadings were generally higher than 0.7 (with several exceptions) and exceeded 0.8 in many cases.

Costello & Osborne (2005) describe a cross-loading item as an item that loads at .32 or higher on more than one factor. There were several cases of this namely Cmp-Adpt that loaded onto factor 1 with a value 0.74 and factor 3 with a value of 0.32. Normally a high loading of 0.74 would make the case for the item being associated with that factor however, Cmp-Suc also loaded onto factor 3 which is in line with the social contagion theory that Cmp-Suc and Cmp-Adpt should represent Mimetic pressure.

Table 21: Factor Analysis for the Extended Model

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Parent-Adpt	0.196	0.148	0.055	0.604	-0.044	-0.223
Own-Adpt	0.790	0.232	0.033	-0.010	0.039	-0.058
ITDptSize	0.010	0.016	-0.009	0.842	0.110	0.102
NrEmployee	-0.212	0.003	0.007	0.859	0.123	0.113
Cmp-Adpt	0.743	0.044	0.323	0.039	-0.023	0.047
Cmp-Suc1	0.213	0.143	0.862	-0.006	0.044	0.034
Cmp-Suc2	0.160	0.140	0.915	0.033	0.071	0.014
Cmp-Suc3	0.145	0.128	0.894	0.023	0.047	0.031
Cmp-Suc4	0.148	0.148	0.909	0.009	0.071	0.000
S-adpt	0.747	0.071	0.100	0.001	0.045	0.072
C-Adpt	0.778	-0.016	0.251	0.036	-0.019	-0.012
Pap	-0.105	0.215	0.041	0.009	0.683	-0.091
Conf	0.025	-0.068	0.056	0.022	0.767	0.168
Meet	0.178	0.110	0.077	0.152	0.660	0.052
Mod	0.088	0.827	0.144	0.024	0.107	-0.026
Legit	0.227	0.805	0.111	0.041	0.064	-0.013
Cost-red	0.162	0.686	0.117	0.037	-0.017	0.329
Comp-red	0.240	0.486	0.096	-0.034	-0.108	0.398
New-Serv	-0.004	0.751	0.163	0.122	0.234	0.127
Inf-Adpt	0.751	0.240	0.049	-0.062	0.067	-0.014
Comp-Impact	0.046	-0.173	-0.125	0.077	-0.017	-0.737

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Comp-undrstnd	-0.016	-0.074	0.100	-0.116	-0.137	-0.766
Expl.Var	3.290	2.921	3.509	1.881	1.642	1.539
Prp.Totl	15%	13%	16%	9%	7%	7%

Other items that cross-loaded onto two factors were Cost-Red and Comp-Red. Cost-Red loaded strongly onto factor 2, which appears to find little distinction between the Progressiveness construct and the Internal Benefits construct. It is interesting that it also loaded onto factor 6 because items associated with perceived complexity (a control variable) also loaded onto factor 6. Comp-Red also cross-loaded between factor 2 and factor 6. However, it did not load strongly onto either factor (0.486 and 0.397 respectively) this is most likely because it is associated with the reduction in complexity as well as the internal benefits view associated with the efficient choice perspective described by Fichman (2004).

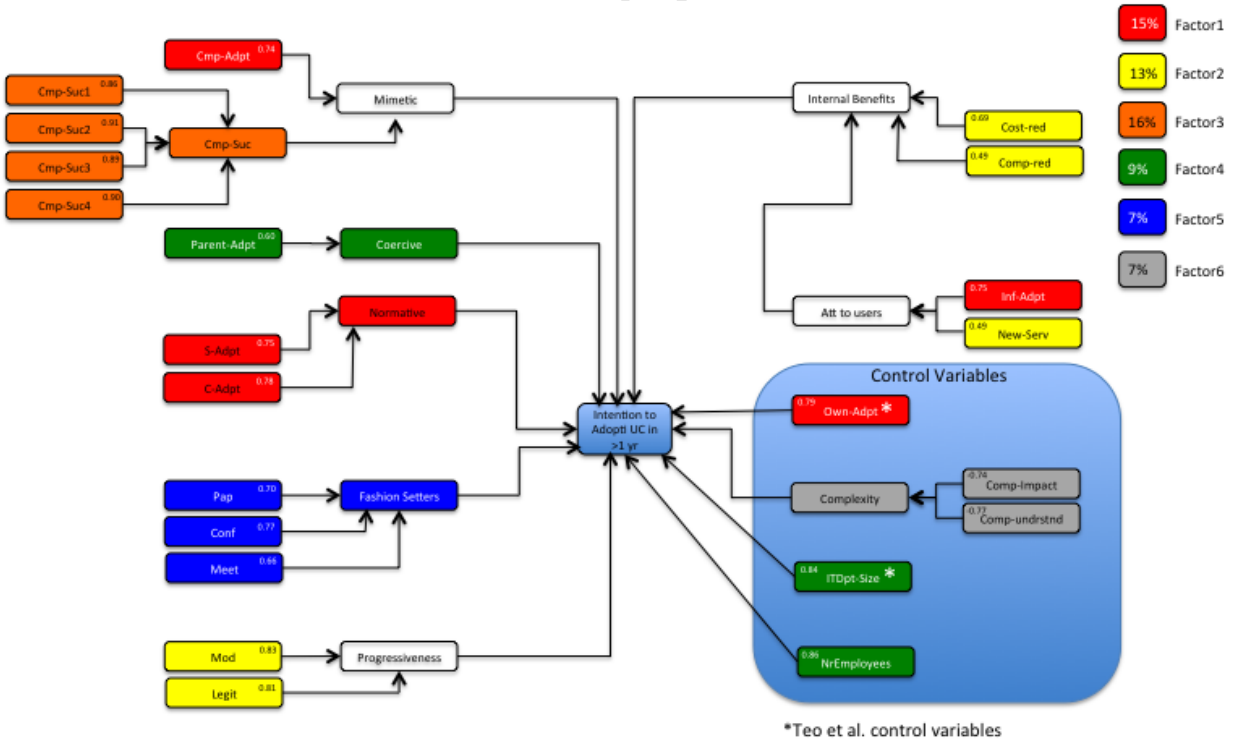


Figure 28: Factor Analysis - Extended Model

There were also several items that did not load onto factors matching their constructs these were Parent-Adpt, Own-Adpt, Cmp-Adpt and Inf-Adpt. This is shown clearly in Figure 28 above. These have already been discussed in the previous section on EFA for

the initial model (with the exception of Inf-Adpt). It is interesting that a pattern appears to be emerging for those items associated with any measure of adoption by suppliers, competitors, informally or formally all appear to load onto the same factor. This suggests that neither the initial model nor the extended model capture this latent variable. Mod and Legit which are associated with Perceived progressiveness loaded onto the same factor as Cost-Red, Comp-Red and New-Serv which are associated with Internal Benefits. It appears that this may in fact be a single factor or that some form of recursive relationship exists that is not captured in this model. This analysis is concerned with examining the initial model and the extended model, so no items were moved or dropped. However, it appears that the extended model may be problematic in capturing the concepts of Fashion Setting, Progressiveness and Internal Benefits

Costello & Osborne (2005) suggest using the scree test to determine the number of factors to retain. The scree test method was employed and two further variations of the EFA were then conducted, one with an Eigen cut-off value of 0.8 and one with an Eigen cut-off value of 0.7. This appeared to be where the Eigen value graph flattened out. These are shown in Table 93 and Table 94 in Appendix L: Results of Further Exploratory Factor Analysis. A further 3 factors emerged but these did not substantially change the model. Parent-Adpt loaded onto a different factor from the ITdeptSize and NrEmployees, which is expected and discussed in the previous section. Slightly unexpectedly, Pap loaded strongly at (0.8) onto a different factor from the Conf and Meet items, which make up the Fashion Setters construct. Comp-Red loaded onto its own factor, which is not unexpected given the cross-loadings in the earlier analysis. Since this analysis is concerned with examining the initial model and the extended model, no items were moved or dropped. These possible additional factors are worth examining in the EFA of the integrated model however.

6.6. Eigen Value Analysis: Extended Model

The questionnaire items for the extended model loaded onto 6 factors when using the Kaiser criterion and explained 67.28% of the variance. When the Eigen cut-off was reduced to 0.7 using the scree test, the items loaded onto 9 factors and explained 78.25% of the variance. These results support the fact that the instrument tested by Basaglia et al., (2008) used in the extended model is a strongly validated instrument. The results of the Eigen value analysis are shown in Table 22 below.

Table 22: Eigen Value Analysis - Extended Model

Factor	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
Factor 1	5.656	25.709	5.656	25.709
Factor 2	2.543	11.559	8.199	37.268
Factor 3	2.184	9.929	10.383	47.196
Factor 4	1.807	8.214	12.190	55.411
Factor 5	1.346	6.117	13.536	61.527
Factor 6	1.248	5.672	14.784	67.199
Factor 7	0.895	4.069	15.679	71.268
Factor 8	0.800	3.636	16.479	74.904
Factor 9	0.737	3.348	17.215	78.252

6.7. Testing for Validity: Integrated Model

Floyd & Widaman (1995) note that researchers rarely collect and analyse data without an a priori idea about how the variables are related. The Integrated model proposed in section 3.7 was an initial attempt to try and fit the initial model, the extended model and the new variables proposed by the qualitative analysis into a model that fitted with current theory. The objective was to see if the items for each variable in the integrated model loaded together and did not cross load onto other factors in order to obtain evidence of construct validity (Nunally, 1978). Exploratory Factor Analysis attempts to determine the nature of the constructs influencing a set of responses. The aim of factor analysis is to reveal any latent variables that are the cause of covariance in the manifest variables (Costello & Osborne, 2005, DeCoster, 1998). The objective was therefore also to expose any additional latent variables.

At this stage it was necessary to conduct an exploratory factor analysis in order to obtain an approximation of the existing dimensions of each of the proposed constructs for the integrated model. Costello & Osborne (2005) state that EFA is a complex procedure with few absolute guidelines and many options and that there is evidence that blindly applying the Kaiser criterion (all factors with Eigen values greater than one) represents the norm in literature but does not always yield the best results for a given data set.

As was the case for the EFA performed for the initial and the extended model, the EFA was calculated using Statistica 10 (StatSoft, Inc., 2011). Drawing from Costello & Osborne (2005), with 44 test items being used, a maximum of 44 factors was indicated,

with a minimum Eigen value of 0.00. The extraction method employed was principal components. The factor rotation used was Varimax Orthogonal, which is appropriate to use when factors are independent with no correlation between factors (as indicated for the Initial and the Extended model EFA). There is some criticism of the principal components extraction method. Both Gorsuch (1997) and McArdle (1990) warn that when the factors are uncorrelated and communalities are moderate, EFA using principle component analysis can produce inflated values of variance accounted for by the components. However, the analysis of the initial model and the extended model indicate that this is unlikely to be a problem due to the relatively strong data that appears to exist in the sample. Analysis in previous sections shows that it exhibits relatively high communalities that do not generally exhibit cross loadings, while having several variables loading strongly on each factor.

The results of the scree test can be found in Appendix L in section 25.3. The scree test was employed (see Figure 31 in section 25.3) and this showed that somewhere between 18 and 15 factors were indicated. The EFA output with 18 and 15 factors and their respective loadings can be seen in Table 95 and Table 96 in section 25.3. Both analyses showed high communalities with rare instances of cross-loadings but not all items loaded onto factors matching their constructs. This was largely because certain factors had only one item loading onto them.

A further series of exploratory factor analyses was conducted in order to reduce the number of factors and to determine if items would load onto factors matching their constructs and reduce any cross loadings. The results of these can be found in section 25.3. The optimum number of factors appeared to be 12 factors. The application of the Kaiser criterion would have found 11 factors, which ironically is quite close to the optimum number.

It was decided to use the 11-factor EFA because this is directly comparable to the analyses done on the initial model and the extended model in sections 6.2 and 6.5 above. The 12-factor EFA can be found in Table 97 in section 25.3 in the appendices.

Table 23 below shows the results of the 11-factor exploratory factor analysis (EFA) using the Kaiser criterion (Eigen value cut-off of 1.0) of all the test items (excluding the dependant variable). As can be seen, the items do not all load onto the same factors represented by constructs in the previous two models.

Table 23: Factor Analysis for Integrated Model

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
ITDptSize	0.0661	0.0152	-0.0161	0.8145	0.1049	0.0046	0.0042	0.0972	-0.0056	-0.0747	-0.0072
NrEmployee	0.0364	-0.1384	-0.0018	0.8289	0.1110	0.0205	-0.2050	0.1447	0.0009	-0.0220	0.0117
Parent-Adpt	0.0829	0.0588	0.0695	0.6255	-0.1171	-0.0547	0.1847	-0.0431	0.0300	0.1275	0.0296
Innov	0.0808	0.8178	0.0176	-0.1286	-0.0431	0.0116	-0.0014	0.0727	-0.0276	-0.0312	0.1395
Whit-Col	-0.0126	0.6558	0.0432	0.2297	-0.0350	0.1322	0.0360	0.1006	0.0626	0.0278	-0.0326
Knowl	0.0885	0.7853	0.0501	0.1106	0.0979	0.0679	0.1565	0.0352	0.0207	0.1212	0.0178
Collab	0.0074	0.8346	0.0722	-0.0696	0.0635	-0.0038	0.1462	-0.0707	-0.0336	0.0904	0.0206
Early-adpt	0.0852	0.7774	0.0664	-0.1895	-0.0587	-0.0285	0.1549	-0.0043	-0.0104	0.0575	0.2142
Cmp-Suc1	0.1615	0.0979	0.8540	-0.0053	0.0564	0.0773	0.1923	0.0514	0.0098	0.0525	0.0829
Cmp-Suc2	0.1487	0.0642	0.8992	0.0313	0.0293	0.1181	0.1432	0.0733	0.0286	0.0965	0.0275
Cmp-Suc3	0.1261	0.0183	0.8760	0.0250	0.0466	0.1537	0.1337	0.0710	0.0110	0.0887	0.0364
Cmp-Suc4	0.1644	0.0684	0.8874	0.0119	-0.0150	0.1533	0.1334	0.0863	0.0338	0.0699	0.0253
Dom-Su1	0.0872	0.0814	0.1988	-0.0086	0.0628	0.8083	0.0814	0.0199	-0.0313	0.1525	0.0659
Dom-Su2	0.2031	0.0686	0.1347	-0.0381	-0.0256	0.8202	0.1272	0.0320	-0.0715	0.1886	0.0762
Dom-Su3	0.0793	0.0136	0.1237	0.0067	0.0732	0.8169	0.0643	-0.0495	0.0006	0.0217	-0.0689
Own-Adpt	0.1566	0.2756	0.0490	-0.0020	-0.0024	-0.0299	0.7078	0.0118	0.0916	0.0515	0.3460
Cmp-Adpt	0.1070	0.1262	0.3069	0.0268	-0.0168	0.0508	0.7499	0.0026	-0.0311	0.0046	-0.0318
S-adpt	0.0883	-0.0011	0.0442	-0.0147	0.0036	0.2588	0.7426	0.1135	0.0493	0.0679	0.0368
C-Adpt	0.0065	0.0829	0.2331	0.0426	0.0199	0.0543	0.7813	0.0031	-0.0379	0.1265	-0.0118
Inf-Adpt	0.1807	0.1759	0.0530	-0.0463	-0.0024	-0.0018	0.6694	0.0504	0.0317	0.1442	0.3226
Dom-Cu1	0.0732	0.1323	0.1532	0.0199	0.0444	0.1838	0.1676	0.0152	0.1317	0.7512	-0.0482
Dom-Cu2	0.1376	0.1678	0.1132	0.0332	0.0072	0.2887	0.1804	0.0461	0.0393	0.7126	0.0950
I-Part	0.0340	0.0074	0.0919	0.0399	-0.1076	0.0425	0.0748	0.5491	-0.0116	0.1545	0.1418
Pap	0.1533	0.0057	0.0413	0.0213	-0.0472	-0.0087	-0.1166	0.6586	0.1169	0.0096	0.0446
Conf	0.0229	0.0147	0.0326	-0.0001	0.1687	-0.0096	0.0408	0.7398	-0.0111	-0.0962	-0.0664
Meet	0.1626	0.1052	0.0628	0.1508	0.1487	-0.0291	0.1625	0.5736	-0.0151	0.0333	-0.0849
Mod	0.7777	0.0563	0.1013	0.0244	-0.0556	0.1361	0.0735	0.0909	0.1045	0.1222	0.0495
Legit	0.7304	0.1285	0.0689	0.0653	-0.0142	0.2011	0.1778	0.0173	0.1120	0.0744	0.2148
Mature	0.6138	0.1043	0.1589	0.1033	0.3686	0.1066	0.0435	0.0122	0.1208	-0.0513	0.0416
Cost-red	0.6894	0.0180	0.1028	-0.0027	0.2574	0.0329	0.1666	-0.0107	0.1588	-0.0060	0.0669
Comp-red	0.5324	-0.0601	0.1003	-0.0608	0.4024	-0.0650	0.3082	-0.1405	0.0674	-0.0153	-0.1473
New-Serv	0.7751	-0.0020	0.1321	0.1127	0.0551	0.0606	-0.0214	0.1959	0.0222	0.0715	0.0796
Org-Effic	0.7920	0.0726	0.0945	0.0183	0.0881	0.0477	0.0376	0.1828	0.0799	0.0509	0.1359
Ease	0.3722	-0.0256	0.0681	-0.0291	0.3191	-0.1159	0.0944	0.1023	-0.0648	0.3768	0.4189

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
Useful	0.5475	0.0012	0.1332	0.0076	0.0993	-0.0639	0.0095	0.1780	-0.0463	0.4096	0.3937
Alt-cost	-0.1955	0.0419	-0.0035	-0.0285	-0.0829	0.0520	-0.0649	-0.0716	-0.8739	-0.0491	-0.0154
Alt-tech	-0.2166	-0.0484	-0.0542	0.0041	-0.0079	0.0357	0.0139	-0.0184	-0.8350	-0.0813	-0.1364
Comp-Impact	-0.1808	0.0611	-0.0937	0.1271	-0.5772	-0.0010	0.0886	-0.0580	-0.0271	-0.2890	-0.0487
Comp-undrstnd	-0.1399	0.0576	0.1173	-0.0910	-0.6392	0.0669	0.0022	-0.1215	0.0639	-0.0903	-0.0418
Comp-risk	-0.2399	-0.1378	0.0164	0.0060	-0.5662	-0.0226	0.0244	-0.0222	0.0820	-0.0083	0.0707
Comp-skills	0.0076	0.0469	-0.0777	-0.0699	-0.6718	-0.0785	-0.0674	0.0801	-0.1873	0.0895	-0.3421
Comp-Stds	0.0614	-0.0418	-0.1138	-0.0791	-0.6785	-0.1751	-0.0137	-0.0281	-0.1300	0.1546	-0.2880
Comp-Cultr	-0.2818	-0.1748	-0.0619	0.0185	-0.1864	-0.0196	-0.1862	0.0039	-0.0837	-0.0555	-0.6990
Comp-Mature	-0.2045	-0.2152	-0.0549	-0.0586	-0.2192	-0.0814	-0.1912	-0.0211	-0.1206	0.0154	-0.7345
Expl.Var	4.59	3.41	3.55	1.97	2.69	2.43	3.31	1.88	1.69	1.76	2.05
Prp.Totl	10%	8%	8%	4%	6%	6%	8%	4%	4%	4%	5%

The EFA above leads to the following proposed integrated model, which is depicted in Figure 29 below. As expected, the items related to institutional theory which can be found in the initial model developed by Teo et al., (2003) load strongly onto factors matching their constructs (Cmp-Suc=Factor 3, Dom-Su=Factor 6, Dom-Cu=Factor 10). As was found in section 6.2 and 6.5, the perceived extent of competitor adoption (Cmp-Adpt) loads onto the same factor (Factor 7) as the normative items S-Adpt and C-Adpt as well as Inf-Adpt and the control variable Own-Adpt.

The extent of supplier and competitor adoption loading onto the same factor fits well with institutional theory described by Powel & DiMaggio (1991). Davis (1991) states that if an organisation starts to perceive a greater number of its contacts adopting an innovation then the adoption of that innovation may be deemed to become normatively appropriate. So, it can be argued that the perceived extent of adoption by various actors (including but not restricted to) suppliers and customers is a part of normative pressure as well. As can be seen in Figure 29 below, the proposed formative construct for normative pressure includes all the items that load onto the factor except for the control variable (Own-Adpt).

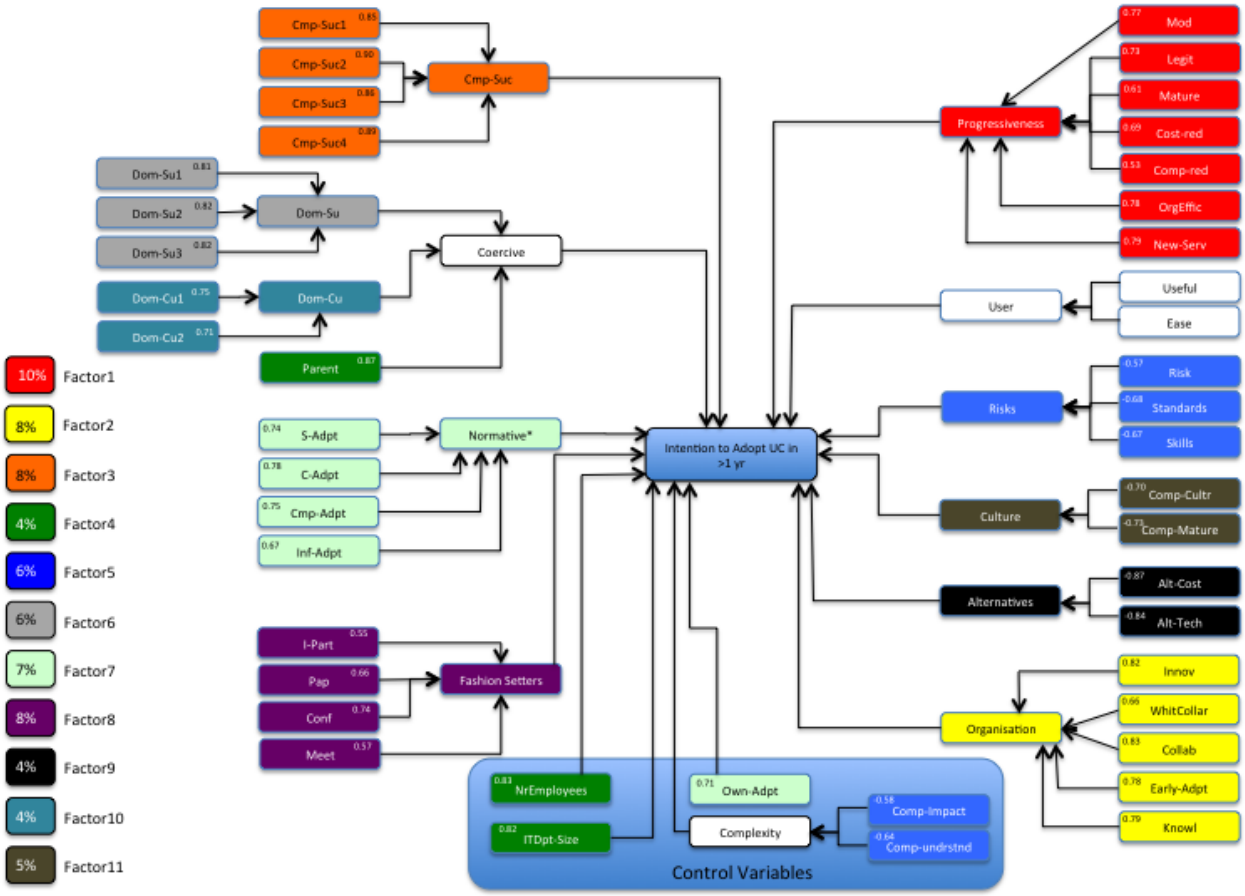


Figure 29: Factor Analysis - Integrated Model

Own-Adpt is kept as a control variable in order to directly compare the three models but it will be argued that it is substantively different to the own adoption of EDI proposed by Teo et al., (2003) which was used as a control variable for the adoption of FEDI. As will be seen later in section 10, the inclusion of own-adoption of other elements of UC slightly improves the predictive power of the integrated model for the full adoption of UC.

The items relating to progressiveness and internal benefits as well as many of emerging items from the qualitative analysis all loaded strongly onto factor 1 shown in red in Figure 29 above. Perceived progressiveness and perceived internal benefits appear to measure the same latent variable. The items Mature (measuring the perceived maturity of the technology) and Comp-Red (measuring the perceived ability of the technology to reduce organisational complexity) both cross-loaded onto factor 5. Other items that loaded onto factor 5 were associated with perceived risk and complexity so this is not surprising that there was some cross correlation. It was therefore proposed that

Progressiveness and Internal Benefits be merged to become a single formative construct called Progressiveness in the integrated model.

The organisational innovativeness and organisational mindfulness perspective appears to be well represented by the items that load onto Factor 2 (Fiol and O'Connor, 2003; Frambach & Schillewaert, 2002; Swanson and Ramiller, 2004). This is represented in yellow in Figure 29. All the items load with a higher value than 0.7 except for Whit-Col which still loads fairly strongly at 0.66. There were no cross-loadings for items associated with this factor. It was therefore proposed that a formative construct representing Organisational Innovativeness be included in the integrated model called Organisation.

Costello & Osborne (2005) indicate that, in the social sciences, the magnitudes of the factor loadings are commonly between 0.4 to 0.7. The Fashion Setters items: I-Part, Pap, Conf and Meet all load onto Factor 8 with no cross-loadings. The loadings range from 0.55 to 0.74. It was proposed to retain the Fashion Setter construct. The slightly lower loadings may be associated with the fact that all the items use binary scales. The temporal nature of fashion setters' pressure may also play a role. These kinds of forces are expected to be very dynamic over time as contagion builds or ebbs away (Fichman 2004). It was therefore decided to keep the Fashion Setters construct proposed by Basaglia et al., (2008) and to include the I-Part item derived from Teo et al., (2003)

The expected ease of use (Ease) and expected usefulness (Useful) of the technology was expected to load strongly along with items loading on Factor 1 (Progressiveness). However, these two items cross-loaded onto several factors. This was not the case if the EFA was extended to 12 factors as per the scree method (see Table 97 in the Appendices section 25.3 EFA Integrated Model). In a 12-factor EFA, these two items loaded strongly onto Factor 12 at 0.73 and 0.69 respectively. It was therefore proposed to keep this as a separate formative construct named User in the integrated model.

The items related to alternative cost reduction mechanisms and alternative technologies that could provide a similar benefit were expected to load onto the same factor as the items related to the efficient choice perspective. However, both Alt-Cost and Alt-Tech loaded onto Factor-9 at 0.87 and 0.84 respectively. In subsequent exploratory factor analyses where the number of factors was reduced (in steps of 1) from 11 to 5, these items did eventually load onto Factor 1 (see Table 98: EFA Integrated Model - Max 5 Factors in the appendices). However, only weak loadings could be achieved of (0.44 and 0.45 respectively). The qualitative interviews seemed to indicate that this could be an important influencing factor on its' own. It was therefore decided to retain these two items as a formative construct called Alternatives.

The two items related to the control variable Complexity loaded onto Factor 5 with loadings of 0.58 and 0.64 respectively. In addition the items related to the perceived lack of skills (Skills), lack of security (Risk) and lack of standards (Standards) also loaded onto Factor 5. In order to compare the initial, extended and integrated model it was decided to keep these as separate constructs. A formative construct called Risks was proposed. The item, Skills, cross-loaded onto factor-11 at 0.34 but loaded much more strongly on Factor-5 at 0.68 and it was decided to keep it as part of the Risks construct.

The items Comp-Cultr and Comp-Mature measuring the respondents perception of his own organisations maturity and cultural fit with the adoption of UC both loaded strongly on Factor-11 with loadings of 0.70 and 0.73 respectively. In subsequent exploratory factor analyses where the number of factors was reduced (in steps of 1) from 11 to 5, these items cross-loaded onto Factor 1 and Factor 2 fairly evenly (see Table 98: EFA Integrated Model - Max 5 Factors in the appendices). It was proposed to keep this as a separate formative construct called Culture because this also emerged as a potentially important influencing factor in the qualitative analysis.

6.8. Testing for Reliability: Integrated Model

Based on the Qualitative and Quantitative analysis performed so far, an integrated model was proposed in the previous section. An item analysis was conducted on all the items relating to the constructs in the integrated model and a summary of the results is displayed in Table 24 below. The results for the item analysis for each of the individual proposed constructs can be found in

Appendix K: Results of Item Analysis in section 24.3.

Table 24: Summary of Item Analyses for Integrated Model Constructs

Dimensions	Name	Number of items	Cronbach's Alpha	Average inter-item correlation
Perceived success of competitor adopters that have adopted UC	Cmp-Suc	4	0.944483	0.812818
Perceived dominance of supplier adopters that have adopted UC	Dom-Su	3	0.842169	0.64622
Perceived dominance of customer adopters that have adopted UC	Dom-Cu	2	0.757597	0.613012
Perceived organisational innovativeness	Organisation	5	0.850722	0.551685
Normative pressure from supply chain and elsewhere	Normative	5	0.849347	0.53556
Fashion Setter's pressure to adopt UC	Fashion Setters	4	0.562986	0.248522
Perceived progressiveness and efficiency	Progressiveness	7	0.869705	0.516695
Expectation of user ease of adoption	User	2	0.832469	0.717258

Dimensions	Name	Number of items	Cronbach's Alpha	Average inter-item correlation
Perception of alternatives to UC	Alternatives	2	0.79298	0.657065
Perception of cultural fit of UC and organisation	Culture	2	0.791283	0.66356

All of the constructs, except two, yielded Cronbach's alpha values exceeding (or very close to) 0.8. Only Dom-Cu at 0.75 and Fashion-Setters at 0.56 were exceptions. Nunnally (1978) and Cavana et al., (2001) suggest that 0.6 is an acceptable value for initial investigations. The value of 0.56 yielded by the analysis of Fashion Setters' pressure suggests that this may not be indicative of a highly reliable set of questions underlying the construct they are intending to measure. Overall, the proposed integrated model appears to have a higher reliability and validity than either of the initial or the extended models for this data set.

6.9. Eigenvalue Analysis: Integrated Model

Hart et al., (2007) state that Eigenvalue analysis illustrates how much of the variance is explained by each factor. The results of the Eigenvalue analysis are shown in Table 25.

Table 25: Eigen Value Analysis - Integrated Model

Factor	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
Factor 1	9.05	20.57	9.05	20.57
Factor 2	3.78	8.60	12.84	29.17
Factor 3	3.04	6.91	15.88	36.09
Factor 4	2.19	4.98	18.07	41.06
Factor 5	2.08	4.72	20.15	45.79
Factor 6	2.03	4.60	22.17	50.39
Factor 7	1.85	4.21	24.02	54.60
Factor 8	1.53	3.48	25.55	58.07
Factor 9	1.42	3.22	26.97	61.30
Factor 10	1.25	2.85	28.22	64.15
Factor 11	1.12	2.55	29.35	66.70
Factor 12	0.99	2.26	30.34	68.96

The 44 items all loaded onto 12 factors, which cumulatively accounted for 68.9% of the variance. This suggests that there is sound overall construct validity. This can be contrasted with the initial model where 19 items loaded onto 8 distinct factors and

accounted for 80.2% of the variability. The extended model measured only 22 items that loaded onto 6 factors and accounted for 67.2% of the variability.

7. Quantitative: Correlation Analysis

7.1. Correlation Analysis: Initial Model

The purpose of a correlation analysis is to measure the strength of the relationships between the constructs themselves and the dependant variable (Intention). Table 26 below shows the Pearson correlations between the super-ordinate constructs and the independent variable. All correlations marked in red are significant at a 95% significance level (P<0.05). The three super-ordinate constructs (Mimetic, Coercive and Normative) are all significantly and positively correlated with each other as well as the independent variable. Of the control variables, only Own-Adpt is significantly and positively correlated with the dependent variable.

Table 26: Correlation Analysis - Initial Model - Super-Ordinate Constructs

	Mimetic	Coercive	Normative	Complexity	Own-Adpt	NrEmployee	ITDptSize	Intention
Mimetic	1.000	0.341	0.636	-0.047	0.487	-0.100	0.029	0.172
Coercive	0.341	1.000	0.303	-0.032	0.285	0.206	0.188	0.240
Normative	0.636	0.303	1.000	-0.016	0.542	-0.121	0.026	0.150
Complexity	-0.047	-0.032	-0.016	1.000	0.004	-0.109	-0.049	-0.017
Own-Adpt	0.487	0.285	0.542	0.004	1.000	-0.163	0.018	0.341
NrEmployee	-0.100	0.206	-0.121	-0.109	-0.163	1.000	0.669	0.084
ITDptSize	0.029	0.188	0.026	-0.049	0.018	0.669	1.000	0.091
Intention	0.172	0.240	0.150	-0.017	0.341	0.084	0.091	1.000

The correlation between the extent of an organisation's adoption of some elements of UC (Own-Adpt) and the intention to adopt UC (Intent) was the highest, yielding a correlation value (r) of 0.341. This indicates that there is a relatively strong positive relationship between an organisation's existing adoption of some elements of UC (Own-Adpt) and their intention to adopt UC completely (Intention). This variable is derived from a similar control variable in Teo et al., (2003) it is kept as a control variable for comparative purposes of the 3 models but it is proposed to include it in a final refined integrated model.

There is a positive relationship between Mimetic and Normative pressure and intention to adopt UC, which is indicated by the correlation values (r) of 0.172 and 0.150 respectively. These are however not very strongly correlated. Coercive pressure is slightly more strongly correlated with a correlation value (r) of 0.24, which indicates that Coercive pressure is correlated with intention to adopt (UC).

It is interesting to note that all of the super-ordinate constructs are positively correlated with each other, showing that they are all related to each other to some degree. The other control variables: complexity, IT department size, and number of employees do not appear to be significantly correlated with Intention to adopt UC.

Table 99, in Appendix M, shows a more detailed Pearson correlation analysis of the dependant variable (Intention) with the constructs that make up the super-ordinate constructs of Mimetic, Normative and Coercive. All marked correlations are significant at a 95% significance level ($P<0.05$). What is interesting is that some of the constructs that make up the higher level constructs are not significantly correlated with the dependant variable (Intention) even though the super-ordinate constructs are all positively and significantly correlated with the dependant variable. This suggests that some of these constructs could be dropped from a refined model.

In particular, perceived dominance of suppliers (Dom-Su) and perceived extent of supplier adoption (S-Adpt) are not significantly correlated with Intention to adopt UC (Intention).

Table 27 shows a summary of the correlation analysis specifically for the hypothesised relationships in the initial model described by Teo et al., (2003). No evidence could be found to support hypothesis H12a using Pearson correlation i.e. that greater perceived dominance of suppliers that have adopted UC will lead to greater intent to adopt UC. The correlation coefficient r is only 0.081. A Spearman rank correlation analysis was performed because if data is not interval but comes from a Likert scale then it is appropriate to use a non-parametric test like Spearman rank because it makes no assumptions about normality and can be used on small sample sizes (Hart et al., 2007). The detailed results of the Spearman rank correlation analysis can be found in Table 102 and Table 103 in Appendix M.

A Spearman rank correlation value (r) of 0.119 was found at the 95% significance level ($p<0.05$) for perceived dominance of suppliers (Dom-Su) and Intention to adopt UC (Intention), which indicates that there is a positive and significant correlation. The same issue was found for hypothesis $H_1$3a relating to perceived extent of supplier adoption. No support for the hypothesis could be found using a Pearson correlation analysis but a Spearman rank correlation analysis yielded a value (r) of 0.119 at the 95% significance level ($p<0.05$), which indicates that there is a positive and significant correlation. It is interesting to note that Basaglia et al., (2008) dropped both these variables as well as Dom-Cu from the construct Coercive pressure (Coercive) when they tested for VoIP adoption in Italy which is one of the elements of UC.

Table 104, in Appendix M, details the Pearson and Spearman correlation analysis for all the corollaries to the main hypotheses. No evidence could be found to support hypothesis $H_1$3c that states that participation in associations that promote and disseminate information on UC will lead to greater intention to adopt UC. The independent variable (I-Part) was not found to significantly correlate with the dependant variable (Intention) using either Pearson or Spearman correlation analysis.

Table 27: Summary of Correlation Analysis & Hypotheses – Initial Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation	Spearman Correlation	Support found?
$H_1$1	Greater mimetic pressure will lead to greater intention to adopt UC	Mimetic	0.172	0.191	Yes
$H_1$2	Greater coercive pressure will lead to greater intention to adopt UC	Coercive	0.240	0.277	Yes
$H_1$3	Greater normative pressure will lead to greater intention to adopt UC	Normative	0.150	0.164	Yes
$H_1$14	Mimetic pressure will have a more significant impact on intention to adopt UC when perceived complexity is higher than when it is lower	Mimetic when complexity is high	0.204	0.237	Some limited support found
		Mimetic when complexity is low	0.148	0.156	

Teo et al., (2003) hypothesised that perceived complexity would be an influencing factor on Mimetic pressure which is represented by hypothesis $H_1$14 in Table 27 above. As can be seen the predicted effect was observed, using Spearman rank correlation analysis but not Pearson correlation analysis. Table 100 in Appendix M shows the results of the Spearman rank correlation test where perceived complexity was high (with N=74 cases). Table 101 in Appendix M shows the results where perceived complexity was low (N=172 cases). This analysis showed that mimetic pressure appeared to be more strongly correlated with intention to adopt UC when perceived complexity was higher than when it was lower.

The Pearson and Spearman analysis supported all other hypotheses and their corollaries' except those specifically stated above. Further analysis using Multiple Regression will assist in confirming the specific relationships and which of these hypotheses will be accepted or rejected.

7.2. Correlation Analysis: Extended Model

The extended model proposed by Basaglia et al., (2008) has some constructs in common with the initial model. However, several of the constructs such as Coercive and Normative were modified by the omission of sub-constructs. The analysis performed in this section will not duplicate what has been done in section 7.1 for the control variables as these remain the same.

Table 28: Pearson Correlation Analysis - Extended Model

	Progressivens	FashionSet	Intrnl-Benf	Mimetic	Coercive (Extended)	Normative (Extended)	Intention
Progressivens	1.000	0.192	0.589	0.309	0.137	0.249	0.297
FashionSet	0.192	1.000	0.169	0.114	0.069	0.077	0.187
Intrnl-Benf	0.589	0.169	1.000	0.386	0.104	0.356	0.361
Mimetic	0.309	0.114	0.386	1.000	0.171	0.636	0.172
Coercive (Extended)	0.137	0.069	0.104	0.171	1.000	0.126	0.179
Normative (Extended)	0.249	0.077	0.356	0.636	0.126	1.000	0.150
Intention	0.297	0.187	0.361	0.172	0.179	0.150	1.000

Table 28 above shows the results of the Pearson correlation analysis on all the super-ordinate constructs from the extended model proposed by Basaglia et al.,(2008). The correlation values marked in red are significant at the 95% level ($p<0.05$).

The correlation coefficient for coercive pressure (Coercive) dropped from 0.24 (in the initial model) to 0.18 due to the omission of constructs relating to supply chain pressure from customers and suppliers. The construct is still however significantly and positively correlated with intention to adopt UC (Intention). Normative pressure (Normative) has however not changed even with the omission of the I-Part item. It is still significantly and positively correlated with the dependant variable (Intention).

The construct related to internal benefits (Intrnl-Benf) yielded the highest correlation with the dependant variable (Intention) with a Pearson correlation value (r) of 0.361 at the 95% significance level. Perceived progressiveness (Progressiveness) was also positively and significantly correlated with the intention to adopt UC (Intention). Fashion setters' pressure was more in line with the variables from the initial model with a correlation coefficient (r) of only 0.187 at the 95% significance level.

The additional constructs relating to the efficient choice and fashion setter perspectives (Progressiveness, Fashion Setter and Internal Benefits) in the extended model appear to be more strongly correlated in general with the dependant variable. Table 29 below shows a summary of the correlation analysis specifically for the hypothesised relationships in the initial model described by Basaglia et al., (2008).

Table 29: Summary of Correlation Analysis and Hypotheses - Extended Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation	Support found?
H_14	Greater perceived progressiveness will lead to a greater intent to adopt UC	Progressivens	0.297	Yes
H_15	Greater fashion setter pressure will lead to a greater intention to adopt UC	FashionSet	0.187	Yes
H_16	Greater perceived internal benefits will lead to a greater intent to adopt UC	Intrnl-Benf	0.361	Yes
H_17	Greater attention toward users will lead to greater intent to adopt UC	Att2Usrs	0.389	Yes

Table 106, in Appendix M, details the Pearson and Spearman correlation analysis for all the corollaries to the main hypotheses. No evidence could be found to support hypothesis H15b that stated that: Greater extent of participation in conferences including UC will lead to a greater intent to adopt UC. Neither the Pearson correlation analysis (r=0.092) nor the Spearman Rank analysis (r=0.082) was significant at the 95% level ($p<0.05$). However all other corollaries for all of the hypothesised relationships were supported. Further analysis using Multiple Regression will assist in confirming the specific relationships and which of these hypotheses will be accepted or rejected.

7.3. Correlation Analysis: Integrated Model

Table 30 below shows the results of the Pearson correlation analysis on all the super-ordinate constructs from the integrated model proposed in section 6 above. The correlation values marked in red are significant at the 95% level ($p<0.05$).

Table 30: Pearson Correlation Analysis - Integrated Model

	Cmp-Suc	Coercive	Normative (Integrated)	Fashion Set (Integrated)	Progressiveness (Integrated)	User	Risks	Culture	Alternatives	Organisation	Intention
Cmp-Suc	1.000	0.316	0.396	0.195	0.343	0.247	-0.134	-0.212	-0.106	0.175	0.198
Coercive	0.316	1.000	0.337	0.144	0.286	0.175	-0.082	-0.200	-0.081	0.203	0.240
Normative (Integrated)	0.396	0.337	1.000	0.132	0.305	0.242	-0.082	-0.327	-0.092	0.288	0.216
Fashion Set (Integrated)	0.195	0.144	0.132	1.000	0.241	0.226	-0.090	-0.124	-0.095	0.101	0.172
Progressiveness (Integrated)	0.343	0.286	0.305	0.241	1.000	0.526	-0.318	-0.434	-0.329	0.154	0.345
User	0.247	0.175	0.242	0.226	0.526	1.000	-0.255	-0.433	-0.216	0.134	0.267
Risks	-0.134	-0.082	-0.082	-0.090	-0.318	-0.255	1.000	0.395	0.146	-0.075	-0.115
Culture	-0.212	-0.200	-0.327	-0.124	-0.434	-0.433	0.395	1.000	0.239	-0.314	-0.364
Alternatives	-0.106	-0.081	-0.092	-0.095	-0.329	-0.216	0.146	0.239	1.000	-0.044	-0.261
Organisation	0.175	0.203	0.288	0.101	0.154	0.134	-0.075	-0.314	-0.044	1.000	0.213
Intention	0.198	0.240	0.216	0.172	0.345	0.267	-0.115	-0.364	-0.261	0.213	1.000

The results show that all the constructs were significantly correlated with the dependent variable (Intention) at the 95% significance level. Three variables namely Risks, Culture and Alternatives were negatively correlated with the dependant variable and the rest were all positively correlated.

Coercive pressure (r=0.240) and Cmp-Suc (r=0.198) are the same as the constructs in the Initial model. The revised operationalization of normative pressure (r=0.216) shows a stronger correlation with the dependant variable than for either the initial model (r=0.15) or the extended model (r=0.15). However, fashion-setters' pressure (r=0.172) shows a slightly lower correlation than it does in the extended model where r=0.187. This can be shown to be due to the inclusion of the independent variable (I-Part) which was not found to significantly correlate with the dependant variable (Intention) using either Pearson or Spearman correlation analysis (see Appendix M). It is suggested that I-Part be dropped from a final, refined model.

Perceived progressiveness (r=0.345) is more strongly correlated with the dependant variable (Intention) in the integrated model than in the extended model where r=0.297. This suggests that the construct operationalised in the integrated model will be a stronger predictor of intention to adopt UC than that suggested by Basaglia et al., (2008) in the extended model.

The expectation that users will find UC both useful and easy to use proved to have a fairly strong and positive correlation with intention to adopt UC (r=0.267). The same

was true for the perception of organisational innovativeness (Organisation) where r=0.213.

The variables that were negatively correlated with intention to adopt UC (Intention) were the perception of risks associated with UC (r=-0.115), the perception of the organisational culture (r=-0.364) and the perception that there were alternatives to UC (r=-0.261).

Table 31 below shows a summary of the correlation analysis specifically for the hypothesised relationships in the extended model. All the relationships are supported by the correlation analysis.

Table 31: Summary of Correlation Analysis and Hypotheses – Integrated Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation	Support found?
$H_1$8	Perceived organisational innovativeness will lead to a greater intention to adopt UC	Organisation	0.213	Yes
$H_1$9	The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC	Alternatives	-0.261	Yes
$H_1$10	Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC	User	0.267	Yes
$H_1$11	Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC	Culture	-0.364	Yes
$H_1$12	Negative perceptions of the organisational risks associated with UC will lead to a lower intention to adopt UC	Risks	-0.115	Yes

Table 108 in Appendix M details both the Pearson and Spearman rank analysis for all the corollaries to the main hypothesis. No support could be found for the following three corollaries $H_1$8b, $H_1$12a, and $H_1$12b. $H_1$8b stated that an organisation with many white-collar workers will have a greater intention to adopt UC. Several interviewees in the qualitative interviews supported this hypothesis. However, no evidence could be found to support it in the sample.

Tobin & Bidoli (2006) indicated that there was a strong disincentive to adopt technologies like UC from both security concerns as well as a concern related to a lack of skills. As discussed in section 4.5.7, no strong support for these hypotheses emerged during the qualitative interviews. This was validated in the correlation analysis where no support could be found for these hypotheses either.

Some interesting cross correlations were found that were not well explained by the literature. Table 32 below shows cross-correlations between certain constructs in the integrated model and certain items chosen because of high correlations that were observed. These observations are not easily explained by the factor analysis, or the literature related to the initial and the extended model in the preceding sections. The correlation values marked in red are significant at the 95% level ($p<0.05$).

The perception of organisational innovativeness (Organisation) and either the informal adoption (Inf-Adpt) or the adoption of some elements of UC (Own-Adpt) was relatively high. Where: Organisation and Inf-Adpt (r=0.307) and Organisation and Own-Adpt (r= 0.385). This lends some credibility to the organisational innovativeness perspective discussed by Fichman (2004).

Table 32: Cross Correlations - Integrated Model

	Means	Std.Dev.	Progressiveness (Integrated)	Inf-Adpt	Organisation	Culture	Own-Adpt
Progressiveness (Integrated)	5.123	0.840	1.000	0.312	0.154	-0.434	0.315
Inf-Adpt	4.517	1.672	0.312	1.000	0.307	-0.428	0.692
Organisation	5.098	1.179	0.154	0.307	1.000	-0.314	0.385
Cultr	3.098	1.199	-0.434	-0.428	-0.314	1.000	-0.494
Own-Adpt	4.571	1.752	0.315	0.692	0.385	-0.494	1.000

Additionally, the perceived progressiveness of the technology (UC) appeared to be positively correlated with both informal (r=0.312) and actual formal adoption (r=0.315) of some elements of UC. Perceived progressiveness of the technology and the perceived organisational innovativeness were positively but not strongly correlated.

Quantitative: Multiple Regression Analysis

While correlation analysis measures the strength of the relationship between variables, it is also necessary to discover what the relationship is. This relationship can be measured by how much the dependent variable (Intention) is affected by each of the independent variables, and by all of them simultaneously (Hair et al., 2006). Therefore, the second stage of hypothesis testing involves a multiple regression analysis.

8. Quantitative: Multiple Regression Analysis

Multiple regression analysis (MRA) is performed by calculating the beta value (β) of each hypothesised relationship as well as the proportion of the variance of the dependant variable that is explained by each of the independent variables. This is referred to as the coefficient of determination (R^2) (Lederer, Maupin, Sena, & Zhuang, 2000). MRA can also establish the relative predictive importance of the independent variables by comparing beta weights (Garson, 2011).

The multiple regression equation takes the form $y = b_1x_1 + b_2x_2 + \ldots + b_nx_n + c$. Where y equals the independent variable, $x_1, x_2, \ldots, x_n$ are the dependant variables, $b_1, b_2, \ldots b_n$ are the regression coefficients which represent the amount the dependant variable y changes when the associated independent variable changes by one unit while the others are held constant; c is the constant where the regression line intercepts the y axis.

The research questions for the MRA can be stated as follows:

1. To what extent do the factors described in in the initial model predict the adoption of unified communications?

2. Does the addition of the factors described in the extended model, to the factors in the initial model, improve the extent of the predicted adoption of unified communications?

3. To what extent do the factors in the integrated model improve the extent of the predicted adoption of unified communications?

4. What rearrangement of factors would improve the predictive powers of the integrated model?

8.1. Summary of Multiple Regression Analysis: Initial Model

Table 33 below is a summary of several multiple regression analyses performed on the constructs that make up the initial model and the dependant variable (Intention). The table shows the p-values from each MRA. Marked values indicate that $p<0.05$. Table 33 below shows that the initial model (excluding control variables) at best explains 11.44% of the variance in intention to adopt unified communications. The creation of constructs and super-ordinate constructs from the test items improves the parsimony of the model but reduces the fidelity to the point where for the 3 super-ordinate i.e. level-1 constructs

(Coercive, Normative and Mimetic) the model only explains 6.78% of the variance in intention to adopt unified communications.

Table 33: Summary of Multiple Regression Analysis Initial Model

Type of constructs	Constructs	Control variables & Level-1 Constructs	Level-1 Constructs Only	Control variables & Level-2 Constructs	Level-2 Constructs Only	Control variables & Level-3 Constructs	Level-3 Constructs Only	Control Model
Control Variables	NrEmployee	0.106		0.098		0.117		0.028
	ITDptSize	0.799		0.860		0.988		0.770
	Own-Adpt	0.000		0.000		0.000		0.000
Super-ordinate Constructs (level-1)	Coercive	0.018	0.001					
	Normative	0.261	0.579					
	Mimetic	0.831	0.266					
Constructs (Level-2)	Cmp-Suc			0.016	0.028			
	Dom-Su			0.649	0.520			
	Dom-Cu			0.040	0.014			
	Cmp-Adpt			0.076	0.567	0.052	0.463	
	S-adpt			0.596	0.667	0.511	0.789	
	C-Adpt			0.963	0.409	0.914	0.435	
	Parent			0.225	0.011	0.228	0.011	
	I-Part			0.605	0.841	0.657	0.907	
Sub-Constructs (Level-3)	Cmp-Suc1					0.156	0.120	
	Cmp-Suc2					0.429	0.334	
	Cmp-Suc3					0.393	0.499	
	Cmp-Suc4					0.864	0.658	
	Dom-Su1					1.000	0.722	
	Dom-Su2					0.072	0.142	
	Dom-Su3					0.018	0.012	
	Dom-Cu1					0.388	0.325	
	Dom-Cu2					0.534	0.409	
Variance explained in adoption intention R^2		**15.32%**	**6.78%**	**18.00%**	**8.84%**	**20.40%**	**11.44%**	**13.61%**

A more detailed view of each of the multiple linear regression analyses that were performed can be found in Appendix N. Table 33 above appears to show that there are not many variables that are significant, however, the restricted variance of an independent variable in a particular sample can be a cause of finding no significance (Garson, 2011). This masking effect is clearly shown with the construct (Parent) in Table 33 above. In some regression analyses it is shown to be significant but in others (with more variables) it appears not to be. So in order to test the hypothesised relationships detailed in Appendix A, it is necessary to construct a series of equations that limits the number of constructs in order to try and avoid making type II errors. This will be done in section 8.4 below.

8.2. Summary of Multiple Regression Analysis: Extended Model

Table 34 below is a summary of several multiple regression analyses performed on the constructs that make up the extended model and the dependant variable (Intention). The table shows the p-values from each MRA. Marked values indicate that p<0.05. Table 34 below is a summary of several multiple regression analyses performed on the constructs that make up the extended model and the dependant variable (Intention). The table shows the p-values from each MRA. Marked values indicate that p<0.05.

Table 34: Summary of Multiple Regression Analysis - Extended Model

Type of constructs	Constructs	Control variables & Level-1 Constructs	Level-1 Constructs Only	Control variables & Level-2 Constructs	Level-2 Constructs Only	Control variables & Level-3 Constructs	Level-3 Constructs Only	Control Model
Control variables	NrEmployee	0.093		0.138		0.168		0.029
	ITDptSize	0.469		0.520		0.510		0.772
	Complexity	0.093		0.085		0.001		0.969
	Own-Adpt	0.000		0.002		0.076		0.000
Super-ordinate Constructs (level-1)	Coercive	0.185	0.013					
	Normative	0.273	0.944					
	Mimetic	0.656	0.999					
	FashionSet	0.038	0.030					
	Progressivens	0.099	0.123					
	Intrnl-Benf	0.001	0.000					
Constructs (Level-2)	Cmp-Suc			0.195	0.305			
	Att2Usrs			0.006	0.000			
	Cmp-Adpt			0.079	0.209	0.060	0.180	
	S-adpt			0.167	0.260	0.281	0.350	
	C-Adpt			0.679	0.376	0.658	0.451	
	Parent			0.208	0.034	0.214	0.036	
	Pap			0.919	0.956	0.998	0.939	
	Conf			0.257	0.352	0.319	0.417	
	Meet			0.406	0.283	0.443	0.288	
	Mod			0.949	0.817	0.800	0.765	
	Legit			0.562	0.508	0.686	0.547	
	Cost-Red			0.001	0.001	0.003	0.003	
	Comp-Red			0.350	0.273	0.410	0.365	
Sub-Constructs (Level-3)	Cmp-Suc1					0.437	0.418	
	Cmp-Suc2					0.391	0.320	
	Cmp-Suc3					0.342	0.341	
	Cmp-Suc4					0.982	0.789	
	Inf-Adpt					0.080	0.000	
	New-Serv					0.017	0.034	
Variance explained in adoption intention R^2		**21.98%**	**17.12%**	**25.83%**	**22.37%**	**26.50%**	**22.81%**	**13.61%**

As can be seen from Table 34 above, the extended model improves on the initial model somewhat. But at best (excluding control variables) still only explains 22.8% of the variance in intention to adopt unified communications. The six super-ordinate constructs (Coercive, Mimetic, Normative, Fashion-setters, Progressive and Internal-Benefits) explain only 17.12% of intention to adopt unified communications. A more

detailed view of each of the multiple linear regression analyses that were performed can be found in Appendix N.

8.3. Summary of Multiple Regression Analysis: Integrated Model

Table 35 below is a summary of several multiple regression analyses performed on the constructs that make up the extended model and the dependant variable (Intention). The table shows the p-values from each MRA. Marked values indicate that p<0.05.

Table 35: Summary of Multiple Regression Analysis - Integrated Model

Type of constructs	Constructs	Control variables & Level-1 Constructs	Level-1 Constructs Only	Control variables & Level-2 Constructs	Level-2 Constructs Only	Control variables & Level-3 Constructs	Level-3 Constructs Only	Control Model
Control variables	NrEmployee	0.1047		0.1018		0.4678		0.0292
	ITDptSize	0.6048		0.3580		0.1308		0.7718
	Complexity	0.0589		0.0322		0.0313		0.9686
	Own-Adpt	0.0203		0.1497		0.1604		0.0000
Super-ordinate Constructs (level-1)	Mimetic	0.4983	0.6581					
	Coercive	0.1965	0.0437					
	Normative	0.3052	0.9333					
	Fashion-Set*	0.2730	0.1828					
	Progressivns*	0.0193	0.0387					
	User	0.4535	0.5893					
	Risks	0.5778	0.2058					
	Cultr	0.0082	0.0007					
	Alternatives	0.0117	0.0055					
	Organisation	0.1650	0.0677					
Constructs (Level-2)	Cmp-Suc			0.3701	0.3717			
	Dom-Su			0.7360	0.7484			
	Dom-Cu			0.4158	0.5851			
	Parent-Adpt			0.1657	0.0290	0.2107	0.0400	
	Innov			0.6260	0.5318	0.6762	0.5558	
	Knowl			0.2404	0.2036	0.2471	0.1996	
	Collab			0.9697	0.9473	0.9886	0.9497	
	Early-adpt			0.4087	0.3289	0.5249	0.4054	
	Cmp-Adpt			0.1246	0.1314	0.1387	0.1403	
	S-adpt			0.3895	0.4333	0.3204	0.3650	
	C-Adpt			0.4572	0.3078	0.5428	0.3635	
	Inf-Adpt			0.2886	0.0904	0.2227	0.0709	
	I-Part			0.3079	0.3823	0.4288	0.5072	
	Pap			0.8290	0.8100	0.9249	0.9017	
	Conf			0.2201	0.2404	0.2867	0.3049	
	Meet			0.3789	0.2951	0.3825	0.2898	
	Mod			0.9080	0.9942	0.8995	0.9992	
	Legit			0.7920	0.8634	0.7026	0.7600	
	Mature			0.2592	0.2002	0.3145	0.2489	
	Cost-red			0.0038	0.0040	0.0073	0.0075	
	Comp-red			0.7196	0.7089	0.9249	0.9132	
	New-Serv			0.0219	0.0268	0.0180	0.0211	
	Org-Effic			0.5225	0.3872	0.4211	0.2944	
	Ease			0.7382	0.9584	0.8444	0.8908	
	Useful			0.9257	0.9761	0.9855	0.9105	

Type of constructs	Constructs	Control variables & Level-1 Constructs	Level-1 Constructs Only	Control variables & Level-2 Constructs	Level-2 Constructs Only	Control variables & Level-3 Constructs	Level-3 Constructs Only	Control Model
	Alt-cost			0.4336	0.5384	0.2856	0.3608	
	Alt-tech			0.2456	0.1376	0.3281	0.1937	
	Comp-risk			0.9882	0.6679	0.9371	0.6096	
	Comp-skills			0.6413	0.9476	0.6359	0.9624	
	Comp-Stds			0.4408	0.3892	0.5073	0.4411	
	Comp-Cultr			0.0821	0.1297	0.1031	0.1470	
	Comp-Mature			0.4195	0.1761	0.4759	0.2156	
Sub-Constructs (Level-3)	Cmp-Suc1					0.6452	0.5027	
	Cmp-Suc2					0.3147	0.2715	
	Cmp-Suc3					0.5779	0.6262	
	Cmp-Suc4					0.6492	0.4250	
	Dom-Su1					0.6198	0.6124	
	Dom-Su2					0.3601	0.3774	
	Dom-Su3					0.0765	0.0923	
	Dom-Cu1					0.6759	0.7734	
	Dom-Cu2					0.9412	0.9407	
Variance explained in adoption intention R^2		**25.96%**	**22.98%**	**31.57%**	**29.29%**	**32.59%**	**30.36%**	**13.61%**

Table 35 above shows that the proposed integrated model improves upon both the initial and extended models in that it explains 30.36% of the variance in intention to adopt unified communications at best. It explains 22.98% of the variance in intention to adopt unified communications when reduced to 10 super-ordinate constructs.

The loss of fidelity from the test item (sub-construct) level to the super-ordinate construct level suggests that simple averaging of test-items and lower order constructs to form higher constructs could be too crude a method and a weighting system such as that done in structured equation modelling may improve the explained variance. A more detailed view of each of the multiple linear regression analyses that were performed can be found in Appendix N.

8.4. Multiple Regression Analysis: Hypothesis Testing

8.4.1. Hypothesis Testing – Initial Model

In order to test the hypothesised relationships in the initial model, it is necessary to build the following multiple regression equations:

Equation 1: **INTENTION** = c + b_1 * *CMP-ADPT* + b_2 * *CMP-SUC*

Equation 1a: **INTENTION** = d + b_3 * CMP-ADPT

Equation 1b: **INTENTION** = e + b_4 * *CMP-SUC1* + b_5 * *CMP-SUC2* + b_6 * *CMP-SUC3* + b_7 * *CMP-SUC4*

Equation 2: **INTENTION** = f + b_8 * *DOM-SU* + b_9 * *DOM-CU* + b_{10} * *PARENT*

Equation 2a: **INTENTION** = g + b_{11} * *DOM-SU1* + b_{12} * *DOM-SU2* + b_{13} * *DOM-SU3*

Equation 2b: **INTENTION** = h + b_{14} * *DOM-CU1* + b_{15} * *DOM-CU2*

Equation 2c: **INTENTION** = i + b_{16} * *PARENT*

Equation 3: **INTENTION** = j + b_{17} * *S-ADPT* + b_{18} * *C-ADPT* + b_{19} * *I-PART*

Equation 3a: **INTENTION** = k + b_{20} * *S-ADPT*

Equation 3b: **INTENTION** = l + b_{21} * *C-ADPT*

Equation 3c: **INTENTION** = m + b_{22} * *I-PART*

Where b_1 to b_{22} represent the beta values (β) corresponding to the hypotheses they represent and c, d, e to j are the constants. For clarity, equation 1 is associated with Hypothesis H1, equation 1a is associated with hypothesis H1a and so on.

Table 36: Summary of Regression Analysis - Hypothesis Testing - Initial Model

Hypothesis: Equation	Independent Variables	Beta Values	Intercept	R^2	Adjusted R^2	p-level	Hypothesis Supported?
$H_1$1	Cmp-Adpt Cmp-Suc	0.03 0.24	4.18	0.04	0.03	0.00111	Yes
$H_1$1a	Cmp-Adpt	0.09	5.02	0.01	0.01	0.02833	Yes
$H_1$1b	Cmp-Suc1 Cmp-Suc2 Cmp-Suc3 Cmp-Suc4	0.18 0.24 -0.12 -0.03	4.18	0.05	0.04	0.00309	Yes
$H_1$2	Dom-Su Dom-Cu	0.01 0.19	4.16	0.07	0.06	0.00004	Yes

Hypothesis: Equation	Independent Variables	Beta Values	Intercept	R^2	Adjusted R^2	p-level	Hypothesis Supported?
	Parent	0.78					
$H_1$2a	Dom-Su1 Dom-Su2 Dom-Su3	0.08 0.21 -0.20	4.83	0.04	0.03	0.00365	Yes
$H_1$2b	Dom-Cu1 Dom-Cu2	0.08 0.15	4.25	0.04	0.03	0.00048	Yes
$H_1$2c	Parent	0.09	5.09	0.03	0.03	0.00106	Yes
$H_1$3	S-Adpt C-Adpt I-Part	0.01 0.12 0.08	4.85	0.03	0.02	0.02759	Yes
$H_1$3a	S-Adpt	0.08	5.07	0.01	0.01	0.05527	No
$H_1$3b	C-Adpt	0.13	4.91	0.03	0.02	0.00319	Yes
$H_1$3c	I-Part	0.13	5.27	0.00	---	0.35198	No

Table 36 above is a summary of the regression analyses performed on hypotheses H1, H2 and H3 and all of the associated corollaries. Marked values indicate that $p<0.05$. The highest coefficient of determination (R^2) value was for hypothesis H2 from equation 2, which was 0.07. This means that 7% of the total variance in the independent variable can be explained by the independent variables Dom-Su (perceived dominance of suppliers), Dom-Cu (perceived dominance of customers) and Parent (Perceived extent of parent adoption of UC).

No support could be found for hypotheses H3a and H3c which both had overall p-values exceeding 0.05 for their associated equations. A detailed analysis is done in the next section (Section 9 Analysis of Results: Quantitative).

8.4.2. Hypothesis Testing – Extended Model

In order to test the hypothesised relationships in the extended model, it is necessary to build the following multiple regression equations:

Equation 4: **INTENTION** = n + b_{23} * *MOD* + b_{24} *LEGIT

Equation 4a: **INTENTION** = o + b_{25} * MOD

Equation 4b: **INTENTION** = p + b_{26} * LEGIT

Equation 5: **INTENTION** = q + b_{27} * PAP + b_{28} * CONF + b_{29} * MEET

Equation 5a: **INTENTION** = r + b_{30} * PAP

Equation 5b: **INTENTION** = s + b_{31} * CONF

Equation 5c: **INTENTION** = t + b_{32} * MEET

Equation 6: **INTENTION** = u + b_{33} * COST-RED + b_{34} * COMP-RED + b_{35} * ATT2USRS

Equation 6a: **INTENTION** = v + b_{36} * COST-RED

Equation 6b: **INTENTION** = w + b_{37} * COMP-RED

Equation 7: **INTENTION** = x + b_{38} * INF-ADPT + b_{39} * NEW-SERV

Equation 7a: **INTENTION** = y + b_{40} * NEW-SERV

Equation 7b: **INTENTION** = z + b_{41} * INF-ADPT

Where b_{23} to b_{41} represent the beta values (β) corresponding to the hypotheses they represent and n, m, o to z are the constants. For clarity, equation 4 is associated with Hypothesis $H_1$4, equation 4a is associated with hypothesis H4a and so on.

Table 37: Summary of Regression Analysis - Hypothesis Testing - Extended Model

Hypothesis: Equation	Independent Variables	Beta Values	Intercept	R^2	Adjusted R^2	p-level	Hypothesis Supported?
$H_1$4	Mod Legit	0.13 0.28	3.13	0.09	0.09	0.00000	Yes
$H_1$4a	Mod	0.31	0.34	0.07	0.06	0.00000	Yes
$H_1$4b	Legit	0.37	3.32	0.09	0.08	0.00000	Yes
$H_1$5	Pap Conf Meet	0.29 0.03 0.39	4.88	0.04	0.03	0.00291	Yes
$H_1$5a	Pap	0.43	5.00	0.02	0.01	0.01552	Yes
$H_1$5b	Conf	0.23	5.24	0.02	0.01	0.09550	No
$H_1$5c	Meet	0.46	5.10	0.03	0.01	0.00082	Yes
$H_1$6	Cost-Red Comp-Red Att2Usrs	0.24 -0.06 0.38	2.54	0.19	0.18	0.00000	Yes
$H_1$6a	Cost-Red	0.33	3.72	0.11	0.11	0.00000	Yes
$H_1$6b	Comp-Red	0.15	4.74	0.03	0.03	0.00216	Yes
$H_1$7	Inf-Adpt New-Serv	0.18 0.34	2.55	0.16	0.16	0.00000	Yes
$H_1$7a	New-Serv	0.43	3.01	0.10	0.10	0.00000	Yes
$H_1$7b	Inf-Adpt	0.22	4.34	0.09	0.09	0.00000	Yes

Table 36 above is a summary of the regression analyses performed on hypotheses H4, H5, H6 and H7 and all of the associated corollaries. Marked values indicate that

p<0.05. The highest coefficient of determination (R^2) value was for hypothesis H6 from equation 6, which was 0.19. This means that 19% of the total variance in the independent variable can be explained by the independent variables Cost-Red (perceived cost reductions derived from UC), Comp-Red (perceived infrastructure complexity reductions derived from UC) and Att2Usrs (Attention towards users).

No equations and their associated hypotheses had overall p-values exceeding 0.05. The coefficients of determination (R^2) values appear to be generally higher for the extended model relationships than those in the initial model. A detailed analysis is done in the next section (Section 9 Analysis of Results: Quantitative).

8.4.3. Hypothesis Testing – Integrated Model

In order to test the hypothesised relationships in the integrated model, it is necessary to build the following multiple regression equations:

Equation 8: **INTENTION** = $a_1 + b_{42} *$ *INNOV* $+ b_{43}$ *WHIT-COL+ b_{44} *COLLAB+ b_{45} *EARLY-ADPT+ b_{45} *KNOWL

Equation 8a: **INTENTION** = $a_2 + b_{46} *$ INNOV

Equation 8b: **INTENTION** = $a_3 + b_{47} *$ WHIT-COL

Equation 8c: **INTENTION** = $a_4 + b_{48} *$ COLLAB

Equation 8d: **INTENTION** = $a_5 + b_{49} *$ EARLY-ADPT

Equation 8e: **INTENTION** = $a_6 + b_{50} *$ KNOWL

Equation 9: **INTENTION** = $a_7 + b_{51} *$ *A*LT-COST + b_{52} *ALT-TECH

Equation 9a: **INTENTION** = $a_8 + b_{53} *$ *A*LT-COST

Equation 9b: **INTENTION** = $a_9 + b_{54}$ *ALT-TECH

Equation 10: **INTENTION** = $a_{10} + b_{55} *$ USEFUL + b_{56} *EASE

Equation 10a: **INTENTION** = $a_{11} + b_{57} *$ USEFUL

Equation 10b: **INTENTION** = $a_{12} + b_{58} *$ EASE

Equation 11: **INTENTION** = $a_{13} + b_{59} *$ COMP-CULTR + b_{56} *COMP-MATURE

Equation 11a: **INTENTION** = $a_{14} + b_{60} *$ COMP-CULTR

Equation 11b: **INTENTION** = $a_{14} + b_{60} *$ COMP-MATURE

Equation 12: **INTENTION** = $a_{15} + b_{61} *$ RISK + b_{62} *STDS + b_{63} *SKILLS

Equation 12a: **INTENTION** = $a_{16} + b_{64} *$ RISK

Equation 12b: **INTENTION** = a_{17}+ b_{65} * STDS

Equation 12c: **INTENTION** = a_{18}+ b_{66} * SKILLS

Where b_{42} to b_{66} represent the beta values (β) corresponding to the hypotheses they represent and a_1 to a_{18} are the constants. For clarity, equation 8 is associated with Hypothesis H8, equation 8a is associated with hypothesis H8a and so on.

Table 38: Summary of Regression Analysis - Hypothesis Testing - Integrated Model

Hypothesis: Equation	Independent Variables	Beta Values	Intercept	R^2	Adjusted R^2	p-level	Hypothesis Supported?
$H_1$8	Innov Whit-Col Collab Early-Adpt Knowl	-0.05 -0.02 0.19 -0.08 0.16	4.42	0.08	0.06	0.00009	Yes
$H_1$8a	Innov	0.13	4.63	0.02	0.02	0.00962	Yes
$H_1$8b	Whit-Col	0.07	5.00	0.01	0.01	0.09827	No
$H_1$8c	Collab	0.13	4.70	0.02	0.02	0.00609	Yes
$H_1$8d	Early-Adpt	0.17	4.50	0.05	0.05	0.00005	Yes
$H_1$8e	Knowl	0.19	4.40	0.06	0.05	0.00001	Yes
$H_1$9	Alt-Cost Alt-Tech	-0.14 -0.23	6.76	0.07	0.06	0.00001	Yes
$H_1$9a	Alt-Cost	-0.29	6.47	0.05	0.05	0.00003	Yes
$H_1$9b	Alt-Tech	-0.32	6.58	0.06	0.06	0.00000	Yes
$H_1$10	Ease Useful	0.09 0.29	3.33	0.07	0.07	0.00000	Yes
$H_1$10a	Ease	0.28	3.97	0.05	0.05	0.00003	Yes
$H_1$10b	Useful	0.36	3.39	0.07	0.07	0.00000	Yes
$H_1$11	Comp-Cultr Comp-Mature	-0.20 -0.18	6.52	0.13	0.13	0.00000	Yes
$H_1$11a	Comp-Cultr	-0.34	6.35	0.11	0.11	0.00000	Yes
$H_1$11b	Comp-Mature	-0.29	6.30	0.11	0.10	0.00000	Yes
$H_1$12	Risk Stds Skills	-0.06 0.01 -0.10	5.98	0.02	0.01	0.15435	No
$H_1$12a	Risk	-0.09	5.72	0.01	0.00	0.12725	No
$H_1$12b	Stds	-0.07	5.65	0.01	0.00	0.20371	No
$H_1$12c	Skills	-0.11	5.78	0.01	0.00	0.04234	Yes

Table 38 above is a summary of the regression analyses performed on hypotheses H8, H9, H10, H11 and H12 and all of the associated corollaries. Marked values indicate that $p<0.05$. The highest coefficient of determination (R^2) value was for hypothesis H11 from equation 11, which was 0.13. This means that 13% of the total variance in the independent variable can be explained by the independent variables Comp-Cultr (perception that the organisations culture does not fit with UC) and Comp-Mature (perception that the organisation is not yet mature enough to adopt UC).

The following equations and their associated hypotheses had overall p-values exceeding 0.05 these were H8b, H12, H12a and H12b. This meant that no support could be found for these hypotheses. A detailed analysis is done in the next section (Section 9 Analysis of Results: Quantitative).

9. Analysis of Results: Quantitative

9.1. Analysis Methods

The hypotheses for all three models were tested using a 2-stage process. The first stage consisted of a correlation analysis. Pearson Correlation tests were run first and if no significance could be found at the 95% significance level, a further Spearman Rank Correlation test was performed if it was appropriate for the type of variable.

The second stage consisted of a series of multiple regression analyses. Multiple regression analysis was performed by calculating the beta value (β) of each hypothesised relationship as well as the proportion of the variance (R^2) of the dependant variable that is explained by each of the independent variables.

It is important to note that all marked correlations are significant at the $p<0.05$ level. This means that on average if 20 hypotheses are accepted where $p=0.05$ then one of them will have been spuriously accepted. In practice the p values were generally much lower than 5%, so this appears not to be a problem for this research.

9.2. Support for Theory and Hypotheses - Results & Discussion

All hypotheses are posed and discussed in the alternate form H_1 (the null hypothesis H_0 is that there is no effect).

9.2.1. Initial Model – Discussion of Hypotheses Not Rejected

Table 39 below is a summary of the two-stage hypothesis testing process for the initial model showing hypotheses that were not rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation and the Spearman Rank correlation (when performed). All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$.

$H_1$1 (that greater mimetic pressure will lead to a greater intent to adopt UC) is not rejected. This is because both the regression analysis and the Pearson and Spearman correlations show that it is significant at the 95% level ($p<0.05$). There is also positive

correlation with the dependant variable as predicted. The same holds true for both its corollaries $H_1$1a and $H_1$1b. The relatively low explained variance (4%) is cause for concern. The explained variance for the corollary $H_1$1b is higher at 5% than for the construct as a whole. This suggests that even though the construct is a formative one, its' predictive power is lower when Cmp-Adpt and Cmp-Suc are combined than when they are separate. Teo et al., (2003) do not experience this in their study on FEDI, however it is not at odds with institutional theory to move Cmp-Adpt from the mimetic pressure construct to another part of the model such as normative pressure.

Table 39: Hypothesis Not Rejected - Initial Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Spearman Rank Correlation coefficient (r)	Hypothesis Supported?
$H_1$1	Greater mimetic pressure will lead to greater intention to adopt UC	0.04	0.172	0.191	Yes
$H_1$1a	Greater extent of adoption of UC by competitors will lead to greater intent to adopt UC	0.01	0.121	0.146	Yes
$H_1$1b	Greater perceived success of competitors that have adopted UC will lead to a greater intent to adopt UC	0.05	0.198	0.194	Yes
$H_1$2	Greater coercive pressure will lead to a greater intent to adopt UC	0.07	0.240	0.277	Yes
$H_1$2a	Greater perceived dominance of its suppliers that have adopted UC will lead to greater intention to adopt UC	0.04	0.081	0.119	Yes
$H_1$2b	Greater perceived dominance of its customers that have adopted UC will lead to greater intent to adopt UC	0.04	0.211	0.224	Yes
$H_1$2c	Adoption of UC by parent company will lead to greater intent to adopt UC	0.03	0.179	0.159	Yes
$H_1$3	Greater normative pressure will lead to a greater intent to adopt UC	0.03	0.150	0.164	Yes
$H_1$3b	Greater extent of adoption of UC among its customers will lead to a greater intent to adopt UC	0.03	0.211	0.224	Yes

$H_1$2 (that greater coercive pressure will lead to a greater intent to adopt UC) is not rejected. This is because both the regression analysis and the Pearson and Spearman correlations show that it is significant at the 95% level ($p<0.05$). There is also positive correlation with the dependant variable as predicted. The Pearson correlation coefficient for $H_1$2a was not found to be significant at the 95% level. However, a Spearman Rank correlation was found to be significant and the corollary was not rejected. The reason the regression analysis is significant and the Pearson correlation is not is because the regression measured the items (sub-constructs) individually and the Pearson correlation measured the aggregated construct (variable). This suggests that there is a non-linear relationship with the dependant variable. Coercive pressure has the highest explained variance (7%) for the hypothesised relationships. This result

contradicts the expectation of Basaglia et al., (2008) who decided to drop most of the variables related to supply chain pressure.

$H_1$3 (that greater normative pressure will lead to a greater intent to adopt UC) is not rejected. This is because both the regression analysis and the correlation analyses show that it is significant at the 95% level ($p<0.05$). There is also a positive correlation with the dependant variable as predicted. Two of the variables making up the construct for normative pressure were found not to be significant however and related hypotheses were rejected. The reasons are possibly different for each of these and are discussed below.

9.2.2. Initial Model – Discussion of Hypotheses that were Rejected

Table 40 below is a summary of the two-stage hypothesis testing process for the initial model and shows the two hypotheses that were rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation and the Spearman Rank correlation. All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$.

Table 40: Hypotheses Rejected - Initial Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Spearman Rank Correlation coefficient (r)	Hypothesis Supported?
$H_1$3a	Greater extent of adoption of UC among suppliers will lead to a greater intent to adopt UC	0.01	0.081	0.119	No
$H_1$3c	Participation in associations that promote and disseminate information on UC will lead to a greater intent to adopt UC	0.00	0.051	0.059	No
$H_1$14	Mimetic pressure will have a more significant impact on intention to adopt UC when perceived complexity is higher than when it is lower	0.04 (Hi) 0.02 (Lo)	0.204 (Hi) 0.148 (Lo)	0.237 (Hi) 0.156 (Lo)	Limited support

$H_1$3a was rejected because both the Pearson correlation coefficient and the multiple regression tests for $H_1$3a were not found to be significant at the 95% level. However, a Spearman Rank correlation was found to be significant at the 95% level. This suggests that there is no linear relationship but that the correlation is still significant. The hypothesis was rejected. This is at odds with Teo et al., (2003) and DiMaggio and Powel (1983).

$H_1$3c was rejected on the basis that none of the tests conducted yielded a significance level below 0.05. There are two possible reasons for this. The variable was operationalised as a binary variable and this could have been problematic. (Garson, 2011) states that independent variables in regression testing are assumed to be continuous, interval variables, though it is common to see use of ordinal data in linear regression. Another reason may be associated with timing. Fichman (2004) refers to the temporal problem associated with asking respondents if they have recently been exposed to, or associated with agents of normative pressure and then trying to find a correlation with actual or intentional adoption.

$H_1$14 is an example of an interacting or a moderating variable. Garson (2011) states that there are several approaches to measuring interaction effects. Once of the simplest is to run separate regressions for each level of the interacting variable. The sample was split into two samples. One where perceived complexity was high (with N=74 cases) and one sample where perceived complexity was low (N=172 cases). Cases where perceived complexity was neutral were dropped from the analysis. Multiple linear regressions were run on each sub-sample. Several multiple linear regression tests were performed on the super-ordinate construct mimetic as well as on the sub-constructs that make up the mimetic super-ordinate construct. None of these tests yielded a significant result at the 95% level.

$H_1$14 was rejected on the basis that none of the linear tests (multiple linear regression and Pearson's correlation) conducted yielded a significance level below 0.05. Only the Spearman Rank correlation yielded a result that was significant at the 95% level. This is at odds with Teo et al., (2003) who found that $H_1$14 was significant using a partial least squares (PLS) statistical technique.

9.2.3. Extended Model – Discussion of Hypotheses Not Rejected

Table 41 below is a summary of the two-stage hypothesis testing process for the extended model and shows the hypotheses that were not rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation. All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$

Table 41: Hypotheses Not Rejected - Extended Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Hypothesis Supported?
$H_1$4	Greater perceived progressiveness will lead to a greater intent to adopt UC	0.09	0.297	Yes
$H_1$4a	Greater perception that UC characterises a modern dynamic company will lead to a greater intent to adopt UC	0.07	0.257	Yes
$H_1$4b	Greater perception that UC is a legitimate way to manage communication in its industry will lead to a greater intent to adopt UC	0.09	0.292	Yes
$H_1$5	Greater fashion setter pressure will lead to a greater intention to adopt UC	0.04	0.187	Yes
$H_1$5a	Greater extent of exposure to media covering UC will lead to a greater intent to adopt UC	0.02	0.133	Yes
$H_1$5c	Greater extent of participation in meetings with peers discussing UC will lead to a greater intent to adopt UC	0.03	0.183	Yes
$H_1$6	Greater perceived internal benefits will lead to a greater intent to adopt UC	0.19	0.361	Yes
$H_1$6a	Greater perceived cost reductions derived from UC will lead to a greater intent to adopt UC	0.11	0.331	Yes
$H_1$6b	Greater perceived infrastructure complexity reductions from UC will lead to a greater intent to adopt UC	0.03	0.168	Yes
$H_1$7	Greater attention toward users will lead to greater intent to adopt UC	0.16	0.389	Yes
$H_1$7a	The ability to offer new services to users will lead to a greater intent to adopt UC	0.10	0.321	Yes
$H_1$7b	Greater the extent of adoption of UC by users on an informal basis will lead to a greater intent to adopt UC	0.09	0.303	Yes

$H_1$4 (Greater perceived progressiveness will lead to a greater intent to adopt UC) is not rejected. This is because both the regression analysis and the Pearson and Spearman correlations show that it is significant at the 95% level ($p<0.05$). Explained variance in the dependant variable is 9%. There is also positive correlation with the dependant variable as predicted.

$H_1$5 (Greater fashion setter pressure will lead to a greater intention to adopt UC) is not rejected. This is because both the regression analysis and the correlation analyses show that it is significant at the 95% level ($p<0.05$). There is also a positive correlation with the dependant variable as predicted. One of the variables (Conf – measuring attendance at conferences discussing UC) making up the construct for fashion setter

pressure was found not to be significant however and $H_1$5b was rejected. The reasons are discussed below.

$H_1$6 (Greater perceived internal benefits will lead to a greater intent to adopt UC) is not rejected. This is because both the regression analysis and the Pearson and Spearman correlations show that it is significant at the 95% level ($p<0.05$). There is also positive correlation with the dependant variable as predicted. Perceived internal benefits (Intrnl-Benf) has the highest explained variance (19%) for the hypothesised relationships in the extended model. This result confirms the expectation of Basaglia et al., (2008).

$H_1$7 (Greater attention toward users will lead to greater intent to adopt UC) is not rejected. This is because both the regression analysis and the Pearson and Spearman correlations show that it is significant at the 95% level ($p<0.05$). There is also positive correlation with the dependant variable as predicted. Attention towards users (Att2Usrs) is a sub-construct of (Intrnl-Benf) and has the 2nd highest explained variance (16%) for the hypothesised relationships in the extended model.

9.2.4. Extended Model – Discussion of Hypotheses that were Rejected

Table 42 below is a summary of the two-stage hypothesis testing process for the extended model and shows the hypothesis that was rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation and the Spearman Rank correlation. All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$.

Table 42: Hypotheses Rejected - Extended Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Spearman Rank Correlation coefficient (r)	Hypothesis Supported?
$H_1$5b	Greater extent of participation in conferences including UC will lead to a greater intent to adopt UC	0.02	0.092	0.083	No

$H_1$5b was rejected because the Pearson correlation coefficient and the multiple regression tests, as well as the Spearman correlations for $H_1$3a were not found to be significant at the 95% level. The reasons are probably the same as those given for the rejection of $H_1$3c above.

9.2.5. Integrated Model – Discussion of Hypotheses Not Rejected

Table 43 below is a summary of the two-stage hypothesis testing process for the extended model and shows the hypotheses that were not rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation. All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$

Table 43: Hypothesis Not Rejected - Integrated Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Hypothesis Supported?
$H_1$8	Perceived organisational innovativeness will lead to a greater intention to adopt UC	0.08	0.213	Yes
$H_1$8a	The perception that an organisation is highly innovative will lead to greater intention to adopt UC	0.02	0.14	Yes
$H_1$8c	The perception that an organisation is highly collaborative will lead to greater intention to adopt UC	0.02	0.15	Yes
$H_1$8d	The perception that an organisation is an early adopter will lead to greater intention to adopt UC	0.05	0.22	Yes
$H_1$8e	The perception that the organisation has many mobile collaborative workers will lead to a greater intention to adopt UC.	0.06	0.24	Yes
$H_1$9	The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC	0.07	-0.261	Yes
$H_1$9a	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit, will lead to a lower intention to adopt UC	0.05	-0.23	Yes
$H_1$9b	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit, will lead to a lower intention to adopt UC	0.06	-0.25	Yes
$H_1$10	Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC	0.07	0.27	Yes
$H_1$10a	The expectation that users in the organisation will find UC very easy to use will lead to a greater intention to adopt UC	0.05	0.23	Yes
$H_1$10b	The expectation that users in the organisation will find UC useful will lead to a greater intention to adopt UC	0.07	0.27	Yes
$H_1$11	Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC	0.13	-0.36	Yes
$H_1$11a	The perception that UC does not fit the organisational culture will lead to a lower intention to adopt UC	0.11	-0.33	Yes
$H_1$11b	The perception that the organisation is not ready or mature enough to adopt UC will lead to a lower intention to adopt UC	0.11	-0.33	Yes
$H_1$12c	The perception that UC skills are scarce which makes UC implementations risky will lead to a lower intention to adopt UC	0.01	-0.11	Yes

$H_1$8 (Perceived organisational innovativeness will lead to a greater intention to adopt UC) is not rejected. This is because both the regression analysis and the Pearson

correlations show that it is significant at the 95% level ($p<0.05$). There is also positive correlation with the dependant variable as predicted. $H_1$8b, which is a corollary of $H_1$8, was rejected and is discussed in the section below. These results corroborate the literature on the Organisational Innovativeness Perspective (Brown & Russell, 2007; Fichman, 2004).

$H_1$9 (The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC) is not rejected. This is because both the regression analysis and the Pearson correlations show that it is significant at the 95% level ($p<0.05$). There is also negative correlation with the dependant variable as predicted. The perception that there are alternatives to UC (Alternatives) does not have a very high explained variance (7%) for the hypothesised relationships in the extended model. This result is partly at odds with the results of the qualitative interviews where it was stated that Telkom (the incumbent carrier) found alternative ways to incentivise clients not to adopt certain elements of UC. This does not appear to be as strong an influence (with $r=-0.261$) as is perhaps perceived in the popular media.

$H_1$10 (Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC) is not rejected. This is because both the regression analysis and the Pearson correlations show that it is significant at the 95% level ($p<0.05$). There is also positive correlation with the dependant variable as predicted. The expected usefulness and ease of use for users (User) has an explained variance of (7%) for the hypothesised relationships in the extended model. This result is partly at odds with the results of the qualitative interviews, which suggested that this may almost be a TAM model by proxy based on expectations of user experience. There is clearly a significant and positive relationship but it does not appear to contribute in a big way to the model.

$H_1$11 (Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC) is not rejected. This is because both the regression analysis and the Pearson correlations show that it is significant at the 95% level ($p<0.05$). There is also negative correlation with the dependant variable as predicted. Culture has the highest explained variance (13%) for the hypothesised relationships in the extended model. This result confirms the expectation of several of the interviewees in the qualitative interviews. It also appears to fit well with the views of the organisational innovativeness perspective.

The balance of the hypotheses in $H_1$12 were rejected and are discussed below, only $H_1$12c (The perception that UC skills are scarce which makes UC implementations risky will lead to a lower intention to adopt UC) is not rejected. This is because both the

regression analysis and the Pearson correlations show that it is significant at the 95% level ($p<0.05$). There is also negative correlation with the dependant variable as predicted. This variable has a very low explained variance of 1% of the dependant variable. This result confirms the findings of Tobin and Bidoli (2006) but only very weakly. Many interviewees in the qualitative interviews stated that skills were an issue but were not a significant factor anymore and that view has been validated.

9.2.6. Integrated Model – Discussion of Hypotheses that were Rejected

Table 44 below is a summary of the two-stage hypothesis testing process for the extended model and shows the four hypotheses that were rejected. It shows the coefficient of determination (R^2) from the regression testing. It also shows the correlation coefficient value (r) of the Pearson correlation and the Spearman Rank correlation. All these values measure the relationship with the single dependent variable (Intention) and marked values in red are significant at $p<0.05$.

Table 44: Hypotheses Rejected - Integrated Model

Hypothesis	Description	Regression R^2	Pearson Correlation Coefficient (r)	Spearman Rank Correlation coefficient (r)	Hypothesis Supported?
$H_1$8b	An organisation with many white-collar workers will be more likely to adopt UC than an organisation that does not have many white-collar workers	0.01	0.09	0.10	No
$H_1$12	Negative perceptions of the organisational risks associated with UC will lead to a lower intention to adopt UC	0.02	-0.12	-0.11	No
$H_1$12a	The perception that UC introduces security risk into the organisation will lead to a lower intention to adopt UC	0.01	-0.08	-0.07	No
$H_1$12b	The perception that there are not enough standards and vendor interoperability will lead to a lower intention to adopt UC	0.01	-0.07	-0.058	No
$H_1$13	Perceived alternatives will have a more significant impact on intention to adopt UC when perceived risk is higher than when it is lower.	0.10 (Hi) 0.02 (Lo)	-0.319 (Hi) -0.139 (Lo)	-0.342 (Hi) -0.156 (Lo)	No
$H_1$15	The larger the IT Department the more likely the organisation will be to adopt UC.	0.01	0.091	0.077	No

$H_1$8a was rejected because the Pearson correlation and Spearman Rank coefficients and the multiple regression tests for $H_1$3a were not found to be significant at the 95% level. This result is at odds with views of two of the interviewees in the qualitative interviews.

$H_1$12 was rejected because the multiple regression tests for $H_1$12 were not found to be significant at the 95% level. However, both the Pearson and Spearman Rank correlations were found to be significant at the 95% level. The hypothesis was rejected because it appeared that the significance was only because of the sub-construct comp-skills ($H_1$12c), which was negatively but significantly correlated with the dependant variable. The negative correlation is in line with the predicted relationship with the dependant variable. The explained variance is extremely low (2%) and so even though this is possibly a type II statistical error, it is unlikely to have a significant impact on the overall predictive power of the model by excluding this group of factors.

$H_1$13 was not supported because only one of the multiple regression tests conducted on the sub-samples (perceived risk was high) was found to be significant at the 95% level. The multiple regression test on the sub-sample where perceived risk was low showed no significance. This lack of significance was also true for the Pearson and Spearman correlation tests. Therefore not enough statistical evidence was available to support the hypothesis.

$H_1$15 was not supported because all the statistical tests (see Table 44) to determine the hypothesised relationship were found not to be significant.

10. Developing and Evaluating a Refined Integrated Model

10.1. Refining the Integrated Model

In order to improve the predictive power of the integrated model, it is necessary to drop or rearrange the factors in the model. Garson (2011) warns that theory driven rather than data driven modelling is a preferred approach, so no effort was made to link constructs that cannot be based on underlying theory.

Based on the findings in sections 7, 8 and 9 above a refined integrated model is proposed and is represented in Figure 30. The following sub-constructs (items) were dropped from the old integrated model: S-Adpt (due to the rejection of $H_1$3a), white-col (due to the rejection of $H_1$8b**)**, I-Part (due to the rejection of $H_1$3c), Conf (due to the rejection of $H_1$5b), Comp-Risk (due to the rejection of $H_1$12a) and Comp-Stds (due to the rejection of $H_1$12b).

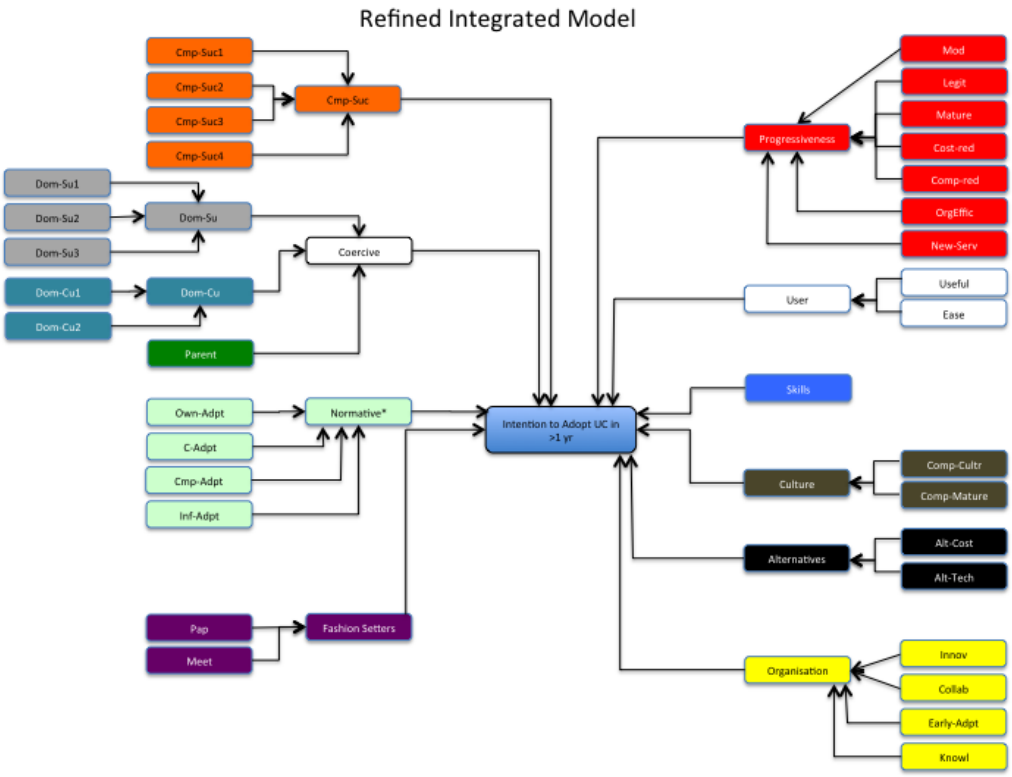


Figure 30: Refined Integrated Model

The construct Risks was dropped (due to the rejection of $H_1$12) but the sub-construct (item) Skills was retained. The constructs are all based on existing formative and

reflective constructs from the previous model. The only exception is the new construction of normative pressure (Normative*), which drops the sub-construct S-Adpt and gains the sub-construct Own-Adpt.

It is still reasonable to retain the name normative for the construct because it is still a formative emergent construct formed by several sub-constructs that relate to the normative pressures on an organisation in the context of UC adoption. If an organisation starts to perceive a greater number of its contacts adopting an innovation then the adoption of that innovation may be deemed to become normatively appropriate (Davis, 1991). As discussed previously normative pressure is the perceived extent of adoption by various actors such as customers. What may be different and interesting about this refined formulation of normative pressure is that it appears that the informal adoption by users starts to make the innovation normatively appropriate. Similarly, the organisations own adoption of elements of UC appears to start to make the whole of UC normatively appropriate.

The role of suppliers in the context of UC adoption appears problematic. Hypothesis H12a (greater perceived dominance of its suppliers that have adopted UC will lead to greater intention to adopt UC) was not rejected because both the regression analysis and the Spearman correlation were found to be significant at the 95% level. However the Pearson correlation of the construct Dom-Su was not found to be significant at the 95% level. This can be shown to be because 2 of the 3 sub-constructs (items) that make up Dom-Su are not significantly correlated with the dependent variable (Intention) at the 95% level. These items were Dom-Su1 (... our firm's well being depends on their resources) and Dom-Su3(....our firm cannot easily switch away from them). However, Dom-Su2(.. our firm must maintain good relationships with them) was significantly and positively correlated with Intention to adopt UC (r=0.13). This suggests that these items could also be dropped in order to improve the explained variance. In practice this was found to slightly worsen the explained variance.

Table 45: Model Comparison

Model	Level-1 Constructs Only	Level-2 Constructs Only	Item level (sub-constructs) Only
Initial Model	6.78%	8.84%	11.44%
Extended Model	17.12%	22.37%	22.81%
Integrated Model	22.98%	29.29%	30.36%
Refined Integrated Model	23.78%	29.09%	30.21%

Table 45 above shows clearly that the addition of successive theoretical adoption perspectives improves the explained variance in the intention to adopt UC. The initial model explains only 6.78% of the variance. The extended model explains 17.12% of the

variance. The integrated model explains 22.98% of the variance and the refined model only slightly improves on that and brings it up to 23.78%.

Table 45 also clearly shows how the super-ordinate constructs cause a loss of fidelity. This can clearly be seen when comparing the explained variance of the model composed of individual items (sub-constructs) compared to the models composed of super-ordinate (level-1) constructs. The explained variance gets as high as 30.21% which is in line with the results achieved by Teo et al., (2003) and an improvement on the results achieved by Basaglia et al., (2008).

10.2. Relative Contribution of Factors and Effect Size Measures

Performing a multiple regression analysis on the refined model yields the following: $p<1.60763940 \times 10^{-14}$, $R^2= 0.2370$ and adjusted $R^2= 0.2131$ so overall, the multiple regression equation is highly significant which means that given the independent variables, one can "predict" intention to adopt UC better than what would be expected by pure chance alone. The standard error of estimate (SEE) is 1.1002. Garson (2011) states that a measure of a good model is when SEE is markedly less than the standard deviation of the dependent variable, which in this case is 1.24. In a good model, the mean of the dependent variable is expected to be greater than 1.96 times SEE. This is the case here where (mean of Intention=5.35) > (1.96 x 1.24 = 2.16)

Table 46 below shows the standardized regression coefficients (known as b* or beta-weights) and the raw regression coefficients (b). The magnitude of the Beta coefficients (b and b*) enables one to compare the relative contribution of each independent variable in the prediction of the dependent variable (Intention) (StatSoft, Inc., 2011). However, standardization is needed before comparison when the metric of two or more variables in a regression model differ because in this case only standardized b-coefficients (beta weights) can be compared to judge relative predictive power of independent variables (Garson, 2011). As is evident in Table 46 below, the variables perceived progressiveness, organisational culture, alternatives and coercive pressure are the most important predictors of intention to adopt UC; of those, only the last three variables mentioned are statistically significant when an MRA is run on the whole model.

The regression coefficient for organisational culture and alternatives are negative. Therefore, the weaker the negative perceptions of organisational culture, the higher the intention to adopt UC. Similarly the lower the perception that there are alternatives to UC the higher the intention to adopt UC. The regression weight for coercive pressure is

positive; therefore the greater the coercive pressure, the greater the intention to adopt UC.

Table 46: Effect Size Measures and MRA on Refined Integrated Model

Name	Level-importance	b*	b	Partial Correlation	Semi-Partial Correlation	Pearson Correlation (r) with Intention to adopt	p-value from multiple linear regression
Progressiveness	0.86	0.11	0.17	0.10	0.09	0.35	0.07906
Organisational Culture	-0.62	-0.19	-0.20	-0.17	-0.15	-0.37	0.00265
Alternatives	-0.79	-0.15	-0.21	-0.15	-0.14	-0.26	0.00541
Coercive	0.50	0.11	0.12	0.11	0.10	0.26	0.04890
Organisational Innovativeness	0.40	0.08	0.08	0.08	0.07	0.23	0.15091
Normative*	0.26	0.07	0.06	0.06	0.06	0.29	0.25659
Fashion Setter	0.23	0.09	0.33	0.10	0.09	0.20	0.06831
User	0.19	0.03	0.04	0.03	0.02	0.27	0.65120
Skills	0.16	0.04	0.04	0.04	0.04	-0.11	0.44424
Cmp-Suc (Mimetic)	0.06	0.01	0.01	0.01	0.01	0.20	0.85012

All marked values in red in Table 46 above are significant at $p<0.05$. Achen (1982) admonishes against over reliance on beta weights and states that the b coefficient may be conceived as the "potential influence" of the independent on the dependent, while the “level importance” can be conceived as the "actual influence of the independent variable. Garson (2011) states that level importance is a better indicator of the expected actual influence of the independent variable on the dependent variable. Level-importance is calculated as the b coefficient times the mean for the corresponding independent variable. Table 46 above shows that the level-importance and the rows are actually ordered based on the level importance indicated in the first column. The level-importance and beta-weights method are in agreement that the first 4 factors are the most important in terms of actual and potential influence.

Garson (2011) states that the betas reflect the unique contribution of each independent variable. However, joint contributions contribute to R^2 but are not attributed to any particular independent variable and this means that the betas may understate the importance of an independent variable that makes strong joint contributions to R^2 but makes only a weak unique contribution. Therefore it is important when reporting relative betas that the correlations of the independent variable with the dependent variable are

reported as well (Garson, 2011). These are included in Table 46 above (in the column titled: Pearson Correlation (r) with Intention to adopt) in order to indicate if this is the case. The mimetic pressure expressed by Cmp-Suc (the perceived success of competitors) appears to be such a variable, as does normative pressure.

The partial and semi-partial correlations are also shown in Table 46 and these are relatively similar. From this it can be concluded that no variable is predicting a unique "chunk" of variability in the dependent variable (that is not accounted for in the other variables).

10.3. Dependant Variable

There appears to be an imbalance in the model between the relative sophistication of the independent variables and the overly simplistic dependent variable. The reason for the simplistic dependant variable is that it was drawn from strongly validated prior research. However, in order to improve the model it is suggested that the dependent variable is specified in more detail. This could take the form of a formative construct made up of intention to adopt each of the components of UC individually. This would allow statistical testing of the relationships between the various pressures to adopt from each of the theoretical perspective and the individual components of UC.

11. Conclusions

11.1. Background

Popular and industry literature suggests that many leading international enterprises are developing UC roadmaps (Elliot & Blood, 2009). Some have trial deployments underway but few have a fully integrated communication environment (Blum, 2008). Evidence suggests that UC adoption is likely to increase over the next several years as enterprises update their installed bases of communication infrastructure and as UC technology solutions mature. The literature suggested that South Africa lacked the dynamism of peer countries (Esselaar et al., 2006; Tobin & Bidoli, 2006) and continued to delay adoption of UC although they did appear to be starting to catch up (Neilson, 2010; Smit, 2007). It was suggested that this might have a wider economic impact. One recent industry sponsored study BMI-T (2011) on UC, indicated that this is possibly no longer the case. The results of this research concur with that of the BMI-T (2011) study, however some of the factors impacting South African adoption appear slightly different in South Africa.

There were several objectives to this research. One of the objectives was to determine if this lack of dynamism was still true. This would be done by identifying the drivers that influence the adoption of UC in South Africa and determining if these factors were still there and were the same as in other countries. It was also desirable to see if South African organisations are still slow to adopt UC. The literature suggested that South Africa has some specific factors which are a product of the context of the South African regulatory history that continue to negatively influence the adoption of UC. It was important to ascertain if this was still true or if these factors had started to diminish.

This was done by evaluating and expanding on an existing series of models of technology adoption. These models were used to predict the intention to adopt UC. These models were also used to gain a better understanding of the aspects surrounding the topic of UC adoption.

11.2. Discussion of the Models and Associated Research Questions

The research questions were posed primarily in the context of testing the models' predictive powers as well as testing individual hypotheses generated by the models.

11.2.1. Discussion of the Initial Model

The research question pertaining to the initial model was: To what extent do the factors described in the initial model proposed by Teo et al., (2003) predict the adoption of unified communications? It was found that the initial model, based only on the institutional perspective, appears to be a weak predictor of intention to adopt UC in South Africa. The model explains less than 7% of the variance in the dependent variable (Intention). This is in direct contrast to Teo et al., (2003) who explained over 30% of the variance in intention to adopt FEDI using the same model. This was possibly because unlike FEDI, UC is made up of several component technologies that can be implemented discretely. Each of these component technologies is reliant on a network effect needed to make that component successful in its' own right. In addition UC is reliant on an overall community wide adoption of UC to establish "critical mass" as described by Fichman (1992).

The other possible reason for the poor explained variance of the initial model may also be related to UC being at a relatively early stage of adoption. E-mail had to reach a stage of critical mass before the pressure to adopt on organisations had any impact (Fichman, 1992). FEDI may have been a more mature technology when Teo et al., (2003) performed their research. It appears likely that the predictive power of models associated with social contagion theory is lower when studying complex multi-user technologies such as UC that have not yet attained critical mass.

Part of the research was to determine if the hypotheses generated by the initial model are valid in the context of UC adoption. It was found that both coercive pressure as well as normative pressure related to suppliers was either weak or non-existent. This finding is consistent with the findings of Basaglia et al., (2008) who also found that supply chain pressure was not a major factor. This could be related to the relative immaturity of VoIP at the time of the Basaglia (2008) study and the immaturity of UC at the time of this study. The reasoning would be that complex multi-user technologies such as these would be unlikely to be part of inter-organisational linkages this early in the adoption phase. It could also be possible that UC plays no present or future role in the supply chain in most organisations.

Another hypothesis that could not be strongly validated was that of the impact of perceived complexity. Teo et al., (2003) asserted that mimetic pressure would have a

more significant impact on intention to adopt UC when perceived complexity is higher than when it is lower. Previous theories and empirical studies of complexity had indicated that when technologies are poorly understood, the pressure to copy other organisations was higher (Teo et al., 2003). This was found to be true for the adoption of FEDI but could not be strongly correlated in the case of UC. Neither the Pearson correlation coefficient nor the multiple regression tests for $H_1$14 were found to be significant at the 95% level. However it was found to be true using a Spearman Rank correlation (which was significant at the 95% level) where r was found to be 0.24 when complexity was high and r was found to be 0.16 when complexity was low. This is not a strong validation of the hypothesis however.

11.2.2. Discussion of the Extended Model

The research question pertaining to the extended model was: Does the addition of the factors described in the extended model (Basaglia et al., 2008), to the factors in the initial model, improve the extent of the predicted adoption of unified communications? This was definitely found to be the case where the explained variance in the intention to adopt UC jumped from R^2=6.78% for the initial model to R^2=17.12% for the extended model. This indicates that the additional factors from the efficient choice perspective and the management fashion perspective improved the predictive power of the model. This was in line with the study by Basaglia et al., (2008) where the R^2 for the intention to adopt VoIP in Italy was found to be 20%. It was found that the extended model, with the additional theoretical perspectives, is a stronger predictor of intention to adopt UC but is still not as strong as certain technology adoption models described by Fichman (2004), which can have R^2 values higher than 70%. If it is true that UC is a complex multi-user technology that has not yet attained critical mass in most organisations, then both fashion setters pressure and perceived progressiveness are likely to be weaker than if it were not true. This probably explains some of the relative weakness in the predictive power of the extended model.

Another objective of the research was also to determine if the hypotheses generated by the extended model are valid in the context of UC adoption. Part of fashion setters' pressure was due to the attendance of conferences that discussed UC. No evidence could be found to support this hypothesis. This could possibly be due to a temporal problem and the way the item was operationalised. The question was taken from a well-validated instrument (Basaglia et al., 2008) where Fashion Setters pressure was found

to be both positively and significantly correlated with intention to adopt VoIP. However, the question asked respondents if during the last few months they had attended a conference that included discussion of UC. Fichman (2004) indicates that these kinds of pressures that wax and wane can be difficult to operationalize. It is conceivable that this hypothesis is valid and that the problem is not with the hypothesis but the way in which it was operationalised.

11.2.3. Discussion of the Integrated Model

Though the extended model improved on the initial model, it still excluded certain perspectives most notably the organisational innovativeness perspective that were included in the integrated model. The extended model also excluded any specific South African factors that had been highlighted by other researchers, which were also included in the integrated model. The research question pertaining to the integrated model was: To what extent do the factors in the integrated model improve the extent of the predicted adoption of unified communications? The improvement in the "goodness" of the model was only found to be by another 5.86% where the explained variance in the intention to adopt UC increased from R^2=17.12% for the extended model to R^2=22.98% for the integrated model. This indicates that the additional factors from the organisational innovativeness perspective and the technical, South African and regulatory perspectives improved the predictive power of the model somewhat but not hugely.

Several of the hypotheses related to the integrated model could not be accepted because no significant correlations could be found. These included the expectation that an organisation with many white collar workers would be more likely to adopt UC than one with few white collar workers. Several of the interviewees in the qualitative interviews specifically used the term "white-collar" but no significance could be found. It is however interesting that a related term "knowledge workers" was positively and significantly correlated with UC adoption but this was specifically associated with mobile knowledge workers so the key factor was probably "mobile". This aligns with Cortner (2011) who states that few organisations list mobility as a key UC application, but many organisations identify mobility as one of the most significant drivers for UC adoption.

The other class of hypotheses that were rejected related to risks. The professional and popular media makes much of the risks associated with security, lack of standards, vendor inter-operability and general organisational risks associated with UC. No evidence could be found to support these views.

An effort was made in section 10 to refine the integrated model in order to answer the research question: What rearrangement of factors would improve the predictive powers of the integrated model? Garson (2011) warns that theory driven rather than data driven modelling is a preferred approach, so no major permutations unsupported by theory were compared. Certain items that showed no significance were dropped from the model which slightly improved the predictive power of the model to R^2=23.78%.

Table 45 in section 10 above shows that when the predictive power of the models is measured at the item (sub-construct) level i.e. the super-ordinate constructs and constructs are ignored, then the explained variance R^2=30.21%. This shows that the approach used to build the models and achieve a degree of parsimony causes a loss of fidelity. This is because the group of sub-constructs (items) that make up a construct are merely averaged. The constructs in turn are averaged to form a super-ordinate construct. This approach ignores the relative importance of the independent variables Garson (2011). Both Teo et al., (2003) and Basaglia et al., (2008) used a statistical technique called PLS (Partial Least Squares). This approach has two potential benefits. Firstly, it allows researchers to evaluate both formative and reflective constructs simultaneously (Chin, 1998). Secondly, PLS calculates a path weight to indicate how valuable each item is in forming the super-ordinate construct (Basaglia et al., 2008). It is possible that evaluating the integrated model using PLS may yield a higher overall R^2 value for the model.

11.3. Discussion of Research Objectives

One of the research objectives was to identify the drivers that influence the adoption of unified communication technologies in South Africa. The approach used was to simultaneously consider several technology adoption perspectives. From the institutional perspective, which introduced coercive, normative and mimetic pressures, only coercive pressure was found to show a high relative contribution in the prediction of the intention to adopt UC. Garson (2011) noted that some variables might make a weak unique contribution but a strong joint contribution to the model. Both mimetic and normative pressure appeared to fit this description. This was discussed in section 10.2 above.

The management fashion perspective introduced fashion setter pressure and perceived progressiveness. Fashion setter pressure could also be said to have a weak unique contribution but a stronger joint contribution to the model. The items making up perceived progressiveness loaded onto the same factor as those for the efficient choice perspective. This made sense as respondents who believed that UC introduced cost reduction and complexity reduction into the organisations were likely to equally believe that UC was thus a legitimate way to operate an organisational communications system. Those who did not hold that view were also likely to believe that UC was not a legitimate way to operate a communications system. Perceived progressiveness was ranked as one of the most important factors (see Table 46) but it was not shown to be statistically significant in that particular multiple regression analysis. An individual multiple regression analysis of the factors that make up perceived progressiveness (in the integrated model) shows that it is statistically significant. It is possible that there is a degree of suppression occurring and suppression is not uncommon in large models where the signs of regression coefficients differ (Garson, 2011). This is the case here. It is also possible that there could be non-linear effects such as inhibitors or hygiene factors, threshold values and other moderators at play.

The factors that were derived from prior South African research were mostly shown to have no discernable impact on the intention to adopt UC. These factors included regulatory confusion, security risks, lack of standards and the like. One factor that did show a small impact was that of a perceived lack of UC skills.

The factors that emerged from the qualitative interviews appeared to have a stronger impact than those that emerged from prior South African research. These included the factors such as (perceived innovativeness, perceived collaborative organisation, perceived early-adaptor) which can be ascribed to the Organisational Innovativeness perspective described by Wolfe (1994). Organisational innovativeness was ranked as the 5th most important factor (measured by level-importance).

Other factors that emerged from the qualitative interviews were the factors associated with expected user adoption experience (User), which was ranked 7th most important out of the ten factors (measured by level-importance). It appeared to be a factor whose unique contribution to R^2 was low but whose joint contribution was higher than the beta coefficients implied.

Another factor that emerged from the qualitative interviews was that of perceived organisational culture, which was negatively but significantly correlated with the perceived organisational innovativeness perspective. Its' items loaded strongly onto a

separate factor however and it was measured separately. Organisation culture was ranked as the 2nd most important factor (measured by level-importance) and was the most important factor measure by beta weights. It was also significantly and strongly correlated with the dependant variable.

One of the most interesting factors that emerged from the qualitative interviews was that of perceived alternatives to UC. This factor was included because of statements during the qualitative interviews as well as media and other research (Horwitz & Currie, 2007) to the effect that Telkom (South Africa's incumbent carrier) was incentivising organisations not to adopt UC technologies such as VoIP in order to retain market share. This factor was ranked third by level importance and 2nd by beta weight in terms of relative contribution to R^2. It was also significantly and negatively correlated with intention to adopt UC which confirms both the research and statements that the higher the perception that perceived alternatives to UC exist, the lower the intention to adopt UC. This factor may not be uniquely South African, but it is likely that it only presents itself strongly in countries where an incumbent monopolistic operator exists in markets that are in the early stages of deregulation.

On the whole then, many of the same factors that exist in other countries also exist in South Africa. There appear to be some factors such as a perceived risk associated with skills that, while it has low impact, may be evidence of the skills gap that is known to exist in South Africa (Akojee & Arends, 2009). Most of the issues raised by Tobin & Bidoli (2006) appear no longer to apply. South African firms did not appear to all be laggards. This must be taken in the context that the primary focus of the research was on the intention to adopt UC. The actual extent of UC adoption was measured, but only as a perceived extent of UC adoption and may be subject to a degree of bias. The study by BMI-T (2011) on UC, came up with similar adoption rates to those found in this study. These adoption rates were also similar to a world-wide study done by BT (Blum, 2008). So it appears as if South African organisations are slightly (but no longer significantly) behind world-wide trends. There are specific factors (such as perceived alternatives to UC) which are a product of the context of the South African regulatory history that appear to continue to negatively influence the adoption of UC.

Section 11.2 above shows that there is validity in extending the technology adoption model to include the organisational innovativeness perspective as well as any others relevant to the South African context.

Several additional moderating and influencing variables not exposed in the literature were explored such as the impact of perceived risk and perceived complexity on the model. None of these was found to have significant influence however.

The final two stated research objectives were to identify possible areas for future research and to serve as a baseline for a future longitudinal study. Both of these are discussed in section 11.6 below.

11.4. Key Findings

The more perspectives that were combined in a model, the more predictive power the model had but with diminishing returns.

Some constructs play a more important role than others. The perceived progressiveness and organisational culture perspectives appear to have the most predictive power.

It appears as if South African organisations are slightly (but no longer significantly) behind world-wide trends.

Some relatively uniquely South African inhibitors to the adoption of UC are measurable and appear to be the result of South Africa's regulatory history. The perception that alternatives exist to UC was the third strongest predictor in the integrated model.

Coercive pressure (including aspects of supply chain pressure) was found to be significant in contradistinction to Basaglia et al., (2008). This may be because this study was conducted about 3 years later and the network effects described by (Fichman 2004) were greater in the South African study than in the Italian study where internal adoption challenges were proportionally stronger.

When contrasting all the pressures derived from the institutional perspective, only coercive pressure was found to show a high relative contribution in the prediction of the intention to adopt UC.

It appears likely that the predictive power of models associated with social contagion theory is lower when studying complex multi-user technologies such as UC that have not yet attained critical mass.

Fashion setter pressure was the 4th weakest predictor of intention to adopt UC but this may have been due to difficulties in operationalising and measuring the concept.

11.5. Implications for Theory and Practice

Fichman (1992) states that diffusion theory provides a useful perspective on how to improve technology assessment and implementation. Previous studies where the assumptions of classical diffusion have tended to produce strong results have been when researchers examined either individual adoption and/or independent-use technologies with a low knowledge burden. However, results using classical diffusion theory have been less than conclusive in studies of organisational adoption of complex multi-user technologies. This multi-perspective approach seems to be more conclusive for studying these kinds of complex technology adoptions.

In practice this could prove to be a useful model for predicting adoption intentions for UC as well as other types of technology. Practitioners who might find this most useful would be communications service providers (CSPs) such as systems integrators, ISPs and telecommunications carriers. The model also exposes some of the assumptions in the professional and popular literature as either being weak or simply untrue. It also provides a means to continue to test these assumptions that are often stated as facts.

11.6. Limitations and Suggested Future Research

The relatively simplistic dependent variable needs to be expanded into a construct made up of the intention to adopt each of the components of UC individually. The actual adoption of certain UC components needs to be related to the intention to adopt other components to complete the UC adoption overall. There are generally held views that the adoption of some components of UC heralds the full adoption of UC later. Typical comments are: “Enterprises typically deploy IM and presence first, before considering the other communications-related modules that Microsoft delivers.” (Mann, Smith, Austin, Silver, & Gilbert, 2011). This needs to be tested more rigorously and this model with an expanded dependent variable would provide a means to do so.

The current refined model is very linear and there are possible recursive relationships, feedback loops and multi-collinearities that could be explored. There are several examples of this such as perceived ease of use and usefulness being related to the possibility of offering new services, which is part of the perceived progressiveness construct, which in turn is positively correlated with the user construct.

Both Teo et al, (2003) and Basaglia et al, (2008) used a statistical method called partial least squares (PLS). This is a latent structural equation modeling approach that allows one to evaluate both formative and reflexive constructs simultaneously. Reflective indicators reflect a latent unmeasured construct that is deemed to exist before it is measured. Formative indicators on the other hand are used to form a super-ordinate construct where individual indicators are weighted according to their relative importance in forming the construct (Chin, 1998). The integrated model contains both formative and reflective constructs. It is expected that testing the integrated model using PLS may improve the explained variance because of this.

The results of this research can be used as the basis for a future longitudinal study. All of the suggested improvements above can be incorporated without changing the ability to directly compare these results with future results.

11.7. Conclusion

The study of UC adoption in organisations is important because the financial impact of the convergence of communications technologies will be large as they generally have significant investments in communications infrastructure from multiple vendors.

The lack of dynamism in the South African context appears to have been true in the past but the evidence is that it appears to be diminishing. This is seen where the inhibitors to UC adoption outlined by Tobin & Bidoli (2006) five years ago appear either no longer to be valid or to have diminished significantly. This hopefully means that South African organisations are less exposed to the dire outcomes predicted in the literature in the late 2000s.

It is believed that the research methodology and approach did achieve all of the stated objectives. This contributed to a new understanding of the factors that influence organisational adoption of UC in South Africa. It also provides a means to increase knowledge of organisational technology adoption in South Africa and internationally.

Classical diffusion theory has proved useful for measuring and predicting relatively straightforward single user technology adoption such as PCs. However, when the locus of adoption is both organisational and user level, and the technology is complex, having network externalities linking it to other user networks as well as depending on other technology layers and components then, classical diffusion theory appears less useful.

Several theoretical perspectives have tried to fill the gap, but no single perspective appears to do as much on its own, as a combination of perspectives does collectively. Fichman (2004) criticises this "more is better" approach while at the same time acknowledging that broad models can, and often do, have strong predictive power.

A model with strong predictive and explanatory powers is needed for organisational adoption of complex technologies. The refined integrated model has the potential to be such a model.

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13. Glossary of Terms

B2B	Business to Business
B2C	Business to Consumer
BT	British Telecom
CEBP	Communications Enabled Business Process
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFO	Chief Financial Officer
CIO	Chief Information Officer
CIPRO	Companies and Intellectual Property Registration Office
COO	Chief Operating Officer
CSP	Communications Service Provider
EC	Efficient Choice
EDI	Electronic Data Interchange
EFA	Exploratory Factor Analysis
FEDI	Financial Electronic Data Interchange
GDP	Gross Domestic Product
GDPR	Real Gross Domestic Product
IP	Internet Protocol
IP Telephony	Internet Protocol Telephony
IS	Information Systems
IT	Information Technology
ICT	Information Communications Technology
IM	Instant Messaging
ISP	Internet Service Provider
MRA	Multiple Regression Analysis

OI	Organisational Innovativeness
PLS	Partial Least Squares
SIP	Session Initiation Protocol
SMS	Short Message Service
UC	Unified Communications
UC&C	Unified Communications and Collaboration
VC	Video Conference
VoIP	Voice over IP

14. Appendix A – Research Hypotheses

The preliminary research hypotheses, illustrated in Figure 10: Proposed Integrated Research Model, are posed in the alternative form (the null hypothesis H_0 is that there is no effect):

14.1. Hypothesis derived from the Initial Model

- $H_1$1: Greater mimetic pressure will lead to a greater intent to adopt UC. H1 also has the following corollaries:
    - $H_1$1a: Greater extent of adoption of UC by competitors will lead to greater intent to adopt converged communications technologies.
    - $H_1$1b: Greater perceived success of competitors that have adopted UC will lead to a greater intent to adopt UC.
- $H_1$2: Greater coercive pressure will lead to a greater intent to adopt UC. H2 also has the following corollaries:
    - $H_1$2a: Greater perceived dominance of its suppliers that have adopted UC will lead to greater intention to adopt UC.
    - $H_1$2b: Greater perceived dominance of its customers that have adopted UC will lead to greater intent to adopt UC.
    - $H_1$2c: Adoption of UC by a parent company will lead to greater intent to adopt UC.
- $H_1$3: Greater normative pressure will lead to a greater intent to adopt UC. H3 also has the following corollaries:
    - $H_1$3a: Greater extent of adoption of UC among suppliers will lead to a greater intent to adopt UC.
    - $H_1$3b: Greater extent of adoption of UC among its customers will lead to a greater intent to adopt UC.
    - $H_1$3c: Participation in associations that promote and disseminate information on UC will lead to a greater intent to adopt UC.

14.2. Hypothesis derived from the Extended Model

- $H_1$4: Greater perceived progressiveness will lead to a greater intent to adopt UC. H4 also has the following corollaries:

- $H_1$4a: Greater perception that UC characterises a modern dynamic company will lead to a greater intent to adopt UC
- $H_1$4b: Greater perception that UC is a legitimate way to manage communication in its industry will lead to a greater intent to adopt UC

- $H_1$5: Greater fashion setter pressure will lead to a greater intention to adopt UC. H5 also has the following corollaries:
  - $H_1$5a: Greater extent of exposure to media covering UC will lead to a greater intent to adopt UC
  - $H_1$5b: Greater extent of participation in conferences including UC will lead to a greater intent to adopt UC
  - $H_1$5c: Greater extent of participation in meetings with peers discussing UC will lead to a greater intent to adopt UC.
- $H_1$6: Greater perceived internal benefits will lead to a greater intent to adopt UC. H6 also has the following corollaries:
  - $H_1$6a: Greater perceived cost reductions derived from UC will lead to a greater intent to adopt UC.
  - $H_1$6b: Greater perceived infrastructure complexity reductions from UC will lead to a greater intent to adopt UC.
- $H_1$7: Greater attention toward users will lead to greater intent to adopt UC
  - $H_1$7a: The ability to offer new services to users will lead to a greater intent to adopt UC.
  - $H_1$7b: Greater the extent of adoption of UC by users on an informal basis will lead to a greater intent to adopt UC.

14.3. Hypothesis derived from the Integrated Model

- $H_1$8: Perceived organisational innovativeness will lead to a greater intention to adopt UC.
  - $H_1$8a: The perception that an organisation is highly innovative will lead to greater intention to adopt UC.
  - $H_1$8b: An organisation with many white-collar workers will be more likely to adopt UC than an organisation that does not have many white-collar workers.
  - $H_1$8c: The perception that an organisation is highly collaborative will lead to greater intention to adopt UC.

- $H_1$8d: The perception that an organisation is an early adopter will lead to greater intention to adopt UC.
- $H_1$8e: The perception that the organisation has many mobile collaborative workers will lead to a greater intention to adopt UC.

- $H_1$9: The perception that there are better or equivalent technical and cost saving alternatives will lead to a lower intention to adopt UC.
  - $H_1$9a: The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit; will lead to a lower intention to adopt UC.
  - $H_1$9b: The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit; will lead to a lower intention to adopt UC.
- $H_1$10: Expected usefulness and ease of use for users (by decision makers and influencers of primary adoption) will lead to greater intention to adopt UC.
  - $H_1$10a: The expectation that users in the organisation will find UC very easy to use will lead to a greater intention to adopt UC.
  - $H_1$10b: The expectation that users in the organisation will find UC useful will lead to a greater intention to adopt UC.
- $H_1$11: Negative perceptions of the organisations culture and maturity will lead to a lower intention to adopt UC.
  - $H_1$11a: The perception that UC does not fit the organisational culture will lead to a lower intention to adopt UC.
  - $H_1$11b: The perception that the organisation is not ready or mature enough to adopt UC will lead to a lower intention to adopt UC.
- $H_1$12: Negative perceptions of the organisational risks associated with UC will lead to a lower intention to adopt UC.
  - $H_1$12a: The perception that UC introduces security risk into the organisation will lead to a lower intention to adopt UC.
  - $H_1$12b: The perception that there are not enough standards and vendor interoperability will lead to a lower intention to adopt UC.
  - $H_1$12c: The perception that UC skills are scarce which makes UC implementations risky will lead to a lower intention to adopt UC.

15. Appendix B – Survey Questionnaire

The survey questions in this appendix are laid out in the order in which they appeared to the survey respondents on the UCT select survey ASP system.

15.1. Section 1: Demographic and Organisational Information

Table 47: Survey Questionnaire: Demographic and Organisational Information

Variable	Questions
Role	**1. Please select the description that best describes your current role*** Choose the answer closest to your current role even if it is not an exact fit.
	• Chief Executive Officer • Chief Information Officer • Chief Financial Officer • Information Technology Manager • Network Manager • Facilities Manager • Information Technology Architect • Information Technology Engineer • Other Management Role • Other Technical Role • Business Owner • Managing Director • Chief Technology Officer • Other, please specify • [ ]
ITDptSize	**2. What is the number of employees in your organisation's IT department?**
	• Between 0 and 10 • Between 10 and 50 • Between 50 and 100

Variable	Questions
	• Between 100 and 200 • Between 200 and 500 • Greater than 500
Tenure	**3. How many years have you been in the Information Technology industry?***
	The value must be between 0 and 99, inclusive. [ ]
	4. How many years have you been at your current organisation?*
	The value must be between 0 and 99, inclusive. [ ]
Industry	**5. Please indicate the industry sector that most closely resembles your organisation***
	• Process manufacturing • Discrete manufacturing • Retail trade • Business and legal services (including IT) • Transportation • Automotive manufacturing • Insurance • Banking • Other financial services • Wholesale trade • Construction • Mining and Mineral resources • Government and Civil Society • Education • Agriculture • Healthcare Services • Broadcast and Communications • Utilities (Electricity, Water etc)

Variable	Questions
	• Telecommunications • Media • Private Broadcasting • Forestry • Fishing • Non Governmental Organisation • Tourism • Other • [ ]
NrEmployees	**6. What do you believe is the number of employees in your organisation?***
	• Between 1 and 50 • Between 50 and 100 • Between 100 and 500 • Between 500 and 1000 • Between 1000 and 2000 • Greater than 2000
Branches	**7. What is the number of branches or discrete geographical locations in your organisation?***
	• Only 1 • Between 1 and 10 • Between 10 and 50 • Between 50 and 100 • Between 100 and 500 • Greater than 500
B2B	**8. My organisation is primarily a .... provider**
	• Business to business • Business to consumer • Both business to business and business to consumer • Other

Variable	Questions
Province	**9. In which South African Provinces does your organisation operate?*** Please check all that apply Select at least 1 response. • Gauteng • Western Cape • Eastern Cape • KwaZulu Natal • Free State • Limpopo • Mpumalanga • North West • Northern Cape • Other countries: Please specify separated by a comma • [ ]

15.2. Section 2: Integrated Model (OI perspective)

Table 48: Survey Questionnaire: Integrated Model (OI perspective)

Variables	Questions
	10. Assess the following statements about your organisation and indicate your opinion on them:* 7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree
Innov	• It is highly innovative.
WhitCol	• It has many white-collar professionals.
Knowl	• It has many highly mobile knowledge workers.
Collab	• It is highly collaborative.
EarlyAdpt	• It is an early adopter.

15.3. Section 3: Initial Model Variables

Table 49: Survey Questionnaire: Initial Model Variables

Variables	Questions
	DEFINITION: Unified communications (UC) is the integration of real-time communication services such as instant messaging (chat), presence information, telephony (including IP telephony), video conferencing, and call control with non-real-time communication services such as unified messaging (integrated voicemail, e-mail, SMS and fax). UC is not a single product, but a set of products that provides a consistent unified user interface and user experience across multiple devices and media type. Unified Communications (UC) Elements are: -Live Communications (Instant Messaging, Presence) -Live Conferencing (Audio and Video Conferencing,Video Telephony, Web Conferencing) -Messaging (Unified e-mail, voice mail, fax, SMS) -Clients and Endpoints (IP Phones, Desktop communicator clients, softphones) Examples of vendors that produce UC products and services are: Cisco, Microsoft, Avaya, Polycom, NEC, Siemens, Alcatel-Lucent and others. Examples of service providers that provide cloud based UC services are: Google, Skype, Yahoo and a whole host of others..
OwnAdpt	**11. What do you believe is the extent of your organisation's adoption of Unified Communications (UC) technology?*** (Please indicate per element of UC. Your impression of the extent is more important than the actual real number but if you truly don't know please select 0%):
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)
Parent1	**12. If your organisation has a parent company: Is your parent organisation planning on adopting (or has already adopted) unified communications (UC)?***
	• Yes • No • Don't know • No Parent company
Parent2	**13. If your organisation has a parent company: What is the extent of adoption of unified**

Variables	Questions
	communications within your parent organisation?* Choose 0% if there is no parent organisation.
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)
Cmp-Adpt	**14. What do you believe is the proportion of your organisation's MAJOR competitors who have adopted unified communications (UC) currently?***
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)
	15. How much success have your organisation's MAJOR competitors had with the adoption of Unified Communications (UC)?*
	7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree
Cmp-Suc1	• Our main competitors that have adopted UC have benefited greatly.
Cmp-Suc2	• Our main competitors that have adopted UC are perceived favourably by others in our industry.
Cmp-Suc3	• Our main competitors that have adopted UC are perceived favourably by suppliers.
Cmp-Suc4	• Our main competitors that have adopted UC are perceived favourably by their customers.
	16. With regard to our organisation's main suppliers that have adopted Unified Communications (UC) ...*
	7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree
Dom-Su1	• .. our firm's well being depends on their resources.
Dom-Su2	• ... our firm must maintain good relationships with them.
Dom-Su3	• ...our firm cannot easily switch away from them.
S-Adpt	**17. What do you believe is the proportion of your organisation's MAJOR suppliers who have adopted unified communications currently (UC)?***
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)
	18. With regard to our organisation's major customers that have adopted Unified Communications (UC) ...*
	7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree
Dom-Cu1	• ... our firm's well being depends on their purchases.

Variables	Questions
Dom-Cu2	• ... our firm must maintain good relationships with them.
C-Adpt	**19. What do you believe is the proportion of your organisation's MAJOR customers who have adopted unified communications currently?***
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)

15.4. Section 4: Extended Model (Management Fashion Perspective)

Table 50: Survey Questionnaire: Extended Model (Management Fashion Perspective)

Variables	Questions
I-Part	**20. Do you participate in any industry, trade or professional bodies where you have been exposed to Unified Communications promotion or information?***
	Yes; No; Don't Know
Pap	**21. During the last few months have you read any columns online or in newspapers and magazines that promoted or gave information about unified communication systems?***
	Yes; No; Don't Know
Conf	**22. During the last few months have you attended any conferences that included discussion of unified communication systems?***
	Yes; No; Don't Know
Meet	**23. During the last few months have you attended meetings with your peers at other companies (e.g. other CIOs) in which you discussed unified communication systems?***
	Yes; No; Don't Know
Mod Legit Mature	24. Unified Communications (UC) best practices...*
	7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree • The use of UC systems represents a practice that characterizes a modern, dynamic company. • UC is a legitimate way to manage communication in the industry your organisation belongs to. • UC is a mature and enterprise-ready set of technologies.

Cost-red Comp-red New-Serv Org-Effic	• Adopting UC leads to cost reductions. • Adopting UC leads to a reduction in infrastructure complexity. • Adopting UC leads to the possibility to offer new and useful services to our employees. • Adopting UC leads to improved organisational efficiency.
Inf-Adpt	**25. What do you believe is the proportion of your firm's users who have already informally adopted UC technology?*** This could either be through online operators such as Google, Skype, Microsoft-MSN or via their own implementations of industry vendors such as Cisco
	None (0%); Between 0% and 20%; Between 20% and 40%; Between 40% and 60%; Between 60% and 80%; Between 80% and 100%;All (100%)

15.5. Section 5: Integrated Model (Emerging and SA Factors)

Table 51: Survey Questionnaire: Integrated Model (Emerging and SA Factors)

Variables	Questions
Ease Useful	**26. When formally adopting IT approved Unified Communications (UC) tools, users in our organisation will find ...*** 7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree • ..that UC is very easy to use. • ..that UC is extremely useful.
Alt-Cost Alt-Tech	**27. Benefits of alternatives to using Unified Communications Technology*** Examples of alternatives could include getting billing discounts from your fixed or mobile carriers etc 7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree • Other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit. • Other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit
Comp-Impact	**28. Complexities when adopting Unified Communications*** 7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree • It is difficult to understand the impact of UC on organizational processes.

Variables	Questions
Comp-Udrstd	• It is difficult to understand UC from a technological point of view.
Comp-Risk	• UC introduces security risk into our business.
Comp-Cultr	• UC does not fit into our organisational culture.
Comp-Skills	• UC skills are scarce and thus UC implementations are risky.
Comp-Stds	• There are not enough standards and vendor interoperability in place.
Comp-Mature	• Our organisation is not ready or mature enough to adopt UC.

15.6. Section 6: Dependent Variable (Intention to Adopt UC)

Table 52: Survey Questionnaire: Dependent Variable (Intention to Adopt UC)

Variables	Questions
Intention	**29. Intention to adopt Unified Communications within the next year***
	If your organisation has not yet adopted UC please fill in normally. If it has already adopted UC please indicate either agree, strongly agree or very strongly agree as appropriate and indicate below
	7 point scale: (1) Strongly Disagree ◄————►(7) Strongly Agree
	• Our firm is contemplating adopting UC within 1 year

16. Appendix C – Qualitative Interview Questions

Linked to the following objectives:

- Identify the drivers that influence the adoption of converged communication technologies in South Africa
- Determine if factors that influence adoption are the same in South Africa as other countries by comparing results, where possible, of similar research.

Table 53: Qualitative Interview Questions

Perspective	Theme and Questions
Institutional Perspective	**Mimetic Pressure**
	In what circumstances and to what extent do organisations copy their competitors' adoption of technologies like UC?
	Do you believe that the perceived extent of adoption of UC by an organisation's competitors will positively influence their own decision to adopt UC?
	Do you believe that the perceived success of adoption of UC by an organisation's competitors will positively influence their own decision to adopt UC?
	Coercive Pressure
	In what circumstances and to what extent are organisations coerced (by parent organisation or suppliers or customers) into adopting technologies like UC?
	Do you believe that the perceived dominance of key supplier adopters of UC will positively influence an organisation's decision to adopt UC? 1. For own internal use? 2. For use with suppliers, customers?
	Do you believe that the perceived dominance of key customer adopters of UC will positively influence an organisation's decision to adopt UC? 1. For own internal use? 2. For use with suppliers, customers?
	Does the decision of a parent organisation to adopt UC influence subordinate businesses to do the same?
	Normative Pressure

	Does the extent of adoption by key suppliers and customers influence organisations to adopt UC themselves?
	Does the perceived extent of adoption by key suppliers have a positive influence on an organisations decision to adopt UC? 1. Internally? 2. Externally?
	Does the perceived extent of adoption by key customers have a positive influence on an organisations decision to adopt UC? 1. Internally? 2. Externally?
	Do you believe that a decision maker's participation in trade, industry or professional bodies that expose him/her to either a promotion or information on UC will positively influence the decision to adopt UC?
Fashion Setters pressure	**Exposure to media (Pap), Participation in conferences (conf), Participation in meetings with other CIOs (meet)**
	Does exposure to media, conferences or discussions with other CIOs about UC lead to greater intention to adopt UC?
Perceived Progressiveness	**Perceived extent of modernity (Mod), Perceived extent of legitimacy (Legit)**
	Does the belief that Unified Communication systems represents a practice that characterizes a modern, dynamic company lead to greater adoption?
	Does the belief that Unified Communication systems represents a legitimate way to operate a communications system lead to greater adoption?
Perceived internal benefit	**Perceived costs (Cost-Red), Perceived extent of reductions in infrastructure complexity (Comp-Red)**
	Does either the perceived cost reduction or complexity reduction lead to greater adoption?
Attention towards users	**Perceived extent of possibility to offer new services (NewServ), Perceived extent of existing informal adoption (InfAdpt)**
	Does either the possibility to offer users new services or users existing informal adoption of UC lead to greater adoption?
Alternatives	**Perceived cost benefits of non-UC alternatives (Alt-cost), Perceived technical benefits of non-UC alternatives (Alt-tech)**
SA specific	Previous research has found the following factors might play a role in the adoption of unified

Issues	communication technology. Can you please comment on the role each of these might play for UC adoption in South Africa? • Internal company politics • Privacy concerns • Don't want to jeopardise business • Do not want to be at bleeding edge of technology • Satisfied with present systems • Lack of skills • No compelling business case • Security issues (how do you protect your IP infrastructure from different secrutity threats?) • Lack of regulatory clarity • Timescales for return on investment • Complexity of deployment/implementation costs • Too much confusion in the market (too many suppliers, lack of standards, not sure which suppliers will survive) • Poor quality of voice communications • Quality of Service issues • High bandwidth costs, High cost of service
	Are there any other important issues that might impact the adoption of UC in a South African context?
Control	**Size, IT-size, Industry Sector, Extent of adoption of some UC**
	Do you believe that any of the following might have a strong influence on an organisations decision to adopt UC? • Number of employees in the organisation • Number of staff in the IT-department • Industry sector • Existing adoption of some unified communication technology

17. Appendix D – Cover Letters

Cover Letter for Request for Qualitative Interviews

Department of Information Systems
Leslie Commerce Building
Engineering Mall. Upper Campus
OR Private Bag. Rondebosch 77001
Cape Town
Tel: 650-2261
Fax No: (021) 650-2280

Environmental and organisational drivers influencing the adoption of unified communication technology in South Africa

Dear Sir/Madam,

As an Information Systems Masters student at the University of Cape Town, I am conducting some interviews as part of a research project on the environmental and organisational drivers influencing the adoption of unified communication technology in South Africa

Your participation in this research project will be greatly appreciated. Your input will allow me to identify and understand the various factors that play a role in the adoption of unified communications (UC) technology. This will also allow me to complete my Masters degree successfully. The interview should take about 45 minutes of your time.

Participation is voluntary. Data collected will be stored electronically and will be kept strictly confidential. Participation will be anonymous as no sensitive personal details such as name and address will be collected. However, if you wish to receive a copy of the final results of the research, you are welcome to give me your email address and the final results will be sent to you.

The interview instrument that will be administered has been approved by the University of Cape Town Ethics Committee and thus, meets all ethical requirements imposed by the university.

If you have any further queries, please feel free to contact the researchers using the contact details are provided below. Thank you for your time and cooperation.

Sincerely,

Brian Pinnock
Masters Student (Researcher)
Email: Brian.Pinnock@za.didata.com
Cell no: +27832552534

17.2. Cover Letter for Request for Participation in Quantitative Survey

Department of Information Systems
Leslie Commerce Building
Engineering Mall. Upper Campus
OR Private Bag. Rondebosch 77001
Cape Town
Tel: 650-2261
Fax No: (021) 650-2280

Environmental and organisational drivers influencing the adoption of unified communication technology in South Africa

Dear Sir/Madam,

As an Information Systems Masters students at the University of Cape Town, I am conducting a survey as part of a research project on the environmental and organisational drivers influencing the adoption of unified communication technology in South Africa

Your participation in this research project will be greatly appreciated. Your input will allow me to identify and understand the various factors that play a role in the adoption of unified communications (UC) technology. This will also allow me to complete my Masters degree successfully. The survey should take about 15 minutes of your time.

Participation is voluntary. Data collected will be stored electronically and will be kept strictly confidential. Participation will be anonymous as no sensitive personal details such as name and address will be collected. However, if you wish to receive a copy of the final results of the research, you are welcome to give me your email address and the final results will be sent to you.

The interview instrument that will be administered has been approved by the University of Cape Town Ethics Committee and thus, meets all ethical requirements imposed by the university.

If you have any further queries, please feel free to contact the researchers using the contact details are provided below. Thank you for your time and cooperation.

Sincerely,

Brian Pinnock
Masters Student (Researcher)
Email: Brian.Pinnock@za.didata.com
Cell no: +27832552534

18. Appendix E – Operationalising Mimetic Pressure

Mimetic pressure was operationalised through two sub-constructs measuring the extent of adoption by competitors (Cmp-adpt) and the perceived success of adoption by competitors (Cmp-suc).

Table 54: Operationalising Mimetic Pressure

Super-ordinate Construct	Construct	Sub-constructs	Operationalising question / statement	Variable
Mimetic Pressure	Cmp-adpt	None	What do you believe is the proportion of your firm's competitors who have adopted unified communications currently?	Ordinal 7 point scale: (1) None ◄———►(7) All
	Comp-suc	Cmp-suc1	Our firm's main competitors that have adopted UC have benefited greatly	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Cmp-suc2	Our firm's main competitors that have adopted UC are perceived favourably by others in our industry	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Cmp-suc3	Our firm's main competitors that have adopted UC are perceived favourably by suppliers	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Cmp-suc4	Our firm's main competitors that have adopted UC are perceived favourably by their customers.	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree

19. Appendix F – Operationalising Coercive Pressure

Coercive pressure was operationalised through three sub-constructs measuring: conformity with parent corporations practices (Parent); perceived dominance of supplier adopters (Dom-su) and customer adopters (Dom-cu).

Table 55: Operationalising Coercive Pressure

Super-ordinate Construct	Construct	Sub-construct	Operationalising question / statement	Variable
Coercive Pressure	Parent	Parent-01	If your organisation has a parent company: Is your parent organisation planning on adopting UC in the near future?	Nominal Scale: (1) Yes (2) No (3) No parent company (4) Already adopting
		Parent-02	If your organisation has a parent company: What is the extent of adoption of UC within your parent organisation?	Ordinal 7 point scale: (1) Just starting ◄———►(7) All business units have adopted
	Dom-su	Dom-su01	With regard to our firm's main suppliers that have adopted UC, our firm's well being depends on their resources.	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Dom-su02	With regard to our firm's main suppliers that have adopted UC, our firm MUST maintain good relationships with them	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Dom-su03	With regard to our firm's main suppliers that have adopted UC, our firm cannot easily switch away from them.	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
	Dom-cu	Dom-cu01	With regard to our firm's main customers that have adopted UC, our firm's well being depends on their purchases.	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree
		Dom-cu02	With regard to our firm's main customers that have adopted UC, our firm MUST maintain good relationships with them	Ordinal 7 point Likert scale: (1) Strongly Disagree ◄———►(7) Strongly Agree

20. Appendix G – Results of Qualitative Interviews

20.1. Interview A

20.1.1. Interview A – Phrases Coded

Table 56: Interview A – Phrases Coded

Property Code	Key Phrases
A1	I don't think at this point in time we've really copied anyone, otherwise we'd have been further down the road.
A2	Users are aware of UC and ask "Can't I have this? Can't I have that?" until you tell them the cost.
A3	Business see this [UC] as a nice to have rather than a productivity tool.
A4	[Competitor behaviour] might have an influence especially if it was a big financial institution like Sanlam.
A5	If [financial services] competitors are seen to be having success then executives would put pressure on us [to adopt UC]
A6	Some aspects of UC such as video [are noted]
A7	I'm not sure executives understand the full scope of what UC can do. Perhaps we don't upsell enough to the business
A8	Once people realise you can work from home as efficiently or more efficiently it will start picking up.
A9	It is very hard to get a business case [proven]
A10	The smaller companies [in our group of companies] just tell us to [expletive]-off because of the way our business model works
A11	It could, if you look at something like email. If your service providers all have e-mail it is easier to communicate with them
A12	The same [adoption of UC technology by customers] holds for key customers. If you've got competitors [who have adopted] he would rather give his business to someone who can communicate with him
A13	What we will do is try to influence the business below by first focusing on the larger group companies
A14	If the smaller companies see the parent company achieving success they might adopt at a later stage
A15	It won't be the café on the corner but, big suppliers, yes.
A16	Yes , because it makes them aware of what's happening.
A17	Exposure is important
A18	Most people listen to Gartner and then forget.
A19	I think the Ciscos,…and Microsofts, of the world have more influence than Gartner
A20	I would say so [UC is modern and legitimate] Ja.
A21	It's about the rate at which costs come down
A22	In this financial climate yes, cost reduction definitely is.
A23	Reduction in complexity is linked to reduction in cost
A24	Complexity and risk are linked
A25	Cost and risk are linked
A26	Life-cycle is linked to risk and compexity
A27	UC plays strongly in the collaboration space. The fact that we don't have a collaboration architect or evangelist [is a problem for us]
A28	[We] need an evangelist who can build the complete [UC] picture
A29	I think it does play a role. Our user base plays with Facebook and Skype for IM and VoIP
A30	[Consumerisation of IT] has an influence
A31	The legacy is still cheaper
A32	If you look at cell phones, the quality is [expletive] and people are getting used to it…getting away with a less than perfect solution.
A33	Risk is an issue
A34	No-one wants to be at the bleeding edge. Let Mutual rather sort out all the bugs.
A35	Change for changes sake. Our legacy stuff is end of life but still works
A36	Skills are scarce but are available
A37	No, there's not much in the way of politics
A38	Executives have privacy concerns but not general users
A39	If you look at the whole outsource model you don't require like a CCIE
A40	Ja, we do it [the business case] per piece of [unified comms]
A41	Ja, you need to build a business case around your comfort zone [each piece of unified comms]
A42	I'm pushing green IT as hard as I can
A43	You can use video conferencing to reduce your carbon footprint
A44	At this point in time its not a big enough deal
A45	It does play a big role, I think especially now with…legislation around the confidentiality of information etc
A46	It [legislation] is becoming more important
A47	I think it [regulatory clarity] has gone away, because I think we understand the regulatory environment now

Property Code	Key Phrases
A48	Time scales for the ROI of Unified Comms is important,I think if you can get an ROI of 16 months, 18 months it will help
A49	I don't think the complexity of the deploy [is important] because the complexity will translate into cost ultimately
A50	Standards, yes that's an issue. That's definitely an issue….it makes the decision making process difficult
A51	Within the business space the control of the quality is important, Ja.
A52	Our guys tend to be the older generation

20.1.2. Interview A – Coded Phrases Analysed

Each of the coded phrases captured above are mapped to a particular concept, counted (total repetition of concept) and also given a score (1 to 5) to indicate no agreement (1) or strong agreement (5) that the concept is a factor that the interviewee believes will influence the adoption of UC.

Table 57: Interview A - Coded Phrases Analysed

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Cmp-Adpt	A1	A4								2	1	3								2.00
Cmp-Suc	A5									1	3									3.00
Dom-Su	A11	A15								2	4	5								4.50
Dom-Cu	A12									1	4									4.00
Parent	A10	A13								2	1	5								3.00
S-Adpt	A11									1	4									4.00
C-Adpt	A12									1	4									4.00
I-Part	A16									1	4									4.00
Pap	A17									1	4									4.00
Conf	A17	A18								2	5	2								3.50
Meet	A17									1	4									4.00
Mod	A20									1	4									4.00
Legit	A21									1	4									4.00
New Serv	A3	A8	A28							3	2	4	5							3.67
Inf-Adpt	A29	A30								2	5	4								4.50
Cost-red	A2	A3	A9	A21	A23	A22	A25	A40	A31	9	4	4	4	4	4	5	4	4	2	3.89
Comp-red	A23	A24								2	4	4								4.00
Impact	A24	A26	A49							3	3	3	2							2.67
Understand	A7									1	4									4.00
NrEmployees										0										
ITDept-Size										0										
Industry-Category										0										
Own-Adpt										0										
Some elements of	A6	A28	A40							3	3	4	4							3.67

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
UC																				
High bandwidth costs										0										
Politics	A37									1	2									2.00
Privacy	A38									1	3									3.00
Regulatory clarity	A47									1	1									1.00
Short ROI	A48									1	4									4.00
Poor quality of VoIP	A51									1	4									4.00
Quality of service issues										0										
Risk	A24	A25	A26	A33	A41					5	4	4	4	4	3					3.80
Standards	A34	A50								2	4	5								4.50
Security	A45									1	4									4.00
Skills	A36	A39								2	3	3								3.00
Alt-Cost	A31									1	5									5.00
Alt-Tech	A32	A35								2	4	4								4.00
Early-Adpt	A34									1	4									4.00
Vendor pressure	A19									1	4									4.00
Parent-Suc	A14									1	4									4.00
Life-Cycle	A26									1	4									4.00
Evangelist	A27	A28								2	4	4								4.00
Outsource	A39									1	3									3.00
Green IT	A42	A43	A44							3	3	3	1							2.33
Legislation	A45	A46								2	4	4								4.00
Org-effic	A3	A8								2	2	4								3.00
Useful	A2									1	5									5.00
Ease										0										
Innov										0										
White Collar										0										
Collaborative	A27									1	5									5.00
Knowledge Workers										0										
NrBranches										0										
International										0										
B2B										0										
Behaviour	A52									1	4									4.00
Comp-Cultr	A53									1	3									3.00
Comp-Mature										0										
Supplier Status										0										

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Mature										0										
Mobility										0										

20.2. Interview B

20.2.1. Interview B – Phrases Coded

Table 58: Interview B - Phrases Coded

Property Code	Key Phrases
B1	You need to read Schumpeter because he says…that companies are forced to adopt new technologies because the market is changing..creative destruction etc
B2	I come from a heavy engineering background SCADA systems and so on…..and we made decsions based on the business need…is there a business need, that's how we made technology decisions
B3	In the IT industry, people are much more gullable.
B4	They do it because it's the fashion
B5	They do it because everybody else is doing it….wether its gonna add business value or streamline the process or reduce cost or improve things is sometimes not the most important thing
B6	Maybe that's a symptom because the technology vendors that supply the technology actually force the refresh cycles
B7	I haven't found that in the heavy engineering industry
B8	The product lifecycles are longer and people are able to stay in the technology longer
B9	I don't think its so much of a competitive issue
B10	What I find in DD and maybe this is a DD thing is that our customers are doing it and maybe we need to be doing it.
B11	From a DD perspective the perception is created that customers are doing everything and therefore we need to be doing everything
B12	I don't think it's the right philosophy that we must drink our own champagne and eat our own dog food
B13	Another pressure point is from the vendors
B14	Because we are a systems integrator we are totally reliant on our vendors and our vendors push things through [to IT] and it may not necessarily be the best thing
B15	If you look at other companies that are not [in the same industry as us] those pressures [supplier pressures] are not there
B16	If you do a study [from different perspectives of different industries] you are going to get different views
B17	The customer is getting pressure from the systems integrator as well as from the manufacturer of the technology
B18	The status of the supplier makes a difference [to their ability to apply pressure]
B19	I don't think UC has any different technology adoption factors or attributes than any other technology
B20	Take ERP for example….ERP has worked but there are a whole lot of other factors….are the people in the business ready for it
B21	…And is the ERP ready to be integrated into other systems..so there's a whole lot of issue…integration issues, training issues, maturity of the organisation, what other systems are available to support this
B22	And if you look at [the components of UC] are the technologies able to integrate seemlessly, is there a need for these technologies
B23	And is the organisation mature enough. My answer is probably not.
B24	And even me as a CIO, I very rarely use everything. Certain people in the organisation if you look at total skill set ……its only the super users that like to play with all the components
B25	Yes there's a need for the technology but I don't know if the maturity of the people in the organisation is ready to adopt this
B26	I'm not sure if people are ready enough to adopt it.
B27	What the technology will do in terms of adding value to the business and is there a cost benefit case….I doubt it

Property Code	Key Phrases
B28	Possibly one could argue travel….but there are other things that can give me that, so to claim that UC has give me benfits to travel costs is a false impression
B29	To tell me that UC has been able to save me, I don't know, 1 hour or 2 hour a day. I think that is a fallacy
B30	If you look at technology….it is evolving so fast…technology gatekeepers need to keep abreast of new technologies..other technologists go to these conferences and these networks start to build
B31	In terms of driving the technologies I don't think these [conferences] directly drive adoption but they do show who is doing this and who the right partners are
B32	I think meeting with other CIOs adds a bit of value but I think from a DD perspective our own adoption lays a much larger role because we are a technology company
B33	When I joined here I was really impressed by the way the company used technology and it created the impression for me that this was a world class organisation
B34	Being best in class just means you are just ahead of your group but being state of the art means you are significantly ahead
B35	I think [perceived cost reduction] in the IT industry are a lot more gullible and they take the white paper and they run with it. Its very easy to make a business case.
B36	You should use these guys as a kind of skunk works for you and together work towards adopting a new technology and that way achieve a greater success
B37	If we look at the technology adoption lifecycle. People who hold a technology in the decline phase will always try and hold onto those technologies
B38	You can stay on the old technology for a while but everyone around you will change and eventually you will be forced to change
B39	I think resistance to change is a huge thing in most organisations. People always know better. There definitely is politics…and protection of turf
B40	Privacy concerns are conspiracy theories…I think it is a lame excuse for [non adoption]
B41	I think for UC the skills is an issue
B42	I think regulatory issues have largely been put to bed…its not a factor that's going to influence adoption definitely not
B43	[Deployment costs]..I think when you look at the full lifecycle of the technology, I don't think the deployment costs is a huge issue.
B44	I think quality of service will always be an issue because we rely on bandwidth so much.
B45	I think [the role of culture] in some of the sectors, take heavy industry, its more important to get the guys on the production line sorted out. In [many industries] this will apply. It becomes a blue collar, white collar issue.
B46	[Mobility] I think its going to complicate things a bit but will also enhance things because the next 10 years is the era of the smartphone
B47	A white collar worker in the manufacturing sector has very little chance of getting unified comms, whereas in a more knowledge management company…
B48	No, I think number of employees is not a factor. I think the smaller companies will use it first.
B49	I think the smaller companies will adopt it quicker but other bigger companies that are very dispersed will use it a lot. Large companies that are all together will be less likely to use it.
B50	[IT department Size] may not be a factor, I think it's a proxy but I don't think it's the only proxy
B51	I don't believe the legislation is an issue anymore
B52	I think that the type of customer the business has may have an influence. A business customer creates different pressures to a consumer customer.
B53	Yes possibly I suppose

20.2.2. Interview B – Coded Phrases Analysed

Table 59: Interview B - Coded Phrases Analysed

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Cmp-Adpt	B2	B3	B9							3	2	4	2							2.67
Cmp-Suc	B9	B38								2	3	3								3.00
Dom-Su	B6	B13	B14	B17	B18					5	5	4	4	4						3.40

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Dom-Cu	B10									1	5									5.00
Parent										0										
S-Adpt	B5	B38								2	5	4								4.50
C-Adpt	B5	B11	B38							3	5	5	4							4.67
I-Part	B11	B38								2	3	3								3.00
Pap	B4	B5								2	5	5								5.00
Conf	B4	B5	B30	B31						4	5	5	4	3						4.25
Meet	B4	B5	B31	B32						4	5	5	4	3						4.25
Mod	B33	B34								2	5	4								4.50
Legit	B33									1	5									5.00
New Serv	B22	B36								2	4	4								4.00
Inf-Adpt	B36									1	5									5.00
Cost-red	B27	B28	B29	35						4	1	1	1	5						2.00
Comp-red										0										
Impact	B53									1	3									3.00
Understand	B53									1	3									3.00
NrEmployees	B48									1	1									1.00
ITDept-Size	B50									1	4									4.00
Industry-Category	B7	B15	B45	B47						4	5	4	5	4						4.50
Own-Adpt	B12	B32								2	2	5								3.50
Some elements of UC										0										
High bandwidth costs										0										
Politics	B39									1	4									4.00
Privacy	B40									1	1									1.00
Regulatory clarity	B42									1	1									1.00
Short ROI										0										
Poor quality of VoIP	B44									1	4									4.00
Quality of service issues	B44									1	4									4.00
Risk										0										
Standards	B22									1	4									4.00
Security	B40									1	1									1.00
Skills	B41									1	5									5.00
Alt-Cost	B28	B37								2	4	4								4.00
Alt-Tech	B28	B37								2	4	4								4.00
Early-Adpt	B35	B36								2	4	4								4.00
Vendor pressure	B13	B17	B18							3	4	4	4							4.00
Parent-Suc										0										
Life-Cycle	B8	B37								2	5	3								4.00
Evangelist										0										
Outsource										0										

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Green IT										0										
Legislation										0										
Org-effic										0										
Useful	B22	B26								2	4	4								4.00
Ease	B24	B25	B26							3	4	4	4							4.00
Innov	B1									1	4									4.00
White Collar	B45									1	5									5.00
Collaborative	B47									1	4									4.00
Knowledge Workers	B45	B47								2	5	4								4.50
NrBranches	B49									1	5									5.00
International	B49									1	5									5.00
B2B	B15	B52								2	4	4								4.00
Behaviour	B24									1	4									4.00
Comp-Cultr	B20	B21								2	4	4								4.00
Comp-Mature	B20	B21	B23	B25						4	4	4	4	4						4.00
Supplier Status	B18									1	3									3.00
Mature	B30									1	4									4.00
Mobility	B46									1	3									3.00

20.3. Interview C

20.3.1. Interview C – Phrases Coded

Table 60: Interview C - Phrases Coded

Property Code	Key Phrases
C1	I think there's quite a bit of copying I think we tend to sell [UC] based on case studies
C2	[Most influence] comes from …. I think there are two areas. I think its vendor led and we tend to be mouth pieces for them
C3	But the other big influence is consumer led influence, so what your finding is that whole ecosystem of things on the internet and people adopt unified comms
C4	Now people are talking about enterprise social software
C5	I don't think there's a lot around parent organisation drive.
C6	I think its more from employees saying we are not dynamic enough, we are behind the times
C7	I reckon the only area where theres perhaps a bit of coercion is on the supply chain side because look at the way we communicate with Cisco - the only reason we initially set up telepresence was because of them
C8	Key customers will be a key pressure but more key suppliers than customers. In our business where customers play a massive part is when our customers expect us to adopt the technology we are selling
C9	I think if you take the financial services segment…for us we deal with HSBC on a global basis…why shouldn't we use technology instead of flying
C10	I think that pressure [normative pressure] is there, I think, I gues the only counter balance to that is the resistance to that. Customers will ask show me how this either saves or makes me money
C11	[Participation in industry bodies] - It is and I think there's a fair amount of copying that happens at that level and what is percieved as best practice
C12	I think a key issue though is standards, OCS won't have these features if you integrate with another vendor

Property Code	Key Phrases
C13	[Extent of cost reductions and complexity]…I think it's a massive issue.
C14	The biggest inhibitors is the massive complexity that it entails at an operational level. For the user they are unified but at an operational level they are not unfied.
C15	If you add that to the mindshift about how people use technology…but if you consider your average working age of people in a non-IT organisation it actually goes counter to their background
C16	The technology has a lot of promise, progressive companies adopt it but getting some of the older executives to adopt it.
C17	Just look at DD and see how some of the older executives really use UC
C18	What helps to overcome this is that those kind of users typically become larger users of unified comms in their private capacity at home before they adopt it at work
C19	Age does play a role wheras I think your younger generation expects to use it at work
C20	[Alt]- I think they do come out a lot. Very often we put together a business case based on voice cost saving and if you go to an FD he says but I can save this money in other ways
C21	If you look at productivity an FD will always show that the business case is not robust
C22	What you shouldn't underestimate is the role that UC plays in just getting people together, its not just about saving on travel. If you look at what we did with VC what we found was that you need other technologies to keep people connected and drive better productivity.
C23	I think that's a changing cultural thing. I think its part of understanding that your part of bigger group that needs to collaborate and that toolsets are important to do it.
C24	You wont bring it down to this is how much we saved this month in rands and cents
C25	The one I agree with least is the poor quality of service. Just look at what mobile has proven…that people will put up with poor quality of service as long as it leads to flexibility.
C26	You biggest cost driver other than the booze bill at an international hotel is your $12 Internet connection charge
C27	The human being adapts to poor QoS as long as you are getting services and flexibility you never had before
C28	Privacy and security are more corporate governance issues. The irony is that people will not use UC and then go home and use facebook. That's more a case of busines keeping up with trends. Look at what we are doing generating a policy around social media.
C29	There's a lot of UC being used in how quickly DD collaborates around the world.
C30	And that's a cultural thing that you decide either to govern or not govern.
C31	Skills? That's a massive issue. Companies have legacy technology that all takes a part in UC and bringing these things together to create a road map and then manage that it's a challenge.
C32	Dispersed. Ja
C33	Large number of people. Ja
C34	Other than the geographic one, I think the two that come to mind are highly skilled, collaborative workforces so for example engineers. If its an enviroment and you are looking at innovation in terms of architecture. The sweet spot is highly skilled and collaborative people.
C35	The other one I think increasingly is anyone who has a highly mobile workforce as a core area
C36	The structure of the organisation makes a massive difference. If the organisation is too federated, they will all do it as long as its their way. They are more likely to struggle to get a business case out of it. Look at the pissing match between Australia and the US at Dimension Data
C37	The single biggest factor is expectation of what bandwidth is available
C38	No, the legislation has mostly disappeared as a factor
C39	No, not really. No, they don't seem directly relevant. I mean they are but other factors impact them and on their own they don't seem to

20.3.2. Interview C – Coded Phrases Analysed

Table 61: Interview C - Coded Phrases Analysed

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Cmp-Adpt	C1									**1**	4									4.00
Cmp-Suc	C1									**1**	3									3.00
Dom-Su	C2	C7								**2**	5	4								4.50
Dom-Cu	C8	C9								**2**	4	4								4.00
Parent	C5									**1**	2									2.00
S-Adpt	C7									**1**	5									5.00
C-Adpt	C10									**1**	4									4.00
I-Part	C10									**1**	3									3.00
Pap	C11									**1**	4									4.00
Conf	C11									**1**	4									4.00
Meet	C11									**1**	4									4.00
Mod	C6									**1**	4									4.00
Legit	C6									**1**	4									4.00
New Serv	C6	C22	C27							**3**	5	4	4							4.33
Inf-Adpt	C3	C18	C29							**3**	5	5	4							4.67
Cost-red	C10	C13	C21	C24						**4**	5	5	4	4						4.50
Comp-red	C10	C13	C21							**3**	4	5	3							4.00
Impact	C13	C14								**2**	5	5								5.00
Understand	C13									**1**	5									5.00
NrEmployees	C39									**1**	3									3.00
ITDept-Size	C39									**1**	3									3.00
Industry-Category	C39									**1**	3									3.00
Own-Adpt	C39									**1**	2									2.00
Some elements of UC										**0**										
High bandwidth costs	C25	C37								**2**	3	5								4.00
Politics	C25	C36								**2**	3	4								3.50
Privacy	C28									**1**	2									2.00
Regulatory clarity	C28									**1**	3									3.00
Short ROI	C10									**1**	4									4.00
Poor quality of VoIP	C27									**1**	1									1.00
Quality of service issues	C25									**1**	1									1.00
Risk	C28									**1**	1									1.00
Standards	C12	C31								**2**	4	5								4.50
Security	C28									**1**	2									2.00
Skills	C31									**1**	5									5.00
Alt-Cost	C20									**1**	4									4.00

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Alt-Tech	C20									**1**	4									4.00
Early-Adpt	C29									**1**	3									3.00
Vendor pressure	C2									**1**	4									4.00
Parent-Suc										**0**										
Life-Cycle										**0**										
Evangelist										**0**										
Outsource										**0**										
Green IT										**0**										
Legislation										**0**										
Org-effic	C21	C22								**2**	2	5								3.50
Useful	C15	C22	C27							**3**	4	5	5							4.67
Ease	C27									**1**	4									4.00
Innov	C23	C34								**2**	4	5								4.50
White Collar	C34									**1**	4									4.00
Collaborative	C23	C34								**2**	4	5								4.50
Knowledge Workers	C34									**1**	5									5.00
NrBranches	C32									**1**	4									4.00
International	C26									**1**	5									5.00
B2B										**0**										
Behaviour	C17									**1**	4									4.00
Comp-Cultr	C15	C19	C30							**3**	5	4	4							4.33
Comp-Mature	C15	C19								**2**	4	4								4.00
Supplier Status	C2									**1**	3									3.00
Mature	C14									**1**	5									5.00
Mobility	C26	C35								**2**	4	4								4.00

20.4. Interview D

20.4.1. Interview D – Phrases Coded

Table 62: Interview D - Phrases Coded

Property Code	Key Phrases
D1	Not at all.
D2	The only thing that Mutual in terms of technology looks at is a 3 year and 5 year horizon and they look at what consultants like Gartner and McKinsey are saying
D3	They plan their review on the 3 year and 5 year goals and wait for business to approach them
D4	They don't look at what competitors are doing only at what Gartner recommends.
D5	There's two parts. There's the IT delivery and the demand from the business.
D6	In terms of the business there will be an influence of competitors but not IT
D7	When Old Mutual bought Celestia which was a UK insurer the development was hived off to South Africa. One of the big costs was voice.

Property Code	Key Phrases
D8	So without proper planning we opened up to MSN messenger which saved on voice costs but immediately went viral.
D9	So from then on Old Mutual was very careful of getting the control right.
D10	Then along came Skype and Mutual had to say no because it was about governance and control. Its about is the guy using it for what its supposed to be
D11	The development of UC was driven by the wrong end of the problem. The organisation kept constantly with this mindset of control. We stagnated because nobody could tell us definitively how to control it as an organisation
D12	The along comes Danny Naidoo who was a director of Microsoft and he wants OCS. He doesn't want a business case for it. He wants that collaboration that it can bring
D13	There was this up-swelling of demand for UC. Two reasons. Mutual sends between 20 and 40 people to Johannesburg per day from Cape Town and the regions. On average you can work it out to about R5000 per person.
D14	They probably spend about R40 million per year on international phone calls to places like London. But there's no Voice over IP or anything. It's quite a whack of money on purely telephoning each other.
D15	So there was a huge demand.
D16	There was all of a sudden a need for collaboration. So that's how Danny got OCS into the building.
D17	With this particular project…when we were looking at OCS…one of the things we discovered that the holding company in London…its minute in terms of numbers but they are the owners. There was a huge amount of pressure for OCS and Sharepoint.
D18	There was a lot of coercive pressure specifically around OCS
D19	The internal pressures were purely around cost.
D20	Even the corporate customers for example in the employee benefits space….for example…like Telkom…no strangely there would be hardly any pressure. For some reason customers are scared to force Old Mutual into a corner
D21	It's all internal supply chain. The internal customers are the business units trying to drive down costs and London trying to drive Unified Comms.
D22	Key suppliers success led some credence to the fact that it could be done.
D23	Mutual has a policy of not being bleeding edge, so if something is less than 5 years old as a technology they won't look at it.
D24	You know that old saying if it aint broke….well at Mutual even if it's a bit broken theres still resistance to fixing it if it kind of works. There fundamentally a resistance.
D25	I will give you another example. At Old Mutual everyone phones peoples cell phones from a fixed extension. It drives up the cost dramatically.
D26	There's this mindset that we'll consume the easiest way.
D27	No, apart from Gartner, Old Mutual goes their own way
D28	Complexity does play a role, but we outsource the operational side so skills and complexity become the service providers problem. The complexity issue we would worry about would be for the users
D29	Bandwidth costs play a small role
D30	I think those have all diminished a lot
D31	Yes, as you are aware that was one of the key decision factors for the Merlot project. Getting the cost saving without implementing a technology solution
D32	Yes, mobility is an influencing factor but only for those people that are mobile or impacted by them
D33	Yes, I would agree that the perception of being modern and legitimate plays a role
D34	Financials services legislation can be a factor but no more so than in any other technology like e-mail.
D35	Not really in Mutual's case no. Possibly a slight influence but not really.

20.4.2. Interview D – Coded Phrases Analysed

Table 63: Interview D - Coded Phrases Analysed

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Cmp-Adpt	D1	D6								2	1	4								2.50
Cmp-Suc	D1	D22								2	1	3								2.00
Dom-Su	D2									1	2									2.00
Dom-Cu	D2	D20								2	2	2								2.00
Parent	D17	D18								2	5	4								4.50
S-Adpt	D2									1	2									2.00
C-Adpt	D2	D21								2	2	3								2.50
I-Part	D4									1	4									4.00
Pap	D4									1	4									4.00
Conf	D27									1	2									2.00
Meet	D27									1	2									2.00
Mod	D33									1	4									4.00
Legit	D33									1	4									4.00
New Serv	D2	D13								2	5	5								5.00
Inf-Adpt	D8									1	5									5.00
Cost-red	D8	D14	D19	D25						4	4	5	4	4						4.25
Comp-red	D28									1	2									2.00
Impact	D28									1	2									2.00
Understand	D28									1	2									2.00
NrEmployees	D35									1	3									3.00
ITDept-Size	D35									1	3									3.00
Industry-Category	D35									1	3									3.00
Own-Adpt	D35									1	3									3.00
Some elements of UC	D8									1	4									4.00
High bandwidth costs	D29									1	3									3.00
Politics	D16									1	3									3.00
Privacy	D30									1	3									3.00
Regulatory clarity	D30									1	3									3.00
Short ROI	D30									1	3									3.00
Poor quality of VoIP	D30									1	3									3.00
Quality of service issues	D30									1	3									3.00
Risk	D10	D11								2	5	5								5.00
Standards	D30									1	3									3.00
Security	D10	D11								2	3	3								3.00

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Skills	D28									1	2									2.00
Alt-Cost	D31									1	5									5.00
Alt-Tech	D24	D31								2	4	5								4.50
Early-Adpt	D22									1	5									5.00
Vendor pressure	D12									1	4									4.00
Parent-Suc	D21									1	4									4.00
Life-Cycle										0										
Evangelist	D12									1	4									4.00
Outsource	D28									1	4									4.00
Green IT										0										
Legislation	D34									1	3									3.00
Org-effic	D16									1	5									5.00
Useful										0										
Ease	D26									1	4									4.00
Innov										0										
White Collar										0										
Collaborative	D12	D16								2	5	4								4.50
Knowledge Workers	D7									1	4									4.00
NrBranches										0										
International	D17									1	5									5.00
B2B										0										
Behaviour										0										
Comp-Cultr										0										
Comp-Mature										0										
Supplier Status										0										
Mature	D22									1	5									5.00
Mobility	D32									1	4									4.00

20.5. Interview E

20.5.1. Interview E – Phrases Coded

Table 64: Interview E - Phrases Coded

Property Code	Key Phrases
E1	UC not a differentiator to end consumer only to dealer base and employees.
E2	Adoption by competitors in SA has been slow. Due to most oil companies largely pulling out of Africa, the South African operations tend to be last on the roll out list.
E3	Possibly just get it on the strategy roadmap but will not influence actual adoption directly.
E4	No coercion from Engen because Petronas often takes its cue from Engen in these kinds of issues.
E5	But is an issue with Shell etc

Property Code	Key Phrases
E6	No but key vendors of UC may have the influence to put it on the technology agenda.
E7	There is some influence but only to the extent of putting it on the roadmap. It won't influence adoption.
E8	Yes in the oil industry in general but not in the case of Engen.
E9	It might if the dealer base through the dealer council created influence.
E10	Not really in our industry. The industry category matters a bit here because industries with a consumer base will behave differently from industries with a business client base.
E11	Not really although some elements of social networking are making their way into IS plans due to retail customer demand
E12	This used to be the case but the recession has impacted the effect of outside influence dramatically
E13	This also used to be the case but again the recession has impacted the effect of outside influence dramatically.
E14	Some peer CIOs will have an influence but only so far as their organization and strategic reasons match Engens.
E15	CIO pressure carries the most weight
E16	Not really.
E17	Not really.
E18	Yes, but only in smaller companies.
E19	Most large organisations have already found other ways to reduce the delta.
E20	To some extent
E21	Less trust of Telkom even though they may offer the same as an equivalent competitor on paper because of legacy.
E22	Most of the non UC alternatives eg toll bypass are already in place in large companies.
E23	Recession has had a bigger impact than anything
E24	Skills are not a major issue as these can be acquired in the global market place.
E25	Legacy of Telkom mindset (i.e. breaking Telkoms break-in break-out rules) on older Telecoms managers continues to play a big role.
E26	Independent 3rd party benchmarks steer us away from high risk technology implementations
E27	Business case has most of ROI taken out of it by other projects so only the soft issues remain
E28	SA used to be highly innovative e.g. banking industry. But over the last 10 years mediocrity has come to be acceptable
E29	UC is not viewed as a true opportunity
E30	Bandwidth will be resolved by 2012
E31	Internet adoption in SA is low and the role of culture in how we use our smartphones and devices in our consumer and business lives has created a gap between SA and Europe. SA don't use their devices as much.
E32	It is dangerous to put a box around these sorts of things. These don't seem like relevant factors.
E33	Lifecycle only plays a small role.

20.5.2. Interview E – Coded Phrases Analysed

Table 65: Interview E - Coded Phrases Analysed

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Cmp-Adpt	E1									**1**	3									3.00
Cmp-Suc	E1	E2	E3							**3**	3	3	2							2.67
Dom-Su	E4	E5								**2**	2	2								2.00
Dom-Cu	E4	E5	E7							**3**	4	4	2							3.33

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Parent	E4	E5	E8							**3**	2	4	2							2.67
S-Adpt	E6	E9	E10							**3**	2	2	2							2.00
C-Adpt	E7	E9	E11							**3**	2	4	4							3.33
I-Part	E12									**1**	3									3.00
Pap	E13									**1**	2									2.00
Conf	E13									**1**	2									2.00
Meet	E14	E15								**2**	4	4								4.00
Mod	E16									**1**	2									2.00
Legit	E17									**1**	2									2.00
New Serv	E20									**1**	4									4.00
Inf-Adpt	E20									**1**	4									4.00
Cost-red	E18	E19	E23	E29						**4**	4	2	2	1						2.25
Comp-red	E18	E19								**2**	4	2								3.00
Impact	E32									**1**	1									1.00
Understand	E32									**1**	1									1.00
NrEmployees	E32									**1**	1									1.00
ITDept-Size	E32									**1**	1									1.00
Industry-Category	E10									**1**	4									4.00
Own-Adpt	E31									**1**	1									1.00
Some elements of UC										**0**										
High bandwidth costs	E30									**1**	1									1.00
Politics										**0**										
Privacy										**0**										
Regulatory clarity										**0**										
Short ROI	E27	E29								**2**	1	1								1.00
Poor quality of VoIP										**0**										
Quality of service issues										**0**										
Risk	E26									**1**	4									4.00
Standards										**0**										
Security										**0**										
Skills	E24									**1**	1									1.00
Alt-Cost	E22									**1**	2									2.00
Alt-Tech	E20	E25								**2**	2	4								3.00
Early-Adpt										**0**										
Vendor pressure	E6									**1**										3.00
Parent-Suc										**0**										
Life-Cycle	E33									**1**	3									3.00
Evangelist										**0**										
Outsource										**0**										
Green IT										**0**										

Concepts	1	2	3	4	5	6	7	8	9	Total repetition of concept in the interview	1	2	3	4	5	6	7	8	9	Total Emphasis Score
Legislation										**0**										
Org-effic										**0**										
Useful										**0**										
Ease										**0**										
Innov	E28									**1**	4									4.00
White Collar										**0**										
Collaborative										**0**										
Knowledge Workers										**0**										
NrBranches										**0**										
International										**0**										
B2B	E10									**1**	5									5.00
Behaviour										**0**										
Comp-Cultr	E31									**1**	4									4.00
Comp-Mature	E31									**1**	4									4.00
Supplier Status	E6									**1**	2									2.00
Mature										**0**										
Mobility										**0**										

21. Appendix H: Descriptive Statistics Qualitative

The results of all the semi-structured interviews are summarised in each of the following tables below, which reflect simply the count of the occurrences of a particular concept. Each concept was only raised once by the interviewer in the form of a question, so an incidence value higher than 1 may be significant. This is because an incidence count higher than 1 indicates that the interviewee will have raised the issue himself multiple times either before or after the question was asked directly. Similarly an incidence value of zero may be significant as it indicates that the question went unanswered even when explicitly asked.

Table 66: Qualitative -Incidence of Concepts from Initial Model

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Mimetic "Industry pressure"	Cmp-Adpt	2	3	1	2	1	9
	Cmp-Suc	1	2	1	2	3	9
Coercive	Dom-Su	2	5	2	1	2	12
	Dom-Cu	1	1	2	2	3	9
	Parent	2	0	1	2	3	8
Normative "Supply chain pressure"	S-Adpt	1	2	1	1	3	8
	C-Adpt	1	3	1	2	3	10
	I-Part	1	2	1	1	1	6

The repetition of the concept Dom-Su (which measures pressure from suppliers) may be important as it was repeated by almost all participants more than once. Similarly the repetition of issues pertaining to competitor adoption (Cmp-Adpt) tends to appear high. The lack of mention of parent adoption in interview B does not appear significant based on its reasonably high incidence in all other interviews as well.

Table 67: Qualitative - Incidence of concepts from Extended Model

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Fashion Setters	Pap	1	2	1	1	1	6
	Conf	2	4	1	1	1	9
	Meet	1	4	1	1	2	9
Progressiveness	Mod	1	2	1	1	1	6
	Legit	1	1	1	1	1	5
Attention to Users	New Serv	3	2	3	2	1	11
	Inf-Adpt	2	1	3	1	1	8
Progressiveness	Cost-red	9	4	4	4	4	25
	Comp-red	2	0	3	1	2	8

All concepts drawn from Basaglia et al., (2008), were raised a higher number of times than they were asked except for the concept of legitimacy. The most significant of these appears to be the concept of cost reduction (Cost-red) that was returned to by all participants multiple times. This

indicates that it may be a valuable factor or inhibitor influencing the intention to adopt unified communications.

In below, most concepts were raised only about as often as they were asked. One cannot draw any further conclusions from this. The only exceptions for concepts drawn from Tobin and Bidoli (2006) were the concepts of risk (Risk) and alternative technologies (Alt-tech) that could deliver a similar value. This indicates that these may be valuable factors in an integrated model.

Table 68: Qualitative - Incidence of Concepts from South African Literature

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Adoption	Some elements UC	3	0	0	1	0	4
Cost	High B/Wdth costs	0	0	2	1	1	4
Organisational	Politics	1	1	2	1	0	5
Risk	Privacy	1	1	1	1	0	4
Complexity	Regulatory clarity	1	1	1	1	0	4
Cost	Short ROI	1	0	1	1	2	5
Risk	Poor quality of VoIP	1	1	1	1	0	4
Risk	QoS issues	0	1	1	1	0	3
Risk	Risk	5	0	1	2	1	9
Risk	Standards	2	1	2	1	0	6
Risk	Security	1	1	1	2	0	5
Risk	Skills	2	1	1	1	1	6
Alternatives	Alt-Cost	1	2	1	1	1	6
Alternatives	Alt-Tech	2	2	1	2	2	9

The emerging concepts are represented in the order that they initially appeared in the interviews.

Table 69: Qualitative - Emerging Concepts

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Organisational	Early-Adpt	1	2	1	1	0	5
Coercive	Vendor pressure	1	3	1	1	1	7
Coercive	Parent-Suc	1	0	0	1	0	2
Alt-Tech	Life-Cycle	1	2	0	0	1	4
Normative	Evangelist	2	0	0	1	0	3
Risk	Outsource	1	0	0	1	0	2
Normative	Green IT	3	0	0	0	0	3
Complexity	Legislation	2	0	0	1	0	3
Progressiveness	Org-effic	2	0	2	1	0	5
User	Useful	1	2	3	0	0	6
Organisational	Collaborative	1	1	2	2	0	6
Culture	Behaviour	1	1	1	0	0	3
Culture	Comp-Cultr	1	2	3	0	1	7
User	Ease	0	3	1	1	0	5
Organisational	Innov	0	1	2	0	1	4
Organisational	White Collar	0	1	1	0	0	2
Organisational	Knowledge Workers	0	2	1	1	0	4
Geograhic spread	NrBranches	0	1	1	0	0	2
Geograhic spread	International	0	1	1	1	0	3
Industry Category	B2B	0	2	0	0	1	3
Culture	Comp-Mature	0	4	2	0	1	7
Organisational	Supplier Status	0	1	1	0	1	3
Organisational	Mature	0	1	1	1	0	3
Organisational	Mobility	0	1	2	1	0	4

Some concepts such as Green IT were raised multiple times by a single interviewee but were not raised by any other interviewee. Other concepts that were raised by three or more interviewees or were returned to multiple times by multiple interviewees can be considered as eligible for scrutiny.

Table 70: Qualitative: Control Variables

Category	Concept	Incidence A	Incidence B	Incidence C	Incidence D	Incidence E	Total Incidence
Complexity	Impact	3	1	2	1	1	8
	Understand	1	1	1	1	1	5
Size	NrEmployees	1	1	1	1	1	5
	ITDeptSize	1	1	1	1	1	5
Industry	Industry-Category	1	4	1	1	1	8
Adoption	Own-Adpt	1	2	1	1	1	6

The concepts related to the control variables derived from the theoretical models did not elicit multiple responses except in the cases of the impact of UC on an organisation (comp-impact) and the type of industry (industry-category) that an organisation found itself in.

22. Appendix I: Results of Analysis of Qualitative Interviews

Each of the tables in the sections below shows:

- The total incidence (or count) of the concept from all of the interviews.
- The Emphasis (support for the concept) by each interviewee.
- The Mean-Emphasis that is simply an average of all the Emphasis from each interview. A Mean-Emphasis score above 3.0 would indicate support for the concept as a factor influencing the adoption of UC.
- Standard deviation of the Emphasis.
- The maximum and minimum Emphasis.

There is a danger in assuming that the sample is statistically significant (which is not) when analysing the interviews. However, it is useful to use statistical measures to determine the variance in opinions of the 5 interviewees in one table. It is also worth noting that the emphasis is a purely subjective measure derived by the researcher's analysis of the meanings of coded phrases from each interview.

Table 71: Qualitative: Concepts from the Initial Research Model

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
Mimetic "Industry pressure"	Cmp-Adpt	9	2.00	2.67	4.00	2.50	3.00	2.83	0.75	4.00	2.00
	Cmp-Suc	9	3.00	3.00	3.00	2.00	2.67	2.73	0.43	3.00	2.00
Coercive	Dom-Su	12	4.50	3.40	4.50	2.00	2.00	3.28	1.25	4.50	2.00
	Dom-Cu	9	4.00	5.00	4.00	2.00	3.33	3.67	1.11	5.00	2.00
	Parent	8	3.00		2.00	4.50	2.67	3.04	1.06	4.50	2.00
Normative "Supply chain pressure"	S-Adpt	8	4.00	4.50	5.00	2.00	2.00	3.50	1.41	5.00	2.00
	C-Adpt	10	4.00	4.67	4.00	2.50	3.33	3.70	0.82	4.67	2.50
	I-Part	6	4.00	3.00	3.00	4.00	3.00	3.40	0.55	4.00	3.00

Table 72: Qualitative: Emphasis of concepts from the Extended Model

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
Fashion Setters	Pap	6	4.00	5.00	4.00	4.00	2.00	3.80	1.10	5.00	2.00
	Conf	9	3.50	4.25	4.00	2.00	2.00	3.15	1.08	4.25	2.00
	Meet	9	4.00	4.25	4.00	2.00	4.00	3.65	0.93	4.25	2.00
Progressiveness	Mod	6	4.00	4.50	4.00	4.00	2.00	3.70	0.97	4.50	2.00

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
	Legit	5	4.00	5.00	4.00	4.00	2.00	3.80	1.10	5.00	2.00
Attention to Users	New Serv	11	3.67	4.00	4.33	5.00	4.00	4.20	0.51	5.00	3.67
	Inf-Adpt	8	4.50	5.00	4.67	5.00	4.00	4.63	0.41	5.00	4.00
Internal Benefits	Cost-red	25	3.89	2.00	4.50	4.25	2.25	3.38	1.17	4.50	2.00
	Comp-red	8	4.00		4.00	2.00	3.00	3.25	0.96	4.00	2.00

Table 73: Qualitative: Emphasis of control variables

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
Complexity	Impact	8	2.67	3.00	5.00	2.00	1.00	2.73	1.48	5.00	1.00
	Understand	5	4.00	3.00	5.00	2.00	1.00	3.00	1.58	5.00	1.00
Size	NrEmployees	5	2.00	1.00	3.00	3.00	1.00	2.00	1.00	3.00	1.00
	ITDeptSize	5	2.00	4.00	3.00	3.00	1.00	2.60	1.14	4.00	1.00
Industry	Industry-Category	8	2.00	4.50	3.00	3.00	4.00	3.30	0.97	4.50	2.00
Adoption	Own-Adpt	6	3.00	3.50	2.00	3.00	1.00	2.50	1.00	3.50	1.00

Table 74: Qualitative: South African Factors

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
Adoption	Some elements UC	4	3.67			4.00		3.83	0.24	4.00	3.67
Cost	High B/Wdth costs	4			4.00	3.00	1.00	2.67	1.53	4.00	1.00
Risk	Politics	5	2.00	4.00	3.50	3.00		3.13	0.85	4.00	2.00
Risk	Privacy	4	3.00	1.00	2.00	3.00		2.25	0.96	3.00	1.00
Complexity	Regulatory clarity	4	1.00	1.00	3.00	3.00		2.00	1.15	3.00	1.00
Cost	Short ROI	5	4.00		4.00	3.00	1.00	3.00	1.41	4.00	1.00
Risk	Poor quality of VoIP	4	4.00	4.00	1.00	3.00		3.00	1.41	4.00	1.00
Risk	QoS issues	3		4.00	1.00	3.00		2.67	1.53	4.00	1.00
Risk	Risk	9	3.80		1.00	5.00	4.00	3.45	1.72	5.00	1.00
Risk	Standards	6	4.50	4.00	4.50	3.00		4.00	0.71	4.50	3.00
Risk	Security	5	4.00	1.00	2.00	3.00		2.50	1.29	4.00	1.00
Risk	Skills	6	3.00	5.00	5.00	2.00	1.00	3.20	1.79	5.00	1.00
Alternatives	Alt-Cost	6	5.00	4.00	4.00	5.00	2.00	4.00	1.22	5.00	2.00
Alternatives	Alt-Tech	9	4.00	4.00	4.00	4.50	3.00	3.90	0.55	4.50	3.00

23. Appendix J: Qualitative Emerging Factors

Table 75: Qualitative: Emerging Factors

Category	Concept	Total Incidence	Emphasis A	Emphasis B	Emphasis C	Emphasis D	Emphasis E	Mean Emphasis	STD Dev	Maximum	Minimum
Organisational	Early-Adpt	5	4.00	4.00	3.00	5.00		4.00	0.82	5.00	3.00
Coercive	Vendor pressure	7	4.00	4.00	4.00	4.00	3.00	3.80	0.45	4.00	3.00
Coercive	Parent-Suc	2	4.00			4.00		4.00	0.00	4.00	4.00
alt-tech?	Life-Cycle	4	4.00	4.00			3.00	3.67	0.58	4.00	3.00
Normative	Evangelist	3	4.00			4.00		4.00	0.00	4.00	4.00
Risk	Outsource	2	3.00			4.00		3.50	0.71	4.00	3.00
Normative	Green IT	3	2.33					2.33		2.33	2.33
Complexity	Legislation	3	4.00			3.00		3.50	0.71	4.00	3.00
Progressiveness	Org-effic	5	3.00		3.50	5.00		3.83	1.04	5.00	3.00
User	Useful	6	5.00	4.00	4.67			4.56	0.51	5.00	4.00
Organisational	Collaborative	6	5.00	4.00	4.50	4.50		4.50	0.41	5.00	4.00
Geographic spread	International	3	4.00	4.00	4.00			4.00	0.00	4.00	4.00
Culture	Comp-Mature	7	3.00	4.00	4.33		4.00	3.83	0.58	4.33	3.00
User	Ease	5		4.00	4.00	4.00		4.00	0.00	4.00	4.00
Organisational	Innov	4		4.00	4.50		4.00	4.17	0.29	4.50	4.00
Organisational	White Collar	2		5.00	4.00			4.50	0.71	5.00	4.00
Organisational	Knowledge Workers	4		4.50	5.00	4.00		4.50	0.50	5.00	4.00
Culture	Behaviour	2		5.00	4.00			4.50	0.71	5.00	4.00
Culture	Comp-Cultr	3		5.00	5.00	5.00		5.00	0.00	5.00	5.00
Geographic spread	NrBranches	3		4.00			5.00	4.50	0.71	5.00	4.00
Culture	Supplier Status	7		4.00	4.00		4.00	4.00	0.00	4.00	4.00
Organisational	Mature	3		3.00	3.00		2.00	2.67	0.58	3.00	2.00
Attention to users	Mobility	3		4.00	5.00	5.00		4.67	0.58	5.00	4.00
Industry Category	B2B	4		3.00	4.00	4.00		3.67	0.58	4.00	3.00

24. Appendix K: Results of Item Analysis

24.1. Item Analysis for Initial Model Constructs

24.1.1. Item Analysis for Perceived Competitor Success (Cmp-Suc)

Summary for scale: Mean=17.2689 Std.Dv.=3.64196 Valid N:331

Cronbach alpha: .944483 Standardized alpha: .944520

Average inter-item corr.: .812818

Table 76: Item Analysis for Perceived Competitor Success (Cmp-Suc)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Cmp-Suc1	Our main competitors that have adopted UC have benefited greatly	12.92749	7.837643	2.799579	0.8279474	0.9390905
Cmp-Suc2	Our main competitors that have adopted UC are perceived favourably by others in our industry.	12.95166	7.43573	2.726853	0.8997097	0.9168591
Cmp-Suc3	Our main competitors that have adopted UC are perceived favourably by suppliers.	13.01813	7.73381	2.780973	0.8572846	0.9302498
Cmp-Suc4	Our main competitors that have adopted UC are perceived favourably by their customers.	12.90937	7.296921	2.701281	0.88336	0.9222398

24.1.2. Item Analysis for Perceived Dominance of Suppliers (Dom-Su)

Summary for scale: Mean=13.3656 Std.Dv.=3.23839 Valid N:331

Cronbach alpha: .842169 Standardized alpha: .843963

Average inter-item corr.: .646220

Table 77: Item Analysis for Perceived Dominance of Suppliers (Dom-Su)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Dom-Su1	With regard to our organisation's main suppliers that have adopted Unified Communications (UC) our firm's well being depends on their resources.	9.009064	4.697803	2.167442	0.7188206	0.770653
Dom-Su2	With regard to our organisation's main suppliers that have adopted Unified Communications (UC) our firm must maintain good relationships with them.	8.570997	5.145262	2.268317	0.7524713	0.7414533
Dom-Su3	With regard to our organisation's main suppliers that have adopted Unified Communications (UC) our firm cannot easily switch away from them.	9.151057	5.197726	2.279852	0.6569937	0.8282538

24.1.3. Item Analysis for Perceived Dominance of Customers (Com-Cu)

Summary for scale: Mean=9.63746 Std.Dv.=2.39222 Valid N:331

Cronbach alpha: .757597 Standardized alpha: .760084

Average inter-item corr.: .613012

Table 78: Item Analysis for Perceived Dominance of Customers (Dom-Cu)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Dom-Cu1	With regard to our organisation's major customers that have adopted Unified Communications (UC) our firm's well being depends on their purchases.	5.151057	1.590475	1.26114	0.6130125	
Dom-Cu2	With regard to our organisation's major customers that have adopted Unified Communications (UC) our firm must maintain good relationships with them.	4.486405	1.953743	1.397763	0.6130125	

24.1.4. Item Analysis for Perceived Complexity

Summary for scale: Mean=7.30816 Std.Dv.=1.74995 Valid N:331

Cronbach alpha: .536470 Standardized alpha: .537243

Average inter-item corr.: .367281

Table 79: Item Analysis for Perceived Complexity

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Comp-Impact	It is difficult to understand the impact of UC on organizational processes.	3.293051	1.047052	1.023255	0.3672807	
Comp-undrstnd	It is difficult to understand UC from a technological point of view.	4.015106	1.187083	1.089533	0.3672807	

24.1.5. Item Analysis for Normative Pressure

Summary for scale: Mean=7.70393 Std.Dv.=2.97107 Valid N:331

Cronbach alpha: .568050 Standardized alpha: .527493

Average inter-item corr.: .288061

Table 80: Item Analysis for Normative Pressure (Initial Model)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
S-adpt	What do you believe is the proportion of your organisation's MAJOR suppliers who have adopted unified communications currently (UC)?	4.009063	2.800522	1.673476	0.5634766	0.1150353
C-Adpt	What do you believe is the proportion of your organisation's MAJOR customers who have adopted unified communications currently?	4.308157	3.300809	1.816813	0.5499907	0.1425726
I-Part	Do you participate in any industry, trade or professional bodies where you have been exposed to Unified Communications promotion or information?	7.090634	8.167011	2.857798	0.1424057	0.7190858

24.2. Item Analysis for Extended Model Constructs

24.2.1. Item Analysis for Normative Pressure

Summary for scale: Mean=7.09063 Std.Dv.=2.86213 Valid N:331

Cronbach alpha: .719086 Standardized alpha: .720620

Average inter-item corr.: .563257

Table 81: Item Analysis for Normative Pressure (Extended Model)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
S-adpt	What do you believe is the proportion of your organisation's MAJOR suppliers who have adopted unified communications currently (UC)?	3.39577	2.402278	1.549928	0.5632567	
C-Adpt	What do you believe is the proportion of your organisation's MAJOR customers who have adopted unified communications currently?	3.694864	2.828342	1.681768	0.5632567	

24.2.2. Item Analysis for Internal Benefits

Summary for scale: Mean=19.0786 Std.Dv.=3.70992 Valid N:331

Cronbach alpha: .638971 Standardized alpha: .671605

Average inter-item corr.: .344675

Table 82: Item Analysis for Internal Benefits

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
New-Serv	Adopting UC leads to the possibility to offer new and useful services to our employees.	13.5770	10.2320	3.1987	0.4406	0.5794
Inf-Adpt	What do you believe is the proportion of your firm's users who have already informally adopted UC technology?	14.5619	8.1616	2.8568	0.2907	0.6990
Cost-red	Adopting UC leads to cost reductions.	14.1209	8.2392	2.8704	0.5499	0.4814
Comp-red	Adopting UC leads to a reduction in infrastructure complexity.	14.9758	7.9571	2.8208	0.4865	0.5188

24.3. Item Analysis for Integrated Model Constructs

24.3.1. Item Analysis for Organisation

Summary for scale: Mean=25.4924 Std.Dv.=5.89677 Valid N:331

Cronbach alpha: .850722 Standardized alpha: .854701

Average inter-item corr.: .551685

Table 83: Item Analysis for Organisation

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Innov	Assess the following statements about your organisation and indicate your opinion on them: It is highly innovative.	20.03323	23.72397	4.870726	0.7108621	0.8098423
Whit-Col	Assess the following statements about your organisation and indicate your opinion on them:It has many white-collar professionals.	20.44411	24.19854	4.919201	0.5073765	0.8625617
Knowl	Assess the following statements about your organisation and indicate your opinion on them:It has many highly mobile knowledge workers.	20.51964	22.20732	4.712464	0.696494	0.8104694

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Collab	Assess the following statements about your organisation and indicate your opinion on them:It is highly collaborative.	20.45015	22.69465	4.76389	0.7421263	0.7998033
Early-adpt	Assess the following statements about your organisation and indicate your opinion on them:It is an early adopter.	20.52266	22.24949	4.716936	0.6795352	0.8152519

24.3.2. Item Analysis for Normative* (Changed Construct)

Summary for scale: Mean=19.8973 Std.Dv.=6.57740 Valid N:331

Cronbach alpha: .849347 Standardized alpha: .849901

Average inter-item corr.: .535560

Table 84: Item Analysis for Normative (Integrated Model Construct)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Own-Adpt	What do you believe is the extent of your organisation's adoption of Unified Communications (UC) technology?	15.32628	27.58538	5.252179	0.6793983	0.8130606
Cmp-Adpt	What do you believe is the proportion of your organisation's MAJOR competitors that have adopted Unified Communications (UC)?	16.17825	28.64799	5.352381	0.6617079	0.8177053
S-adpt	What do you believe is the proportion of your organisation's MAJOR suppliers who have adopted unified communications currently (UC)?	16.20242	28.89861	5.375742	0.6307274	0.825984
C-Adpt	What do you believe is the proportion of your organisation's MAJOR customers who have adopted unified communications currently?	16.50151	29.41616	5.423667	0.6728888	0.8155984
Inf-Adpt	What do you believe is the proportion of your firm's users who have already informally adopted UC technology?	15.38066	28.67081	5.354513	0.6528774	0.820053

24.3.3. Item Analysis for Fashion Setters* (Integrated Model Construct)

Summary for scale: Mean=2.46828 Std.Dv.=1.23634 Valid N:331

Cronbach alpha: .562986 Standardized alpha: .568415

Average inter-item corr.: .248522

Table 85: Item Analysis for Fashion Setters* (Integrated Model Construct)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
I-Part	Do you participate in any industry, trade or professional bodies where you have been exposed to Unified Communications promotion or information?	1.854985	1.012203	1.006083	0.2801773	0.5466916
Pap	During the last few months have you read any columns online or in newspapers and magazines that promoted or gave information about unified communication systems?	1.646526	1.086536	1.042371	0.3646018	0.4867107
Conf	During the last few months have you attended any conferences that included discussion of unified communication systems?	1.987915	0.8941138	0.9455759	0.4023829	0.4416701
Meet	During the last few months have you attended meetings with your peers at other companies (e.g. other CIOs) in which you discussed unified communication systems?*	1.915408	0.9354424	0.9671827	0.35484	0.4845641

24.3.4. Item Analysis for Progressiveness* (Integrated Model Construct)

Summary for scale: Mean=35.8580 Std.Dv.=5.88123 Valid N:331

Cronbach alpha: .869705 Standardized alpha: .878642

Average inter-item corr.: .516695

Table 86: Item Analysis for Progressiveness (Integrated Model Construct)

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Mod	The use of UC systems represents a practice that characterizes a modern, dynamic company.	30.35347	26.31312	5.129632	0.6758979	0.8477504
Legit	UC is a legitimate way to manage communication in the industry your organisation belongs to.	30.34441	26.60041	5.157559	0.6865633	0.8471861
Mature	UC is a mature and enterprise-ready set of technologies.	31.0997	25.90245	5.089445	0.6330686	0.8527917
Cost-red	Adopting UC leads to cost reductions.	30.9003	24.44021	4.943704	0.6897081	0.8451824
Comp-red	Adopting UC leads to a reduction in infrastructure complexity.	31.75529	25.42954	5.042771	0.5062584	0.8773918
New-Serv	Adopting UC leads to the possibility to offer new and useful services to our employees.	30.35649	27.0572	5.201653	0.6775666	0.8491307
Org-Effic	Adopting UC leads to improved organisational efficiency.	30.33837	25.4565	5.045444	0.7380635	0.8392978

24.3.5. Item Analysis for User

Summary for scale: Mean=10.3927 Std.Dv.=1.79978 Valid N:331

Cronbach alpha: .832469 Standardized alpha: .835353

Average inter-item corr.: .717258

Table 87: Item Analysis for User

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Ease	When formally adopting IT approved Unified Communications (UC) tools, users in our organisation will find ...that UC is very easy to use.	5.410876	0.8402443	0.9166484	0.7172584	
Useful	When formally adopting IT approved Unified Communications (UC) tools, users in our organisation will find that UC is extremely useful.	4.981873	1.044989	1.022247	0.7172584	

24.3.6. Item Analysis for Alternatives

Summary for scale: Mean=7.69486 Std.Dv.=1.77028 Valid N:331

Cronbach alpha: .792980 Standardized alpha: .793047

Average inter-item corr.: .657065

Table 88: Item Analysis for Alternatives

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Alt-cost	Other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit.	3.800604	0.9270087	0.9628129	0.657065	
Alt-tech	Other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit.	3.89426	0.9586075	0.979085	0.657065	

24.3.7. Item Analysis for Culture

Summary for scale: Mean=6.19637 Std.Dv.=2.39712 Valid N:331

Cronbach alpha: .791283 Standardized alpha: .797759

Average inter-item corr.: .663560

Table 89: Item Analysis for Culture

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Comp-Cultr	UC does not fit into our organisational culture.	3.265861	2.01391	1.419123	0.6635602	
Comp-Mature	Our organisation is not ready or mature enough to adopt UC.	2.930514	1.448344	1.203472	0.6635602	

24.3.8. Item Analysis for Risk

Summary for scale: Mean=12.3716 Std.Dv.=2.80330 Valid N:331

Cronbach alpha: .646413 Standardized alpha: .643575

Average inter-item corr.: .388296

Table 90: Item Analysis for Risk

Code	Item Description	Mean if deleted	Var. If deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted
Comp-risk	UC introduces security risk into our business.	8.151057	4.859356	2.204395	0.3006385	0.7430934
Comp-skills	UC skills are scarce and thus UC implementations are risky.	8.58006	3.844799	1.960816	0.5275745	0.4486944
Comp-Stds	There are not enough standards and vendor interoperability in place.	8.012085	3.588978	1.89446	0.5606173	0.3946878

25. Appendix L: Results of Further Exploratory Factor Analysis

All factor loadings in Appendix L are varimax normalised.

25.1. EFA Initial Model

Table 91: EFA Initial Model - Eigen Cut-off 0.9

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
ITDptSize	0.003	0.027	0.034	0.859	0.062	-0.074	-0.052
NrEmployee	0.006	-0.187	0.043	0.871	0.119	-0.089	0.078
Own-Adpt	0.077	0.751	-0.018	-0.005	-0.033	0.190	0.034
Cmp-Adpt	0.306	0.796	0.057	0.013	0.020	0.021	-0.025
Cmp-Suc1	0.870	0.209	0.089	-0.005	0.017	0.090	0.037
Cmp-Suc2	0.914	0.158	0.127	0.039	0.022	0.117	0.004
Cmp-Suc3	0.890	0.124	0.169	0.028	0.025	0.084	0.059
Cmp-Suc4	0.903	0.153	0.165	0.011	0.010	0.081	0.043
Dom-Su1	0.199	0.088	0.819	0.004	0.051	0.190	0.015
Dom-Su2	0.150	0.157	0.847	-0.021	0.012	0.197	0.020
Dom-Su3	0.124	0.036	0.843	0.012	-0.025	0.019	-0.005
S-adpt	0.047	0.780	0.275	-0.013	0.075	-0.006	0.114
Dom-Cu1	0.160	0.108	0.139	-0.008	0.027	0.857	0.029
Dom-Cu2	0.122	0.192	0.252	0.013	0.091	0.800	0.057
C-Adpt	0.220	0.784	0.043	0.009	-0.050	0.143	-0.002
Parent-Adpt	0.062	0.191	-0.101	0.585	-0.164	0.266	0.053
I-Part	0.092	0.086	0.018	0.054	0.008	0.071	0.976
Comp-Impact	-0.128	0.055	-0.056	0.081	-0.803	-0.127	-0.116
Comp-undrstnd	0.069	-0.056	0.031	-0.133	-0.829	0.031	0.102
Expl.Var	3.501	2.695	2.361	1.869	1.400	1.647	1.014
Prp.Totl	18%	14%	12%	10%	7%	9%	5%

Table 92: EFA Initial Model - Eigen Cut-off 0.8

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
ITDptSize	0.009	0.064	-0.015	0.924	-0.001	0.015	-0.041	0.039
NrEmployee	0.010	-0.165	0.018	0.876	0.086	-0.046	0.086	0.177
Own-Adpt	0.076	0.735	0.000	-0.101	-0.006	0.149	0.031	0.199
Cmp-Adpt	0.306	0.794	0.058	-0.019	0.023	0.018	-0.025	0.057
Cmp-Suc1	0.871	0.213	0.080	0.007	0.007	0.106	0.038	-0.038
Cmp-Suc2	0.914	0.155	0.132	0.010	0.029	0.107	0.003	0.063
Cmp-Suc3	0.889	0.122	0.172	0.009	0.029	0.078	0.058	0.040
Cmp-Suc4	0.903	0.152	0.167	-0.003	0.012	0.079	0.042	0.023
Dom-Su1	0.198	0.085	0.827	-0.008	0.060	0.179	0.014	0.029
Dom-Su2	0.149	0.155	0.853	-0.030	0.019	0.189	0.019	0.016
Dom-Su3	0.123	0.039	0.844	0.031	-0.026	0.023	-0.004	-0.038
S-adpt	0.049	0.794	0.251	0.038	0.046	0.040	0.117	-0.129
Dom-Cu1	0.160	0.110	0.125	-0.027	0.014	0.875	0.030	0.042
Dom-Cu2	0.123	0.195	0.238	0.000	0.077	0.819	0.058	0.034
C-Adpt	0.221	0.785	0.035	-0.012	-0.056	0.153	-0.001	0.033
Parent-Adpt	0.059	0.129	-0.001	0.216	-0.034	0.068	0.043	0.945
I-Part	0.092	0.085	0.017	0.035	0.008	0.071	0.976	0.041
Comp-Impact	-0.127	0.058	-0.065	0.068	-0.812	-0.116	-0.114	0.042
Comp-undrstnd	0.069	-0.057	0.025	-0.143	-0.833	0.036	0.102	-0.010
Expl.Var	3.500	2.670	2.349	1.709	1.381	1.614	1.014	1.002
Prp.Totl	0.184	0.141	0.124	0.090	0.073	0.085	0.053	0.053

25.2. EFA Extended Model

Table 93: EFA Extended Model - Eigen Cut-off 0.8

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
ITDptSize	0.039	0.077	-0.010	0.890	0.057	-0.004	0.015
NrEmployee	-0.190	0.026	0.010	0.856	0.108	0.077	0.170
Own-Adpt	0.779	0.210	0.036	-0.097	0.082	-0.013	0.182
Parent-Adpt	0.180	0.047	0.067	0.363	0.096	-0.038	0.740
Cmp-Adpt	0.748	0.078	0.320	0.051	-0.050	-0.005	-0.067
Cmp-Suc1	0.214	0.156	0.861	0.002	0.026	0.008	-0.048
Cmp-Suc2	0.158	0.136	0.916	0.012	0.073	0.021	0.038
Cmp-Suc3	0.143	0.123	0.895	0.001	0.050	0.041	0.043
Cmp-Suc4	0.146	0.146	0.910	-0.006	0.069	0.001	0.016
S-adpt	0.752	0.111	0.097	0.029	0.010	0.010	-0.121
C-Adpt	0.779	-0.001	0.250	0.014	-0.025	-0.026	0.020
Pap	-0.119	0.135	0.054	-0.078	0.755	0.043	0.207
Conf	0.051	0.008	0.054	0.211	0.652	0.031	-0.535
Meet	0.182	0.099	0.084	0.158	0.658	0.073	-0.032
Mod	0.076	0.831	0.143	-0.002	0.124	-0.059	0.045
Legit	0.214	0.804	0.111	-0.004	0.090	-0.032	0.097
Cost-red	0.160	0.721	0.114	0.062	-0.039	0.260	-0.079
Comp-red	0.243	0.541	0.091	0.028	-0.155	0.305	-0.183
New-Serv	-0.013	0.741	0.166	0.086	0.259	0.129	0.095
Inf-Adpt	0.737	0.208	0.053	-0.157	0.119	0.051	0.196
Comp-Impact	0.048	-0.160	-0.131	0.087	-0.024	-0.800	-0.025
Comp-undrstnd	-0.025	-0.086	0.095	-0.145	-0.117	-0.787	0.048
Expl.Var	3.252	2.954	3.515	1.811	1.619	1.462	1.066
Prp.Totl	15%	13%	16%	8%	7%	7%	5%

Table 94: EFA Extended Model - Eigen cut-off 0.7

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
ITDptSize	0.049	0.035	-0.006	0.906	0.077	-0.021	0.052	0.082	0.008
NrEmployee	-0.169	0.046	0.010	0.866	0.055	0.094	0.180	-0.063	0.054
Own-Adpt	0.747	0.091	0.051	-0.098	0.033	-0.082	0.212	0.321	0.149
Parent-Adpt	0.134	0.093	0.066	0.274	0.036	-0.032	0.840	-0.047	0.016
Cmp-Adpt	0.739	0.109	0.317	0.004	0.097	0.026	0.009	-0.021	-0.225
Cmp-Suc1	0.200	0.118	0.865	-0.003	0.054	-0.005	-0.021	0.104	-0.018
Cmp-Suc2	0.155	0.127	0.919	0.013	0.040	0.024	0.040	0.029	0.039
Cmp-Suc3	0.137	0.087	0.900	0.010	0.007	0.027	0.036	0.082	0.063
Cmp-Suc4	0.142	0.146	0.912	-0.011	0.054	0.009	0.026	0.016	0.013
S-adpt	0.794	0.165	0.095	0.046	0.018	0.066	-0.157	-0.092	-0.065
C-Adpt	0.773	-0.001	0.251	-0.009	0.044	-0.022	0.062	0.016	-0.099
Pap	-0.043	0.155	0.070	0.059	0.190	0.053	0.001	-0.070	0.896
Conf	0.034	0.027	0.059	0.188	0.733	0.039	-0.380	-0.011	0.201
Meet	0.082	0.126	0.086	0.008	0.836	0.067	0.293	0.066	0.058
Mod	0.096	0.886	0.142	-0.010	0.065	0.022	0.022	0.071	-0.004
Legit	0.233	0.831	0.112	-0.004	0.015	0.031	0.063	0.124	0.018
Cost-red	0.127	0.517	0.132	0.082	-0.018	0.182	-0.056	0.592	0.046
Comp-red	0.142	0.220	0.115	-0.002	0.063	0.138	-0.026	0.836	-0.100
New-Serv	0.006	0.730	0.173	0.110	0.099	0.166	0.052	0.177	0.210
Inf-Adpt	0.739	0.117	0.069	-0.119	-0.040	0.005	0.144	0.240	0.257
Comp-Impact	0.046	-0.100	-0.133	0.083	0.015	-0.797	-0.013	-0.165	-0.038
Comp-undrstnd	-0.045	-0.084	0.097	-0.144	-0.099	-0.821	0.044	-0.026	-0.015
Expl.Var	3.144	2.513	3.554	1.759	1.333	1.424	1.083	1.340	1.067
Prp.Totl	0.143	0.114	0.162	0.080	0.061	0.065	0.049	0.061	0.049

25.3. EFA Integrated Model

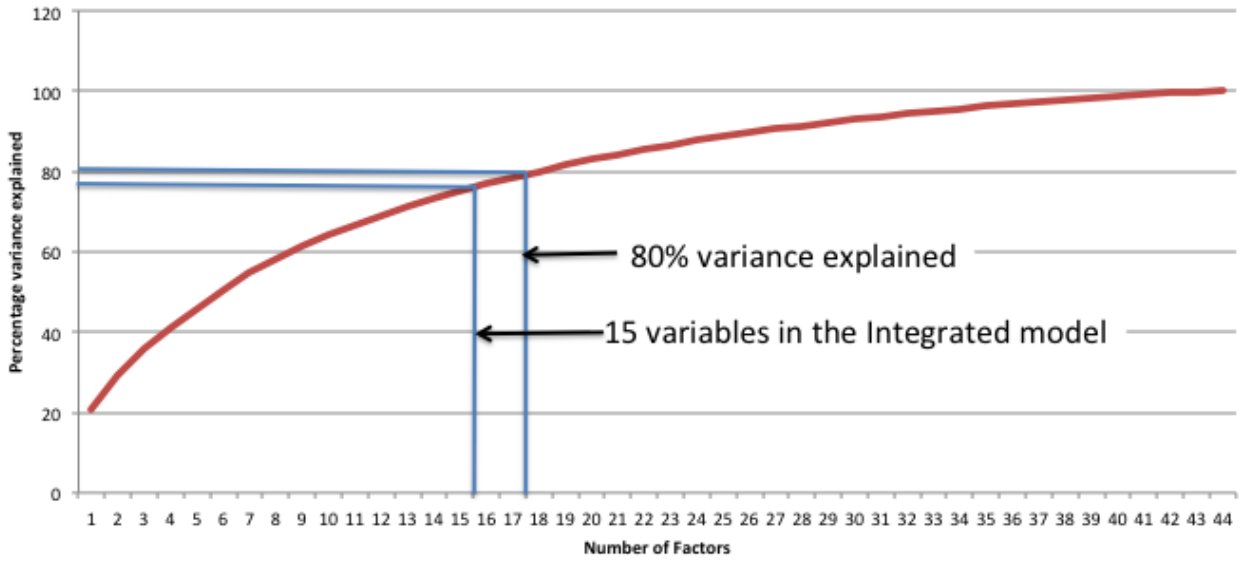

Figure 31: Scree Test Integrated Model

Table 95: EFA Integrated Model - Max 18 Factors

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15	Factor 16	Factor 17	Factor 18
ITDptSize	0.1	0.0	0.0	0.1	0.1	-0.9	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1
NrEmployee	0.0	-0.1	0.0	-0.2	0.1	-0.9	0.0	0.1	0.0	0.0	-0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.1
Innov	0.1	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.1
Whit-Col	0.1	0.6	0.1	0.1	0.0	-0.1	0.1	0.0	0.1	0.0	-0.1	-0.1	0.2	0.6	0.0	0.1	0.0	-0.2
Knowl	0.1	0.7	0.1	0.1	0.0	-0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.0	-0.1
Collab	0.0	0.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	-0.1	0.0
Early-adpt	0.1	0.8	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	-0.2	0.0	-0.1	0.0	0.0
Own-Adpt	0.1	0.3	0.1	0.7	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.0	-0.2	0.2	0.0	0.1	-0.2
Cmp-Adpt	0.1	0.1	0.3	0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-0.1	0.0	0.1	0.1	-0.1	-0.2	0.1
Cmp-Suc1	0.2	0.1	0.9	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Cmp-Suc2	0.1	0.1	0.9	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cmp-Suc3	0.1	0.0	0.9	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0
Cmp-Suc4	0.2	0.1	0.9	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dom-Su1	0.1	0.1	0.2	0.1	0.1	0.0	0.8	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Dom-Su2	0.2	0.1	0.1	0.1	0.0	0.0	0.8	0.0	0.0	0.2	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Dom-Su3	0.0	0.0	0.1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	-0.1	-0.1

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15	Factor 16	Factor 17	Factor 18
S-adpt	0.1	0.0	0.1	0.8	0.0	0.0	0.2	0.0	0.1	0.0	-0.1	0.0	0.1	0.1	-0.1	0.0	0.0	0.1
Dom-Cu1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.9	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0
Dom-Cu2	0.2	0.1	0.1	0.2	0.0	0.0	0.2	0.0	0.0	0.8	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Parent-Adpt	0.1	0.0	0.1	0.1	0.0	-0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.9	-0.1	0.0	0.0
C-Adpt	0.0	0.1	0.2	0.8	0.0	0.0	0.0	0.0	-0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.1	-0.1	0.0
I-Part	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.9	0.0	0.1	-0.1	0.1	0.0
Pap	0.2	0.0	0.1	0.0	0.0	-0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.9	0.0
Conf	0.1	0.0	0.1	0.0	0.1	-0.1	0.0	0.8	0.0	0.0	0.1	0.0	0.1	0.1	-0.3	-0.1	0.2	-0.1
Meet	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.8	0.1	0.0	-0.1	0.1	0.0	-0.1	0.3	0.3	0.0	0.1
Mod	0.8	0.0	0.1	0.1	-0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	-0.1	0.0	0.1	0.0	0.1
Legit	0.8	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.1	-0.1	0.1	0.0	0.1	0.0	0.1	0.0	-0.1
Mature	0.6	0.1	0.2	0.0	0.3	-0.1	0.1	0.0	0.1	0.0	0.3	0.0	0.2	0.0	0.0	0.2	-0.1	0.2
Cost-red	0.6	0.1	0.1	0.1	0.2	-0.1	0.1	0.0	0.1	0.0	0.4	0.2	0.0	-0.1	0.0	-0.1	0.0	0.1
Comp-red	0.4	-0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.7	0.1	-0.1	0.0	0.0	0.1	-0.1	0.0
New-Serv	0.8	0.0	0.2	0.0	0.0	-0.1	0.1	0.1	0.0	0.0	0.1	0.2	-0.1	0.1	0.1	0.0	0.2	0.0
Org-Effic	0.8	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.0
Inf-Adpt	0.1	0.2	0.1	0.7	0.1	0.1	0.0	-0.1	0.1	0.1	0.1	0.3	0.0	0.0	0.1	0.1	0.2	-0.2
Ease	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.8	0.0	0.1	0.0	0.1	0.0	0.2
Useful	0.4	0.0	0.2	0.0	0.0	-0.1	0.0	0.0	0.1	0.1	0.0	0.7	0.1	0.0	0.0	0.1	0.0	0.1
Alt-cost	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.9	-0.1	-0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Alt-tech	-0.2	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	-0.9	0.0	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0
Comp-Impact	-0.2	0.0	-0.1	0.0	-0.2	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.2	0.0	-0.1	0.0	-0.1	0.0	-0.8
Comp-undrstnd	-0.1	0.1	0.1	0.0	-0.3	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.2	0.2	-0.7	0.0	0.0	-0.1	-0.4
Comp-risk	-0.2	-0.1	0.0	0.0	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.1	0.0	0.1	-0.8	0.0	-0.1
Comp-Cultr	-0.4	-0.2	-0.1	-0.2	-0.6	-0.1	0.1	0.0	-0.1	-0.1	0.3	-0.3	0.1	0.0	0.1	0.0	0.0	0.1
Comp-skills	-0.1	0.0	0.0	0.0	-0.8	0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
Comp-Stds	0.0	0.0	-0.1	0.0	-0.8	0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0	-0.2	0.0	-0.1
Comp-Mature	-0.3	-0.2	-0.1	-0.2	-0.6	0.0	-0.1	-0.1	-0.1	0.0	0.1	-0.4	0.0	0.0	-0.1	0.1	0.0	0.3
Expl.Var	4.3	3.4	3.6	3.2	2.4	1.8	2.4	1.4	1.7	1.6	1.2	1.9	1.1	1	1.1	1.1	1.1	1.2
Prp.Totl	10%	8%	8%	7%	5%	4%	5%	3%	4%	4%	3%	4%	2%	2%	3%	2%	2%	3%

Table 96: EFA Integrated Model - Max 15 factors

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15
ITDptSize	0.06	0.01	0.00	0.04	0.05	0.89	0.01	0.06	0.01	0.01	0.03	0.03	0.05	0.04	0.02
NrEmployee	0.04	0.13	0.01	0.16	0.04	0.85	0.02	0.09	0.02	0.04	0.03	0.05	0.07	0.08	0.14
Innov	0.11	0.82	0.02	0.00	0.08	0.11	0.00	0.04	0.03	0.00	0.07	0.01	0.03	0.08	0.07
Whit-Col	0.05	0.67	0.05	0.09	0.07	0.24	0.10	0.03	0.07	0.02	0.20	0.16	0.12	0.16	0.01
Knowl	0.06	0.79	0.05	0.14	0.04	0.09	0.09	0.06	0.03	0.10	0.13	0.05	0.05	0.03	0.10
Collab	0.01	0.84	0.07	0.12	0.03	0.07	0.01	0.03	0.03	0.09	0.10	0.03	0.05	0.00	0.01
Early-adpt	0.08	0.78	0.07	0.14	0.09	0.20	0.01	0.05	0.01	0.05	0.04	0.15	0.08	0.13	0.01
Own-Adpt	0.13	0.28	0.04	0.68	0.25	0.09	0.01	0.11	0.09	0.04	0.09	0.24	0.01	0.21	0.17
Cmp-Adpt	0.13	0.13	0.32	0.77	0.02	0.02	0.02	0.05	0.04	0.05	0.01	0.10	0.01	0.04	0.05
Cmp-Suc1	0.16	0.10	0.86	0.18	0.11	0.00	0.06	0.01	0.00	0.08	0.05	0.05	0.03	0.03	0.05
Cmp-Suc2	0.14	0.06	0.90	0.14	0.04	0.01	0.12	0.06	0.03	0.09	0.02	0.04	0.01	0.02	0.02
Cmp-Suc3	0.10	0.02	0.88	0.12	0.04	0.01	0.17	0.06	0.02	0.05	0.05	0.08	0.04	0.01	0.05
Cmp-Suc4	0.16	0.07	0.89	0.14	0.01	0.00	0.15	0.05	0.04	0.06	0.03	0.02	0.03	0.01	0.00
Dom-Su1	0.09	0.07	0.20	0.08	0.10	0.02	0.82	0.04	0.03	0.15	0.03	0.01	0.00	0.02	0.05
Dom-Su2	0.21	0.07	0.15	0.15	0.01	0.03	0.83	0.03	0.05	0.17	0.10	0.07	0.04	0.00	0.01
Dom-Su3	0.06	0.02	0.12	0.05	0.03	0.05	0.84	0.08	0.01	0.03	0.13	0.04	0.05	0.02	0.05
S-adpt	0.10	0.02	0.06	0.79	0.03	0.01	0.25	0.01	0.08	0.02	0.04	0.03	0.09	0.11	0.10
Dom-Cu1	0.08	0.10	0.15	0.11	0.01	0.04	0.15	0.04	0.08	0.84	0.12	0.08	0.07	0.00	0.07
Dom-Cu2	0.20	0.15	0.12	0.17	0.05	0.01	0.22	0.02	0.00	0.79	0.13	0.09	0.00	0.07	0.01
Parent-Adpt	0.12	0.03	0.06	0.16	0.04	0.36	0.07	0.14	0.02	0.14	0.02	0.12	0.10	0.06	0.71
C-Adpt	0.01	0.08	0.24	0.77	0.03	0.01	0.04	0.01	0.05	0.16	0.10	0.04	0.03	0.01	0.06
I-Part	0.08	0.05	0.08	0.08	0.02	0.03	0.03	0.16	0.03	0.07	0.02	0.11	0.86	0.01	0.01
Pap	0.18	0.00	0.06	0.10	0.03	0.06	0.01	0.64	0.13	0.08	0.17	0.02	0.33	0.10	0.14
Conf	0.07	0.00	0.05	0.04	0.07	0.20	0.07	0.56	0.02	0.06	0.00	0.05	0.19	0.01	0.62
Meet	0.13	0.07	0.09	0.13	0.02	0.15	0.01	0.73	0.00	0.09	0.10	0.04	0.05	0.01	0.05
Mod	0.79	0.05	0.11	0.08	0.06	0.00	0.11	0.05	0.11	0.12	0.01	0.08	0.02	0.02	0.01
Legit	0.78	0.12	0.08	0.19	0.13	0.02	0.15	0.02	0.09	0.12	0.08	0.06	0.07	0.01	0.03
Mature	0.59	0.11	0.15	0.01	0.23	0.12	0.10	0.02	0.10	0.03	0.34	0.04	0.10	0.18	0.00
Cost-red	0.65	0.03	0.10	0.13	0.16	0.02	0.04	0.07	0.15	0.00	0.37	0.13	0.11	0.07	0.04
Comp-red	0.43	0.07	0.09	0.21	0.14	0.03	0.03	0.04	0.05	0.04	0.66	0.07	0.06	0.06	0.03
New-Serv	0.78	0.01	0.15	0.00	0.01	0.08	0.06	0.22	0.04	0.03	0.02	0.13	0.04	0.13	0.07
Org-Effic	0.80	0.07	0.10	0.03	0.09	0.01	0.03	0.16	0.07	0.05	0.08	0.13	0.07	0.06	0.01
Inf-Adpt	0.14	0.19	0.06	0.66	0.16	0.13	0.04	0.13	0.06	0.06	0.02	0.30	0.01	0.09	0.17

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15
Ease	0.23	0.04	0.08	0.13	0.14	0.05	0.01	0.01	0.07	0.06	0.13	0.80	0.07	0.24	0.05
Useful	0.45	0.05	0.15	0.05	0.03	0.07	0.03	0.06	0.07	0.15	0.00	0.72	0.09	0.10	0.05
Alt-cost	0.19	0.04	0.01	0.06	0.10	0.05	0.06	0.04	0.87	0.07	0.09	0.03	0.04	0.01	0.05
Alt-tech	0.18	0.06	0.06	0.01	0.07	0.01	0.00	0.03	0.88	0.00	0.05	0.13	0.06	0.02	0.05
Comp-Impact	0.14	0.03	0.10	0.07	0.17	0.11	0.05	0.00	0.06	0.10	0.13	0.21	0.08	0.67	0.01
Comp-undrstnd	0.15	0.04	0.10	0.06	0.22	0.13	0.06	0.10	0.03	0.03	0.03	0.06	0.10	0.77	0.06
Comp-risk	0.12	0.12	0.00	0.08	0.18	0.02	0.11	0.31	0.04	0.04	0.41	0.19	0.35	0.28	0.03
Comp-Cultr	0.38	0.18	0.06	0.21	0.61	0.05	0.05	0.02	0.04	0.12	0.27	0.26	0.10	0.00	0.05
Comp-skills	0.05	0.05	0.06	0.03	0.75	0.05	0.02	0.04	0.10	0.03	0.19	0.03	0.00	0.30	0.02
Comp-Stds	0.02	0.03	0.09	0.04	0.72	0.08	0.14	0.08	0.04	0.04	0.24	0.05	0.04	0.26	0.01
Comp-Mature	0.27	0.22	0.04	0.19	0.68	0.02	0.04	0.02	0.08	0.04	0.15	0.31	0.02	0.10	0.02
Expl.Var	4.39	3.43	3.60	3.23	2.34	1.92	2.38	1.57	1.69	1.60	1.31	1.77	1.15	1.56	1.06
Prp.Totl	10%	8%	8%	7%	5%	4%	5%	4%	4%	4%	3%	4%	3%	4%	2%

Table 97: EFA Integrated Model - Max 12 Factors

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
ITDptSize	0.05	0.03	-0.01	0.85	0.08	0.02	0.04	0.06	0.03	-0.10	-0.03	0.06
NrEmployee	0.02	-0.12	0.01	0.86	0.08	0.03	-0.17	0.12	0.03	-0.04	0.00	0.07
Innov	0.08	0.82	0.02	-0.13	-0.05	0.01	-0.01	0.08	-0.03	-0.03	0.13	0.01
Whit-Col	-0.02	0.66	0.05	0.24	-0.03	0.14	0.05	0.09	0.08	0.03	-0.04	-0.02
Knowl	0.09	0.78	0.05	0.10	0.10	0.07	0.16	0.03	0.02	0.13	0.03	0.00
Collab	0.01	0.83	0.07	-0.08	0.07	0.00	0.15	-0.07	-0.03	0.09	0.02	0.00
Early-adpt	0.08	0.78	0.07	-0.20	-0.07	-0.02	0.15	0.00	-0.01	0.04	0.18	0.09
Own-Adpt	0.17	0.27	0.05	-0.04	-0.03	-0.04	0.70	0.02	0.07	0.08	0.35	0.05
Cmp-Adpt	0.11	0.13	0.31	0.01	-0.01	0.05	0.75	0.00	-0.03	0.01	-0.03	-0.03
Cmp-Suc1	0.16	0.10	0.85	-0.02	0.05	0.08	0.19	0.05	0.01	0.05	0.08	0.04
Cmp-Suc2	0.14	0.06	0.90	0.02	0.03	0.12	0.14	0.07	0.03	0.09	0.03	0.04
Cmp-Suc3	0.12	0.02	0.88	0.02	0.04	0.16	0.13	0.07	0.02	0.08	0.03	0.05
Cmp-Suc4	0.16	0.07	0.89	0.00	-0.02	0.15	0.13	0.08	0.04	0.06	0.02	0.03
Dom-Su1	0.09	0.08	0.20	-0.01	0.05	0.80	0.07	0.02	-0.04	0.17	0.09	-0.01
Dom-Su2	0.19	0.08	0.14	-0.03	-0.03	0.83	0.13	0.02	-0.06	0.16	0.05	0.08
Dom-Su3	0.08	0.02	0.13	0.03	0.07	0.82	0.07	-0.06	0.01	0.02	-0.04	-0.06
S-adpt	0.06	0.02	0.05	0.00	0.00	0.29	0.76	0.09	0.09	0.00	-0.01	0.11

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12
Dom-Cu1	0.09	0.11	0.15	-0.05	0.07	0.15	0.14	0.05	0.09	0.81	-0.03	0.06
Dom-Cu2	0.15	0.15	0.11	-0.02	0.02	0.27	0.16	0.07	0.01	0.74	0.08	0.15
Parent-Adpt	0.17	0.02	0.06	0.54	-0.13	-0.14	0.15	0.01	-0.07	0.35	0.16	-0.30
C-Adpt	0.02	0.08	0.23	0.01	0.03	0.04	0.77	0.01	-0.05	0.16	0.01	-0.06
I-Part	0.04	0.01	0.09	0.03	-0.12	0.04	0.07	0.56	-0.02	0.15	0.11	0.10
Pap	0.17	-0.01	0.04	0.01	-0.05	-0.03	-0.13	0.68	0.09	0.05	0.06	-0.03
Conf	0.00	0.02	0.04	0.03	0.18	0.01	0.05	0.72	0.02	-0.16	-0.09	0.07
Meet	0.17	0.10	0.06	0.14	0.16	-0.04	0.15	0.58	-0.03	0.06	-0.05	-0.04
Mod	0.78	0.06	0.10	0.01	-0.04	0.13	0.07	0.10	0.10	0.12	0.01	0.12
Legit	0.74	0.12	0.07	0.04	-0.02	0.18	0.17	0.03	0.09	0.11	0.21	0.08
Mature	0.62	0.10	0.16	0.10	0.37	0.09	0.04	0.02	0.11	-0.03	0.10	0.00
Cost-red	0.68	0.02	0.11	-0.01	0.26	0.03	0.16	-0.01	0.16	-0.01	0.08	0.07
Comp-red	0.54	-0.07	0.10	-0.07	0.43	-0.07	0.29	-0.13	0.05	0.01	-0.08	-0.06
New-Serv	0.77	0.00	0.13	0.10	0.06	0.06	-0.02	0.20	0.02	0.06	0.05	0.14
Org-Effic	0.80	0.07	0.09	0.00	0.09	0.04	0.03	0.20	0.06	0.06	0.13	0.11
Inf-Adpt	0.17	0.18	0.05	-0.07	-0.02	0.00	0.67	0.05	0.03	0.12	0.28	0.16
Ease	0.26	0.03	0.08	0.04	0.29	-0.02	0.16	0.04	0.05	0.09	0.19	0.73
Useful	0.45	0.05	0.14	0.05	0.08	0.01	0.06	0.12	0.05	0.16	0.16	0.69
Alt-cost	-0.20	0.04	-0.01	-0.03	-0.08	0.05	-0.07	-0.06	-0.88	-0.05	-0.05	0.03
Alt-tech	-0.20	-0.06	-0.06	-0.01	0.01	0.02	0.00	0.00	-0.86	-0.03	-0.11	-0.11
Comp-Impact	-0.13	0.05	-0.10	0.10	-0.58	-0.03	0.08	-0.04	-0.07	-0.18	-0.02	-0.27
Comp-undrstnd	-0.10	0.05	0.11	-0.13	-0.64	0.03	-0.02	-0.10	0.02	0.01	-0.03	-0.21
Comp-risk	-0.22	-0.14	0.01	-0.02	-0.58	-0.03	0.02	-0.02	0.07	0.03	0.03	-0.05
Comp-Cultr	-0.29	-0.17	-0.06	0.04	-0.12	-0.01	-0.18	-0.01	-0.06	-0.06	-0.69	-0.22
Comp-skills	-0.03	0.08	-0.07	-0.05	-0.62	-0.03	-0.04	0.04	-0.13	-0.02	-0.51	0.13
Comp-Stds	0.02	-0.01	-0.11	-0.07	-0.63	-0.13	0.02	-0.06	-0.07	0.05	-0.46	0.17
Comp-Mature	-0.22	-0.21	-0.05	-0.04	-0.14	-0.06	-0.19	-0.04	-0.09	-0.01	-0.75	-0.17
Expl.Var	4.43	3.40	3.57	1.98	2.54	2.41	3.28	1.86	1.68	1.65	1.99	1.55
Prp.Totl	10%	8%	8%	4%	6%	5%	7%	4%	4%	4%	5%	4%

Table 98: EFA Integrated Model - Max 5 Factors

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
ITDptSize	0.03	0.00	0.02	0.48	-0.07
NrEmployee	-0.06	-0.03	-0.15	0.60	-0.13
Innov	0.03	0.01	0.80	0.06	-0.01
Whit-Col	-0.07	0.12	0.63	0.23	0.03
Knowl	0.09	0.15	0.78	0.10	-0.07
Collab	0.01	0.11	0.81	-0.07	-0.03
Early-adpt	0.15	0.08	0.80	-0.10	0.03
Own-Adpt	0.55	0.22	0.42	-0.34	0.10
Cmp-Adpt	0.36	0.49	0.19	-0.30	0.22
Cmp-Suc1	0.22	0.76	0.04	0.05	0.02
Cmp-Suc2	0.17	0.81	-0.01	0.12	0.04
Cmp-Suc3	0.15	0.81	-0.04	0.10	0.01
Cmp-Suc4	0.17	0.81	0.00	0.13	0.06
Dom-Su1	-0.10	0.64	0.14	0.05	-0.28
Dom-Su2	-0.01	0.63	0.15	0.05	-0.22
Dom-Su3	-0.16	0.56	0.04	0.03	-0.28
S-adpt	0.37	0.40	0.14	-0.30	0.12
Dom-Cu1	0.18	0.41	0.19	0.03	-0.03
Dom-Cu2	0.21	0.44	0.27	0.05	-0.07
Parent-Adpt	0.15	0.11	0.09	0.25	0.16
C-Adpt	0.33	0.46	0.19	-0.35	0.20
I-Part	0.16	0.16	0.09	0.28	0.15
Pap	0.18	0.01	0.02	0.47	0.09
Conf	0.10	0.04	0.03	0.37	0.00
Meet	0.24	0.12	0.13	0.37	0.02
Mod	0.61	0.23	0.05	0.32	-0.05
Legit	0.64	0.25	0.16	0.21	-0.13
Mature	0.49	0.20	0.05	0.25	-0.40
Cost-red	0.64	0.16	-0.01	0.13	-0.27
Comp-red	0.53	0.15	-0.11	-0.09	-0.27
New-Serv	0.59	0.18	-0.02	0.45	-0.14
Org-Effic	0.66	0.15	0.07	0.36	-0.17
Inf-Adpt	0.54	0.25	0.33	-0.31	0.09
Ease	0.53	0.09	0.07	0.04	-0.34

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Useful	0.59	0.17	0.08	0.24	-0.19
Alt-cost	-0.47	0.06	0.08	-0.09	0.05
Alt-tech	-0.46	0.04	-0.02	-0.10	0.05
Comp-Impact	-0.21	-0.10	0.07	-0.04	0.53
Comp-undrstnd	-0.19	0.10	0.05	-0.09	0.54
Comp-risk	-0.15	-0.02	-0.09	-0.09	0.50
Comp-Cultr	-0.52	-0.09	-0.31	0.11	0.32
Comp-skills	-0.20	-0.06	0.02	0.14	0.67
Comp-Stds	-0.07	-0.12	-0.06	0.05	0.68
Comp-Mature	-0.46	-0.09	-0.35	0.09	0.37
Expl.Var	5.57877662	5.20921316	3.84183408	2.58231984	2.93460433
Prp.Totl	13%	12%	9%	6%	7%

26. Appendix M – Results of Further Correlation Analysis

26.1. Correlation Analysis Results – Initial Model

Table 99: Pearson Correlation Analysis - Initial Model Constructs

	Cmp-Adpt	Cmp-Suc	Dom-Su	Dom-Cu	Parent-Adpt	S-adpt	C-Adpt	I-Part	Complexity	Own-Adpt	NrEmployee	ITDptSize	Intention
Cmp-Adpt	1.000	0.427	0.202	0.235	0.167	0.563	0.607	0.097	-0.026	0.521	-0.128	0.026	0.121
Cmp-Suc	0.427	1.000	0.351	0.311	0.111	0.241	0.360	0.153	-0.065	0.230	-0.009	0.023	0.198
Dom-Su	0.202	0.351	1.000	0.377	0.027	0.308	0.188	0.071	-0.062	0.134	-0.008	0.002	0.081
Dom-Cu	0.235	0.311	0.377	1.000	0.137	0.242	0.301	0.152	-0.104	0.261	-0.062	-0.005	0.211
Parent-Adpt	0.167	0.111	0.027	0.137	1.000	0.062	0.165	0.102	0.036	0.191	0.307	0.251	0.179
S-adpt	0.563	0.241	0.308	0.242	0.062	1.000	0.563	0.144	-0.049	0.460	-0.091	0.031	0.105
C-Adpt	0.607	0.360	0.188	0.301	0.165	0.563	1.000	0.107	0.024	0.500	-0.124	0.015	0.162
I-Part	0.097	0.153	0.071	0.152	0.102	0.144	0.107	1.000	-0.027	0.110	0.081	0.012	0.051
Complexity	-0.026	-0.065	-0.062	-0.104	0.036	-0.049	0.024	-0.027	1.000	0.004	-0.109	-0.049	-0.017
Own-Adpt	0.521	0.230	0.134	0.261	0.191	0.460	0.500	0.110	0.004	1.000	-0.163	0.018	0.341
NrEmployee	-0.128	-0.009	-0.008	-0.062	0.307	-0.091	-0.124	0.081	-0.109	-0.163	1.000	0.669	0.084
ITDptSize	0.026	0.023	0.002	-0.005	0.251	0.031	0.015	0.012	-0.049	0.018	0.669	1.000	0.091
Intention	0.121	0.198	0.081	0.211	0.179	0.105	0.162	0.051	-0.017	0.341	0.084	0.091	1.000

The table above shows a Pearson correlation analysis of the initial model representing all constructs that make up super-ordinate constructs but excludes items (sub-constructs) that make up the constructs. N=331. Marked correlations, in red, are significant at the 95% level ($p < 0.05$)

Table 100: Pearson Correlation Analysis - Initial model - Complexity High (N=74)

	Cmp-Adpt	Cmp-Suc1	Cmp-Suc2	Cmp-Suc3	Cmp-Suc4	Cmp-Suc	Mimetic	Normative	Coercive	Intention
Cmp-Adpt	1.000	0.422	0.351	0.366	0.409	0.430	0.944	0.520	0.312	0.179
Cmp-Suc1	0.422	1.000	0.672	0.677	0.787	0.871	0.649	0.434	0.133	0.121
Cmp-Suc2	0.351	0.672	1.000	0.911	0.736	0.914	0.609	0.380	0.283	0.184
Cmp-Suc3	0.366	0.677	0.911	1.000	0.742	0.917	0.622	0.399	0.232	0.171
Cmp-Suc4	0.409	0.787	0.736	0.742	1.000	0.909	0.654	0.364	0.190	0.148
Cmp-Suc	0.430	0.871	0.914	0.917	0.909	1.000	0.703	0.436	0.231	0.172
Mimetic	0.944	0.649	0.609	0.622	0.654	0.703	1.000	0.568	0.330	0.204
Normative	0.520	0.434	0.380	0.399	0.364	0.436	0.568	1.000	0.388	0.158
Coercive	0.312	0.133	0.283	0.232	0.190	0.231	0.330	0.388	1.000	0.403
Intention	0.179	0.121	0.184	0.171	0.148	0.172	0.204	0.158	0.403	1.000

The table above shows a Pearson correlation analysis of the initial model representing only cases where complexity was perceived to be high i.e. a value of 5 up to 7. Neutral and low perceptions of complexity where excluded. N=74. Marked correlations, in red, are significant at the 95% level (p <0.05)

Table 101: Pearson Correlation Analysis - Initial Model - Complexity Low (N=172)

	Cmp-Adpt	Cmp-Suc1	Cmp-Suc2	Cmp-Suc3	Cmp-Suc4	Cmp-Suc	Mimetic	Normative	Coercive	Intention
Cmp-Adpt	1.000	0.450	0.370	0.344	0.377	0.417	0.911	0.689	0.276	0.084
Cmp-Suc1	0.450	1.000	0.779	0.761	0.784	0.899	0.733	0.265	0.297	0.194
Cmp-Suc2	0.370	0.779	1.000	0.817	0.880	0.944	0.696	0.284	0.346	0.187
Cmp-Suc3	0.344	0.761	0.817	1.000	0.777	0.908	0.661	0.251	0.354	0.147
Cmp-Suc4	0.377	0.784	0.880	0.777	1.000	0.936	0.697	0.289	0.341	0.180
Cmp-Suc	0.417	0.899	0.944	0.908	0.936	1.000	0.755	0.296	0.363	0.192
Mimetic	0.911	0.733	0.696	0.661	0.697	0.755	1.000	0.632	0.364	0.148
Normative	0.689	0.265	0.284	0.251	0.289	0.296	0.632	1.000	0.241	0.140
Coercive	0.276	0.297	0.346	0.354	0.341	0.363	0.364	0.241	1.000	0.227
Intention	0.084	0.194	0.187	0.147	0.180	0.192	0.148	0.140	0.227	1.000

The table above shows a Pearson correlation analysis of the initial model representing only cases where complexity was perceived to be low i.e. a value of 3 down to 1. Neutral and high perceptions of complexity where excluded. N=172. Marked correlations, in red, are significant at the 95% level (p <0.05)

Table 102: Spearman Correlation - Initial Model - Super-Ordinate Constructs (N=331)

	Mimetic	Coercive	Normative	Own-Adpt	ITDptSize	NrEmployee	Complexity	Intention
Mimetic	1.000	0.346	0.657	0.509	-0.030	-0.133	-0.073	0.191
Coercive	0.346	1.000	0.296	0.297	0.171	0.212	-0.028	0.277
Normative	0.657	0.296	1.000	0.546	-0.004	-0.130	0.006	0.164
Own-Adpt	0.509	0.297	0.546	1.000	-0.002	-0.176	0.002	0.375
ITDptSize	-0.030	0.171	-0.004	-0.002	1.000	0.687	-0.027	0.077
NrEmployee	-0.133	0.212	-0.130	-0.176	0.687	1.000	-0.086	0.077
Complexity	-0.073	-0.028	0.006	0.002	-0.027	-0.086	1.000	-0.029
Intention	0.191	0.277	0.164	0.375	0.077	0.077	-0.029	1.000

The table above shows a Spearman correlation analysis of the initial model super ordinate constructs representing all cases N =331. Marked correlations, in red, are significant at the 95% level (p <0.05)

Table 103: Spearman Correlation - Initial model (N=331)

	Cmp-Adpt	Cmp-Suc	Dom-Su	S-adpt	Dom-Cu	C-Adpt	Parent-Adpt	I-Part	Complexity	Own-Adpt	ITDptSize	NrEmployee	Intention
Cmp-Adpt	1.000	0.415	0.190	0.571	0.238	0.619	0.132	0.102	-0.052	0.533	-0.022	-0.144	0.146
Cmp-Suc	0.415	1.000	0.367	0.275	0.359	0.384	0.087	0.210	-0.061	0.218	-0.020	-0.018	0.194
Dom-Su	0.190	0.367	1.000	0.314	0.376	0.198	0.017	0.062	-0.089	0.126	-0.024	0.001	0.119
S-adpt	0.571	0.275	0.314	1.000	0.234	0.567	0.018	0.146	-0.028	0.458	0.004	-0.103	0.119
Dom-Cu	0.238	0.359	0.376	0.234	1.000	0.290	0.094	0.162	-0.105	0.261	-0.033	-0.064	0.224
C-Adpt	0.619	0.384	0.198	0.567	0.290	1.000	0.136	0.115	0.045	0.506	-0.016	-0.135	0.175
Parent-Adpt	0.132	0.087	0.017	0.018	0.094	0.136	1.000	0.097	0.047	0.129	0.255	0.330	0.159
I-Part	0.102	0.210	0.062	0.146	0.162	0.115	0.097	1.000	-0.017	0.110	0.001	0.077	0.059
Complexity	-0.052	-0.061	-0.089	-0.028	-0.105	0.045	0.047	-0.017	1.000	0.002	-0.027	-0.086	-0.029
Own-Adpt	0.533	0.218	0.126	0.458	0.261	0.506	0.129	0.110	0.002	1.000	-0.002	-0.176	0.375
ITDptSize	-0.022	-0.020	-0.024	0.004	-0.033	-0.016	0.255	0.001	-0.027	-0.002	1.000	0.687	0.077
NrEmployee	-0.144	-0.018	0.001	-0.103	-0.064	-0.135	0.330	0.077	-0.086	-0.176	0.687	1.000	0.077
Intention	0.146	0.194	0.119	0.119	0.224	0.175	0.159	0.059	-0.029	0.375	0.077	0.077	1.000

The table above shows a Spearman correlation analysis of the initial model representing all cases N=331. Marked correlations, in red, are significant at the 95% level (p <0.05)

26.2. Correlation Analysis and Hypothesis Testing – Initial Model

Table 104: Correlation Analysis & Hypotheses – Initial Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation	Spearman Correlation	Support found?
$H_1$1	Greater mimetic pressure will lead to greater intention to adopt UC	Mimetic	0.172	0.191	Yes
$H_1$2	Greater coercive pressure will lead to greater intention to adopt UC	Coercive	0.240	0.277	Yes
$H_1$3	Greater normative pressure will lead to greater intention to adopt UC	Normative	0.150	0.164	Yes
$H_1$1a	Greater extent of adoption of UC by competitors will lead to greater intent to adopt UC	Cmp-Adpt	0.121	0.146	Yes
$H_1$1b	Greater perceived success of competitors that have adopted UC will lead to greater intent to adopt UC	Cmp-Suc	0.198	0.194	Yes
$H_1$2a	Greater perceived dominance of suppliers that have adopted UC will lead to greater intent to adopt UC	Dom-Su	0.081	0.119	Yes
$H_1$2b	Greater perceived dominance of its customers that have adopted UC will lead to greater intent to adopt UC	Dom-Cu	0.211	0.224	Yes
$H_1$2c	Adoption of UC by parent company will lead to greater intention to adopt UC	Parent-Adpt	0.179	0.159	Yes
$H_1$3a	Greater extent of adoption of UC amongst suppliers will lead to a greater intention to adopt UC	S-Adpt	0.105	0.119	Yes
$H_1$3b	Greater extent of adoption of UC amongst its customers will lead to a greater intent to adopt UC	C-Adpt	0.162	0.175	Yes
$H_1$3c	Participation in associations that promote and disseminate information on UC will lead to greater intention to adopt UC	I-Part	0.051	0.059	No
$H_1$14	Mimetic pressure will have a more significant impact on intention to adopt UC when perceived complexity is higher than when it is lower	Mimetic when complexity is high	0.204	0.237	Limited
		Mimetic when complexity is low	0.148	0.156	

26.3. Correlation Results – Extended Model

Table 105: Pearson Correlation - Extended Model - Sub-Constructs

	Pap	Conf	Meet	Mod	Legit	Cost-red	Comp-red	New-Serv	Inf-Adpt	Intention
Pap	1.000	0.274	0.248	0.160	0.132	0.117	-0.011	0.276	0.064	0.133
Conf	0.274	1.000	0.342	0.081	0.039	0.057	0.042	0.151	0.007	0.092
Meet	0.248	0.342	1.000	0.187	0.180	0.130	0.114	0.223	0.144	0.183
Mod	0.160	0.081	0.187	1.000	0.696	0.501	0.310	0.595	0.223	0.257
Legit	0.132	0.039	0.180	0.696	1.000	0.492	0.343	0.560	0.341	0.292
Cost-red	0.117	0.057	0.130	0.501	0.492	1.000	0.523	0.477	0.243	0.331
Comp-red	-0.011	0.042	0.114	0.310	0.343	0.523	1.000	0.340	0.242	0.168
New-Serv	0.276	0.151	0.223	0.595	0.560	0.477	0.340	1.000	0.205	0.321
Inf-Adpt	0.064	0.007	0.144	0.223	0.341	0.243	0.242	0.205	1.000	0.303
Intention	0.133	0.092	0.183	0.257	0.292	0.331	0.168	0.321	0.303	1.000

The table above shows a Pearson correlation analysis of the extended model representing subconstructs of the major constructs. N=331. Marked correlations, in red, are significant at the 95% level ($p < 0.05$)

26.4. Correlation Analysis and Hypothesis Testing – Extended Model

Table 106: Correlation Analysis and Hypotheses - Extended Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation r value	Spearman Correlation r value	Support found?
$H_1$4a	Greater the perception that UC characterises a modern dynamic company will lead to a greater intent to adopt UC	Mod	0.257	0.314	Yes
$H_1$4b	Greater the perception that UC is a legitimate way to manage communication in its industry will lead to a greater intent to adopt UC	Legit	0.292	0.327	Yes
$H_1$5a	Greater extent of exposure to media covering UC will lead to a greater intent to adopt UC	Pap	0.133	0.130	Yes
$H_1$5b	Greater extent of participation in conferences including UC will lead to a greater intent to adopt UC	Conf	0.092	0.082	No
$H_1$5c	Greater extent of participation in meetings with peers discussing UC will lead to a greater intent to adopt UC	Meet	0.183	0.175	Yes
$H_1$6a	Greater perceived cost reductions derived from UC will lead to a greater intent to adopt UC	Cost-Red	0.331	0.368	Yes

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation r value	Spearman Correlation r value	Support found?
$H_1$6b	Greater perceived infrastructure complexity reductions from UC will lead to a greater intent to adopt UC	Comp-Red	0.168	0.170	Yes
$H_1$7a	The ability to offer new services to users will lead to a greater intent to adopt UC	New-Serv	0.321	0.342	Yes
$H_1$7b	Greater the extent of adoption of UC by users on an informal basis will lead to a greater intent to adopt UC	Inf-Adpt	0.303	0.345	Yes

26.5. Correlation Results – Integrated Model

Table 107: Pearson Correlation - Integrated Model – Sub-constructs

	Innov	Whit-Col	Knowl	Collab	Early-adpt	Mod	Legit	Mature	Cost-red	Comp-red	New-Serv	Org-Effic	Inf-Adpt	Ease	Useful	Alt-cost	Alt-tech	Comp-risk	Comp-Cultr	Comp-skills	Comp-Stds	Comp-Mature	Intention
Innov	1.00	0.45	0.51	0.60	0.72	0.12	0.17	0.14	0.09	-0.03	0.05	0.13	0.19	0.07	0.10	0.04	-0.05	-0.03	-0.23	-0.02	-0.02	-0.24	0.14
Whit-Col	0.45	1.00	0.53	0.43	0.31	0.07	0.19	0.10	-0.02	-0.08	0.06	0.07	0.15	-0.01	0.06	-0.01	-0.07	-0.02	-0.13	0.03	-0.03	-0.15	0.09
Knowl	0.51	0.53	1.00	0.66	0.54	0.15	0.19	0.17	0.15	0.11	0.10	0.17	0.29	0.14	0.15	-0.02	-0.10	-0.16	-0.24	-0.04	-0.11	-0.27	0.24
Collab	0.60	0.43	0.66	1.00	0.66	0.07	0.14	0.10	0.06	0.04	0.00	0.09	0.23	0.10	0.08	0.03	-0.03	-0.12	-0.20	-0.01	-0.08	-0.23	0.15
Early-adpt	0.72	0.31	0.54	0.66	1.00	0.14	0.18	0.09	0.13	-0.01	0.08	0.16	0.34	0.15	0.15	-0.02	-0.08	-0.07	-0.27	0.00	-0.03	-0.31	0.22
Mod	0.12	0.07	0.15	0.07	0.14	1.00	0.70	0.47	0.50	0.31	0.60	0.61	0.22	0.30	0.47	-0.22	-0.27	-0.16	-0.29	-0.08	-0.03	-0.21	0.26
Legit	0.17	0.19	0.19	0.14	0.18	0.70	1.00	0.53	0.49	0.34	0.56	0.58	0.34	0.29	0.47	-0.23	-0.26	-0.18	-0.48	-0.13	-0.10	-0.38	0.29
Mature	0.14	0.10	0.17	0.10	0.09	0.47	0.53	1.00	0.55	0.43	0.46	0.48	0.17	0.34	0.36	-0.23	-0.22	-0.30	-0.33	-0.28	-0.30	-0.29	0.19
Cost-red	0.09	-0.02	0.15	0.06	0.13	0.50	0.49	0.55	1.00	0.52	0.48	0.59	0.24	0.37	0.41	-0.30	-0.24	-0.18	-0.33	-0.25	-0.19	-0.31	0.33
Comp-red	-0.03	-0.08	0.11	0.04	-0.01	0.31	0.34	0.43	0.52	1.00	0.34	0.42	0.24	0.30	0.27	-0.21	-0.11	-0.26	-0.18	-0.25	-0.20	-0.22	0.17
New-Serv	0.05	0.06	0.10	0.00	0.08	0.60	0.56	0.46	0.48	0.34	1.00	0.73	0.20	0.33	0.47	-0.19	-0.22	-0.21	-0.28	-0.08	-0.09	-0.25	0.32
Org-Effic	0.13	0.07	0.17	0.09	0.16	0.61	0.58	0.48	0.59	0.42	0.73	1.00	0.23	0.36	0.50	-0.24	-0.25	-0.19	-0.35	-0.16	-0.12	-0.36	0.30
Inf-Adpt	0.19	0.15	0.29	0.23	0.34	0.22	0.34	0.17	0.24	0.24	0.20	0.23	1.00	0.32	0.29	-0.10	-0.14	-0.09	-0.39	-0.11	-0.06	-0.40	0.30
Ease	0.07	-0.01	0.14	0.10	0.15	0.30	0.29	0.34	0.37	0.30	0.33	0.36	0.32	1.00	0.72	-0.14	-0.19	-0.21	-0.34	-0.24	-0.20	-0.39	0.23
Useful	0.10	0.06	0.15	0.08	0.15	0.47	0.47	0.36	0.41	0.27	0.47	0.50	0.29	0.72	1.00	-0.17	-0.23	-0.20	-0.41	-0.12	-0.09	-0.34	0.27
Alt-cost	0.04	-0.01	-0.02	0.03	-0.02	-0.22	-0.23	-0.23	-0.30	-0.21	-0.19	-0.24	-0.10	-0.14	-0.17	1.00	0.66	0.02	0.15	0.17	0.11	0.20	-0.23
Alt-tech	-0.05	-0.07	-0.10	-0.03	-0.08	-0.27	-0.26	-0.22	-0.24	-0.11	-0.22	-0.25	-0.14	-0.19	-0.23	0.66	1.00	0.08	0.22	0.14	0.09	0.22	-0.25
Comp-risk	-0.03	-0.02	-0.16	-0.12	-0.07	-0.16	-0.18	-0.30	-0.18	-0.26	-0.21	-0.19	-0.09	-0.21	-0.20	0.02	0.08	1.00	0.17	0.25	0.29	0.17	-0.08
Comp-Cultr	-0.23	-0.13	-0.24	-0.20	-0.27	-0.29	-0.48	-0.33	-0.33	-0.18	-0.28	-0.35	-0.39	-0.34	-0.41	0.15	0.22	0.17	1.00	0.34	0.27	0.66	-0.33
Comp-skills	-0.02	0.03	-0.04	-0.01	0.00	-0.08	-0.13	-0.28	-0.25	-0.25	-0.08	-0.16	-0.11	-0.24	-0.12	0.17	0.14	0.25	0.34	1.00	0.59	0.35	-0.11
Comp-Stds	-0.02	-0.03	-0.11	-0.08	-0.03	-0.03	-0.10	-0.30	-0.19	-0.20	-0.09	-0.12	-0.06	-0.20	-0.09	0.11	0.09	0.29	0.27	0.59	1.00	0.34	-0.07
Comp-Mature	-0.24	-0.15	-0.27	-0.23	-0.31	-0.21	-0.38	-0.29	-0.31	-0.22	-0.25	-0.36	-0.40	-0.39	-0.34	0.20	0.22	0.17	0.66	0.35	0.34	1.00	-0.33
Intention	0.14	0.09	0.24	0.15	0.22	0.26	0.29	0.19	0.33	0.17	0.32	0.30	0.30	0.23	0.27	-0.23	-0.25	-0.08	-0.33	-0.11	-0.07	-0.33	1.00

The table above shows a Pearson correlation analysis of the integrated model representing sub-constructs of the major constructs. N=331. Marked correlations, in red, are significant at the 95% level (p <0.05)

26.6. Correlation Analysis and Hypothesis Testing – Integrated Model

Table 108: Correlation Analysis and Hypotheses - Integrated Model

Hypoth-eses	Description	Construct related to Intention	Pearson Correlation	Spearman Correlation	Support found?
$H_1$8a	The perception that an organisation is highly innovative will lead to greater intention to adopt UC	Innov	0.14	0.15	Yes
$H_1$8b	An organisation with many white-collar workers will be more likely to adopt UC than an organisation that does not have many white-collar workers	Whit-Col	0.09	0.10	No
$H_1$8c	The perception that an organisation is highly collaborative will lead to greater intention to adopt UC	Collab	0.15	0.15	Yes
$H_1$8d	The perception that an organisation is an early adopter will lead to greater intention to adopt UC	Early-Adpt	0.22	0.24	Yes
$H_1$8e	The perception that the organisation has many mobile collaborative knowledge workers will lead to a greater intention to adopt UC	Knowl	0.24	0.24	Yes
$H_1$9a	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar cost benefit, will lead to a lower intention to adopt UC	Alt-Cost	-0.23	-0.23	Yes
$H_1$9b	The perception that other approaches exist (that do not require the adoption of UC) that can provide a similar technical benefit, will lead to a lower intention to adopt UC	Alt-Tech	-0.25	-0.26	Yes
$H_1$10a	The expectation that users in the organisation will find UC very easy to use will lead to a greater intention to adopt UC	Ease	0.23	0.29	Yes
$H_1$10b	The expectation that users in the organisation will find UC useful will lead to a greater intention to adopt UC	Useful	0.27	0.31	Yes
$H_1$11a	The perception that UC does not fit the organisational culture will lead to a lower intention to adopt UC	Comp-Cultr	-0.33	-0.36	Yes
$H_1$11b	The perception that the organisation is not ready or mature enough to adopt UC will lead to a lower intention to adopt UC	Comp-Mature	-0.33	-0.38	Yes
$H_1$12a	The perception that UC introduces security risk into the organisation will lead to a lower intention to adopt UC	Comp-Risk	-0.08	-0.07	No
$H_1$12b	The perception that there are not enough standards and vendor interoperability will lead to a lower intention to adopt UC	Comp-Stds	-0.07	-0.06	No
$H_1$12c	The perception that UC skills are scarce which makes UC implementations risky will lead to a lower intention to adopt UC	Comp-Skills	-0.11	-0.14	Yes

27. Appendix N – Results of Multiple Regression Analysis

All marked values in red are where p<0.05.

27.1. MRA – Control Variables

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .36893140 R²= .13611038 Adjusted R²= .12818479
- F(3,327)=17.174 p<.00000 Std.Error of estimate: 1.1581

Table 109: MRA – Control Variables

	b*	Std.Err. of b*	b	Std.Err. of b	t(327)	p-value
Intercept			3.8791	0.2238	17.3332	0.0000
ITDptSize	-0.0205	0.0702	-0.0143	0.0488	-0.2923	0.7702
NrEmployee	0.1573	0.0712	0.0972	0.0440	2.2103	0.0278
Own-Adpt	0.3665	0.0529	0.2594	0.0374	6.9287	0.0000

27.2. MRA – Initial Model

27.2.1. MRA Initial Model - Level-1 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .26030540 R²= .06775890 Adjusted R²= .05920623
- F(3,327)=7.9225 p<.00004 Std.Error of estimate: 1.2030

Table 110: MRA Initial Model - Level 1 Constructs Only

	b*	Std.Err. of b*	b	Std.Err. of b	t(327)	p-value
Intercept			3.9402	0.3064	12.8593	0.0000
Coercive	0.2016	0.0572	0.2322	0.0659	3.5243	0.0005
Normative	0.0387	0.0696	0.0335	0.0604	0.5556	0.5789
Mimetic	0.0787	0.0706	0.0885	0.0793	1.1151	0.2656

27.2.2. MRA Initial Model - Level-2 Constructs

- Regression Summary for Dependent Variable: Intention
- R= .29736003 R²= .08842299 Adjusted R²= .06577511
- F(8,322)=3.9043 p<.00020 Std.Error of estimate: 1.1988

Table 111: MRA Initial Model - Level-2 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(322)	p-value
Intercept			3.6703	0.3893	9.4281	0.0000
Cmp-Suc	0.1403	0.0635	0.1912	0.0865	2.2100	0.0278
Dom-Su	-0.0396	0.0614	-0.0455	0.0706	-0.6448	0.5195
Dom-Cu	0.1489	0.0605	0.1544	0.0627	2.4623	0.0143
Cmp-Adpt	-0.0428	0.0746	-0.0320	0.0558	-0.5731	0.5669
S-adpt	0.0307	0.0713	0.0226	0.0525	0.4311	0.6667
C-Adpt	0.0605	0.0731	0.0483	0.0584	0.8269	0.4089
Parent-Adpt	0.1406	0.0547	0.0716	0.0279	2.5694	0.0106
I-Part	-0.0109	0.0546	-0.0278	0.1390	-0.2003	0.8414

27.2.3. MRA Initial Model - Level-3 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .33819176 R²= .11437367 Adjusted R²= .07513706
- F(14,316)=2.9150 p<.00035 Std.Error of estimate: 1.1928

Table 112: MRA Initial Model - Level-3 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(316)	p-value
Intercept			3.6393	0.4023	9.0465	0.0000
Cmp-Adpt	-0.0557	0.0758	-0.0417	0.0567	-0.7354	0.4626
S-adpt	0.0192	0.0718	0.0141	0.0529	0.2674	0.7894
C-Adpt	0.0571	0.0731	0.0457	0.0584	0.7814	0.4352
Parent-Adpt	0.1409	0.0550	0.0718	0.0280	2.5626	0.0109
I-Part	-0.0064	0.0547	-0.0162	0.1390	-0.1169	0.9070
Cmp-Suc1	0.1541	0.0988	0.1983	0.1272	1.5599	0.1198
Cmp-Suc2	0.1219	0.1261	0.1536	0.1589	0.9669	0.3343
Cmp-Suc3	-0.0733	0.1084	-0.0947	0.1400	-0.6764	0.4993
Cmp-Suc4	-0.0519	0.1173	-0.0628	0.1420	-0.4425	0.6584
Dom-Su1	0.0290	0.0812	0.0275	0.0772	0.3565	0.7217

	b*	Std.Err. of b*	b	Std.Err. of b	t(316)	p-value
Dom-Su2	0.1310	0.0890	0.1397	0.0950	1.4708	0.1423
Dom-Su3	-0.1809	0.0718	-0.1805	0.0717	-2.5182	0.0123
Dom-Cu1	0.0695	0.0705	0.0615	0.0625	0.9851	0.3253
Dom-Cu2	0.0620	0.0750	0.0609	0.0736	0.8275	0.4086

27.3. MRA – Extended Model

27.3.1. MRA Extended Model - Level-1 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .41382273 R²= .17124925 Adjusted R²= .15590202
- F(6,324)=11.158 p<.00000 Std.Error of estimate: 1.1395

Table 113: MRA Extended Model - Level-1 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(324)	p-value
Intercept			2.5536	0.4060	6.2902	0.0000
Coercive*	0.1295	0.0516	0.0660	0.0263	2.5097	0.0126
Normative*	0.0046	0.0663	0.0040	0.0575	0.0697	0.9444
Mimetic	-0.0001	0.0679	-0.0001	0.0763	-0.0008	0.9994
FashionSet	0.1131	0.0517	0.4175	0.1911	2.1847	0.0296
Progressivens	0.0984	0.0635	0.1320	0.0852	1.5483	0.1225
Intrnl-Benf	0.2688	0.0657	0.3438	0.0840	4.0947	0.0001

27.3.2. MRA Extended Model - Level-2 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .47291750 R²= .22365096 Adjusted R²= .19181330
- F(13,317)=7.0247 p<.00000 Std.Error of estimate: 1.1150

Table 114: MRA Extended Model - Level-2 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(317)	p-value
Intercept			2.1565	0.4355	4.9515	0.0000
Computd-Cmp-Suc	0.0593	0.0576	0.0807	0.0785	1.0282	0.3047
Computd-Att2Usrs	0.2905	0.0674	0.3474	0.0806	4.3087	0.0000
Cmp-Adpt	-0.0891	0.0708	-0.0666	0.0529	-1.2581	0.2093
S-adpt	-0.0741	0.0656	-0.0546	0.0483	-1.1292	0.2597
C-Adpt	0.0608	0.0687	0.0486	0.0549	0.8858	0.3764
Pap	0.0030	0.0547	0.0098	0.1769	0.0552	0.9560
Conf	0.0511	0.0548	0.1266	0.1358	0.9320	0.3521
Meet	0.0596	0.0554	0.1485	0.1380	1.0761	0.2827
Parent-Adpt	0.1102	0.0519	0.0561	0.0264	2.1237	0.0345
Mod	-0.0168	0.0723	-0.0203	0.0872	-0.2322	0.8166
Legit	0.0495	0.0747	0.0626	0.0945	0.6628	0.5079
Cost-red	0.2204	0.0655	0.2192	0.0652	3.3637	0.0009
Comp-red	-0.0656	0.0597	-0.0583	0.0531	-1.0985	0.2728

27.3.3. MRA Extended Model - Level-3 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .47755476 R^2= .22805855 Adjusted R^2= .18613202
- F(17,313)=5.4395 p<.00000 Std.Error of estimate: 1.1189

Table 115: MRA Extended Model - Level-3 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(313)	p-value
Intercept			2.1316	0.4547	4.6877	0.0000
Cmp-Adpt	-0.0972	0.0723	-0.0726	0.0541	-1.3436	0.1801
S-adpt	-0.0627	0.0670	-0.0462	0.0493	-0.9364	0.3498
C-Adpt	0.0535	0.0709	0.0428	0.0567	0.7548	0.4510
Pap	0.0042	0.0553	0.0137	0.1791	0.0766	0.9390
Conf	0.0451	0.0555	0.1118	0.1376	0.8129	0.4169
Meet	0.0594	0.0559	0.1480	0.1391	1.0635	0.2884
Parent-Adpt	0.1109	0.0527	0.0565	0.0268	2.1049	0.0361
Mod	-0.0227	0.0759	-0.0273	0.0916	-0.2987	0.7654
Legit	0.0455	0.0755	0.0576	0.0956	0.6022	0.5475
Cost-red	0.2044	0.0672	0.2033	0.0668	3.0416	0.0026
Comp-red	-0.0554	0.0611	-0.0493	0.0543	-0.9081	0.3645

	b*	Std.Err. of b*	b	Std.Err. of b	t(313)	p-value
Cmp-Suc1	0.0759	0.0935	0.0977	0.1203	0.8117	0.4176
Cmp-Suc2	0.1191	0.1195	0.1500	0.1506	0.9961	0.3200
Cmp-Suc3	-0.0981	0.1028	-0.1267	0.1328	-0.9537	0.3410
Cmp-Suc4	-0.0293	0.1095	-0.0355	0.1326	-0.2676	0.7892
Inf-Adpt	0.2320	0.0625	0.1721	0.0464	3.7091	0.0002
New-Serv	0.1477	0.0693	0.1965	0.0921	2.1326	0.0337

27.4. MRA – Integrated Model

27.4.1. MRA Integrated Model - Level-1 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .47688942 R²= .22742352 Adjusted R²= .20328050
- F(10,320)=9.4198 p<.00000 Std.Error of estimate: 1.1071

Table 116: MRA Integrated Model - Level-1 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(320)	p-value
Intercept			3.8975	0.8403	4.6381	0.0000
Mimetic	0.0251	0.0566	0.0341	0.0770	0.4431	0.6580
Coercive	0.1086	0.0544	0.1250	0.0627	1.9948	0.0469
Normative*	0.0079	0.0580	0.0074	0.0547	0.1360	0.8919
Fashion-Set*	0.0673	0.0515	0.2699	0.2066	1.3067	0.1923
Progressivns*	0.1359	0.0652	0.2006	0.0963	2.0832	0.0380
User	0.0341	0.0606	0.0471	0.0835	0.5639	0.5732
Risks	0.0692	0.0547	0.0919	0.0726	1.2653	0.2067
Cultr	-0.2191	0.0628	-0.2267	0.0649	-3.4913	0.0005
Alternatives	-0.1448	0.0525	-0.2029	0.0735	-2.7596	0.0061
Organisation	0.0821	0.0534	0.0863	0.0561	1.5376	0.1251

27.4.2. MRA Integrated Model - Level-2 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .54121419 R²= .29291279 Adjusted R²= .21698397
- F(32,298)=3.8577 p<.00000 Std.Error of estimate: 1.0975

Table 117: MRA Integrated Model - Level-2 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(298)	p-value
Intercept			3.8994	0.8929	4.3671	0.0000
Cmp-Suc	0.0547	0.0611	0.0745	0.0832	0.8947	0.3717
Dom-Su	-0.0190	0.0593	-0.0219	0.0682	-0.3211	0.7484
Dom-Cu	0.0322	0.0589	0.0334	0.0611	0.5466	0.5851
Parent-Adpt	0.1162	0.0529	0.0592	0.0270	2.1945	0.0290
Innov	-0.0480	0.0767	-0.0448	0.0716	-0.6261	0.5318
Knowl	0.0898	0.0705	0.0723	0.0567	1.2743	0.2036
Collab	0.0052	0.0784	0.0045	0.0688	0.0661	0.9473
Early-adpt	0.0816	0.0834	0.0649	0.0663	0.9780	0.3289
Cmp-Adpt	-0.1091	0.0722	-0.0816	0.0539	-1.5127	0.1314
S-adpt	-0.0538	0.0685	-0.0396	0.0505	-0.7847	0.4333
C-Adpt	0.0719	0.0704	0.0574	0.0562	1.0216	0.3078
Inf-Adpt	0.1142	0.0672	0.0847	0.0499	1.6990	0.0904
I-Part	-0.0478	0.0547	-0.1216	0.1390	-0.8750	0.3823
Pap	0.0134	0.0558	0.0434	0.1804	0.2406	0.8100
Conf	0.0666	0.0566	0.1652	0.1404	1.1762	0.2404
Meet	0.0586	0.0559	0.1459	0.1391	1.0488	0.2951
Mod	-0.0006	0.0771	-0.0007	0.0930	-0.0073	0.9942
Legit	-0.0142	0.0822	-0.0179	0.1041	-0.1722	0.8634
Mature	-0.0886	0.0690	-0.0969	0.0755	-1.2838	0.2002
Cost-red	0.2066	0.0711	0.2054	0.0707	2.9042	0.0040
Comp-red	-0.0239	0.0639	-0.0212	0.0568	-0.3737	0.7089
New-Serv	0.1773	0.0797	0.2359	0.1060	2.2254	0.0268
Org-Effic	-0.0728	0.0840	-0.0850	0.0981	-0.8661	0.3872
Ease	0.0040	0.0765	0.0048	0.0927	0.0522	0.9584
Useful	-0.0025	0.0833	-0.0034	0.1126	-0.0300	0.9761
Alt-cost	-0.0428	0.0695	-0.0541	0.0879	-0.6159	0.5384
Alt-tech	-0.1027	0.0690	-0.1321	0.0887	-1.4887	0.1376
Comp-risk	0.0238	0.0554	0.0249	0.0579	0.4294	0.6679
Comp-skills	-0.0043	0.0655	-0.0044	0.0667	-0.0658	0.9476
Comp-Stds	0.0560	0.0649	0.0552	0.0640	0.8623	0.3892
Comp-Cultr	-0.1130	0.0744	-0.1163	0.0765	-1.5194	0.1297

	b*	Std.Err. of b*	b	Std.Err. of b	t(298)	p-value
Comp-Mature	-0.1006	0.0742	-0.0878	0.0648	-1.3561	0.1761

27.4.3. MRA Integrated Model - Level-3 Constructs

- N=331
- Regression Summary for Dependent Variable: Intention
- R= .55103925 R²= .30364425 Adjusted R²= .21302261
- F(38,292)=3.3507 p<.00000 Std.Error of estimate: 1.1003

Table 118: MRA Integrated Model - Level-3 Constructs

	b*	Std.Err. of b*	b	Std.Err. of b	t(292)	p-value
Intercept			3.9847	0.9026	4.4146	0.0000
Parent-Adpt	0.1109	0.0538	0.0565	0.0274	2.0631	0.0400
Innov	-0.0460	0.0780	-0.0429	0.0728	-0.5898	0.5558
Knowl	0.0913	0.0710	0.0735	0.0572	1.2857	0.1996
Collab	0.0050	0.0794	0.0044	0.0697	0.0631	0.9497
Early-adpt	0.0708	0.0849	0.0562	0.0675	0.8332	0.4054
Cmp-Adpt	-0.1087	0.0735	-0.0813	0.0549	-1.4789	0.1403
S-adpt	-0.0630	0.0694	-0.0464	0.0511	-0.9073	0.3650
C-Adpt	0.0649	0.0713	0.0518	0.0570	0.9101	0.3635
Inf-Adpt	0.1240	0.0684	0.0920	0.0508	1.8126	0.0709
I-Part	-0.0368	0.0555	-0.0937	0.1411	-0.6640	0.5072
Pap	0.0069	0.0562	0.0225	0.1817	0.1236	0.9017
Conf	0.0590	0.0574	0.1462	0.1422	1.0279	0.3049
Meet	0.0597	0.0563	0.1488	0.1403	1.0604	0.2898
Mod	0.0001	0.0784	0.0001	0.0946	0.0010	0.9992
Legit	-0.0254	0.0830	-0.0321	0.1051	-0.3057	0.7600
Mature	-0.0810	0.0701	-0.0885	0.0766	-1.1552	0.2489
Cost-red	0.1945	0.0723	0.1934	0.0718	2.6916	0.0075
Comp-red	-0.0071	0.0655	-0.0064	0.0582	-0.1092	0.9132
New-Serv	0.1877	0.0810	0.2498	0.1077	2.3189	0.0211
Org-Effic	-0.0894	0.0851	-0.1043	0.0993	-1.0505	0.2944
Ease	-0.0107	0.0775	-0.0129	0.0939	-0.1375	0.8908
Useful	0.0095	0.0842	0.0128	0.1137	0.1125	0.9105
Alt-cost	-0.0646	0.0706	-0.0817	0.0893	-0.9153	0.3608
Alt-tech	-0.0905	0.0695	-0.1165	0.0894	-1.3028	0.1937

Comp-risk	0.0286	0.0560	0.0299	0.0585	0.5112	0.6096
Comp-skills	-0.0031	0.0666	-0.0032	0.0679	-0.0472	0.9624
Comp-Stds	0.0505	0.0655	0.0498	0.0646	0.7713	0.4411
Comp-Cultr	-0.1114	0.0766	-0.1147	0.0789	-1.4540	0.1470
Comp-Mature	-0.0926	0.0746	-0.0808	0.0651	-1.2411	0.2156
Cmp-Suc1	0.0631	0.0940	0.0812	0.1209	0.6710	0.5027
Cmp-Suc2	0.1338	0.1214	0.1685	0.1530	1.1018	0.2715
Cmp-Suc3	-0.0517	0.1061	-0.0668	0.1370	-0.4875	0.6262
Cmp-Suc4	-0.0902	0.1129	-0.1092	0.1367	-0.7989	0.4250
Dom-Su1	0.0395	0.0778	0.0375	0.0739	0.5072	0.6124
Dom-Su2	0.0774	0.0876	0.0826	0.0934	0.8840	0.3774
Dom-Su3	-0.1175	0.0696	-0.1172	0.0694	-1.6889	0.0923
Dom-Cu1	0.0192	0.0667	0.0170	0.0591	0.2882	0.7734
Dom-Cu2	-0.0054	0.0723	-0.0053	0.0710	-0.0744	0.9407