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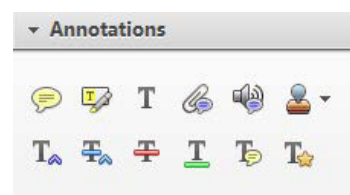
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Determinants of perceived information need for emerging ICTs adoption

Information
need

A study of UK small service businesses'

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Abstract

Purpose – Most studies in information behaviour have focussed on information behaviour aspects such as environmental uncertainty, scanning behaviour of top management executives, student and women information behaviour, information source and credibility, while little is known about the information behaviour of small- and medium-sized enterprises (SMEs) when the need for emerging information and communication technology (EICT) adoption decision-making arises. This paper, therefore, aims to explore the major determinants of perceived information need for EICT adoption by UK small service-oriented businesses.

Design/methodology/approach – The study adopted qualitative method to explore 13 key determinants of SME managers' information behaviour for EICT adoption decision-making by using both unstructured and semi-structured interviews at two different stages with 20 participants drawn purposeful from Luton directories.

Findings – The study developed an extended technology, organisation and environment (TOE) framework by identifying and incorporating the information context which helped to unveil 13 key determinants of perceived information need and their impact on EICT adoption decision-making in SMEs. This further provided insight into understanding SMEs' information behaviour. While the determinants associated with TOE and information contexts influence SMEs' perceived information need for EICT adoption, the extent at which these four constructs shape SMEs' perceived information need for EICT adoption decision-making differs.

Research limitations/implications – The limitation of this study emerged because of the use of qualitative methodologies in relation to the research design, rigour in the collection and management of the large volume of the raw data, the data analysis and the credibility of the findings. This may lead to unforeseen respondent – and research – bias in the data analysis, which may lead to limited understanding of alternatives and insights into the key determinants of perceived information need for EICT adoption decision. Hence, other measures and approaches such as case study and mix-method could be deployed to further validate the findings. Also, one of the limitations of qualitative study has been the issue of theoretical generalizability of the framework. The generalizability of the formwork needs to be established across a wider range of population. Future studies may apply a confirmatory statistical techniques to test and ascertain the validity



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and reliability of the framework across a wider population. Such studies may be used as a benchmark for the theoretical constructs and the factors that may lead to success or failure of mobile marketing technology adoption.

Originality/value – The study has further enriched TOE framework and provided an analytical dimension for exploring key determinants of SMEs' perceived information need for EICT adoption decision-making. It also demonstrates the capacity to provide a reliable explanation of the determinants and serves as a tool for evaluating the benefits or challenges of SMEs' information behaviours when the need for EICT adoption arises.

Keywords Adoption, ICT, TOE, EICT, Mangers' information behaviour, Small service business

Paper type Research paper

Introduction

The complex nature of emerging information and communication technology (ICT), the unpredictable nature of its change and the changes to government policies have continually put pressure on small- and medium-sized enterprises (SMEs) to scan and gather the most relevant and up-to-date information aimed at assisting them in making effective decisions for new technology applications. Although ICTs have unlocked diverse opportunities for businesses, it has become challenging for SMEs because it opens them up to uncertainties and risks. Hence, information has become vital for SMEs' decision-making in a bid to minimise the risks and uncertainties (Simpson and Docherty, 2004). Small businesses respond to economic growth daily and contribute enormously to job creation (Hosseini *et al.*, 2012; Eze and Chinedu-Eze, 2018a; Taylor and Murphy, 2004; Eze *et al.*, 2018c). The growth has not only been facilitated by SMEs' performances alone, but by the use of emerging ICTs. Emerging information and communication technology (EICT) in this research is defined as an entirely new ICT developed or an improved version (Eze *et al.*, 2014). Though these applications are regularly changing and shaping the manner small businesses get in touch with their customers, their adoption and implementation are vital for the existence and development of SMEs and may demonstrate why many SMEs today are successful (Cosh *et al.*, 1999). However, small businesses are faced with numerous challenges such as strict competitive business environment, reduced awareness of new technologies, financial limitations, inadequate training, safety and security issues, inability to understand the strategic implication of the ICT, insufficient resources, poor know of the financial benefit associated with emerging ICT, issues of uncertainty about the benefits of the new technology and ignorance on the contemporary policy of the government at all levels put together, hinder SMEs in adopting and implementing new ICT (Wilson, 1981; Eze *et al.*, 2014, 2018a; Khajeh-Hosseini *et al.*, 2012; Timmers and Glas, 2010; Eze *et al.*, 2018b; Bruque and Moyano, 2007; Culkin and Smith, 2000; Consoli, 2012; Stockdale and Standing, 2004). These challenges have continually put pressure on SMEs. Therefore, to avoid ICT adoption failure, as nearly two-thirds of IT adoption schemes continuously fail (Barrett *et al.*, 2006; Griffith, 1999), SMEs must persistently search, gather and document appropriate information that will aid in making the practical decision for the implementation of new IT solutions.

However, despite the numerous challenges encountered by SMEs (Citroen, 2011), and the significant attempt made by researchers to examine information behaviour (Dervin, 1993; Ellis, 1989; Ellis *et al.*, 1993; Wilson, 1997; Ingwersen, 1996; Alshamaila *et al.*, 2013; Daneshgar *et al.*, 2013; Eze and Chinedu-Eze, 2018b; Dwivedi *et al.*, 2009a; Martin and Matlay, 2001; Nguyen *et al.*, 2015; Ghobakhloo *et al.*, 2013; Daniel *et al.*, 2002), in the past, many studies have focussed on one aspect of information behaviour (Auster and Choo, 1993; Yunjie *et al.*, 2006; Ole Pors, 2008; Urquhart and Yeoman, 2010), while others researchers

AQ: 2

(Agarwal *et al.*, 2011; Jogaratnam and Wong, 2009) have extrapolated the findings associated with information behaviours of individuals and group as if SMEs operate in the same way or environment, there is still dearth of studies that have explored the critical determinants of perceived information need for EICT adoption decision-making in UK SMEs. Johnston *et al.* (2007) have argued that studies should examine factors influencing SMEs information behaviour and that a new framework should be advocated on the adoption decision-making process of SME as no frequently used theory satisfactorily describes small firm adoption decision because each one of them ignores an important aspect of small business idiosyncrasy (Dwivedi *et al.*, 2009a). This paper, therefore, attempts to explore the significant determinants of SMEs perceived information need for EICT adoption decision-making in service small businesses in the UK to develop a conceptual framework that would serve as a frame of reference to small business owners who may want to have a deeper insight and a common understanding of the determinants of perceived information need for new ICT adoption implementation. This is pertinent given that examining issues relating to SMEs is not just about extrapolating the findings of other studies and testing their variables but rather a detailed exploratory study in the small business sector has many advantages (Gilmore and Carson, 2007). The contribution of this study may help SMEs reduce the time spent in search of information for decision-making as research (De Saulles, 2007) has revealed that SMEs wasted nearly £3.7bn on time spent using the internet as a tool for information search. To achieve this purpose, the paper draws on technology, organisation and environment (TOE) framework developed by Tornatzky *et al.* (1990) because the TOE framework provides a more robust theoretical foundation (Alshamaila *et al.*, 2013) which may have the capability to unravel broad variables that may shape information behaviour of SMEs managers as the research is qualitative in nature. The framework also provides a significant analytical tool for examining the adoption decision of wide-range of IT innovation behaviour (Oliveira and Martins, 2011).

Literature review

The UK small service small- and medium-sized enterprises

Presently, in the European Union, SMEs are close to 18 million which account for about 59 per cent of the Gross Domestic Product and provide over 60 per cent of the job creation. More specifically, studies have stressed the significance of ICT to small businesses in particular and the economy at large (Simpson and Docherty, 2004; Lip-Sam and Hock-Eam, 2011; Harvie, 2010). The UK has about 4.9 million businesses, and 99 per cent of these firms are considered to be small and employ workers between 1 and 250. Out of this number of companies, 95 per cent (4.7 million) of these businesses are micro-businesses and create employment of about 32 per cent in the UK (Eze *et al.*, 2018). Small business around the world is critical drivers to employment generation, growth and development (Lindermann *et al.*, 2009; Tilley and Tonge, 2003; Martin and Halstead, 2004; Ritchie and Brindley, 2005). In particular, the service sector performs a very substantial role (Bruhn *et al.*, 2010; Paredada *et al.*, 2011; Mutuala and Brakel, 2006; Shane, 2003; Dahnil *et al.*, 2014). In the UK, SMEs are growing (Lee, 2004) because they receive numerous supports by the government (Ongori and Migiro, 2010) and represent various kinds of businesses and creates over 70 per cent of jobs, skills and innovation development and an additional gross worth of about 60 per cent (Castro *et al.*, 2010). However, with the emergence of globalisation and the implementation of new technologies, there has been a disparity between SMEs in the past and the present (Milla and Choi, 2011), which has increased the activities of services SMEs in the UK.

The paper focusses on UK small service businesses because the sector accounts for about 18 per cent of the entire UK's national output and has continued to top the list as the leading

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economic driver and promoter of both the private and public sectors (Eze and Chinedu-Eze, 2018b). However, despite the serious hard work of the industry to advance the economy (Rantapuska and Ihanainen, 2008), the industry has continually encountered challenges in implementing and adopting new technology applications. Even when they try to achieve such use, they consider such as short-term aids (Gbandi and Amissah, 2014; Maduka *et al.*, 2016) and neglect the long-term rewards (Rantapuska and Ihanainen, 2008; Metaxiotis, 2009). They have invariably ignored the fact that minor changes in their ICT adoption strategy can lead to competitive advantage.

Theoretical underpinning

Technology, organisation and environment framework

According to Merono-Cerdan, (2008), the TOE framework focusses on the characteristic features of technology and the factors stimulating its adoption and diffusion. The structure unveiled a broad range of factors that can assist in unravelling information behaviours of small business managers for emerging ICT adoption. The TOE framework centres on three contextual elements (TOE) that shapes a firm's ICT adoption decision-making. Technological context examines the technology in the organisation and those outside the organisation; organisational context looks at factors associated with the size of the organisation and its scope, scope, the complex nature and the structure of the top executives and the workforce.

On the other hand, the environmental context examines how such variables like competition, business practice, and government, trading partners shapes the organisation (Tornatzky and Fleischer, 1990). According to Rogers (1983), the leaders' physiognomies and the internal and external organisation characteristics are adoption predictors (Merono-Cerdan, 2008; Zhu *et al.*, 2003). The leaders' physiognomies are linked to the leader's attitude to change, while the organisation characteristics are associated with the organisation design. Zhu *et al.* (2003) think that because individuals that make decisions in a firm are internal to the firm, Rogers's innovation diffusion (DOI) is closely related to TOE adoption predictors. Although the DOI and the TOE centred on the features of a technology, which seems to be closely related to technology acceptance model, perceived usefulness and perceived ease of use, technology adoption is greatly influenced by the firms' arrangement, which in turn is shaped by the firms' environment.

While a large number of information behaviour theories (Dervin, 1998; Ellis, 1989; Ellis *et al.*, 1993; Wilson, 1999; Ingwersen, 1996; Kuhlthau, 1991) and ICT adoption theories (Rogers, 1983; Rogers, 1995; Venkatesh *et al.*, 2003; Porter, 1985; Premkumar, 2003; Adams *et al.*, 1992; Pavlou and Fygenson, 2006; Ajzen and Fishbein, 1980; Davis, 1989) have been used in the past and considered the most regularly used theories by scholars to explain either information behaviour and IT adoption decisions in SMEs (Parker and Castleman, 2009; Williams *et al.*, 2009), most of these models or theories were not developed to meet or used in SME context because of their narrow views (Rantapuska and Ihanaine, 2008). Although Dwivedi *et al.* (2009a) examined frequently used adoption theories in this area and stress that no regularly used argument sufficiently defines SMEs' adoption decision because each abandoned some vital aspect of SME idiosyncrasy, their finding resulted in advocating and promoting for the establishment of an integrated theoretical framework. The TOE framework provides a broader and necessary analytical context to examine critical determinants of SME managers information sources on adoption decision of new ICT (Oliveira and Martins, 2011) because TOE has richer variables which shape the attitude and behaviour of small business managers (Tornatzky and Fleischer, 1990). Hence, the study adopted the TOE framework because it can reveal the key determinants that shape SMEs

information sources for new ICT. The critical components of the structure are discussed below:

Information
need

Technological context includes internal, external, past and future technologies and extends to those who have to be tried or tested which are available to the market place and considered appropriate for the organisation to function effectively (Gupta *et al.*, 2013; Gutierrez *et al.*, 2015; Oliveira and Martins, 2011). According to Liao *et al.* (2003), information acquired by businesses either within or outside the organisation will stimulate innovation. Hence, organisations must consider the type of changes that will lead to technology adoption (Baker, 2012). Therefore, technology context is linked to those internal variables SMEs cautiously consider and shape their information behaviour before adopting new technology. Research works (Alshamaila *et al.*, 2013; Ramdani *et al.*, 2013; Zhu *et al.*, 2003; Markus and Tanis, 2000; Grandon and Pearson, 2004; To and Ngai, 2006) have assess and used these variables (e.g compatibility, relative advantages and perceived affordability) which today is considered as a theoretical direction which a substantial number of research studies have adopted in investigating information behaviour and firm's ICT adoption decision-making.

The organisation context looks at the resources, size, features of the business and how the firm communication procedures influence organisations information behaviour and ICT adoption decisions. Baker (2012) stressed that such variables significantly shape organisations information behaviour and the implementation process of new ICT and makes adoption decision easier. Although studies (Ramdani *et al.*, 2013; Thong, 1999; Gutierrez *et al.*, 2015) have examined variables related to the organisation context such as perceived employee acceptance, owner support which are linked to the organisation context, most studies focussed on EICT adoption, while little is known about how organisations gather and document information that significantly shapes their choice of ICT and its implementation.

The environmental context considers both the internal and external factors that shape SMEs positively and undesirable. This includes the environments where the business is conducted as a result of the policies of the government coupled with globalisation (Mehrtens *et al.*, 2001; Chau and Tam, 1997; Nguyen *et al.*, 2015). The environmental context helps to understand the internal and external information that aid SMEs' information sources and ICT adoption decision-making process (Andries and Debackere, 2006) because most times, changes may happen within the environment that may impact negatively or positively the decision of the business. Hence, the capacity of a firm to have a competitive advantage over its competitors may be explored through the internal environment variable. While top business executives support may influence the information systems efficiency, however, the external information systems experts maybe even much more central for small businesses carrying out their operations in a highly sophisticated environment (Thong *et al.*, 1996). Although some of the variables attached to the environmental context may shape SME managers' information behaviours and have been discussed in literature, such factors extend to competitor intelligence gathering (Oliveira and Martins, 2010), provider credibility (Nguyen, 2009), perceived technology market growth (Ramdani *et al.*, 2013), information gathering on customers (Mehrtens *et al.*, 2001; Premkumar and Roberts, 1999) and Government policy (Kuan and Chau, 2001). Therefore, the TOE framework may help unrevealing the information behaviour of SME managers, reduce EICT adoption failure because it encompasses a broader range of factors.

In summary, the study was underpinned by the TOE framework based on some factors. TOE framework absorbs the limitation of the dominant technology perspectives and serves as a useful analytical tool to differentiate the drivers and intrinsic characteristics of an

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innovation capabilities and other environmental conditions of the adoption firm (Rui, 2007), The TOE framework integrates the environmental context which has to a large extent neglected by innovation diffusion theory (IDT). This integration has helped in the explanation of the intra-firms innovation adoption better than the IDT (Oliveira and Martins, 2011; Maduku *et al.*, 2016). Also, the TOE is a more robust theoretical foundation (Alshamaila *et al.*, 2013) which may have the capacity to unravel broad factors influencing the information behaviour of SMEs. The TOE framework also provides a significant analytical tool for explaining the adoption decision of wide-ranging IT innovations (Oliveira and Martins, 2011). The elements of the TOE framework form the bases for the exploration of all-inclusive variables and the development of a structure that may reduce uncertainties associated with EICT based on the conceptual framework presented in Figure 1. The conceptual framework demonstrates that perceived information need for EICT by SMEs may be shaped by specific determinants associated with technology context, organisation context and environment context which may impact SMEs decision-making for EICT adoption.

F1

Method

Sampling

This research adopted purposive random sampling because the investigation is not quantitative in nature, which aimed at discovering and explaining the participants’ real-life cases and experiences and select units of analysis at the single level (SMEs) aimed at assisting the researcher in making a reasonable evaluation based on the research objectives instead of statistical generalisation (Mason, 1996). It is important to note that the researchers further adopted snowball sampling which complimented the purposeful sampling because other participants assist the researchers by introducing other participants that were also interviewed. This was so because observation shows that most decisions on EICTs by SMEs usually are left in the hand of the managers considering their nature, structure and size. Hence the study selected SME managers from some service-oriented industry in the UK that implemented new ICT in the past five years with employment of about 1 to 249. Seventy participants were selected from the crunch Database. Twenty participants were interviewed

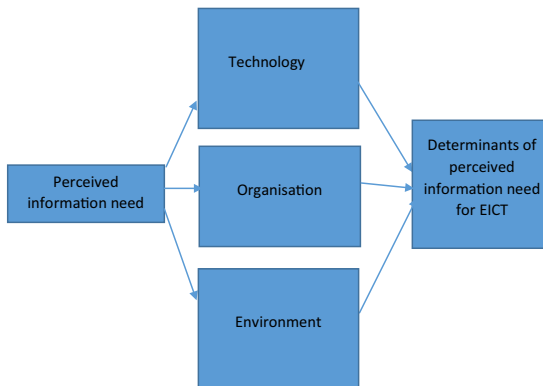


Figure 1.
Conceptual framework of perceived information need for EICT adoption decision-making

Unstructured interviews and semi-structured interviews

The study adopted both unstructured and semi-structured interviews which are carried out in two stages. The aim of the unstructured interview or the first stage of the interview was to have a broader view of the research area, to redefine the research topic and to understand the present state of information behaviour of SMEs with regard to EICT adoption, as well as to test the codes generated with a few samples of the raw data. The analysis of the initial data collected at this stage shaped the development of the semi-structured interview questions at the second stage of the data collection. The semi-structured interview was further conducted to create an avenue for the researchers to grasp the full richness of the participants' views using their own words and based on their understanding (Oates, 2006). Therefore, data collected were dependent on the participants' narratives (Schultze and Avital, 2011). A formal letter was designed and sent few days to the interview, detailing the purpose of the interview and issues of confidentiality so that the respondents can go through them, make their judgement and feel more conformable and to ascertain the researchers' credibility before the interview (Oates, 2006). This is considered as an important part of the interview protocol according to Oates (2006), because relying on one's memory may result in bias and error. The interviews lasted from about 40 min to 1 h. It is important to note that at the first stage of the unstructured interview (preliminary study), 4 SMEs were interviewed, while 16 SMEs were interviewed using semi-structured interviews questions at the second stage. The summary of the participant's profile is shown in Tables I and II.

Information
need

UI No.	Role	Company size	Sector	Business location
M1	Owner	100	Security services	Coventry
M2	Owner	25	IT software development	Northampton
M3	Owner	50	Telecommunication	Birmingham
M4	Head of operations	2	Telecommunication	Birmingham

Table I.
Participant profile for
the preliminary
study

UI No.	Role	Company size	Sector	Business location
M5	Managing Director	50	IT software development	London
M6	Director	10	Training and development	Luton
M7	Director	100	Security	Forest Gate
M8	PA to CEO	35	Financial firm	London
M9	Site Manager	50	Engineering/Telecommunication	Luton
M10	Branch Manager	30	Retails	Luton
M11	Owner	20	Telecommunication	Luton
M12	IT manager	65	Security	London
M13	Managing Director	10	Property	Bedford
M14	Manager	15	Property	Bedford
M15	IT Director	25	Consultancy	London
M16	Owner	5	Money management	Cambridge
M17	Owner	1	Internet marketing	London
M18	Business analyst manager	20	Financial firm	London
M19	Operational Manager	5	Security training	Cambridge
M20	IT manager	70	IT consultant	London

Table II.
Main study
participants' profile

T1 T2

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Data analysis

Data were analysed using both theory and empirical driven thematic analysis because the codes adopted in this study emerged both deductively and inductively (Bryman, 2008; Braun and Clarke, 2006). The stages through which the interview data were analysed and interpreted is illustrated in Figure 1. Steps 1-3 involved gathering of data, to generate codes from the theory, to review and to rewrite the codes and to apply a sample of data to the codes. The purpose of this exercise is to ensure that the codes are credible before further analysis. In stage four all the data were entered into Nvivo (a software for qualitative data analysis) because of the vast data involved. Nivivo was further used in analysing the data before the empirical themes were clustered and verified. The method of analysis helped to examine how likely and dependable the issues are before the interpretation (Miles and Huberman, 1994). During the coding exercise, efforts were made to identify the significant norms, ideas and conceptualisation (Braun and Clarke, 2006) instead of focussing at the semantic level which looks at the superficial meaning of the data only (Figure 2).

F2

Reliability analysis was further conducted based on the categories and quotes from the raw data using the inter-coder reliability analysis (Bryman, 2008), which made use of two judges. The judges evaluated the extracted quotes against the themes which were further validated via cross-case analysis of supporting evidence (Macredie and Mijinyawa, 2011). The results of the inter-coder reliability analysis revealed that over 80 per cent agreement was related to the scope of the study, which exceeded 70 per cent benchmark suggested by Miles and Huberman (1994). The data analysis process was a step-by-step approach that unveiled how data were analysed and reported (dependability check), followed by the conformability checks to examine how the data are firmly linked to the interpretation (Boyatzis, 1998). During the analysis, a guide was designed with regard to the description of the codes which aided the coding the data (Tables III and IV).

T3T4

Research findings

Tables V and VI show the themes associated with each code, supporting cases and supporting evidence. This study adopted a theory-driven thematic analysis method because

T5T6

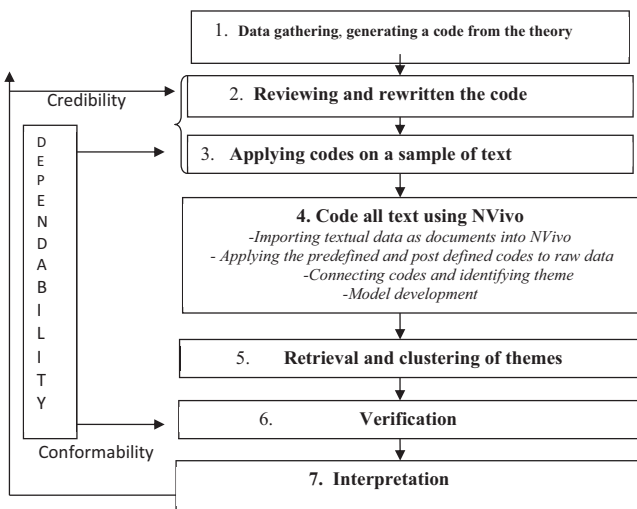


Figure 2.
Data analysis process

F3

the themes that emerged were generated and clustered based on the characteristics of the theoretical codes (Boyatzis, 1998). This process revealed the determinants of perceived information need for EICT adoption decision-making in SMEs. The framework in Figure 3 demonstrates that perceived information need for EICT is influenced by factors associated with not only technology context, organisation context and environment context but also information context.

Information
need

Discussion

Technology context

Fit for purpose. Fit for purpose is the capacity of the new ICT to perform the activities for which it was acquired. Observation revealed that most small business owners would scan, search, gather and document relevant information that will aid the adoption of new technology if it is appropriate and suitable for the purpose. This also extends to how well further ICT support in running the daily business activities. From the analysis, the finding shows that small business owners are eager to seek for information regarding the quality of the IT providers and another requirement to guarantee that the new ICT fits the specific purpose for which the provider was selected. According to the interviewees, it may not be feasible to trust the information accessed and generated online via forums without communicating with the IT provider first:

The new technology application most suit the primary purpose for which the organisation, seek, gather and document relevant information about it. It is extremely dangerous finding for information to adopt a piece of technology which may not serve the organisation. (M8)

The analysis also revealed that SMEs regularly request clarification by the IT providers on any further issues that may hinder effective decision-making concerning the new technology before taking a stand. Some participants echoed this:

We must regularly ask questions that are not clear to us to avoid adopting and implementing such technology otherwise we may continuously lose our clients (M8).

Some other participants (e.g. SM2, SM5, M13 and M17) were also in support of the above statement, which is consistent with this studies (Auster and Choo, 1993; Agarwal et al., 2011; Eze et al., 2018c). The implication of this is that most information acquired on the internet during emerging ICT decision-making may not be accurate. Therefore, obtaining

Areas	No. of judges	Reliability	
		First judge	Second judge
Factors influencing SMEs managers perceived information need for EICT adoption decision-making	2	0.81 (81%)	0.87 (87%)

Table III.
Reliability analysis

Technology	Technology context comprises both the external and internal forces that influence small business owners for new ICT adoption decision
Organisation	Organisation context comprises those resources that influence adoption decision-making and trigger information behaviours of SME owners
Environmental	Environmental context comprises of the internal and external forces shaping the organisation's decision-making process and may have some level of uncertainty when the need for ICT adoption decision-making process arises

Table IV.
Descriptions from a predefined code

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Themes (Factors)	Supporting cases	Total supporting cases
<i>Technology Context of perceived information need</i>		
Fit for purpose	M2, M3, M5, M8, M13, M17	5/20
Compatibility	M3, M6, M8, M10, M11, M12, M16	7/20
Perceived affordability	M1, M2, M 7, M9, M10, M14	6/20
Uncertainty driven	M1, M3, M4, M6, M9, M11, M12	7/20
<i>Total</i>		14/20
M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M14, M17		(70%)
<i>Organisation context of perceived information need</i>		
Users' acceptance information	M2, M4, M6, M7, M9, SM12, M14, M20	8/20
Efficiency-driven	M5, M 6, M10, M11, M13	7/20
Owner's support	M2, M5, M9, M12, M 22	
<i>Total</i>		13/20
M2, M3, M4, M5, M6, M7, M9, M11, M12, M13, M14, M20, M22		(65%)
<i>Environment context of perceived information need</i>		
Competitor's intelligence gathering	M1, M8, M9, M10, M12, M13, M15, M18, M20	9/24
Customer's information gathering	M3, M5, M6, M10, M14, M15	6/20
Provider credibility	M1, M2, M3, M5, M9, M12, M15, M18 M 22	8/20
Technology market growth	M3, M4, M5, M6, M9, M10	6/20
<i>Total</i>		15/20
M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M12, M13, M15, M18, M20		(75%)
<i>Information context of perceived information need</i>		
Perceived information sources credibility/reliability	M1, M2, M3, M5, M9, M12, M15, M18	8/20
Herding event	M1, M4, M6, M9, M11, M12	6/20
Testimonial	M1, M2, M3, M5, M9, M12, M16, M18 M 22	9/20
<i>Total</i>		12/20
M1, M2, M3, M4, M5, M6, M9, M11, M12, M15, M16, M18		(60%)

Table V. Themes and supporting cases

fit-for-purpose ICT using a reliable source is vital if small business owners want to remain in business.

Compatibility. Compatibility is the extent to which an innovation is consistent with the existing norms, past experiences and the values of potential adopters (Rogers, 2003, p. 240). It was revealed that SMEs usually seek compatibility information during ICT adoption decision-making to ascertain how well the EICT is capable of adapting to the existing technology in the firm without having to spend huge finances on staff training or changing the old technology. According to participants, knowing the compatibility information on time has some implication. It assists small business owners in ascertaining how well the new technology will complement the existing technology and also facilitate quicker decision and implementation process. According to participants:

<i>Technology Context of perceived information needs</i>		Information need
Fit for purpose	The new technology application most suit the primary purpose for which the organisation, seek, gather and document relevant information about it. It is extremely dangerous finding for information to adopt a piece of technology which may not serve the organisation” – M8	
Compatibility	“Compatibility test as well as assessing and evaluating the cost must be carried out if a decision to gather information about the technology must be considered” – M8	
Perceived affordability	“As an organisation, the cost must be evaluated against the benefit. If the cost is low and the benefit is relatively high such technology will certainly be deliberated upon” – M1	
Uncertainty drove	Technologies that enhance the expectation of the users are much more welcome in our organisation. When this is considered uncertainty remains a factor” – M4	
<i>Organisation context of perceived information needs</i>		
Users ‘acceptance information	“We often teach them in a bid to understand the new technology and appreciate its relevance in their businesses. This must be clear and understandable” – M4	
Efficiency-driven	“Can the technology improve our daily routine operations? How can technology assist me in accomplishing my task with little or no stress?” – M5	
Owner’s support	“We are happy and open in exploring new ways of getting the required information for adopting new ICT. For example, learning new ways of automating the technology to reduce human input” – M4	
<i>Environment context of perceived information needs</i>		
Competitor’s intelligence gathering	One faces competition day in, day out, and my ultimate goal is to develop a strategy to compete effectively. Therefore, it becomes relevant to understudy the type of technology my competitors are using and find a way to use them more efficiently” – M18	
Customer’s information gathering	“You know that customers are the kings because, without them, there will be no market for us. Therefore, we must pay attention to new technology because of their requirement which will depend on their needs and wants” – M3	
Provider credibility	“an organisation whether big or small should assess the business environment meticulously to know the true provide and ensure that the quality of the technology is guaranteed. It will be a costly mistake If I fail to do so” – M12	
<i>Information context of perceived information need</i>		
Perceived information sources credibility	“We will search on the internet to get an understanding of what and how people are rating new IT and whether it had some bad review” – M2	
Herding event	“Most times we want to know what is trending. What is trending will influence whatever IT we adopt?” – M1	
Testimonial	“Sometimes we call our customers requesting them to tell us, or we ask people that have started using the new IT. We can also request feedback from our customers” – M16	

Table VI.
Themes and supporting evidence

One has to assess the performance and how well the technology is compatible with what we use here without spending so much trying to change our existing structure of the application in use. This is an important factor. (M3)

Compatibility test as well as assessing and evaluating the cost must be carried out if a decision to gather information about the technology must be considered. (M8)

BL

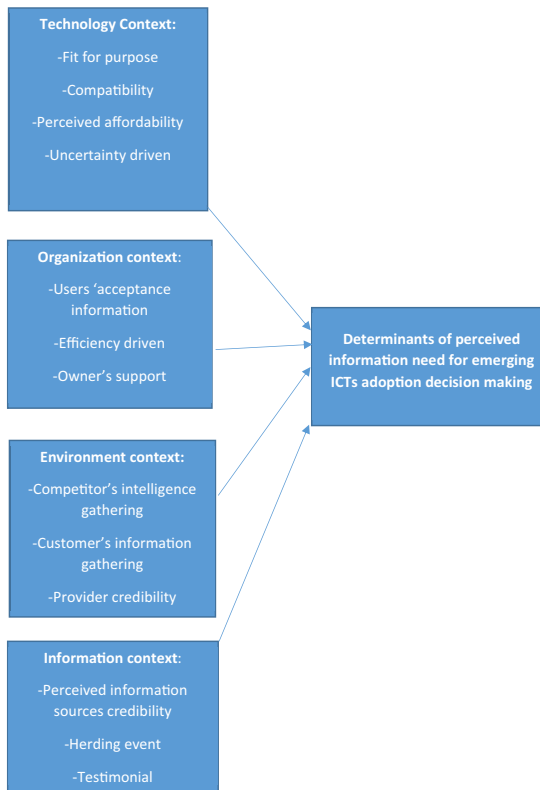


Figure 3.
Determinants of
perceived information
need for EICT
adoption
decision-making

We would normally evaluate how compatible the IT is with our existing infrastructure on the ground. (M16)

SMEs encounter challenges in investing in new ICT because of the inability to foresee the changes in technology when compared to the current technology. [Adomavicius et al. \(2008\)](#) argued that unable to address issues of compatibility would lead to financial waste. Hence, SMEs must analyse and conduct a compatibility test of the existing ICT to develop a business case and generate cognitive information required decision-making and avoid recruiting staff with similar skills during implementation.

Perceived affordability. Perceived affordability is linked to the benefits of the potential ICT compared to the cost of procuring it. Observation revealed that because of the limited financial resources of most SMEs, information on the value of the new EICT is usually obtained through a cost-benefit analysis in relation with the growth of the business, employee efficiency, productivity and the satisfaction customers will derive from using such new ICT. These variables have a long way in assessing the benefit of the new ICT. As echoed by some participants; small business owners would evaluate the cost based on the information available concerning aligning with the technology with the existing organisation structure and the maintenance cost? This was echoed by some participants (M7, M9 and M10) and further supported across cases:

As an organisation, the cost must be evaluated against the benefit. If the cost is low and the benefit is relatively high such technology will certainly be deliberated upon. (M1)

Information
need

Experience has revealed to us that not all expensive products are worth buying. As a business, if we get not a too expensive solution that meets customers' needs at an affordable price, we will not hesitate to try it as long as it is within our planned budget. (M2)

The finding points to the fact that inadequate financial resources are one of the main obstacles of most small businesses. In line with the statement, [Seyal and Rahim \(2006\)](#) stressed that cost is one of the main inhibitors of ICT adoption by SME managers. However, evaluating the value of the EICT helps in the cost-benefit analysis exercise, which according to [Nguyen et al. \(2015\)](#) puts SMEs in a position to continually scan, gather and document information for adequate decision-making.

Uncertainty drove. Observation revealed that risk is associated with a lack of information for decision-making, which makes it difficult in accessing information during ICT adoption decision-making. It is determined through the data that are available for new technology adoption and linked to information need as echoed by some participants:

[. . .] sometimes when it is difficult to access and gather information we interact and engage in a conversation regarding the uncertainty of technology and the behaviour of the employee. (M12)

Technologies that enhance the expectation of the users are much more welcomed in our organisation. When this is considered uncertainty remains a factor. (M4)

Some other participants (M1, M3, M6, M9 and M11), maintained similar views above. From the analysis, uncertainty about the employee behaviour towards the use of EICT, an improvement on the production level and small businesses doubt over the staff attitude towards the use of new technology are mostly the key areas SMEs mainly focus when uncertainty arises. These suggest that it is vital for employees, customers and other internal actors are consulted before decisions are made to acquire new technology. Hence, evaluating past technological needs requires the involvement of other actors within and outside the organisation. In support of the finding, [Walden and Browne \(2009\)](#) argued that deciding on ICT is difficult and doubts make it problematic for owners of the business to come in terms with the new technology. According to [Kauffman et al. \(2015\)](#) some of the uncertainties associated with IT decision-making are employees', technology investment, decisions involve large-scale infrastructure development customers' acceptance requirement, personnel and training costs which may not be reversible, and the value of the benefit of the business venture. Hence small business owners must gather information to minimise these uncertainties.

Organisation context of perceived information need

Users' acceptance information

The finding demonstrates that users "acceptance behaviour shapes adoption decision-making process of small business managers, and employees" opinion and initiatives must be recognised. It was revealed that the IT department and employees play prominent roles because of the difficulties associated with the EICT. As a result, employees must be aware of any emerging ICT before its adoption. This created an opportunity for managers to listen to the opinions of the employees during this process. A similar assertion was echoed by M2, M7, M9, M12, M14 and M20 and supported:

BL

We often teach them in a bid to understand the new technology and appreciate its relevance in their businesses. This must be clear and understandable. (M4)

We normally discuss internally with our IT department because they are more exposed and knowledgeable about the latest trend in the field and help clear the doubts we have. (M6)

Also, [Nguyen *et al.* \(2015\)](#) note that communication between SME owners and their employees when the need for change arises is vital. Failure to recognise this, employees will not be happy and will continue to doubt about the need for the new technology, and may resist the change as a result of losing about their job. Furthermore, [Andries and Debackere \(2006\)](#) argued in his work that communicating with the employees at the early stages of planning and implementation make employees to have a sense of ownership, reduce the risk of new ICT failure and makes SMEs have positive feelings about the systems ([Choo, 2002](#)).

Efficiency-driven

Efficiency-driven is the extent to which the ICT improves SMEs business strategy, assists in the automation of current business operations and enhances workers' efficiency. It also extends to the degree at which the technology aids in the satisfaction of customers' needs and choices. Participants raised these points:

Can technology improve our daily routine operations? How can technology assist me in accomplishing my task with little or no stress? (M5)

You know that IT is developing so fast. Our personnel and clients must have the best experiences. This is one of the factors before acquiring such technology. (SM6)

This is further supported by participants M10, M11 and M13.

Observations demonstrations that an assessment of new IT by small businesses will on a long run shape their behaviour on what decisions to make. SME own managers will be apt to assess opportunities concerning new technology and what the employee potential investment has to offer the firm before the implementation. Managers that are enthusiastic about the new ICT often involved in the process of continuous gathering and documenting of information about the latest technology because innovation reduces cost and enhances technology efficiency ([Higón, 2012](#); [Eze *et al.*, 2018b](#); [Woudstra *et al.*, 2012](#)).

Owner's support

From the analysis, it was evident that managers play a central role in motivating and stirring workers to partake actively in some activities to ensure that the new solution is introduced in the business. Example of such activities includes conferences and events to get familiar with the latest information concerning new technologies aimed at improving the operations of the business and their relations with customers and other stakeholders. This was echoed across cases:

We are happy and open in exploring new ways of getting the required information for adopting new ICT. For example, learning new ways of automating the technology to reduce human input. (M4)

When new solutions emerge, it becomes imperative to send your employees to conferences and events to help them acquire the knowledge and bring on board the solution that can assist in meeting the customers need and support our operations. (M5)

The above statements were further supported by participants M2, M9, M12 and M22. The finding implies that when small businesses encourage or motivate their employees to acquire adequate information that can assist them, it becomes easier for decisions to be taken by managers and this encourages innovation within the organisation (Ramdani *et al.*, 2009). This implies that ICT adoption would be much more successful in SMEs if various employees in the organisation are encouraged or motivated through the top-down approach to improve organisational performance, prevent perceived performance gap and exploit business opportunities (Gangwar *et al.*, 2015). In line with this, some research (Luo and Lin, 2013; Woudstra *et al.*, 2012; Li *et al.*, 2014) has also found that top management support motivates the adoption and implementation of emerging ICT in SMEs.

Information
need

Environment context of perceived information needs

Competitor's intelligence gathering

It was observed that environmental scanning for new IT solutions assists SME own managers in understanding the vital role played by rivals and clients concerning new IT innovation. According to Oliveira *et al.* (2014) the attainment of competitive edge is one of the major drivers of ICT adoption within SMEs, and firms should be mindful of the need for ICT adoption when it arises. Observation further revealed that SME owners often seek for pertinent information concerning the kind of new ICT their competitors are using and how much solution is integrated into their present organisational arrangement that may lead to competitive advantage as mentioned by participants:

One faces competition day in, day out, and my ultimate goal is to develop a strategy to compete effectively. Therefore, it becomes appropriate to understudy the type of technology my competitors are using and find a way to use them more efficiently. (M18)

When such a situation arises, we normally research to know what kind of new solution our competitors are using. (M8)

While this finding was supported by M1, M9, M10, M12, M13, M15 and M20, Alshamaila *et al.* (2013) and Lam *et al.* (2014) stress that obtaining adequate information on the activities of the competitors such as the kind of technology application implemented help businesses to design a strategy that can assist to compete effectively. Therefore, small business managers must continually partake on intelligence gathering by scanning the environment to ascertain what is new and implement it over rivals of the same industry. Furthermore, Raymond and Ramangalahy (2001) strongly emphasised that SME managers should always be at the forefront of adopting new IT solutions to help differentiate their products and services from their competitors (Walden and Browne, 2009; Hirschleifer and Hong Teoh, 2003).

Customers' information gathering

Small businesses often scan and gather information aimed at assisting them in implementing new ICT to satisfy their customers' needs and desires. Hence, customers' information gathering and requirement on new IT solutions are vital for small businesses. In a bid to regularly satisfy customer's needs, SME managers must collect information on clients' needs and requirement, research on the new IT solution that will assist in meeting their needs. Also, observations revealed that ensuring that the needs and requirements of customers' are satisfied is one herculean task coupled with the usage of the new ICTs to satisfy clients. As noted:

BL

You know that customers are the kings because, without them, there will be no market for us. We must pay attention to new solutions because of their requirement. (M3)

It is essential that the needs and wants of the customers are met. Therefore, you must gather their requirements in the first place. (M5)

In summary, adequate information must be collected on clients' needs in line with how the proposed new technology will meet their specific needs. Similar statements were echoed by M3, M5, M6, M10, M14 and M15. The finding suggests that managers of small businesses must consider the role new ICT solution will play in ensuring that the needs of their clients are met. Similarly, [Zhu et al. \(2003\)](#) argued that firms are better equipped when deploying new solutions are deployed to meet customer's needs. Also, past research studies have discovered that pressure from customers is a significant driver of ICT adoption in SMEs, and this should be considered by making a move for implementing new ICT ([Beckinsale et al., 2006](#); [Ghobakhloo et al., 2011](#); [Mehrtens et al., 2001](#)).

Provider credibility

Observation revealed that providers' credibility is important during the decision-making process of EICT adoption. Small businesses require up to date information on the providers to assess how trustworthy they are. The finding revealed that the information acquired from suppliers concerning the providers further enlighten SME managers' adoption decision-making. It was revealed that majority of small business managers were careful in choosing ICT provider to avoid the risk of selecting a provider that is untrustworthy which according to participants may result to severe damage to the organisation as noted across cases:

An organisation whether big or small should assess the business environment meticulously to know the true provide and ensure that the quality of the technology is guaranteed. It will be a costly mistake if I fail to do so. (M12)

If a business is using say potently new IT solution that is trustworthy, that will increase the trust the organisation has on the provider. (M1)

If some of the reviews we got from Google search is positive about the provider that would motivate us to use such provider and take decision quicker. (M18)

One of the significant implications to the above finding is that SMEs most times prefer examining the experiences, background, the credibility of the providers and, the functionality of the new solution and comparing these from one provider to another. [Chibelushi and Costello \(2009\)](#) found that the greatest challenge facing small businesses is the inadequate skills exhibited by consultants and how unreliable they are in providing advice. Hence, SME managers must be cautious when the need for the assistance of the consultants and vendors arises ([Kurnia et al., 2015](#)). Trust and performance of the technology providers were rated was considered an influential critical factor.

Information context of perceived information need

Perceived information sources credibility

Sources credibility is defined as the degree to which the sources of information is dependable and authentic concerning intended EICT to be implemented. Evidence shows that the more the information sources are credible, the more SMEs source and gather information for EICT implementation purposes from such sources. Therefore, information

source credibility shapes SMEs decisions making on EICT adoption. This point was echoed across cases and further supported by participants M3, M5, M9, M12, M15 and M18:

Information
need

We will search on the internet to get an understanding of what and how people are rating new IT and whether it had some bad review. (M2)

If some providers are reliable, I will be confident on the information provided when the need arises. (SM1)

Observation revealed that while some SMEs are often sceptical about the sources of information, which is one of the problems faced during the decision-making process, others were confident on the origins of information provided, however, such information sometimes causes overloaded and further prolongs EICT decision-making. Therefore, personal conviction about the quality and sources of information may have an impact on EICT adoption decision-making. In support of this assertion, Gerstberger and Allen (1968) note that the more quality and reliability the sources of information are, the more such sources of information will be considered during decision-making for new ICT. This is consistent with Marton and Choo (2002) and Woudstra *et al.* (2012) studies.

Herding event

When people are influenced by their business partners, this tends to shape their attitude, belief, value systems, behaviours and decisions. Observation demonstrates that SME owners most times are formed by information obtained by their business partners and what technology is trending. Such influence comes from comments and suggestions from their networks (e.g. Online communities and forums. This was echoed across cases:

Most times we want to know what is trending. What is trending will influence whatever IT we adopt? (M1)

We engage in a search for information for new technology adoption because our competitors also engage in the process. Some things this assist them in enhancing their business process. Therefore we have to be moved in doing a similar thing "This also motivate us to implement, smart and competitive. (M4).

While the finding was further supported M6, M9, M11 and M12, a number of researchers have also found that herding measures influence new IT adoption decision (Walden and Browne, 2009; Hirshleifer and Hong Teoh, 2003; Woudstra *et al.*, 2012; Luo and Lin, 2013; Li *et al.*, 2014).

Testimonial

Testimonials include reviews and commendations of other actors who may have engaged with the ICT in the past. Information from earlier adopters shapes small business owners' decision-making for new ICT implementation. It was revealed that testimonies from prior users help the right technology to be implemented. Such information from early adopters helps late adopters to understand some functions and features of the new technology which may not be apparent to them. While the finding was supported by participants across cases M1, M2, M3, M5, M9, M18 and M 22, others note that:

Sometimes we call our customers requesting them to tell us about the technology, or we ask people that have started using the new IT. We can also request feedback from our customers. (M16)

AQ: 3

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Over the years we have had some bad experiences. If we can learn from the mistakes of others, it will save us from bad decisions if the need for IT implementation arises. (M12)

This finding demonstrates that the commendations of various information sources by people that have used similar sources to obtain relevant information for the new ICT influence others in the selection and use of information sources for new IT adoption decision. Observation shows that SME owners often engage with the internet and forums on the account that business owners that provide such information are early adopters and that they have the right information about the technology.

Conclusion

To understand the determinants of perceived information need for emerging ICT adoption the TOE framework informed the study. This helped to explore 13 key determinants, development and the extension of the TOE framework by identifying the information context. This further adds to the understanding of SMEs information behaviour. From the technology context, *fit for purpose, compatibility, perceived affordability and uncertainty-driven* shapes saw information need for EICT adoption decision-making, while *users' acceptance information, efficiency-driven and owner's support* are linked to organisation context. Also, the environment context is shaped by factors such as *competitor's intelligence gathering, customer's information gathering, and provider credibility* while the information context is influenced by *perceived information sources credibility, herding event and testimonial*. However, the degree at which these contextual elements (technology, organisation, organisation and information context) shapes SMEs' perceived information need for emerging ICT adoption varies from one stage to another The analysis revealed that technology context related determinants represented 70 per cent of the total supporting cases, organisation context related determinants accounted for 65 per cent of the total supporting cases, environment context represented 75 per cent of the total supporting cases, while information context-related factors accounted for 60 per cent of the total supporting cases.

Theoretical and practical implications

The extended TOE framework developed in this study, which aimed at unravelling the determinants of SMEs' perceived information need for EICT adoption and implementation, has some implications. From the theoretical point of view, the framework provides a frame of references (Agarwal, 2000) in understanding the critical determinants of perceived information need for EICT in SMEs (Macredie and Mijnyawa, 2011). The operational definitions of the codes and the determinants represented in the framework serve as an analytical tool for scholars to understand and describe the determinants shaping perceived information need of EICT adoption and implementation in a small business context. The research has identified additional code and its associated determinants which are not related to the three settings of TOE frameworks. The code and the related determinants aided the extension of the TOE framework, thereby enriching the TOE framework.

Second, a large number of researchers in information behaviour have adopted case study, experimentation or survey method even though other methods and techniques may be useful in studying information behaviour of SME managers on EICT adoption. The study deployed a hybrid approach of thematic data analysis involving both deductive and inductive techniques (Boyatzis, 1998) which is rarely used by researchers in information behaviour. This approach provided some guideline for generating meanings from the data and offered conceptual ways of examining, gathering, analysing and clustering data into

most suitable categories. Therefore, the study has further created awareness of diversifying research on information behaviour in terms of methods. The study demonstrates that some techniques can be adopted in studying information behaviour of SMEs concerning EICT.

Third, [Macredie and Mijinyawa, \(2011\)](#) note that the inability of scholars to adequately define the determinants and theoretical concepts of a study has become an issue in analysing and validating the determinants. Hence, the empirical and theoretical constructs and the associated determinants identified in this research could be deployed to formulate a hypothesis to validate the relationships between the constructs and the determinants.

From the practical point of view, it is believed that models and frameworks are valuable for practitioners and decision-makers wanting to develop or improve models of information behaviours and IT application ([Dedrick and West, 2003](#)). Hence, the framework may also serve as a frame of reference to small business owners who want to have a deeper insight and a common understanding of the determinants of perceived information need for new ICT adoption implementation. Also, the framework may be adopted by small business owners for a strong justification for the courses of action ([Benbasat and Moore 1992](#)). SME owners and other decision-makers may use the argument and empirical insight in this study to build awareness among employees on the merits and demerits associated with seeking and gathering information for EICT adoption implementation. Finally, because of the strong exploratory and explanatory capabilities of TOE framework, the framework provides a range of insights on how small businesses and other decision-makers can apply the structure and further identify various concepts associated with the technological, organisational environmental and information context-related factors of perceived information need for EICT adoption.

Limitations and future research

Because qualitative methodologies were adopted in this study about the research design, collection and organisation of the raw data, data analysis and the credibility of the findings may result to unanticipated respondent – and research – bias ([Macredie and Mijinyawa, 2011](#)) in the study of the data. This may limit the understanding of the alternatives and the insights into the determinants of perceived information need, key factors and the source of information for emerging ICT adoption. Therefore, further research may be carried out by adopting a cross-sectional or mixed method approach in a bid to confirm the finding further and better understand the critical variables associated with the framework.

Although the researchers are confident with the use of thematic data analysis approach, the findings associated with the study, and the framework have their limitations. Drawing from the data analysis process, evidence suggest that the factors, determinants of perceived information need and the sources of information presented in this paper are limited. There are other factors, determinates and sources of information which were identified during the analysis but were not incorporated in the findings because their respective supporting cases and supporting themes were limited. Hence, more research is needed in this area in other unravel more factors, determinants and other sources of information prevalent which may not have been included in this study by using a different research approach.

Furthermore, one of the limitations associated with the qualitative study is the issue of theoretical generalizability of the framework. Arguably, the generalizability of the formwork is required to be established across a broader population. Hence, further research may adopt confirmatory statistical techniques to test, check validity and confirm the framework across a more general population, which may be used as a benchmark for the theoretical constructs that may lead to success or failure EICT adoption decision-making.

Information
need

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