

A Framework on Information Behaviour of SME Managers for Decision-Making on Emerging ICTs

Sulaimon Olatunji, Yongmei Bentley, Yanqing Duan, Vincent Ong

Business School Research Institute (BMRI)

University of Bedfordshire United Kingdom LU1 3JU

sulaimon.olatunji01@beds.ac.uk

yongmei.bentley@beds.ac.uk

yanqing.duan@beds.ac.uk

vincent.ong@regents.ac.uk

Abstract

The aim of this study is to explore the perceived information needs and information behaviours of manager of UK small and medium-sized enterprises (SMEs). As technology advancement and innovation are changing rapidly affecting organisations in different ways, organization executives are introducing new technologies for their operations and business environment becomes more complex and dynamic, government introducing different policies to guide the use of these emerging ICTs. As a result, information becomes significant during adoption decision-making process for SME managers to make an inform decision. To achieve this aim, a framework is developed based on existing literature, using the technology organization environmental (TOE) model as the theoretical underpinning for empirical investigation on information behaviour of SME managers in this study. This study is qualitative in nature, and semi-structured face-to-face interviews were conducted with twenty SME managers in the UK service sector. The interviews were recorded and transcribed. Following Myers and Newman's (2007) guidelines for qualitative interview and triangulation method were used to validate the conceptual framework and established the research rigour and quality.

The research findings explained information behaviours of SME managers in the contexts of technology organisation environment as information behaviour triggered and perceived information needs during the adoption decision in SMEs. These findings provide further insight into ICT adoption in SMEs through information behaviours and highlighted the significant of sources of information and pre-information needed during the decision-making process. The research also contributes to theory in the information systems field by using relevant literature from information science field to explore information behaviours of SME managers. Future research can be done in other sectors of the economy to show more holistic behaviours of SME managers.

Keywords: Emerging ICT, Information behaviour, Small and medium Enterprises (SMEs), TOE model

1 Introduction

Emerging ICTs have brought huge changes in how we communicate and do business, including paying our bills, storing our data, and accessing them. It has also provided SMEs with unprecedented opportunities to compete with larger firms; fundamentally, levelling the playing ground and making it possible for SMEs to compete with larger firms without being constrained by geography, market size, technical know-how, or human and financial resources. Furthermore, the use of innovation is indispensable for SME business performance and may eventually define their success (Cosh et al., 1998). However, uncertainty and complexity related to emerging ICTs, globalisation, unsettled market environment and unpredictable technology change, have put pressure on firms' in terms of gathering, seeking and scanning the environment for the information during emerging ICT adoption decision-making process; because a failed ICT adoption decision can mean doom for SMEs. Furthermore, the unfamiliar or unknown experience of new technologies can also affect its adoption (Griffith, 1999). According to Daft and Lengel (1986) two complementary forces influenced the information process; in a decision-making process, they are equivocality and uncertainty and many information systems failed implementation because they failed to address these two forces on time (Kydd, 1989).

According to De Saulles (2007), SMEs in the UK and USA wasted over £3.7 billion in 2005, in terms of time wasted through inefficient use of the Internet as a research tool. Also, in line with the recommendations of Johnston et al. (2007) and Yang and Fu (2008) research should be done on factors that influence SME managers' information behaviour and there should be a new theoretical trend on adoption-decision making process within SMEs. Evidenced from the literature reviewed shown that researchers have discussed numerous ICT adoption decisions in SMEs. However, these studies have mostly focused on drivers of ICT adoptions and factors that influenced ICT adoptions in SMEs and not on SME managers' information behaviours during adoption decision-making process. Therefore, this study aims to fill this gap by exploring information behaviours of SME managers and factors that influence their information behaviours when making adoption decisions using the technology organisation environment (TOE) model as a theoretical underpinning.

2 Background and theoretical framework

The study considers the number of people employed (1-249) in the workforce as the major standard in determining whether a firm is eligible as an SME and other classifications by the Department for Business, Innovation and Skill (BIS) According to BIS (2015), there were 5.3 million small business (with 1 to 49 employees), which is 99.3% of the total business population. A further 33,000 (0.6%) were medium-sized businesses (with 50 to 249 employees), and this means there were 5.4 million SMEs in total in the UK. The definitions and classifications of SMEs might be different by various scholars, from countries, but they some have unique features that are the same regardless of the country. SMEs have a limited access to finance and mostly, there is limited human resource to support them during this process when compared with larger companies (Fassin et al., 2011, Kuan and Chau, 2001). According to Duan et al. (2002), skills and knowledge deficiencies in SMEs are significant barriers to the adoption of emerging ICTs; and owner-managers have less awareness of the operational and strategic benefits of technology than their larger counterpart (Grant et al., 2014).

2.2 Information needs and information behaviour

The increase in the emergence of electronics, computers and the Internet has changed managers' behaviours in seeking and using information. The challenge has changed from making a decision under information scarcity to making a decision with information overload (Tavares et al., 2015). According to Au and Kauffman (2003), decision-makers will invest a realistic amount of time to gather all relevant information from all potential sources and process the information most advantageously before making a decision. According to Van Riel et al. (2004), decisions relating to the development of a new service take place under high levels of uncertainty, because of unpredictable technological change, developments and competitive developments in the marketplace. This can be a cognitive or situational information need of a decision-maker or information user (Wilson, 1997). Information is essential in everyday life and it represents the precious and limited asset that forms the necessary support for all decision-making processes in a company (Černá, 2014). Therefore, information availability becomes necessary in all business processes, particularly, in decision-making on financial matters.

The term 'information behaviour' is the ways human beings interact with information; and the means by which people seek and apply information. Information behaviour is not only limited to searching; it includes information gathering, seeking, acquisition, and use. (Dervin, 1983, Ellis, 1989 ; Ingwersen, 1996 Kuhlthau, 1991; Case 2007; Badilescu-Buga,2013). In this study Wilson' (2000) definition of information behaviour was adopted in this study. Wilson (2000:49.) stated that information behaviour *"Is the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking, and information use."*

Human beings search for information during a decision-making process or want to solve a problem or when facing a challenging situation. These challenges or barriers trigger information behaviours of a decision-maker during this process. Individual scanned the environment when gathering information for their use. Aguilar (1967) defines environmental scanning as getting information about events and relationships in a company's external environment, the knowledge of which would assist top management in its task of charting the company's future course of action. Environment scanning involves looking at the relevant physical and social factors that are not within the boundaries of an organisation and are taken into consideration during organisational decision-making process (Duncan, 1972).

2.3 Theoretical underpinning

The TOE framework was proposed by Tornatzky and Fleischer (1990) discusses three factors that influence adoption decision of emerging ICTs. The three factors are technology, organisation, and environment; and these factors provide an important analytical approach for studying the adoption decision and assimilation of different types of IT innovations (Oliveira and Martins, 2011). According to Tornatzky and Fleischer (1990), these three factors affect the attitude of a company in understanding the need for, search for, and adoption of a new IT. As a result of their findings, using TOE model to underpin this research contributes to theory and knowledge in information systems because TOE Model is an integrated model that integrates technology organisation and environment together, these are discussed below

2.3.1 Technology context of perceived information needs

Technological context refers to both the internal and external technologies that are appropriate to the organisation. This comprises technologies that are available in the marketplace and presently in use in the organisation, and those that are available in the marketplace but have not been adopted in the organisation (, Oliveira and Martins, 2011; Gupta et al., 2013, Gutierrez et al., 2015) . According to Liao et al. (2003), internal knowledge and external environment? of a firm can promote innovation. The firm must consider and evaluate the organisation changes that will be created by adopting a new innovation (Baker, 2012). Technology context in this research stands for the internal variables that SME managers need to consider before adopting an emerging ICT in their company. These variables can be the determinant to their companies' successful adoption decision-making, but there is not enough, or lack of, information on those variables before or after they have adopted the new technology.

2.3.2 Organisation context of perceived information needs

Organisation context explains how firm resources and firm characteristics, as well as firm size, intra-firm communication processes and the lack resources, influence adoption decisions. These concepts affect adoption and implementation decisions in several ways (Baker, 2012). The capacity of a firm to have all these resources will ease adoption decision making process.

2.3.3 Environment context of perceived information needs

Environmental context refers to both the internal and external forces and changes that have an impact and puts pressure on SMEs. Secondly, it could be the surroundings where a firm conducts its business; as a result of technology advancement, globalisation, trading partner pressures, government policy, strategic thinking, (Chau and Tam, 1997, Mehrtens et al., 2001, Nguyen et al., 2015) all these have made information on these surroundings (internal and external) important during adoption decision-making process when adopting emerging ICTs in SMEs (Andries and Debackere, 2006). Therefore, using TOE framework helped us to explore information behaviour of SME managers acknowledging that both internal and external put pressures on small businesses to adopt emerging ICTs and both are known as drivers and barriers to adoption. Hence, SME managers will consult both internal and external sources of information when seeking for information on emerging ICTs. Therefore, the theoretical framework shows that this research explores factors that influence these information source selections and information use in SMEs during adoption decision -making process. In conclusion, in this chapter, the research theoretical framework from TOE framework and literature review within information science is used for data gathering, collection, analysis, research findings, and discussion for this study.

3 Research methodology

According to Myers (2013), a research method is determined by the research methodology adopted in a study. This study was designed to explore and understand SME managers' information behaviours in the decision-making process for adopting emerging ICTs; and the factors that influence their information behaviour. According to Chan and Ngai (2007), qualitative method provides details reality in a significant element and is mostly valuable when a natural setting or a focus on modern-day events is needed. As a result, an Interpretivism qualitative research was thought necessary. This study follows Shenton's (2004) strategies for ensuring trustworthiness in qualitative research in order to established research rigour in this study. Sampling strategy sampling strategy within which; snowballing and purposeful samplings were used. The initial four participants in the preliminary study also helped to test the data collection technique because during the unstructured interviews participants were allowed to talk freely without interruption. Purposeful sampling (non-statistics) helped in selecting SME managers who provided initial information and they met the criteria by BIS. The data collection was stopped when theoretical saturation. Theoretical saturation is where new information and categories are not forthcoming from the data analysis (Urquhart et al., 2010). As a result, twenty participants were interviewed altogether. The interviews lasted around forty-five minutes and were all conducted face-to-face. Data was analysed following the data-driven, thematic qualitative analysis process (Braun and Clarke, 2006) and NVIVO 10 software for analysing qualitative data was used as a data analysis tool which helped in data management.

4 Findings and discussion

The purpose of this research was to explore the information behaviors of SME managers in the UK during adoption decision-making process. SME managers in this study perceived information on technology, organization environment to be the most significant categories of information needed in their adoption decision-making process as shown in figure1. From the findings, a conceptual framework was developed that shows the information needs of SMEs based TEO model during adoption decision-making process. This information needs triggered SME managers' information behaviour and several information sources were consulted in the process of gathering information. How well SME managers succeed in reducing the uncertainties related technology organisation environment and gathered information affects their adoption decision-making during this process. Each of these concepts not only triggered information-seeking behaviour of SME managers but also factors that influence their information behaviours were identified when during this process. For example, Perceived technology information needs trigger in-depth search and using various information sources to gather information on security this will also help them to evaluate the need for the emerging technology and technical aspect of it as well. Such as uncertainty driven, compatibility, legacy technology, relative advantages, lack of technical know-how, perceived affordability, fit for purpose, perceived risk. Not only on technical and need of the emerging ICT, perceived organisation information needs trigger them to gather information on user behaviours such as user acceptance information. The perceived environment information needs on is significant as well. For example, information on competitors, customers, the emerging ICT provider credibility and government policy allowed SME managers to reduce uncertainties and equivocality.

These three contexts technology organisation environment helped SME managers to evaluate the emerging ICTs and in the process of evaluation, they seek for information using different sources of information. As a result, this leaves them overloaded with information from different sources, which leads to analyse the factors that influenced them to use the information and select sources of information, as shown in Figure1. The results of this research have helped to understand SMEs' information behaviours and explored their information needs during adoption decision-making process. The present research also highlights the multifaceted process of information behaviour of SME managers in real life situation. Furthermore, Information sources selection and use is essentially influenced by Perceived information sources credibility, perceived information reliability and other factors as show in figure 1, these factor influenced SME managers to use information from the sources for their adoption decision-making. This study has highlighted how government can create awareness on different policies and sources that can be used to create such awareness; this will reduce time spent on information search in SME.

5 Future research

This research was not on any specific emerging ICT. The future research could investigate in more details information behaviour of SME managers in a specific technology, such as cloud computing, big data, instead of general emerging ICTs. Secondly, this study cannot be generalised because the research method adopted and the location where the research was done was limited in term of participant selections. The whole of UK future research could also be done in other locations especially in England by exploring information behaviours of SME managers in during decision- making process when adopting emerging ICTs in different sectors and using both mixed methods and quantitative method.

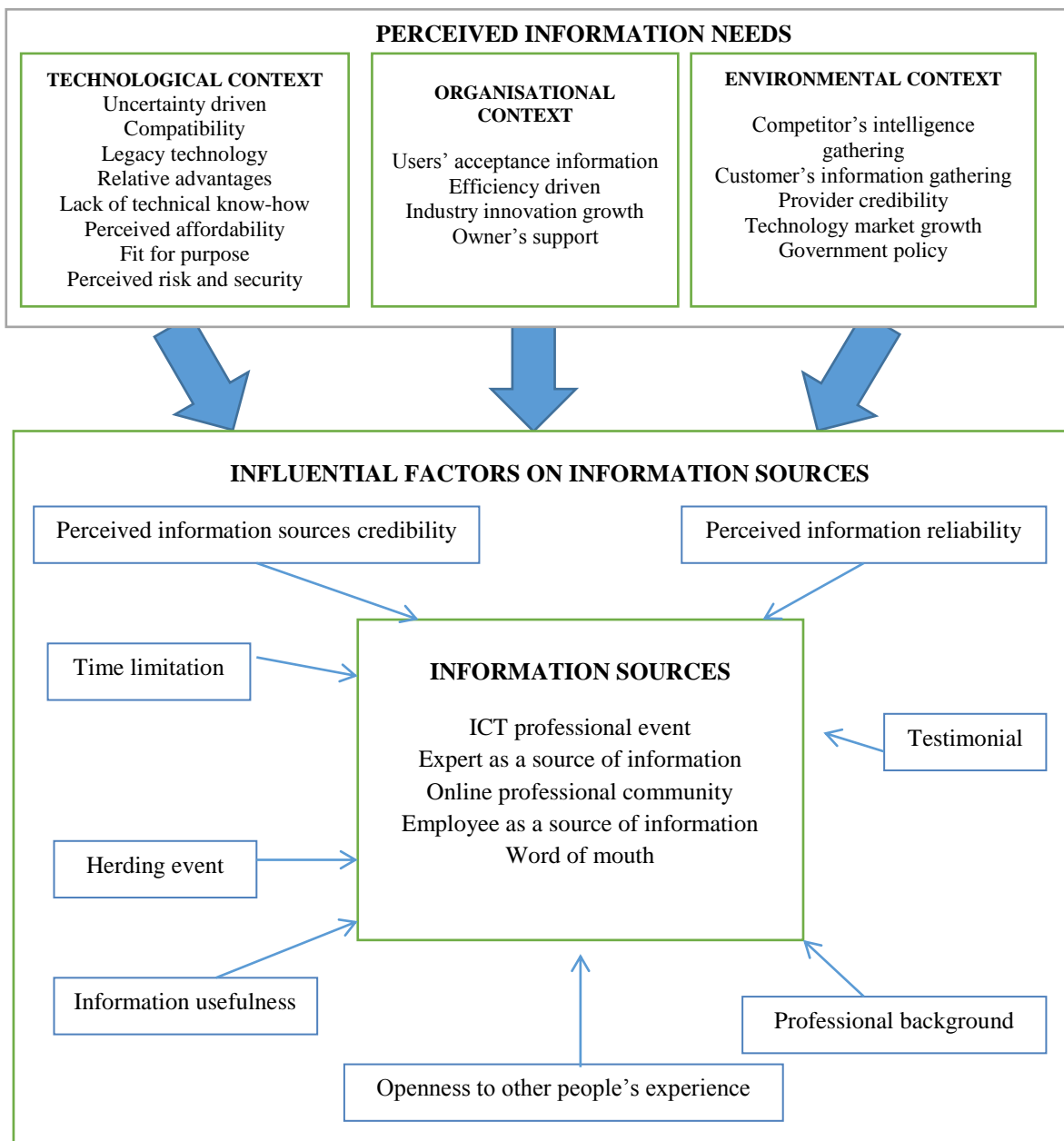


Figure 1 conceptual framework on information behaviour of SME managers during adoption decision-making.

References

- ANDRIES, P. & DEBACKERE, K. 2006. Adaptation in new technology-based ventures: Insights at the company level. *International Journal of Management Reviews*, 8, 91-112
- AGUILAR, F. J. 1967. *Scanning the business environment*, Macmillan.
- AU, Y. A. & KAUFFMAN, R. J. 2003. What Do You Know? Rational Expectations in Information Technology Adoption and Investment. M.E. Sharpe.
- BADILESCU-BUGA, E. 2013. Knowledge behaviour and social adoption of innovation. *Information Processing & Management*, 49, 902-911.
- BAKER, J. 2012. The technology–organization–environment framework. *Information Systems Theory*. Springer
- BRAUN, V. & CLARKE, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.
- BIS, (2015). Department for Business Innovation & Skills [Online]. Available: <https://www.gov.uk/government/organisations/department-for-business-innovation-skills> [Accessed 11/10/2015].
- CASE, D.O., 2007. Information behaviour. *Annual review of information science and technology*, 40 1, 293-327
- ČERNÁ, M. 2014. Aspects of Information Management in Context with IS Selection by SME. *Procedia Engineering*, 69, 745-750.
- CHAN, S. C. & NGAI, E. W. 2007. A qualitative study of information technology adoption: how ten organizations adopted Web-based training. *Information Systems Journal*, 17, 289-315.
- CHAU, P. Y. & TAM, K. Y. 1997. Factors affecting the adoption of open systems: an exploratory study. *Mis Quarterly*, 1-24.
- COSH, A., HUGHES, A. & WOOD, E. 1999. Innovation in UK SMEs: causes and consequences for firm failure and acquisition. *Entrepreneurship, small and medium-sized enterprises and the macroeconomy*, 329-366.
- DAFT, R. L. & LENGEL, R. H. 1986. Organizational information requirements, media richness and structural design. *Management science*, 32, 554-571.
- DAFT, R. L., SORMUNEN, J. & PARKS, D. 1988. Chief executive scanning, environmental characteristics, and company performance: An empirical study. *Strategic Management Journal*, 9, 123-139.
- DE SAULLES, M. 2007. Information literacy amongst UK SMEs: an information policy gap. Aslib proceedings, Emerald Group Publishing, 68-79.
- DERVIN, B. 1983. *An overview of sense-making research: Concepts, methods, and results to date*, The Author.
- DUNCAN, R. B. 1972. Characteristics of Organizational Environments and Perceived Environmental Uncertainty. *Administrative Science Quarterly*, 17, 313-327.
- Duan, Y., Mullins, R., Hamblin, D., Stanek, S., Sroka, H., Machado, V. and Araujo, J., 2002. Addressing ICTs skill challenges in SMEs: insights from three country investigations. *Journal of European Industrial Training*, 26, 9,430-441.
- ELLIS, D. 1989. A behavioural approach to information retrieval system design. *Journal of documentation*, 45, 171-212.
- FASSIN, Y., VAN ROSSEM, A. & BUELENS, M. 2011. Small-business owner-managers' perceptions of business ethics and CSR-related concepts. *Journal of Business Ethics*, 98, 425-453.

GRANT, K., EDGAR, D., SUKUMAR, A. & MEYER, M. 2014. 'Risky business': Perceptions of e-business risk by UK small and medium sized enterprises (SMEs). *International Journal of Information Management*, 34, 99-122.

GRIFFITH, T. L. 1999. Technology Features as Triggers for Sensemaking. *Academy of Management*.

GUPTA, P., SEETHARAMAN, A. & RAJ, J. R. 2013. The usage and adoption of cloud computing by small and medium businesses. *International Journal of Information Management*, 33, 861-874.

GUTIERREZ, A., BOUKRAMI, E. & LUMSDEN, R. 2015. Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of Enterprise Information Management*, 28, 788-807.

JOHNSTON, D. A., WADE, M. & MCCLEAN, R. 2007. Does e-Business Matter to SMEs? A Comparison of the Financial Impacts of Internet Business Solutions on European and North American SMEs. *Journal of Small Business Management*, 45, 354-361.

INGWERSEN, P. 1996. Cognitive perspectives of information retrieval interaction: elements of a cognitive IR theory. *Journal of documentation*, 52, 3-50

NGUYEN, T. H., NEWBY, M. & MACAULAY, M. J. 2015. Information Technology Adoption in Small Business: Confirmation of a Proposed Framework. *Journal of Small Business Management*, 53, 207-227.

MYERS, M. D. & NEWMAN, M. 2007. The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17, 2-26.

MYERS, M. D. 2013. *Qualitative Research in Business & Management*, London: Sage .

MILLIKEN, F. J. 1990. Perceiving and interpreting environmental change: an examination of college administrators' interpretation of changing demographics. *Academy of Management Journal*, 33, 42-63.

MEHRTENS, J., CRAGG, P. B. & MILLS, A. M. 2001. A model of Internet adoption by SMEs. *Information & Management*, 39, 165-176.

OLIVEIRA, T. & MARTINS, M. F. 2011. Literature review of information technology adoption models at firm level. *The Electronic Journal Information Systems Evaluation*, 14, 110-121.

KUAN, K. K. & CHAU, P. Y. 2001. A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework. *Information & Management*, 38, 507-521.

KUHLTHAU, C. C. 1999. The role of experience in the information search process of an early career information worker: perceptions of uncertainty, complexity construction, and sources. *JASIS*, 50, 399-412.

KYDD, C. T. 1989. Understanding the Information Content in MIS Management Tools. *MIS Quarterly*, 13, 277-290.

LIAO, J., WELSCH, H. & STOICA, M. 2003. Organizational absorptive capacity and responsiveness: an empirical investigation of growth-oriented SMEs. *Entrepreneurship Theory and Practice*, 28, 63-85.

SHENTON, A. K. 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, 63-75.

Tornatzky, L.G., Fleischer, M. and Chakrabarti, A.K., 1990. *Processes of technological innovation*. Lexington Books.

TAVARES, S. M., VAN KNIPPENBERG, D. & VAN DICK, R. 2015. Organizational identification and "currencies of exchange": integrating social identity and social exchange perspectives. *Journal of Applied Social Psychology*

- YANG, X. & FU, J. 2008. Review of IT/IS adoption and decision-making behavior in small businesses. *Tsinghua Science & Technology*, 13, 323-328.
- URQUHART, C. & YEOMAN, A. 2010. Information behaviour of women: theoretical perspectives on gender. *Journal of Documentation*, 66, 113-139.
- VAN RIEL, A. C., LEMMINK, J. & OUWERSLOOT, H. 2004a. High-technology service innovation success: a decision-making perspective. *Journal of Product Innovation Management*, 21, 348-359.
- WILSON, T. D. 1997. Information behaviour: an interdisciplinary perspective. *Information Processing & Management*, 33, 551-572.
- WILSON, T. D. 2000. Human information behavior. *Informing Science*, 3, 49-56.