Chapter 72
Measuring Mobile Phone Technology Adoption in SMEs:
Analysis of Metrics

Renatus Mushi
Institute of Finance Management, Tanzania

Said Jafari
Institute of Finance Management, Tanzania

Almar Ennis
Dublin City University, Ireland

ABSTRACT

Mobile technology has experienced a huge acceptance by many users in the current generation. This is due to the benefits offered through its use by individuals and organisations. Similarly, technology adoption studies have widely been used to uncover factors which determine their adoption in different contexts. Some of the scenarios in technology adoption differ due to the specific technology which is under study. For instance, mobile phone technology differs from other computing technologies in several aspects due to its nature i.e. mobility. These differences come along with some different insights concerning the adoption of mobile phones in a particular context. Highlighting important issues on studying the adoption of mobile technology is necessary, especially in developing countries where SMEs are engaging in the usage of mobile phones to accomplish business processes. Thus, this paper provides set of metrics for measuring adoption of mobile phone technology in SMEs. This qualitative study uses a combination of critical literature reviews and interviews conducted by involving key stakeholders of SMEs in Tanzania. This paper shows that among the existing metrics which are used in measuring adoption of other computing technologies, only value creation metric has more realistic grounds to explain the extent of mobile phones adoption in the context of SMEs.

1. INTRODUCTION

Technology adoption studies have been conducted in many technology contexts. This is due to a number of roles played by technology in supporting and achieving various activities. Measuring the extent of ICT adoption in organizations is a complex process (Venkatesh & Bala, 2008). Moreover, the type of technology to be studied upon dictates the approach of measurement (Shaikh & Karjaluoto, 2015). That is, the process of adopting and using the technologies are affected by the nature of technology as a changing variable. For example, until the 1960s, the development of data network technology led users to develop and adopt electronic data processing (EDP) systems (Shaikh & Karjaluoto, 2015). The same trend of technology adoption went on to the next decades. In the 1960s the studies focused on transaction processing systems and, Ethernet and COBOL, while in 1970s, it was Decision Support Systems (DSS), Minicomputers, mid-range computers, personal computers, Electronic Data Interchange (EDI) and E-business (Ellison et al., 2007; Harper, 2003; Power, 2007). Similarly, studies in the 1980s focused on Enterprise Resource Planning (ERP) Systems, Executive Information Systems (EIS), Knowledge Management Systems (KMS) followed by 1990s where studies shifted to deal with mobile commerce, mobile banking, and Web-based DSS (Harper, 2003; Power, 2007). From 2000 to date, studies explain more about Near Field Communication (NFC), Android OS, social banking, to name few (Harper, 2003).

The variation of trends of technologies comes along with the need to explicitly express issues concerning the appropriateness in assessing their adoption status. To effectively explain the technology adoption and acceptance, there are two main paradigms which are asserted (Porter & Donthu, 2006). The first paradigm focuses mainly on how the attributes of a technology affect its perception to the users. This paradigm is well explained by the use of technology adoption models like Technology Adoption Model (TAM) (Porter & Donthu, 2006). The second paradigm includes the latent personality dimensions in explaining the usage and acceptance of new technologies (Porter & Donthu, 2006; King & He, 2006). These personality dimensions are likely to vary from one technology to another. Therefore, it is evident that the personal perception on desktop computing technology differs from those which appear on mobile phone technology. This is contributed by the fact that each computing technology emanates unique features worth considering in measuring adoption of such a technology. In some cases, generic perceptions are measured using generic indicators. For example, different societies and countries use the Technology Readiness Index (TRI) to rank their e-readiness status (Porter & Donthu, 2006; Godoe & Johansen, 2012).

Furthermore, studying technology adoption depends on the target audience. For example, the way individual people adopt and use technology differs from the case when the company or organization is in control of the process. Small companies need to have specific theories to address their contexts (Dandridge, 1979). Similarly, small companies behave differently from larger ones due to some unique features. All these contextual issues need to be well addressed by selecting the appropriate approach of measuring the users' perception on a particular technology (Thong, 1999). This paper discusses the range of possible metrics which can be applied to measure adoption of technology. The contributions include insights on the specifics of mobile phones features with respect to technology adoption. These insights will serve as the guideline for future studies and researches.

The rest of this paper includes section two which provides an insight of mobile technology. Discussion on the meaning of SMEs and how they differ from large firms is covered in section three. Section four provides detailed discussions on the metrics used to measure the adoption and usage of ICT while highlighting their suitability to mobile technology in SMEs. Section five discusses the implications of this study and section six provides the conclusion.

Related Content

Software Defect Prediction Using Machine Learning Techniques
G. Cauvery, Dhina Suresh, G. Aswini, P. Jayanthiand K. Kalaiselvi (2023). *Advances in Artificial and Human Intelligence in the Modern Era (pp. 180-195).*
www.irma-international.org/chapter/software-defect-prediction-using-machine-learning-techniques/330405

Augmented Reality Interfaces for Smart Objects in Ubiquitous Computing Environments
A. W. W. Yew, S. K. Ongand A. Y. C. Nee (2014). *Human-Computer Interfaces and Interactivity: Emergent Research and Applications (pp. 208-229).*
www.irma-international.org/chapter/augmented-reality-interfaces-for-smart-objects-in-ubiquitous-computing-environments/111758

Understanding and Assessing Quality of Models and Modeling Languages
John Krogstie (2019). *Advanced Methodologies and Technologies in Artificial Intelligence, Computer Simulation, and Human-Computer Interaction (pp. 967-980).*
www.irma-international.org/chapter/understanding-and-assessing-quality-of-models-and-modeling-languages/213189

Experimental Actions With Conceptual Objects
 (2018). *Experience-Based Human-Computer Interactions: Emerging Research and Opportunities (pp. 47-97).*
www.irma-international.org/chapter/experimental-actions-with-conceptual-objects/190283

Swarm Intelligence for Multi-Objective Optimization in Engineering Design
Janga Reddy Manne (2019). *Advanced Methodologies and Technologies in Artificial Intelligence, Computer Simulation, and Human-Computer Interaction (pp. 180-194).*
www.irma-international.org/chapter/swarm-intelligence-for-multi-objective-optimization-in-engineering-design/213127