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► **To cite this version:**

Abdulla Alhefeiti, Keiichi Nakata, Sunday Eze, Yanqing Duan. The Role of Actors in the Adoption of Emerging ICT in SMEs: An Actor Network Theory Analysis. Maria Cecilia Calani Baranauskas; Kecheng Liu; Lily Sun; Vânia Paula de Almeida Neris; Rodrigo Bonacin; Keiichi Nakata. 17th International Conference on Informatics and Semiotics in Organisations (ICISO), Aug 2016, Campinas, Brazil. Springer International Publishing, IFIP Advances in Information and Communication Technology, AICT-477, pp.234-236, 2016, Socially Aware Organisations and Technologies. Impact and Challenges. <hal-01646610>

**HAL Id: hal-01646610**

**<https://hal.inria.fr/hal-01646610>**

Submitted on 23 Nov 2017

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# The Role of Actors in the Adoption of Emerging ICT in SMEs: An Actor Network Theory Analysis

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**Abstract.** This paper aims to understand the role of actors in the adoption of emerging Information and Communications Technologies (ICT) using Actor Network Theory (ANT). The use of ANT helps to identify a diverse range of actors and their role and influence in the dynamic process of emerging ICT's adoption in UK Small and Medium Enterprises (SMEs). This study adopts a qualitative approach to investigate how UK services SMEs are engaged in emerging ICT adoption by focusing on the role of actors in the process. Data were gathered through unstructured and semi-structured interviews with managers, IT experts, government agencies, and customers. Using ANT, the roles of various human and non-human actors at a four-stage dynamic adoption process are examined. The findings reveal the critical and dynamic roles of various actors in the socio-technical network. Although SME managers play the decisional role in emerging ICT adoption, their views and decisions are constantly influenced by various other human and non-human factors. The roles and interactions of all actors are dynamic depending on the adoption stages.

**Keywords:** SMEs · ICT adoption · Actor Network Theory · Technology adoption

## 1 Introduction

Although emerging ICT applications offer great opportunities, their successful adoption faces challenges by SME managers and their long-term viability is often uncertain due to the fact that small businesses operate in much more volatile environment with little support on new technology adoption. Very often various stakeholders influence the adoption outcomes. Although ICT adoption has received extensive attention from various researchers, most of research focuses on the factors affecting ICT adoption by treating ICT adoption as a static decision making event and there has been very limited inquiries on how the various actors exert influences that may encourage or inhibit adoption [1]. This research aims to better understand role of diverse actors and their influences in emerging ICT adoption process in UK service SMEs using Actor Network Theory (ANT). This study adopts a qualitative approach aiming to gather rich data. The empirical data collected through interviews are used to first establish a

dynamic adoption process that has been published in [2]. Based on the process of emerging ICT adoption, this study provides further analysis on the dynamic roles of actors and their key influences at each stage of dynamic adoption process.

This study is theoretically underpinned by ANT because it offers a suitable lens for our investigation and understanding. ANT admits that actors are not restricted to only human beings; rather it is based on how strong the association between human and non-human actors is and tracing such association to a source. Overall, the strength of ANT in understanding ICT adoption lies in its emphasis on studying both the human and non-human entities [3]. The key ANT concepts of inscription, translation, framing and stabilization are adopted for the study.

The research employed a two-round data collection process using unstructured (first round) and semi-structured (second round) interviews. In the first round, the interviewee sample was generated from an online data base and 65 participants were contacted randomly, of which 11 participants were interviewed. In the second round, 15 semi-structured interviews were conducted with a range of key human actors identified from the first round of interviews.

## **2 Key Findings and Conclusion**

Using ANT to examine the process of emerging ICT adoption has helped to unveil the dynamic nature of ICT process and the roles of diverse actors involved in the social-technical network of technology adoption. A number of important findings are emerged from our analysis using ANT as a theoretical lens, including 1. Actors' roles are not static, but dynamic, they play different roles at the different adoption stage; 2. Both human and non-human actors influence and are influenced by each other; 3. SMEs managers are the key actor and play a dominant role in influencing and be influenced by non-human actor, i.e. emerging ICT in this context. Overall, emerging ICT adoption has moved from a simple adopters' participation process to involving various actors that constantly interact and influence the process. The findings not only advance our knowledge and understanding on the dynamic nature of emerging ICT adoption and the roles of diverse actors, but also help small business managers to be more strategic and proactive since the adoption of emerging ICT is becoming more challenging. The main limitation of this study is the small sample size used in the data collection due to the nature of qualitative approach. Therefore the key findings can be further validated across a wider population using a mixed method of qualitative and quantitative approaches.

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