

Literature Review on the Use of Technology and Information Systems in SMEs

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DOI: 10.6007/IJARBSS/v6-i12/2528 URL: <http://dx.doi.org/10.6007/IJARBSS/v6-i12/2528>

Abstract

In order to improve their efficiency and performance, companies especially small and medium sized enterprises (SME) adopt new technologies, information systems (IS) and widely used accounting information systems (AIS). This paper seeks to understand general points to consider in the adoption of similar systems and the factors that influence the adoption of these systems in the SME context using the extant literature. The relationship between the AIS systems and firm performance is also considered to shed light to leverage points in the use of AIS and the role it plays in management decision making. Accurate and timely, information based detailed reports are easily produced using AIS helping decision makers, planners and internal auditors.

Keywords: Accounting information systems, small and medium enterprises, SME performance

Introduction

This study uses the extant work on the relationship between technology use, accounting information systems (AIS) and Small and Medium Enterprises (SMEs) performance to underline the determinants of this relationship. Many studies determined the technological factors influencing performance of SMEs as owner commitment, information technology (IT) level, external IT expertise, and general technology use (Hussin et al., 2002; Ismail and King 2006).

The implementation and the effect of technology use in SME context is less investigated than in large scale companies but the use of technology can be more crucial for SMEs performance (Grande et al., 2010). Accordingly, many studies on the SME environment showed a positive relationship among level of technology (Choe, 2002), AIS strategy (Boulianne, 2007; Tuanmat and Smith, 2011), and technology investment (Rahayu, 2012).

Burca et al. (2006) showed the indirect effect of technology use on performance in service sector. Dibrell et al. (2008) showed that the technology investment plays an important role in the innovative character of companies and their

performance. In the same line of research, Naranjo (2004) examined the effect of the use of AIS on performance measures. Moreover, several studies state the use of IT technologies and its positive effects on performance (Hussin et al., 2002; Ismail and King 2006).

The main issues in the technology use for SMEs are the lack of financial resources and fast developing IT (Malarangeng, 2009), management knowledge (Levy, et al., 2011, Francalanci and Morabito, 2008). This paper will add to the extant literature by showing the relationship, direct or indirect, between the antecedent factors of latest technology use and performance. This paper will directly document empirical researches on technology use and identify research gaps related to SMEs' performance as a basis for an empirical future research. To achieve this purpose, the first section of this paper will explain previous researches conducted in different countries, different measurements and methods; the second section will discuss several factors that influence the relationship between technology use and SME performance and identify factors that affect technology implementation to improve performance which will be resulted in competitive advantage.

Literature Review

The extant literature on technology use in SME context shows several performance factors such as strategy, owner commitment, and external technology expertise. Thong (1999) identified the characteristics that play a role in SME performance using data from Singapore based SMEs and affirmed that CEO characteristics (innovativeness and level of technology knowledge), innovation characteristics (relative advantage, compatibility), and organizational characteristics (business size and employee knowledge) are important in technology adoption and use. Hussin et al. (2002) in UK context supported this research and indicated that technology adoption depends more on the internal technology knowledge level of the firm and firms with a higher knowledge rely on their own team excluding outside experts that they see as a danger.

Ismail and King (2006; 2007) emphasized the importance of accounting information systems and the information processing capability. The conformity between the required information quantity and the accounting information system that processes this information to provide management with necessary reports contributes to the performance of SMEs in developing economies. Therefore, the strategic use of technology and IT adds also to the firm value making them adopt new more information based business strategies. The conformity between the type of accounting information system and the general IT strategy of the firm that Boulianne (2007) formulates as defender, prospector and analyzer strategies have an effect on the overall performance of the company. In the same line of research, the relationship between technological capabilities and firm performance is also supported by Isobe et al. (2008) in a study of 302 SMEs. Moreover, the alignment of strategy and information technology is realized by shared vision, cooperation, empowerment, and innovation backed by technology making it connected, flexible and most importantly easy to report.

Sharma and Bhagwat (2003) evaluated information systems performance according to operational efficiency of the information system, downtime and the responsiveness of the system. Accordingly, Levy et al. (2011) in their study showed that the alignment between

information system and strategy, the user-friendliness and the functionality of the system play an important role in the SME's performance. However, the investment in information is limited to supporting operations and transactions.

The performance increase supported by information systems is supported by Estebanez et al. (2010) especially in the service sector using information systems intensively. The study also showed that new accounting standard implementation and information systems usage are the key factors for SMEs that align strategies with organizational culture towards continuous improvement and competitiveness in the market

These studies show a significant positive relation with SMEs performance and the information system but the information systems sophistication level and the company's requirements must be fit (Ismail and King, 2006) and in order to measure this fit level several studies suggested factors such as the systems and organizational characteristic (Thong, 1999), type of industry (Sousa et al., 2006) and type of strategy (Bouliane, 2007) moreover the extant literature shows that business strategy (Tuanmat and Smith, 2011), owner commitment (Amidu et al., 2011), IT expertise (Amidu et al., 2011) are also other factors affecting AIS implementation success and the company's performance. The next part of our study will explain these factors according to the literature.

Factors in Technology Use, Information Systems and AIS Implementation

Literature shows that organizational characteristics have an impact on the implementation of any information system or accounting information system (Thong, 1999). Thong in his work also added the competition in the market and information intensity in the sector as an important factor especially for SMEs. Accordingly, Ismail and King (2007) showed that there are significant differences between large and small firms in the implementation of similar systems. Moreover, Tuanmat and Smith (2011) suggested that SMEs should invest in implementing accounting information systems to be able to compete in a changing environment as market becomes more competitive. Thereby, businesses in different sectors have different information processing needs and different levels of sophistication in their information systems needs (Thong, 1999).

The owner commitment has also an impact in the implementation process of accounting information systems Delone (1988) argued that the owner of a company is a key factor in AIS implementation and usage. If the owner of a company is familiar with, and involved in information systems, the implementation will be more successful. Accordingly, Thong (1999) emphasized the impact of the owner's knowledge of these systems in the success of implementation process. Especially, SMEs owners need to keep updated accounting information systems for decision making accurately and timely. The adoption of accounting information would ensure proper accounting practices as good accounting practices have some implications for SME managers (Lohman, 2000; Amidu et al., 2011). Chu (2009) reported that in SMEs, the owners will be more responsible for the development of information and technology to improve organizational performance.

Moreover the owner's knowledge can lead the company to use more sophisticated accounting information systems that will help managers be aware of many events that can be unnoticed

by others. Accordingly, Naranjo (2004) argued that using sophisticated AIS managers notice the strategic positions better and enhance their performance through information that is shaped by scope, timeliness, aggregation, and integration. Burca et al. (2006) argued that a sophisticated AIS is a need for businesses requiring strong technical, updated base such as service sector. Accordingly, Estebanez et al. (2010) found that SMEs in the service sector use AIS intensively and Al-Egab and Ismail (2011) argued AIS design is influenced by environmental conditions and the sophistication provides managers with sufficient quantity of information to design their business strategy and seeking for competitive advantage by adopting cost leadership strategy to know the features acceptable for the company or to avoid inconsistency in the next business process. These strategies especially cost leadership and innovation differentiation can only be planned and implemented effectively using sophisticated AIS design. However, this system must be aligned with the business strategy to support every process in the operations and transactions in a simple and clear way to achieve efficiency. Tuanmat and Smith (2011) emphasized the importance of this alignment that affects SMEs financial and non-financial performance arguing that SMEs should consider investment in IS and AIS to deal with a variety of customers, the change in environmental factors and increasing competition. In order to ensure the success of AIS implementation and increase in company performance, IT experts and managers should work together and integrate information (Thong, 1995; Woznica and Healy, 2009).

The Performance

AIS can have a positive influence on organizations by adopting rapidly to the changing environment, and easy management of transactions. The increased speed of flow of information between different staff levels and the possibility of the new business on the network and improved external relationships for the firm, mainly with the foreign customers increase firm's performance (Delen et al. 2013). Several studies have also added that AIS acts as a mechanism that facilitates the implementation of organizational strategy and increases the flexibility in the company (Bouwens and Abernethy, 2000; Chenhall, 2003; Soudani, 2012).

Most of the studies in the field, have measured the performance of SMEs in the two approaches, financial and non-financial (Delen et al., 2013). Soudani (2012) used ROA, ROI, debt in capital structure, left over, variable cost, and raw-material to measure firm performance. In Malaysia, Ismail and King (2006) used long term profitability, availability of financial resources, and sales growth to measure the financial performance of a company. Boulianne (2007) stated that business unit performance is represented by three indicators: return on assets, net profit margin, and revenue growth. Burca et al., (2006) used ROI and earnings before tax to measure the financial performance of a firm. Perez et al., (2011) explored the impact of accounting information system (AIS) on these performance measures, with an empirical evidence in Spanish small medium enterprises (SMEs). The research showed that the use of AIS helped improved companies' performance indicators and productivity.

However, Choe (2002) and many other researchers (e.g. Miller 1992; Bledsoe, 1997; Abernethy and Lilis 1995) used non-financial performance indicators such as quality improvement and speed of delivery of product or service. Tuanmat and Smith (2011) used product availability,

product quality, and sales service and support as indicators for improvement by AIS. Similarly, Sousa et al. (2006) used productivity, customer satisfaction, and customer requirement. Moreover in a long term perspective, new product and technological innovations realized by the company can also be non-financial indicators (Isobe et al., 2008).

Conclusion

This study, based on previous researches, using the results of studies show the effect of AIS implementation on SMEs performance. Previous researches have shown that accounting information system adoption increases firm's performance and efficiency in operations allowing to easily track and record every transactions and to create related reports quickly for decision makers and stakeholders.

The relationship between AIS implementation and performance can be analyzed using a variety methods and variables, especially non-financial performance that is still limited in SMEs. Moreover, the adoption and the training of the staff and the alignment of the system with other systems in the company are also essential for business success.

The alignment plays an important role in the performance of the AIS and the financial performance of the company. Moreover, Choe (2002), stated that alignment has a significant effect on non-financial performance. Future studies could examine these effects considering type of industry, the type of strategy on use of technology and IT implementation in the company and AIS alignment.

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