FACTORS INFLUENCING COOPERATIVE BUSINESS INNOVATION THROUGH INFORMATION TECHNOLOGY ADOPTION; A CONCEPTUAL FRAMEWORK DEVELOPMENT

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Abstrak

Kesan dan akibat teknologi maklumat (IT) dalam operasi perniagaan telah menjadi topik perbincangan yang penting di seluruh dunia. Nampaknya impak IT sangat penting kepada mana-mana organisasi perniagaan untuk meningkatkan kecekapan dan produktiviti. Koperasi, sebagai kategori penetapan perniagaan, harus juga mengadoptasi IT sebagai alat penting untuk terus berinovasi proses perniagaan mereka sebagai alat untuk kelestarian dalam era globalisasi. Walau bagaimanapun, setakat mana koperasi-koperasi ini telah menerima teknologi masih perlu dipelajari. Beberapa soalan berkaitan dengan penggunaan IT dan faktor-faktor yang mempengaruhi serta kesan impak IT terhadap prestasi perniagaan di kalangan koperasi perlu dijawab. Oleh itu, kertas kerja ini bertujuan untuk mengkaji faktor-faktor yang mempengaruhi penerimaan IT dan kesan prestasi IT dalam operasi perniagaan koperasi. Kajian ini juga bertujuan untuk mencabar andaian implikasinya dalam model penerimaan teknologi, iaitu tidak ada kesan yang sederhana dalam hubungan antara niat tingkah laku dan penggunaan sebenar sistem. Khususnya, kajian ini mengkaji kesan faktor-faktor sebelumnya-efikasi diri, imej, norma subjektif, dan kesedaran tentang persepsi; dan pengaruh sokongan pengurusan moderator atas niat dan pengangkatan. Selanjutnya, kajian ini juga bertujuan untuk mendapatkan lebih banyak lagi kesan impak yang diterima oleh IT dalam aktiviti perniagaan koperasi yang dipercayai mempengaruhi secara langsung atau tidak langsung proses penerimaan.

Kata kunci: pengambilan teknologi maklumat, koperasi, model penerimaan teknologi

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Abstract

The emergence and consequences of information technology (IT) in business operation has become pertinent discussion topics worldwide. It seems that the impact of IT is very crucial to any business organization towards improving its efficiency and productivity. Cooperatives, as a category of business settings, have to also adopt the new IT as an important tool to further innovate their business process as a means for sustainability in the globalize era. But nevertheless, to which extent these cooperatives have adopted the technology remains to be studied. Some questions with regard to the adoption of IT and the influencing factors as well as perceived impacts of IT on business performance among cooperatives need to be answered. Hence, this paper intended to study factors that influence IT adoption and perceived performance effects of IT in cooperatives business operation. This study also aims to challenge the implicit assumption in technology acceptance model, i.e. non-existing of moderating effects on the relationship between behavioral intention and actual use of system. Specifically, the study examines the effects of prior factors-self-efficacy, image, subjective norm, and awareness on perception; and the influence of moderator-top management support on intention and adoption. Subsequently, the study also intended to seek further light on the perceived impacts of IT adoption in cooperative business activities which is believed to affect directly or indirectly the adoption process.

Keywords: *information technology adoption, cooperatives, technology acceptance model*

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1.0 Introduction

The contribution of social enterprises as well as cooperative (also co-operative or co-op) to social-economic development has been globally appreciated. A Cooperative is a business entity owned and run by a team of individuals for their shared benefit. According the International Cooperative Alliance (ICA), a cooperative refers as an "autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations, through a jointly owned and democratically controlled enterprise" (United Nation [UN], 2011). Operationally, members of cooperative have dominant control over the cooperatives compared to other form of business organizations. A cooperative's setting looks simpler in terms of decision making system, governance, the directors as representative of its members: in which the members act as principal, and the managements as agent (Torgerson, Reynolds, & Gray, 1997).

The number of cooperatives and their members are continuously increasing particularly in the current economic condition, for securing investment and cultivating social equity. Cooperatives and social enterprises are the world's finest optimism of realizing harmony, affluence, and social fairness in this new era (Curl, 2010). Consequently, after the industrial revolution, the number of cooperatives is rising and the idea of business cooperation has spread into various sectors and economic activities. Nowadays, cooperatives continue to dynamically generate and create employment for social-economic well being.

Since past decade, this type of business organization has widely being spread all over the world due to its considerable performance. It is estimated that from 74 countries in all continents which represent 79% of the world's population, where 250 million individuals work within the scope of cooperatives business activities: equivalent to 8.73% of the world's employed population that is substantially higher if compared to 100 million jobs offered in 1990s (Roelants, Hyungsik, & Terrasi, 2014).

In reality, a cooperative function in a similar manner with other commercial firms, which is to serve for the market demand. They also need to react to the new changes in business environment. According to Hebert (1994), fast changes in technology, demands firms to be more responsive to the human factors, which very much determine the successful technology adoption by the organization. In the meantime, a firm's directions is determined by its leaders consisting of chief executive officers and top management. In that sense, cooperative managers also need to play similar role in bringing success to the organizations. In other word, managers also need to manage various changes that can potentially affect their organization in the form of technology, globalization, and lifestyle (Mhd Sarif & Ismail, 2010 as cited Hitt, Black and Porter (2009, pp.26-31).

At present, the emergence of Information Technology (IT) in recent years has given substantial impact on global business organizations. Many scholars have confirmed the dramatic improvement in business efficiency and productivity as a result of the use of IT (Shah Alam & Mohammad Noor, 2009; Niehm et al., 2010). Previous research discovered that IT adoption has improved productivity, generated useful value to customers, accessed to market, and enhanced organizational performance (Hitt & Brynjolfsson, 1996; Chairoel, Widyarto, & Pujani, 2015). A firm (including cooperative) which employs business strategies through empowering IT or Information System adoption has a significant effect on its performance (Shu-Hung Hsu, 2012). This performance is commonly known as operational performance, a mediating factor which eventually effects financial performance of any business organization.

However, besides significant role of IT in business enterprises particularly, Cheuk (2012) reports that only about 50% of the cooperatives adopt IT in their operations. The question of why some of the cooperatives adopt the IT while others still not adopting it are still being understudied. In fact, a lot of studies have been conducted to recognize and evaluate these factors by researchers since previous couple of decades (Legris, Ingham, & Collerette, 2001).
Therefore, studies on adoption and diffusion of IT have become increasingly critical to improve understanding and prediction of IT acceptance and utilization. It is also crucial to associate impacts on adoption or implementation of IT into cooperative business operational performance because of its substantial financial payout. Nevertheless, little studies were conducted to explain which factors effect IT adoption in cooperative business. Additionally, not many studies were found to seek to explain perceived performance effects on IT adoption in cooperative entities. This study therefore, attempted to fill the research gap by investigating factors influencing the relationship between variables and IT adoption within the cooperative organizations and consequently establishing the relationship. In turn, the research is also conducted to explore perceived impacts from the IT adoption on cooperative business performance.

2.0 Literature Review

Nowadays, IT has been known to play a vital role in improving economic growth and enhancing efficiency. In the 1960s and 1970s, research showed great support from telecommunications technology to economic production and distribution, public service delivery, and government supervision. In the next decade of 1980s, information were acknowledged as a new critical factor of production. Subsequently, in the 1990s economic activity such as improved of demand has triggered growing amount of information, coupled with rapid technological revolution made IT substantial to

organizations' competitiveness and growth (Guislain, Qiang, Lanvin, Minges, & Swanson, 2006). A firm's competitiveness and survival depends on its ability to react and adapt to an innovation. Through these technologies, an organization could improve efficiency and quality of business processes (Soto-Acosta et al. 2010; Ramayah et al. 2011; Trigueros-Preciado, Pérez-González, & Solana-González, 2013).

The argument was supported by Hashim (2007) who stressed that companies these days must equip themselves and their employees with knowledge-based economy in order to remain competitive in the global market. In conjunction with that, IT is seen as an important tool for business organizations to face new business challenges. In the global worldwide market, IT offers practical solutions to the obstacles faced by organizations with respect to the productivity of the workers and the quality of service (Napoleon, 1997; Qiang, Clarke, & Halewood, 2006). Cron and Sobol (1983) justified that larger firms which procure or lease their computers and then optimize the use of software were more likely to lower their operating costs and, eventually increase their overall performance (Turnbow, 1996).

Recent IT developments may have promote to a business organization's competitiveness and efficiency through application of sophisticated IT software, such as Customer Resource Management (CRM) and Electronic Data Interchange (EDI), which has empowered organizations to store, share, and use their subscribed information easily (Guislain et al., 2006). In the agriculture sector for instance, Farmers Organizations (FOs) were linked via integrated supplies, production, processing and marketing activities, coupled with application of IT in order to improve delivery system of both agencies (Ahmad,2006).

In summary, the development process of IT and its substantial roles are currently being the prerequisite to cooperative businesses as well, in which they may require to revise their business process in order to be more efficient, effective, and productive. Thus, to improve the adoption and acceptance processes, organization such as cooperative should be aware of their potential individual and organizational influences. Davis (1993) reveals that failure or success of any adoption process is determined by user's acceptance or rejection of any system. Since IT adoption in organization is determined by human characteristics (internal beliefs and external influences), measuring these factors is important to improve the understanding on what has contributed to the process.

Another related subject which was discussed among IT researchers and practitioners is the impacts of IT adoption on business performance. Such performance could be measured through direct or indirect impacts (Bayo-Moriones, Billon, & Lera-Lopez, 2013). Most firms allocate substantial resources in their IT migration in order to improve their competitiveness in current and future markets (Eckhardt, Laumer, & Weitzel, 2009). Past studies, notwithstanding, observed contradiction in the findings due to restrictive IT and organizational performance measures (Paopun, 2001). Moreover, in many cases, findings have also been vague and inconclusive.

Furthermore, the adoption of IT, as heavily debated among IT scholars and practitioners, was due to its huge financial investment needed by any business organization. This study is purposely conducted in order to investigate the relationship between adoption (i.e. represents by actual use of IT) and its perceived impacts on business performance.

3.0 Theoretical background and research hypotheses

Most of models proposed in technology adoption are established from theories coming from disciplines such as behavioral science and social psychology. This study will also develop a conceptual framework based on the technology acceptance model (TAM). Figure 1 shows the proposed model, which uses TAM as the main theoretical foundation. However, previous studies recommended that the original TAM need to also consider other related theories in order to increase its predictive power. This framework attempts to build a parsimonious research model by including some other prior factors, which were studied in TAM2 (i.e. subjective norm and image). However the test for the variables does not restricted to only perceived usefulness as indicated in TAM2. The relationship between the similar variables with perceived ease of use is also accounted for. TAM2, as compared to the original TAM, obviously incorporates additional theoretical constructs bridging the social influence processes (subjective norm and image), while cognitive instrumental processes, i.e., perceived ease of use, remains unchanged. Another essential test to the suggested in this study is the inclusion of the awareness factor as an antecedent to both perceived usefulness and perceived ease of use. The variable which was proposed by Agarwal & Prasad (1998) who investigated its relationship with perception, which was adapted from Roger's diffusion of innovation theory.

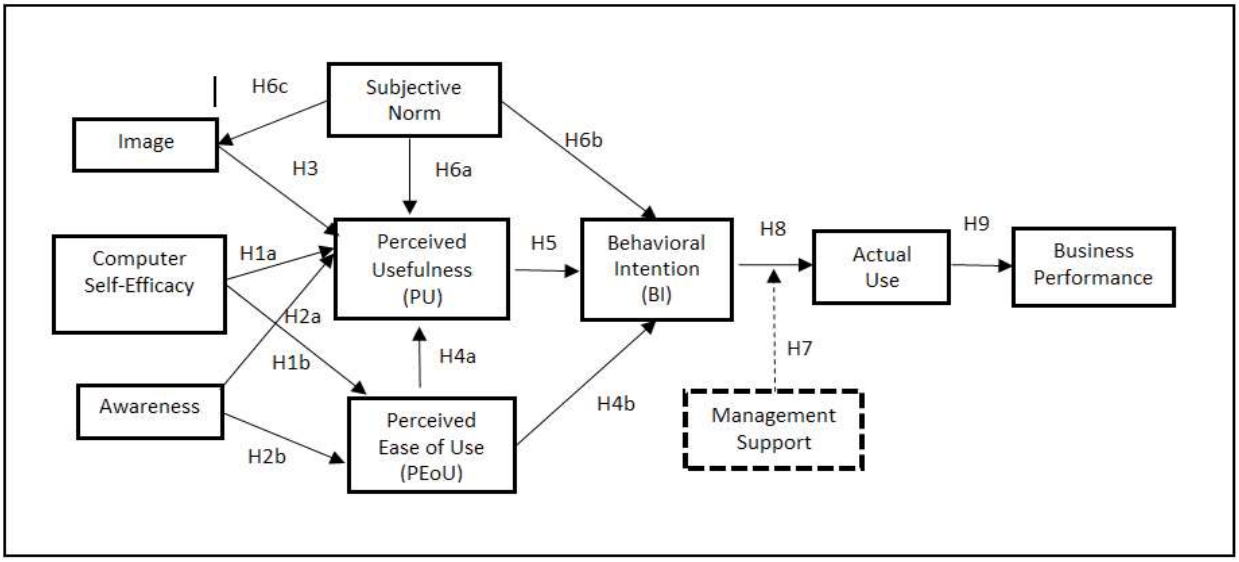

Figure 1: Proposed Conceptual Framework of the Study

The above conceptual framework of this study is depicted as in Figure 1.0. The development of the framework begins with identifying potential factors that might relate to IT adoption in cooperatives. Even if TAM has consistently been applied to the number of technologies, this study deliberately classifies IT into four major categories (Lee, Kozar, & Larsen, 2003), namely a) communication systems, b) general-purpose systems, c) office systems, and d) specialized business systems. Table 1.0 summarizes major classifications of IT as broadly studied using the TAM.

Lee et al. (2003) have segregated communication systems as e-mail, v-mail, fax, dial-up systems, social media, and other related systems. General-purpose systems comprise of windows, personal computers, microcomputers, workstations, the Internet, and other computer facilities. Office systems refer to common software that are often used in workplace such as word processors, spreadsheets, and the like. While specialized business system incorporates special task systems, and mostly organization customized systems such as Case tools, GSS, MRP II, Expert Systems, and etc. The details of the definition are showed as in Table 1.0.

Table 1: Summary of IT Categories applied in TAM Studies

Type of category	% of IT	IT for each category	References
Communication Systems	20	• E-mail • V-mail • FAX • Dial-up Systems • Others (e.g., cellular)	• Karahanna and Straub [1999], Straub [1994] • Karahanna and Limayem [2000] • Straub [1994] • Subramanian [1994] • Kwon and Chidambaram [2000]

General Purpose Systems	28	• Windows • PC (or Microcomputer) • www(or e-commerce) • Workstation • Computer Resources Center • Groupware	• Karahanna et al. [1999] • Igbaria et al.[1995], Agarwal & Prasad [1999] • Gefen and Straub [2000] • Lucas and Spitler [1999, 2000] • Taylor and Todd [1995] • Lou et al. [2000]
Office Systems	27	• Word processor • Spreadsheet • Presentation S/W • Database programs • Groupware	• Adams et al. [1992], Hubona and Geitz [1997] • Methieson[1991],Venkatesh and Davis[1996] • Doll et al. [1998], Hendrickson et al. [1993] • Szajna [1994], Doll et al. [1998] • Malhotra and Galletta [1999],Lou et al. [2000]
Specialized Business Systems	25	• Computerized Model • Case Tools • Hospital IS (Telemedi-cine) • DSS, GSS, GDSS • Experts support System • Others (e.g. MRP)	• Lu et al. [2001] • Xia and Lee [2000], Dishaw and Strong [1999] • Lu and Gustafson [1994], Rawstorne et al.[2000] • Sambamuthy and Chin [1994], Vreede et al[1999] • Gefen and Keil [1998], Keil et al. [1995] • Gefen [2000]

Source : (Lee et al., 2003)

Each of these constructs in the conceptual framework is defined and develop the theoretical rationale for the causal relationships of the model. The for the proposed is depicted in Table 2.

Table 2: Summary of the Operational Variables Construct

Variables classification	Variables/ construct	Definition of construct
External/prior factors (antecedents)	Subjective Norm	a manager's perception that people who are important to her think she should or should not use the technology (Chismar & Wiley-Patton, 2002)
	Image	the degree to which a manager believes that use of a new IT would improve his or her status within a social group (Chismar & Wiley-Patton, 2002).
	Computer self-efficacy	Refers to manager's belief or perception that he or she owns the capability to use computers in order to complete specific task (Bandura, 1995). **Also paralleled with Ajzen (2002) who describes computer self-efficacy as the ability to accomplish a specific behavior.**
	Awareness	Manager's state or ability to perceive or to be conscious of presence or importance of IT for better organization's operation. adopted from (Song, 2014). *awareness represented its perceived significance as an important innovation, conceptual relationship with firm's competitive edge, and appropriateness to the adoption behavior (Kim, 2004).
Precedent variable to the original TAM's Constructs	Perceived usefulness	as "the degree to which a person believes that using a particular system would enhance his or her job performance or productivity" (Davis, 1985, 1989; Venkatesh, 2000).
Original TAM's Constructs	Perceived Ease of Use	"the degree to which a person believes that using a particular system would be free of effort, mentally and physically" (Davis, 1985, 1989).
	Behavioral intention	one's intention to perform a given behavior, a central factor of the TAM, the theory of reasoned action, and the theory of planned behavior (Ajzen, 1991)
	Actual usage	using a given IT systems routinely and productively (Thong & Yap, 1995)

Moderator	Top Management Supports	boards of directors, who make important decisions and hold position at the highest ranking in a cooperative organizational structure
External factor	Business performance	non-financial performance i.e. operational performance (Chairoel et al., 2015), has typically been reflected by cost reduction, productivity improvement, organization's capabilities, resources expertise, and the like.

4.0 Conclusion

The literature review has enabled the formation of the conceptual framework needed to study the innovation impact through IT adoption in the cooperative business process. Despite the potential benefits promised by the IT advancement, to date the cooperatives sector does not show a strong adoption of this technology. Other business sectors seems to have benefited most from the IT advancement, such as online retailing, service providers and to some extent the IT advancement have turn some businesses around substantially such as travel agencies, airlines, musics and others. It is time to explore the extent of IT adoption in the cooperative sector, what factors may contribute to allow its adoption and potential benefits that can be obtained by cooperatives through the IT adoption using the framework developed in this study.

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