Influential factors of B2B E-Commerce Acceptance in SMEs’ Structure and Process

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Abstract

Studying the effects of B2B e-commerce adoption on the SMEs process and structure is crucial for businesses. Extant researches have investigated the impacts of adopting e-commerce and provided some findings, but the varied theoretical approaches have produced results that reflect the impacts of either external or internal factors of adopting e-commerce. However, these approaches did not use a complete model with a broader view of the influential factors and since there is an obvious co-relation between these factors, it is essential to further study and examines the factors behind this problem. This paper attempts to provide a complete framework that covers the two types of factors for which the enterprises can use as a reference. The model was developed based on the latest research findings and enriched by some latest countries adoption trial like China and Iran.

Keywords: B2B E-commerce Adoption, IT innovation, SMEs, IT capabilities, China and Iran.

Introduction

Recently, IT innovation, new communication technology and internet diffusion resulted in a growing need worldwide for electronic commerce (e-commerce) applications. All
industrial types started to adopt business-to-business (B2B) e-commerce to gain advantages even small medium enterprises (SMEs) [16]. These businesses’ environment raises the absolute necessity to adopt IT innovation in order to attain the business strategic goals and improve their operational efficiencies [10]. However this implementation has significant impacts on business’s performance and structure. They are classified as financial and non-financial. The financial impacts are purely monetary such as the profitability and cost reduction and the non-financial ones are labour’s conduciveness and teamwork [3]. Although several cases reported positive impacts and success about B2B e-commerce implementation, some failures have taken a place worldwide [16]. For example, studying the effects of e-commerce adoption on China SMEs found that it has a positive effect on the organization's performance and resulted in new business relationships, which makes new business and new marketing paradigms [17].

Due to these differences in the effect, many investigations and studies conducted to find out the impact of B2B e-commerce adoption [5]. Most previous studies and literature reviews found that organization's resources and IT capabilities form different impacts. The reviewed researchers reported the importance of IT and organizational resources in rotating the influence from a negative to a positive impact.

This paper will focus on how the adoption of B2B e-commerce in SMEs affects the organization process and structure. It will detail more on how organization's resources, IT capabilities and related factors may lead to a growth or a downfall after the adoption. It reviewed the latest researches in this area to shape a framework that summarizes factors behind the effect. Moreover the research will enhance the presented information by incorporating some of China and Iran experiments in functioning e-commerce. China and Iran is considered as a sample in this study due to availability of wide range of literature on e-commerce adoption by SMS's.

The structure of this research is organized as follows. The background section will discuss general information about the adoption of e-commerce in SMEs and the factors that shape its impact. Then it will be followed by the framed model where organization can pick up the most important factors that influence their process and structure. Next it will discuss the methodology used, results and analysis of the research and finally, conclusion and recommendation.

**Background**

Universally, it was found that 80% of the economic growth is contributed by the SMEs sector as well as 70% of the economic growth in developing countries is added by SMEs [11]. The success of e-commerce varies among the adopted organizations worldwide. It was found that UK had gained $1.6 billion in retail sales for the first time of adopting B2B e-commerce [2], while when china identified the adoption in 1993; it earned 5.3 million from
online sales in 2007 from their National Commodity Exchange Centre [17].

This dissimilarity in the success level of adoption raised the importance of what could be the core reasons of the above variation among the countries while they may be categorised as developed ones. Is it only by default or organization's resources and IT capabilities set behind the impacts as it was mentioned earlier in the introduction section; what are the non-financial issues that are influencing the growth of B2B e-commerce in the SMEs and result in different impacts?

Many researchers and SMEs managers are investigating the connection between the e-commerce adoption and the firm's productivity. The Iranian case stated that adoption is not only the benefits and gains of the innovation, but there are number of intangible risks and cost associated with it [3]. Another research from Iran stated that the benefits from e-commerce adoption are numerous but a set of barriers are attached such as lack of network system, inappropriate nature of the product and low level of confidence about electronic settlement [15]. Indeed, Germain and Claycomb [12] found that the connected costs to the operation management, supply chain management, transporting, inventory and manufacturing products have high importance in developing and implementing organizational e-commerce process with low cost network that fit the business environment [12]. Whereas, Sobol and Klein [8] related the yield of the adoption to three factors which are the firm's strategies, infrastructure and Chief Information Officer's (CIO) characteristics. These influences are essential to ensure positive returns on implementing the IT innovations as it was estimated [8].

Based on the research reviews it shows that the researchers and investigators view the contrast of adoption's impact on the basis of what they perceive and practice. Thus, there is no common model where all type of organization can refer and use to reason the most significant influential factors for their planned adoption. Indeed, the researches' review shows a consensus that the effect of the e-commerce adoption is controlled by a group of internally and externally variables in SMEs business environment. Based on this discovery those factors can be sorted into a complete model to represent the most significant factors in which it can be used as a guideline in the measurement stage by the organizations with respect to their business type. These influential aspects are:

A. Internal Factors

Most of the reviewed research represents different aspects related to the Intra-environment of work organization in a narrow zone of countries worldwide and it was rarely to find a general observed view. Thus, the most shared internal factors are management support, firm size, IT integration, organizational culture and human capital [10, 4, and 5]

B. External Factors
On the other side, the most influential external factors are government's regulation and industry characteristics [10,4,5].

Figure 1 represents summarized framework for the most influences on B2B e-commerce. These factors are presented in most of the studied cases but their impacts have different ratios.

And since internationally an increase rate of e-commerce sales and return on investment is observable in SMEs [3,14], this research would concentrate mainly on analysing how the above mentioned factors would positively affect the final outcome with adopting B2B e-commerce and contribute to business success.

Research Model and Hypotheses

Since incompatibility was concluded in the earlier developed models as they only diagnosed the problem from one angle; maintaining those models and make one compatible model is highly recommended by the adopters. A framework with the most influential factors on how the adoption of B2B e-commerce impacts the SMEs performance is drawn in Figure 1. This framework is derived from the most common latest models which are presented from 2008 and onwards. Also, it was found that the framework's factors are forced by other controllers like the time of application, initial level of performance the company would like to meet per certain time and the environmental chaos which were only covered by few research [13]. Thus this research is limited to detail the most influential factors as it is represented in figure 1.

A. Internal factors

An analytical study indicates that each organization has internal influences from its business resources and structure like [10,8]:

- Management support
- Firm size
• IT integration
• Human capital
• Organizational culture

In order to find the impacts of these factors we build some hypothesis to check the validity of their positive impacts from different research views.

H1. Management support is positively associated with the organization process after the adoption.

It was concluded by a number of studies that top managers of SMEs had realized the importance of internet presence while small portion of them use electronic transaction for the commercial purpose [15]. Some analytical researchers found that the characteristics of managers are different when they are an IT orientation (CIO) or general management (CEO) [8]. The management support is highly affected by what type of orientation the manager has. CIO as a leader has the power to shape the organization policies during the deployment of any IT infrastructure. The reasons behind this are that the CIO has both power with interest and power with influence unlike CEO who usually have only the power with influence. Besides, CIO tends to seek and exploit new opportunities and keep a positive achievement in the business career because of innovation orientation [13].

H2. Firm size is positively associated with the organization process after the adoption.

SMEs are limited in their resource more than the large enterprises [16]. However, some literature argued that the market is strongly responding to the information announced by small firms rather than the large ones. Indeed, some argued that the stock price of the SMEs is more unstable which makes their operating cost low and result in a high profitability [10]. Thus, many organizations have downsized [11]. These reviews do support the arguments presented in this paper about the serious effects of the firm size on the final organization's performance process. The company's size contributes a lot in setting the required level of control to manage the business's resources effectively and process the e-commerce transactions efficiently. On the other hand, the bigger the size the higher the need of qualified people with specialized capabilities to perform up the manual process whereas the condition is entirely different when the process are done electronically.

H3. IT integration is positively associated with the organizations process after the adoption.

Integration is often associated with Enterprise Resource Planning systems (ERP). It is the most common IT system that supports integration of multiple resources into one processing system. In the adoption of e-commerce in B2B business the availability of right
information in the right time is very crucial to success of the business process [11]. Adoption of e-commerce would results in the need of automating most of the systems' transactions to make them ready for the integration. The integration improves the flow of goods and service between businesses where large volume of commodities are used. Some literatures argued the difficulty of IT integration appear when there is a big gap between the current used system and the requirement of e-commerce. And this would negativity affects the success of the adoption [13]. But this ratio is low in compare to other businesses performance where they reflect a positive impact after the implementation. Besides, the current technological revolution with the availability of open source software and application will strongly replace the above-mentioned gap in the personnel technical knowledge for SMEs.

**H4.** Human capital is positively associated with the organization process after the adoption.

Human resource (HR) skills represent the business HR capabilities to manage the IT changes in organization. HR can effectively handle the complexity of IT projects, evaluate technology options, and envisage creative and feasible technical solution for the uncertain problems [13]. This can be translated as an opportunity to empower the existing HR after the adoption of e-commerce through improving their skills and capabilities. In the other words, HR affects the e-commerce efficiency in handling its automation transaction and outcome profit. One study showed a high probability of e-commerce success was found where the businesses are mainly operating IT investment [8]. This mainly leads to reason the success for both IT employee’s capabilities and the business resources. Since they smooth the change management and eliminate the resistance to change.

**H5.** Organizational culture is positively associated with the organization process after the adoption.

This factor is co-related with the HR capital in the human resources skills and qualification. Their perception is affected by their educational level. The higher the level the more the accountability they show to handle and accept the changes merged with Innovation. And as a result they will build a good culture atmosphere within the work environment which later positively eliminate any chaos and result in high level of teamwork productivity.

**B. External factors**

The surrounded environment of any business will develop dozens of incentives and obstacles to the business's success. They are known as the external influential factors.
Through the data collected for this research, a number of factors were found but the common shared ones are [16]:

- Government
- Industry characteristics

In order to find the impacts of these factors we build some hypothesis to check their validity from different prospective researches.

**H6.** Government policies are positively associated with the organization process after the adoption.

Government obligation and polices play a big role on the adoption of e-commerce in the country. If the government has the interest and support and encourage enterprises to involve technologies while they are running the business, the more they will practices and get positive outcomes throughout their attempts [1]. However, if the government support is low or none; the future of e-commerce is not long to be seen in the country. For example, since there is a huge support from government in China where it build a nation-wide data communication network, the adopters number reached more than 2200 cities and towns nowadays [17]. Today the electronic orientation can be seen in the government itself as they go for e-government which can be used as a hint that in the future the government will support the adoption and may even force trades toward it in order to increase the growth domestic rate. This tendency was perceived with the majority of the CIO of the information technology authorises in the gulf countries in one of the debates in first Gulf Corporation Council countries (GCC) eGovernment conference [7]. It presented the obstacles the GCC faced through the process toward e-government. Therefore, the final recommended solutions were the promise to increase the government support in order to facilitate the transformation to eGovernment. As a result, Most of GCC have started standardizing their procedure of security and trust for electronic transaction where it will be later used as an essential to confirm the wider usage of e-commerce [7].

**H7.** Industry characteristics are positively associated with the organization process after the adoption.

The industry characteristics are defined as the business diversification, volume of competitors, policies and the usage of technology in the industry. When we measured the number of registered members in Community Economic Development in British Columbia, a sharp increase from 9000 to 5 million took place between 1999 and 2002[17]. This growth concludes a high level of competition in that the industry because the volumes of competitors was increasing. And when there is a huge competition, the enterprise's holders would put their maximum effort in introducing creative and new technologies to save
customer loyalty as well as their competitive advantages within the current IT battle. Consequently, those new technologies will lead to advance the level of technology usage and encourage the move to e-commerce rather than following the traditional commerce process.

Methodology

Firstly, data were collected from the recently published journals that address the impacts of adopting B2B e-commerce on SMEs' performance. All of the selected journals were available in the period of 2008 and beyond. Based on three main journals; the research was outlined and later enriched with the useful information from the related journals, conference papers and websites' articles.

Based on those data, the analysis was performed based on the common aspect from the reviewed literatures and discovered the need to conduct a new research based on the finding of the previous research to address a complete model for all of the different aspects behind the implementation of e-commerce in B2B. Most of the recent research was focusing only on limited areas such as the organizational, environmental or technical aspects. Then they try to interrelate those aspect separately which seems to be incomplete analysis way. Thus, this research was designed to extract a complete model with the common influential issues which are overlapping each other and relatively in respect to industry type; they differ the impacts of adopting B2B e-commerce in SMEs. This formed model is shown in Figure 1 in which the impacts were classified in two main groups as internal and external factors. They cover other research finding by reorganizing their aspect as organizational to be internal, environmental to be both internal and external and technical to be internal issues. The shaped model guided us to pull out seven hypotheses and draw out a wider picture on how they were positively influenced the success of e-commerce adoption in B2B. The developed propositions validity was tested through comparing them to some real practices from our work organization, latest local news and trails' from both China and Iran with e-commerce adoption. The measurement of them was constructing as a scenario that showed what would be the most dominant issues overdue the implication.

Results & Analysis

After the analysis of the assembled data and justification of the seventh hypotheses; it was found that the impact of adopting B2B e-commerce on the process and structure of SMEs is unpredictable. Since most of the case studies had proved that the factors are ranking in their significant positively influences on the firm's performance. It was found that the most significant factors are management support, industry characteristics and government policies. They are highly changing the impacts of adopting B2B e-commerce in SMEs. However, the organizational culture, firm size, IT integration and human capital are
having less impact on shaping the process and structure of SMEs. These finding arranges the worth that firms have to focus firstly on the most significant ones and then consistently incorporate the study of the residual factors.

Success outcome can be granted and viewed early if enterprises have the support from the important aspects and then can proceed and infrastructure the other factors in assessing the impacts on the firm. However, if they do not have that support; continuing the implementation will not result the same excellence and higher risk of getting a fail outcome after the adoption is probable. In addition, some literatures argued that the human capital and IT capabilities are significantly important as the most key parts. But they are highly affected by both the firm size and business market. They assumed whenever the firm size is medium and it operates in a proactive market, it become more controllable on its IT and HR capabilities. They can strive more on enhancing those variables and ensure the positive impact of implementation. However, others observed that the small enterprise cannot grante the success of e-commerce adoption because of their resources shortage. They based their assumption on how the large organization has huge quantities of slack resource. Furthermore, a study on how IT capabilities such as the IT system integration through the process of e-commerce has the biggest significant impact overall firms' process. It provides enterprises a good exposure about their suppliers' service in term of how all flexibility, tracking systems, availability and trust, security and time commitment for shipment is easily managed through the website [14]. Thus, the adoption of internet technology strongly change the cost of the enterprise structure as it reduce the associated cost with the business transactions and speed the respond to the supply the market demand [9].

Finally, the collected data and observed information helped us to anticipate an increased ratio of adopting e-commerce and its success with the different types of industries in the future [4]. For example, a study was taking by Ernst &Young Company in 2002 [6] to describe the level of e-commerce adoption in the Arab gulf countries, has recently pointed out its results. It discovered that United Arab Emirates is the pioneer in this area especially in Dubai Emirate where the big support comes from their government policies. Also, the study reported the increase rate of adoption in these countries toward the B2B e-commerce adoption where we can notice the reasons behind the recent campaigns toward the improvement and encouragement toward automation such as the campaign of Oman digital society.

**Conclusion & Recommendation**

Although the relation between the SMEs process and the adoption of B2B e-commerce has been studied at length, there is a lack of standardization in modelling the impact. It is noticeable on how each country illustrates its own style and evaluates the implication of e-commerce adoption on the basis of it. The multi and uncertain developed models leads to
inconsistency of assessing the influence.

It can be concluded that the impacts are much wider than what those models found and it is going to get bigger as a consequence of the rapid IT development which are sweeping the world. Also, the increases of e-commerce adoption action from the most of SMEs worldwide would affect the sense of affects. They will focus more on taking up the IT innovation in order to survive in the market and do not lose their clients. However, this is going to higher the level of complexity in assessing the impacts of adoption. Especially in B2B as the two parties are businesses and the necessity of supply is high, businesses cannot wait for any delay in receiving their stocks and prefer to turn to a new alternative if they are unsatisfied with their current associates.

Definitely, the results in section five helped to state that the impacts after the adoption are not directly affecting the firms' performance. It first influences the firm's performance variables and later it influences the whole firm's performance. In addition, it was found that management support have the greatest impact on adoption since it holds the ability to influence the whole organization to be lead toward a certain direction where their interest is dominant. This concludes that the implementation of e-commerce in any type of organization in the worldwide does not has any direct effects on its performance rather than the effects on the variable that influence the whole organization process and structure.

In recommendation a future research to focus on the B2B e-commerce impact using the gathered facts in this research is extremely suggested. As well as combining the findings the recent published ones to initiate one model which gather and reflect the entirely factors that impact any adoption of IT innovation in order to assist all SMEs in planning the most influential factors to their business and predicting the impacts and be ready for the changes.

References
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