

# Impact of Information Communication Technology on Business Firms

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**Abstract:** The importance of using Information Communication Technology (ICT) such as enterprise resource planning (ERP) and electronic commerce (e-commerce) by business firms cannot be overstated. ICT applications have been the major interest of researchers and practitioners due to the benefits that can be generated from these applications. The purposes of this study are to find the impact of ICT technologies and application on business firms. An intensive literature review has been conducted to identify the trends and patterns of academic researches. Suggestions based on the review have been made. There are gaps in the literature pertaining to the role of e-commerce and ERP. More studies needed to fill the gaps. The finding shows that most of the studies have focused on adoption factors, benefits and barriers of e-commerce rather than using e-commerce in area such as productivity and cost. The relationship between ERP and productivity was found to be significant.

**Keywords:** information communication; Technology; Business Firms

## 1. INTRODUCTION

The use of ICT technologies and application has started since 1990s. However, in recent years ICT application such electronic commerce (e-commerce) and ERP has become indispensable for business to survive and thrive. The increased competition forced firms to find sources of competitive advantages and strengthen their competitiveness. The association between the production and e-commerce is new and only few studies have been conducted in this area (e.g. Salami, Marthandan, Nor Zaidi and Chong, 2009). E-commerce has the capabilities to reduce the cost of operations and maximize the revenues. Therefore, it can be applicable and usable in the production of goods and services. ERP is an integrated system that can bring together all the applications that a company needs in one single system. This enables companies to speed up the decision making process and respond faster to the changes in the market (Mediations, Chatzoudes and Tsiaris's, 2011).

## 2. METHODOLOGY

This paper aims to review the literature to find pattern and trends of using ICT applications in the business firms. The methodology that this research is using is intensive literature review, i.e. the research is using secondary data. The data collected from previous studies. The research objectives focused on e-commerce and ERP and their implications.

## 3. LITERATURE REVIEW

### 3.1 E-commerce

E-commerce has become a widely accepted method for business operation. Till 2005 most of the research in e-commerce was exclusively conducted in the western world (Molla, and Licker, 2005). The introduction of e-commerce in the business has participated effectively in reducing the cost and maximizing the revenues of firms. Even though most of the firms use e-commerce for online buying and selling, however, it can be used in other areas such as logistic outsourcing (Cho, Ozment and Sink, 2008). The performance

of e-commerce is dependable on many factors that can increase the deployment of e-commerce (Salwani et al., 2009).

### 3.2 Firm Performance with E-commerce

The use of e-commerce in the business world has benefited companies greatly. Cho et al, (2008) examines the relationship between logistic capability, logistics outsourcing and firm performance. They find a positive relationship between logistic capability and firm performance in the e-commerce market. Logistics outsourcing and firm performance were not found to be positively linked.

Following quantitative approach, Salwani et al., (2009) investigate the impact of e-commerce usage on business performance in the tourism sector in Malaysia. They use moderate variable and mediate ones. The results reveal that technology competency, firm size, firm scope, web-technology investment, pressure intensity, and back-end usage have significant influence on e-commerce usage. Among these variables, back-end integration is found to function as a mediator. E-commerce experience is found to moderate the relationship between e-commerce usage and business performance.

### 3.3 Enterprise Resource Planning

One of the new applications in business firms is the use of ERP system. ERP systems can be defined as an integrated software package composed of a set of standard functional modules such as production, sales, human resources, finance, etc., which can be adapted to the specific needs of each organization (Laudon and Laudon, 2012). In this section, the use of ERP by business firms and the factors that enhance the adoption of ERP is highlighted.

### 3.4 ERP and Productivity

Nurmilaakso, (2009) in his study investigated the relationship between labor productivity and ICT applications such as: standardized data exchange with the trading partners, enterprise resource planning (ERP) system, and customer

relationship management (CRM), a website on the Internet, and supply chain management (SCM). The findings reveal that Internet access, standardized data exchange with the trading partners, ERP system, and CRM system contribute significant increases in labor productivity, whereas a website on the Internet, or SCM system do not result in a significant increase.

Another study conducted by Martinez-Caro and Ciara-Navarro (2010) to find the relationship between capital productivity, and internet-based applications, groupware applications, and collective systems. The findings reveal that the relationship between groupware application and collective systems with capital productivity is positive and statistically significant.

The use of ERP in mass customization was investigated by Hong, Dobrzykowski and Vonderembse (2010). They investigated the relationship between lean practices and IT use represented by ERP, e-procurement, and e-commerce. The finding indicates that lean practices, e-commerce, and e-procurement have strong relationships with mass customization performance. However, enterprise resource planning has no relationship with mass customization performance (Arumugam, Hussein et al. 2013).

### 3.5 ERP Successful Implementation

Mediations et al., (2011) investigate the factors that lead to effective implementation of ERP system. They find that consultants support, knowledge transfer, effective communication, conflict resolution are significant factors for the implementation of ERP. Top management support, user support has no significant relationship (Al-Hashimy 2018).

Similarly, Deodar and Aiming (2011) investigate the factors that lead to ERP successful implementation and they disagree with Mediations et al (2011). Their findings reveal that top management support, training and education, and enterprise wide communication have a positive and significant relationship with ERP implementation success. Another study conducted by the same authors Deodar and Aiming (2011a) but they use different variables. The findings of the study reveal that the relationship between project management and team composition with ERP implementation success is significant.

### 3.6 ERM and Supply Chain

Shatat and Udin (2012) investigate the relationship between SCM performance and the components of an ERP system which are integration, material management, production planning, controlling, and workflow management. The findings show that there is a positive and significant relationship between integration, material management, production planning, and controlling and SCM performance. The workflow management does not have a significant relationship with SCM performance.

## 4. Data collective

To achieve the objectives of the study, data were collected on the extent of the application of CRM in small and medium tourism companies in Egypt over three months. The quantitative methodology was used by designing a questionnaire to measure the study variables. The questionnaire design was based on a good review of previous

studies. The validity of the questionnaire was tested through a preliminary study by presenting the questions to academic professors in the field, to ensure that the meanings of the questions are clear and easy to understand. The questionnaire was also tested by postgraduate students of the Faculty of Tourism and Hotels, Alexandria University (Al-Hashimi and Al-hashimy 2019). Reference feeding has been used in the revision and language formulation of the questionnaire.

A total of 400 questionnaires were distributed to the small and medium-sized Egyptian tourism companies. The response rate was 64%. Two hundred and fifty-six valid questionnaires were obtained. This rate is scientifically acceptable for this type of study (Leek et al., 2006; Kingshott, 2006; Zhao and Cavusgil, 2006).

The questions were formulated on a Likert scale ranging from (1) which represents (not strongly agree) to number (5) which represents (strongly agree). The data were analyzed using the Statistical Package for Social Sciences (SPSS). The use of descriptive analysis to identify the characteristics of both front office staff (service providers) as well as customers. In addition, the mean and standard deviation of each variable was calculated as well as the Pearson correlation coefficient to test the relationships between the variables, as well as the Chi-squared tests used to determine the relationship between the descriptive variables (Hasan, Zgair et al. 2015).

To test the accuracy of the questionnaire and the consistency of its parts, Cronbach's alpha was calculated with positive results on an internal consistency scale ( $\alpha = 0.887$ ) that is above the scientifically recommended score of 0.70 (Nunnally's, 1978). The questionnaire was divided into seven sections; The experience of the employee in the field of tourism as well as his experience in the company), and the second section deals with the implementation of CRM (the existence of a database of customers and the proportion of customers dealing with the company, as well as the main benefits of CRM applications) The main factors that may hinder the engagement of customers in Relationship Marketing Programs The fourth section deals with the quality dimensions of customer relationship management. The fifth section deals with the type of services that the customer requests continuously from the company. Through the relationship with the company, as well as most of the services actually purchased by these customers, and sections VI and VII inquiring about the characteristics of the client, who repeated several times with the company, in addition to the reasons behind the decision of the company to target a group of customers and retain them. As well as the reasons that may lie behind the company's lack of one

The analysis of the questionnaire showed that about 55% of respondents work in their companies for a period of one to five years. The rest of the sample is equally divided between three equal categories (about 15%) who work in the company for less than a year, from 5 to 10 years and more than 10 years (Hussain 2017).

As for the experience of the respondents in the field of tourism, such as 43.9% of those sample who have experience in the field of tourism work from one to five years. (10.6%), 5-10 years (21.2%), and more than 10 years (24.2%).

An analysis of the data collected shows that with regard to the implementation of the CRM policy, 71.2% of the respondents agreed that their companies have a customer database. And

57.5% of them agreed to have a private database only with their customers, although 40.95% agreed that they have a database of their customers in a non-institutional way (Hussein, Kasim et al. 2015). These results indicate that most employees of Egyptian tourism companies collect information to help companies to recognize and bring back their best clients, but sometimes with personal effort and in an informal way. Moreover, most respondents believe that most of their clients are already engaged in long-term (long-term) relationships with the company. Where 43.9% of the respondents said that the proportion of these customers ranges between 20% and 50%, while 40.9% of respondents said that the proportion of these customers more than 50%. This result confirmed that the majority of employees believe that they have CRM with the majority of their customers. As for the benefits of CRM, the greatest benefit was to reduce the negative impact of crisis times and accounted for 60.6% (with a mean of 3.64 and a standard deviation of 1.028). Followed by the importance of covering the basic and fixed costs of the company by 56% (with a mean of 3.55, standard deviation 0.911). Followed by 51.5% reduction of marketing expenses (3.32 mean, and standard deviation 1.006). Finally, the company's minimum expenses are 50% (with an average of 3.52 and a standard deviation of 0.977). This is consistent with previous studies on the positive returns of customer relationship management (Xu and Walton, 2005; Sivaraks et al., 2011). This result is very important; because Egypt has suffered in recent years from various crises that have a negative impact on the economic sectors. Especially the tourism sector, so efforts should be made to take care of customer relationship management to reduce the negative impact during crises and reduce marketing expenses and thus increase the profits of tourism companies. This result highlights the importance of applying CRM in Egyptian and small and medium-sized tourism companies, This idea is in DRA Of (O'zgener and Iraz, 2006).

And to calculate the correlation coefficient (Pearson correlation coefficient) to verify the existence of a relationship between each of the company's practical experience and experience in the field of tourism with a database of clients  $r = -0.1$  (sig (2 tailed) = 0.941)  $r = 0.169$  (sig) tailed) = 0.214, which means that there is no statistically significant relationship between both business experience in the company and experience in the field of tourism with the possession of the database. Similarly, to verify the relationship between the number of years of work in the company and the number of customers who have been configured. For successful relationships with them, the Pearson correlation coefficient  $r = -0.068$  (sig (2 tailed) = 0.619) was also calculated, which also means that there is no relationship between the two variables. These results confirm that the company's business experience and overall experience do not affect CRM implementation.

An analysis of Enova with Cochran's Test was also used to test the existence of a difference or impact on the company's experience. The value of Cochran's Q was 566.419 at a mean level of 0.000 indicating that there was no effect on the existence of a database.

As for the nature of customers who prefer to start the company in the management of relationships with them, 80.3% of the employees that they prefer to start the relationship management with customers who have been dealing with the company for a long time. Although 39.3% of them agreed to start a relationship with customers who buy

more than one service even once. This result shows that employees are more interested in customers who have been dealing with the company for a long time. This finding confirmed that employees prefer a long-term relationship when taking a decision to manage relationships with their clients. This is confirmed by some previous studies that the pace of shopping is an important indicator when designing relationship shopping programs (Ashley et al., 2011)

With regard to the characteristics and quality of the customers whom the employee is keen to include in his database; 66.6% of the employees were keen to include customers who deal with the company (Al-Hashimi and Al-hashimy 2019)

## 5. CONCLUSION

This study was a literature review study and real data. Based on the review, e-commerce is an effective application for business firms to acquire raw material effectively and to use it for logistic purposes. There are many factors that can significantly enhance the performance of e-commerce (e.g. technology competency, firm size and etc.). However, more studies can be done to discover more about e-commerce. Reviewing the literature, it is found that most of the studies pertaining to e-commerce related to adoption factors, benefits and barriers. There is a need for more studies in another area for example, productivity and cost.

ERP is one of the ICT applications which have been widely used recently. The association between ERP and productivity was found to be positive regarding capital and labor productivity. However, a negative relationship was found between mass customization and ERP. This is a conflicting result. Mass customization can be described as labor and capital productivity because customization required capital as well as labor. Therefore, more study in this regard can be done to investigate the relationship between the terms.

The success factors of ERP were having mixed results. While some they claim that top management support is very important, other disagree and find that top management has no significance. A research can be conducted in this area to clarify this issue.

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