DESIGNING A MULTIDISCIPLINARY CONCEPTUAL MODEL OF E-COMMERCE ACCEPTANCE IN DEVELOPING COUNTRIES

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ABSTRACT

"E-commerce is a form of innovation providing access to many customers everywhere and every time for organizations. Unfortunately, information and communication technology (ICT) is playing an important role for any countries and the use of the Internet. The adoption of e-commerce in developing countries differs greatly from developed countries. Developing countries often lack the necessary financial, legal, and physical infrastructures for the development of e-commerce. However, effects are sometimes dramatic in developed countries. There are numbers of examples of conceptual models for E-commerce acceptance. Also there are differing characteristics of local environments, both infrastructural and socio-economic, have created a significant level of variation in the acceptance and growth of e-commerce in different regions of the world. In this paper, we present and design a multidisciplinary conceptual model of e-commerce acceptance in developing countries. The focus of this paper is on the B2C conceptual model. This model serves as a guideline for E-commerce acceptance in developing countries."

Keywords: E-commerce Acceptance, conceptual Model, Information and Communication technology (ICT, Business to Consumer (B2C)

1 INTRODUCTION

"E-commerce refers to the concepts of purchase, sale, transferring, exchanges of goods, services, or information by computer networks and internet. Another definition states that exchanging information in different parts, e-commerce is a form of commercial relations, connecting different parts together electronically."

(Ratnasingam, 2001)

E-commerce is a general term for a wide range of software and systems undertaking the services like, information searching transfer management, credit testing, credit donating, direct payment, report collection, account management and etc in internet. These systems provide the basic foundation of internet-based activities. Regarding afore-mentioned definitions, it can be said that e-commerce can be in narrow or wide scales. In narrow scales, it can cover the transactions of open or close networks, using different protocols and in wide scale includes all supporting interactions of business activities.

"In brief, in limited scale, e-commerce includes interactions of e-commerce and it includes the applications and commercial activities of e-commerce in wide scale. There has been significant study on e-commerce, but majority of them have focused on developed countries such as the United States, Canada and Western Europe."

(Garcia and M. Murillo, 2004)

While according to predictions a significant growth will happen in developing countries in the first decade of the twenty. Globally, previous research has shown that developed countries and developing countries differ in terms of e-commerce use and the level of behavior toward its usage, and the factors shaping that behavior.
Electronic commerce (EC) has the potential to improve efficiency and productivity in many areas and, therefore, has received significant attention in many countries.

"However, there has been some doubt about the relevance of ecommerce for developing countries. E-commerce has been predicted to be a new driver of economic growth for developing countries."

(Humphrey et al., 2003)

"The opportunities offered by Internet technologies, a necessity for e-commerce has led many to believe that e-commerce will grow rapidly and help developing countries to overcome their problems of exclusion from world economy and improve the terms of their participation."

(Odedra-Straub, 2003)

"It does present great opportunities to business organizations in developing countries to gain greater global access and reduce transaction costs."

(Kraemer et al., 2002)

2 CRITICAL SUCCESS FACTORS FOR E-COMMERCE ACCEPTANCE

There are a wide range of critical success factors (CSFs) for e-commerce. However, these factors are based on studies of e-commerce in developed countries, where infrastructures that support the development of commerce are fully developed. Developing countries, on the other hand, have underdeveloped infrastructures, different culture and business practice, which might not support the development of ecommerce in the same degree or the same ways as those in developed countries.

For e-commerce to realize its targeted business and socio-economic development objectives, there are a number of challenges that need to be faced that relate to a variety of social, technical, financial and legal elements.

"Safavi has explored that the success of e-commerce is not only depends on technical solution but also on social dimensions such as privacy, trust, usability and accessibility."

(Safavi, 2009)

Therefore, the web designer’s should keep in mind the social dimensions in order to make it more accessible.

"Wang have researched that interaction design for e-commerce website is an important indicator to measure the usability of e-commerce websites."

(Wang, 2011)

However with Internet, different characteristics of the local environment, both infrastructural and socio-economic, have created a significant level of variation in the acceptance and growth of ecommerce in different regions of the world. Also, the interrelated dimensions of B2C e-commerce success were confirmed, namely service quality, system quality, information quality, trust, perceived usefulness, user satisfaction and continuance intentions. Direct relationships between dimensions were identified. These showed that user intentions to continue using an online retail site are directly influenced by perceived usefulness, user satisfaction and system quality. User satisfaction is directly influenced by service quality and perceived usefulness, whilst perceived usefulness is directly influenced by trust and information quality. Trust in the online retailer is directly influenced by service quality and system quality.

3 E-COMMERCE AND ELECTRONIC DATA INTERCHANGE

Although the term e-commerce is fairly new, large corporations have been conducting e-commerce for decades by networking their systems with those of business partners and clients. For example, the banking industry uses Electronic Funds Transfer (EFT) to transfer money between accounts. Many companies also use Electronic Data Interchange (EDI), in which business forms, such as purchase orders and invoices, are standardized so that companies can share information with customers, vendors and business partners electronically.

"E-commerce, E-business or Internet Marketing is all about doing business electronically either in business-to-business (B2B) way that “refers to e-commerce are businesses or other organizations; or Business-to-consumer (B2C) that refers to the e-commerce model in which business sell to individual shoppers.”"

(Su and Adams, 2005)

The B2C model involves transactions between business organizations and consumers. It applies to any business organization that sells its products or services to consumers over the Internet. These sites display product in-
formation in an online catalog and store it in a database. The B2C model also includes services online banking, travel services, and health information.

"Over the last two decades the international market has seen a growth in global trade due to rapid development of the e-commerce."

(Tian and Xuehua, 2009)

The B2C model of e-commerce is more prone to the security threats because individual consumers provide their credit card and personal information on the site of a business organization. In addition, the consumer might doubt that his information is secured and used effectively by the business organization. This is the main reason why the B2C model is not very widely accepted. Therefore, it becomes very essential for the business organizations to provide robust security mechanisms that can guarantee a consumer for securing his information.

"Safavi believes that e-commerce becomes the option to most organizations, as e-commerce is not only about running a website but designing a usable website is a critical issue."

(Safavi, 2009)

Electronic Data Interchange (EDI) is a standard format for exchanging business data. Electronic Data Interchange requires agreement between trading partners in order to govern their electronic trading relationship.

4 E-COMMERCE IN DEVELOPING COUNTRIES

The adoption of e-commerce in developing countries differs greatly from developed countries. Developing countries often lack the necessary financial, legal, and physical infrastructures for the development of e-commerce. In addition, developing countries often have different cultures and business philosophies, which limit the applicability and transferability of the e-commerce models designed by Western countries.

"E-commerce is an objective consequence of ICT enjoying such advantages as globalization of commerce, elimination of time and space limits, increase in purchase rate, easy access to information, significant reduction of transaction costs and reduction of duration of transaction. E-commerce presents developing countries an opportunity that can potentially enhance economic growth and development."

(A Molla et al., 2006)

"However, some developing countries have initiated strategies to achieve an appropriate level of e-commerce development."

(F. Uzoka et al., 2007)

Possible reasons that developed countries, like the US, have created much higher e-commerce value than developing countries can be derived from the presence of affluent consumers and well developed, convenient and inexpensive information infrastructures, transaction infrastructures, and delivery infrastructures.

"E-commerce business models in western countries take advantage of well-developed infrastructures and try to manage information flow, goods flow and payment flow as much as possible with electronic solutions."

(Yun, 2000)

On the other hand, the growth of e-commerce in developing countries has been restricted by business environments, inefficient infrastructures, and cultures that pose significant challenges to e-commerce. Also, e-commerce business models that succeed in developing countries should be different from those in developed countries. For developing countries, the question is not whether to deploy e-commerce, but when to deploy and how to deploy it. These countries have little choice if they want to sustain a competitive advantage in the new global economic environment. Thus, they mimic e-commerce models in their countries. However, these new technologies and new business models have emerged from the value of western culture. If developing countries succeed in building these infrastructures and are able to launch the same online service models as western countries, the questions remain where will such investment lead these countries and will they gain the same benefits from e-commerce model as western countries do. In order for developing countries to succeed in deploying e-commerce, it is necessary to understand local culture context.
5 E-COMMERCE SUSTAINABLE
E-commerce should satisfy the actual needs of customers and improve the user experience in order to promote the sustainable development of enterprise. The sustainable growth of buyers and transaction volume motivate the managers and servers of B2C e-commerce to innovate continuously and provide more and better services.

"Acknowledging the importance of e-commerce customer retention, numerous studies have empirically examined consumer satisfaction, trust, and loyalty for B2C e-commerce services in various countries."
(Cyr, 2008; Kim et al., 2009)

While many developing countries have abundant cheap labor, there still remains the issue of developing IT literacy and education to ensure the quality and size of the IT workforce.

"The need to overcome infrastructural bottlenecks in telecommunications, transport system, electronic payment systems, security, standards, skilled workforce and logistics must be addressed, before ecommerce can be considered suitable for developing countries."
(Odedra, 2003)

A factor leading to better innovation adaptation is its ease of application.

"Cooper found that in customer view, ease of application is an important factor leading to better innovation adaptation. It also causes better customer acceptance."
(Cooper, 1998)

"Chen introduced the difficulty of using home banking as the reason of its failure. According to Rogers, customer perceptions are the main causes of innovation acceptability in e-commerce development."
(Chen, 2004)

When used technical innovations are applied and understandable, more success is likely to occur.

"Nowadays, economic structure of the world shifts to a knowledge–based direction for which the most important reason is the existence of information technology and its technical innovations."
(Chen, 2002)

6 E-COMMERCE MODELS
The internet has become a central part of how we communicate with others and how we transact business. The speed and convenience of the online experience makes it a perfect medium for buyers and sellers. The e-commerce model is a way for business to make money and expend their customer base.

"Grounding conceptualizations of e-commerce success in IS literature is perfectly valid given that for all intents and purposes B2C e-commerce systems are information systems that have been extended for direct use by consumers."
(DeLone & McLean, 2004; Garrity et al., 2005; Pather et al., 2004)

"Establishing the basis for these relationships and clarifying their nature is therefore an important endeavor."
(DeLone & McLean, 2003, 2004)

"There have been surprisingly few attempts at empirically validating and testing models of B2C e-commerce success such as that developed by Molla & Licker and DeLone & McLean."
(Molla & Licker, 2001; DeLone & McLean, 2003)

DeLone & McLean in their updated model included the core dimensions of information quality, system quality and user satisfaction, as well as use/intentions to use, net benefits and service quality. They suggested that intention to use may be employed as an alternative to use as a success dimension. Also, DeLone & McLean illustrated how the updated model could without modification be used to evaluate e-commerce success.

"Companies are making large investments in e-commerce applications but are hard pressed to evaluate the success of their e-commerce systems."
(DeLone & McLean, 2003)

The Technology Acceptance Model (TAM) is a very important modeling approach in e-commerce research. Davis has found that there is a relationship between users’ beliefs about a technology’s usefulness and the attitude
and the intention to use the technology. However, perceived usefulness exhibits stronger and more consistent relationship with usage than did other variables.

"Technology Acceptance Model (TAM) derived from the Theory of Reasoned Action (TRA) offers a powerful explanation for user acceptance and usage behavior of information technology. TAM is one of the most influential models widely used in the studies of the determinant of IS/IT acceptance."

(Davis, 1989; Davis et al., 1989)

"In addition, an individual may adopt a technology if he or she perceives it as convenient, useful and socially desirable even though they do not enjoy using the technology."

(Saga & Zmud, 1994)

Alternative e-commerce success models have been suggested. Molla & Licker (2001) and DeLone & Mclean (2003), illustrated how the updated model could without modification be used to evaluate e-commerce success. Garrity et al. (2005) too developed an e-commerce success model, but this tended to view success primarily in terms of dimensions of satisfaction. Quaddus & Achjar (2005) developed an e-commerce success framework that reflected an organizational perspective. Also, Technology Acceptance Model (TAM) is showed the relationship between users’ beliefs about a technology’s usefulness.

There is often a lack of conceptual clarity as to the theoretical basis for relationships between dimensions of B2C e-commerce success this being as a result of the conceptual weaknesses in the foundational IS success models. Thus, In this paper a proposed multidisciplinary conceptual model of E-commerce acceptance depends on country perspective and customer perspective.

7 MULTIDISCIPLINARY CONCEPTUAL MODEL OF E-COMMERCE ACCEPTANCE

The focus of this paper is on the B2C conceptual model. Many conceptual models have intensified the competition for customer attention in the marketplace while largely ignoring the country perspective and business environments in different parts of the world specially in developing countries. So we designed a multidisciplinary conceptual model of E-Commerce acceptance (see figure1), this model contains two perspective customer and country. By studying and enhancing the customer and country perspectives, we will reach to E-commerce sustainable and acceptance.

Managing customer trust, retention, life style, satisfaction, and loyalty attitudes of e-commerce services is very important for the long-term growth of many businesses.

"Many studies have been concerned with identifying the characteristics of online customers. Factors investigated in this respect have included demographics, psychographics, and attitudes."

(Verchopoulos et al., 2001; Sin et al., 2002; George, 2002)

Also, managing the country environment technical, cultural, political, organizational, economical, legal and social is very critical success factors for short and long term growth of many businesses. Form this multidisciplinary conceptual model, the e-commerce acceptance targeted by studying customer and country factors. Also the ecommerce sustainable led to e-commerce acceptance in developing countries. So this model serves as a guideline for analysis the adoption of ecommerce in developing countries.
7 APPLIED CASE STUDY ON MULTIDISCIPLINARY CONCEPTUAL MODEL OF E-COMMERCE ACCEPTANCE

7.1 Methodology
This paper focuses on the impact of these multidisciplinary conceptual model factors on E-commerce acceptance in Egypt, and our findings identify changes that will be required for broader acceptance and diffusion of e-commerce in this country. Our objective was to explore e-commerce associated concepts, infrastructure and socioeconomic, as they relate to Egypt as a developing country. To address our case study objectives, we developed a questionnaire.

It contained questions designed to collect information on demographics, Socio-economic data Internet usage, and e-commerce activities (frequency of commerce and type of purchase, means used for purchase, transaction experience, and perceptions of e-commerce in Egypt). This questionnaire also contained questions about the legal, social, technological, organizational, cultural, political and economical factors in different regions in Egypt.

7.2 Data collection
We selected 100 individuals that would be considered to be e-commerce users in Egypt. The data have been collected via questionnaires sent by email to those individuals. The questionnaires divided into two main parts. The first part contained questions about customer perspective (trust, loyalty, demography data, retention, life style and satisfaction). The second part contained questions about country perspective (technological, social, legal, culture, organizational, economical and political).

In this case study the selected individuals from many governorates in Egypt in order to measure factors in country perspective from different ways and cultures in Egypt. The study questions asked what the similarities and differences were in attitudes about e-commerce among culture groups from Upper Egypt and Lower Egypt.

All of the scale items were measured using a five-point category-scaling format. A five-point type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree) was used to measure five constructs.
Table 1. Demographic and socio-economic data

<table>
<thead>
<tr>
<th>Factor</th>
<th>Category</th>
<th>Percentage</th>
<th>Average of using E-commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Less than 20</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>20-40</td>
<td>50%</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>40-60</td>
<td>30%</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>Greater than 60</td>
<td>10%</td>
<td>34%</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>50%</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>50%</td>
<td>53%</td>
</tr>
<tr>
<td>Education level</td>
<td>Post graduation</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Under graduation</td>
<td>30%</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>School graduate</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single</td>
<td>34%</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>56%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>10%</td>
<td>63%</td>
</tr>
<tr>
<td>Monthly incomes</td>
<td>Less than 1000 L.E</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>1001L.E -10000L.E</td>
<td>52%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>10001L.E-20000L.E</td>
<td>23%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>More than 20001L.E</td>
<td>7%</td>
<td>89%</td>
</tr>
<tr>
<td>Governorate</td>
<td>Greater Cairo</td>
<td>66%</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>Upper Egypt</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Lower Egypt</td>
<td>18%</td>
<td>12%</td>
</tr>
<tr>
<td>Job</td>
<td>Student</td>
<td>35%</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Employee</td>
<td>55%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>10%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Table 2. Consumer use of E-commerce websites

<table>
<thead>
<tr>
<th>Consumer Use of B2C E-Commerce Websites</th>
<th>Used</th>
<th>Not used</th>
<th>yearly Frequency Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Banking Services</td>
<td>73%</td>
<td>27%</td>
<td>31</td>
</tr>
<tr>
<td>Booking of Airline Tickets</td>
<td>28%</td>
<td>72%</td>
<td>4</td>
</tr>
<tr>
<td>Educational Resources</td>
<td>65%</td>
<td>35%</td>
<td>24</td>
</tr>
<tr>
<td>Trading of Stocks</td>
<td>44%</td>
<td>56%</td>
<td>15</td>
</tr>
<tr>
<td>Participation in E-Auctions</td>
<td>53%</td>
<td>47%</td>
<td>9</td>
</tr>
<tr>
<td>E-health care</td>
<td>7%</td>
<td>93%</td>
<td>5</td>
</tr>
<tr>
<td>Purchases of Books/Music/Mobiles/PCs</td>
<td>42%</td>
<td>58%</td>
<td>16</td>
</tr>
</tbody>
</table>

7.3 Results
From the previous tables, we can conclude that according to the demographic data the males was using E-commerce frequency greater than females. Also the most people used E-commerce in range between twenty and forty. On the other hand for the socio-economic factors the monthly incomes played a big role in using E-commerce also the governorate so that the people in greater Cairo most frequency using E-commerce than the lower Egypt and upper Egypt (as shown in table1). In table2 we can noticed that the most using of E-commerce in E-banking services, Educational Resources and Participation in E-Auctions. But the lowest using of E-commerce was in E-health care services.

8 CONCLUSIONS
Many studies have been concerned with identifying the characteristics of e-commerce customers. By applying the multidisciplinary conceptual model on the case study, it was found that adoption of B2C e-commerce was higher among older, highly educated, and high-income respondents. It is obvious that consumer attitudes towards B2C e-commerce in the developing country are different from other international online consumers with regards to
trust in relation to loyalty. But similar in factors were satisfaction and life style. Thus, the level of country development is not significant with regards to online customer perceptions towards B2C e-commerce. From the country perspective the technology in developing countries the same as developed countries but the differences and limitations were in legal, social, political, organizational, economical and cultural factors. This paper concluded that there was no reasonable evidence to support the sustainable ecommerce and E-commerce acceptance but it was different from one governorate to another in the same country in the factors of country perspective. In Egypt the acceptance of E-commerce in towns differs from in villages related to the information and communications technology.

"Previous studies relate the challenges posed by various national differences, including culture, on elements of Internet use and commercialization."

(Cheung, 2001; Al-Khalid, 2009)

But from the customer perspective, it was concluded that Prior experience influenced attitudes about national control, property rights, internet infrastructure and consumer preferences. Prior experience did not influence attitudes towards privacy cost and access rights.

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