QUANTITATIVE APPROACH TO THE CONCEPT OF E-COMMERCE IN THE THIRD MILLENNIUM

Shaza Mahar  
PhD Scholar, Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia.  
Email: shaza.mahar1@gmail.com

Dr. Aslan Bin Amat Senin  
Associate Professor, Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia

Pirzada Sami Ullah Sabri  
PhD Scholar, Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia

Muhammad Arshad Abbas  
PhD Scholar, Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia.  
Email: a.abbas@graduate.utm.my

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ABSTRACT

The upcoming wave of globalization causes the major changes in the business environment and the familiarity with these changes is necessary for the competition. Developing and promoting technologies, especially the Internet, have led to the e-commerce development which makes the business environment more complex. On the one hand, the dynamics of business and the popularity of e-commerce due to factors such as ease of doing business, leads us to investigate the e-commerce models. In this study, we combined mathematical concepts and e-commerce in order to offer the e-business functions that help us to better understanding of the influential factors in e-commerce. Understand the mathematical logic in e-commerce, our knowledge of the hidden aspects of this concept raises and helps to improve the business environment.

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1. INTRODUCTION

Over the last few decades, computer technology has become an integral part of our society and has a great impact on many aspects of our lives. The report also indicates a growing interest in using the Internet and the increasing number of Internet users [1] & [2]. E-commerce is one of the most popular topics in business today and the other due to factors such as ease of transaction, quick response time and reduce overhead costs, led to e-commerce as a key business model in the future [3] & [4]. Therefore, the development of e-commerce forecast Gefen realistic. According to him, with a rate of e-commerce is growing exponentially and development [5]. The use of e-commerce is not limited to large companies but also small and medium companies to utilize [6]. With the growing importance of e-commerce functionality, knowledge of the patterns of trade is essential in business [7]. Ecommerce patterns are a topic that has attracted the attention of many researchers, for example, in a study, a variety of patterns presented and discussed their trust has been studied [8]. In another study also conducted systematic review of e-commerce in developing countries [9]. But the dynamics of business has led to discussion of e-commerce will become more important. We intend to use mathematical concepts, a dynamic framework for e-commerce offering. In the following brief history of e-commerce and business transformation and we'll explain the concept of e-commerce. After that, we introduce the common models of this type of business and the basis of this model, a matrix of functions they provide, and the provision of electronic commerce and its results are presented.

2. TRANSITION FROM E-COMMERCE AND BUSINESS TRANSFORMATION

The concept of electronic commerce (E-Commerce) emerged in 1970. This concept was first introduced to credit cards, bank cards, electronic catalogs and things of this nature, meaning, and gradually evolved with the growth of the World Wide Web [10]. However, from 1990 onwards, electronic commerce in business creates big change [11]. In a recent study presented to business developments are discussed. This evolution involves five steps that include local business, local business, national business, international business and global business [12].
Initially the business locally and with time and throughout the world affected by the wave of globalization, the business changed internationally and the world came into being as a result of changes in financial instruments created [12] & [13].

3. **THE CONCEPT OF E-COMMERCE**

In addition to e-commerce concepts and theories of computer science, psychology, economics, organizational theory and the science of marketing research, management, accounting, engineering and law are also used. So e-commerce is an interdisciplinary phenomenon [14]. E-commerce, electronic trading of physical goods and intangibles such information is included [15]. In other words, a method for exchanging electronic business, product, service, or information via computer networks is defined mainly takes place via the Internet [16]. But this type of trading involves the buying and selling of goods and services is not only the different processes within and across the organization also has its place in the concept [17].

4. **E-COMMERCE MODELS**

Over the past few years, business models have to manage the dictionary [18]. The business model is a conceptual tool for expressing business logic is [19]. Therefore, designing an appropriate business model is a key factor for an organization [20]. since the recognition performance business model and management practices to influence decisions [21]. After the introduction of the business it is important e-commerce templates to learn more about our business as it helps. In this section, we intend to engage in e-commerce diets. According to different patterns of e-commerce such as Choi (1997), Turban (2006), the Organization for Economic Cooperation and Development (2002) and UNCTAD (2003), the most comprehensive nine-state model is proposed for electronic commerce [22], which we state in the matrix of the nine 3 × 3 (Figure 2) did.

![Figure 2. matrix different patterns of electronic commerce](image)

<table>
<thead>
<tr>
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<th>B</th>
<th>C</th>
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<td>C</td>
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<tr>
<td>G</td>
<td>G2B</td>
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<td>G2G</td>
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**4.1 Business transactions**

A wide variety of transactions by firms takes place. Trading firms providing materials, components, machinery and capital equipment with other firms doing business transactions is an example. In addition, financial transactions between businesses, such as insurance can also be other types of transactions [23]. Commercial transactions between businesses and consumers around the Internet have grown dramatically since 1990 [24]. In this model, firms try to sell their products to end users, through the Internet. The main problem of this method is reliable buyer and pay for goods electronically [25].

**4.2 Consumer transactions**

In addition to consumer transactions with firms doing, another transaction with another group of consumers do. This group of consumers is a list of products to deal with other consumers; the online market place gives everyone in sight [26].

**4.3 Government transactions**

In the wave changes, the government had to use the new technologies (especially the Internet) can provide the goods and services they provide to citizens, businesses, employees and other segments of society as well as the components of pay this concept is the creation of e-government [27]. So in this regard, the government deals with three types of firms (B2G, G2B), citizens (C2G, G2C) and government (G2G) do.
5. **E-COMMERCE FUNCTIONS**

After our previous section, we have presented a matrix of common models in e-commerce; we want to introduce the functions of these patterns. Functions are frequently used in various branches of science, and now we're going to use this concept in e-commerce more precise definition of this business to help keep. With studies on e-commerce models, three models of e-commerce follows the specific function which is as follows:

\[
\begin{align*}
\text{B2B} & \quad f (B) = B \\
\text{C2C} & \quad f (x) = x \quad ; (1) \\
\text{G2G} & \quad f (G) = G
\end{align*}
\]

The remaining patterns of e-commerce following the constant functions are as follows:

\[
\begin{align*}
\text{B2C} & \quad f(B) = C \\
\text{C2B} & \quad f(C) = B \\
\text{B2G} & \quad f(B) = G \\
\text{G2B} & \quad f(X) = a \quad ; (2) \\
\text{B2G} & \quad f(G) = B \\
\text{G2B} & \quad f(G) = B
\end{align*}
\]

Our intention here is not only to provide the functions of e-commerce models, but also we want to get to an important concept. Over time, additional patterns of e-commerce become apparent (B2E) and the definition of e-commerce provided makes these definitions are specific to time and may reduce its effectiveness at other times it is a dynamic e-commerce domain [28]. Therefore, the concept of e-commerce with sustained changes in the business is important. Ecommerce mathematical language, a set of functions that according to these functions, where the trading takes place electronically. These transactions affect the business processes that are being performed.

6. **DISCUSSION AND CONCLUSIONS**

So far, many researchers about the importance and necessity of e-commerce as one of the most successful methods of business valuation gave presentations and discussed the introduction of e-business models. Patterns suggest the role of such factors as corporate, consumer and government and speak of the relationships between these factors. For example, some firms on the seller of goods and services required by the other agent (B2B) and provides consumer (B2C) and sometimes their other buyers appear. Via our world, especially the business environment has led to the development of e-business patterns are not constant over time. Thus, providing a framework of e-business models is needed to predict. But the application of mathematical concepts in e-commerce gives us the opportunity to understand the relationships between factors in e-commerce and knowledge leading to better understanding of this business.
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