

A Systematic Analysis of E-Commerce Models and Their Impact on Business

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ABSTRACT:

In the fast-changing global economy, E-commerce and E-business have become an inner part of business strategies and a powerful tool for economic growth. E-commerce signifies the medium through which information is exchanged between individuals or organizations, and the electronic-based activities within or within organizations. It's the business option where the transactions take place through telecommunication networks. Information and **ICT integration** in business has transformed relationships within organizations and between organizations and individuals. The efficient use of technology in business has improved production, increased **customer engagement**, and enabled mass customization, and reduces cost.

The term e-commerce describes any type of business transactions or information exchange that is carried out through the internet. E-commerce started in the early 70s with innovations such as electronic money transfer. Initially, e-commerce was confined in big companies and a few innovative small businesses. Later, E-commerce was further developed with the starting of **electronic data interchange (EDI)** which introduced other types of transaction processing. Since then, e-commerce applications have expanded rapidly. E-commerce can be used directly or indirectly in all aspects of human life, such as banking, entertainment, shopping in e-mall, buying stocks online, online processing, or Supply Chain Management. Because of its versatility of applications, e-commerce gained a lot of popularity in 10 years. It has also attracted researchers' attention regarding the new technologies and solving the security issues concerning to electronic transactions.

KEYWORDS: ICT integration, customer engagement, electronic data interchange (EDI)

INTRODUCTION

In the early 1990's, businesses began using information technology to improve efficiency within their organizations. The first example was EFT, which allowed organizations to electronically transfer money between each other. Electronic Data Interchange (EDI) was then introduced to facilitate inter-business transactions between financial institutions (banks) and other types of businesses. EFT also facilitated transactions and information exchange between suppliers and the final consumer. Today, e-commerce is everywhere in our lives. We can use it for credit/debit card authorization, make travel reservations over the phone or network, wire fund transfers all over the world. We can also use it for online point of sale (POS) transactions within retailing. There are many ways to use e-commerce. Here are some examples: 1. EFT 2. Electronic banking 3. Electronic insurance 4. Interactive 5. Marketing 6. Supply chain management 7. Fund raising

What is e-commerce?

E-commerce is the process of buying and selling information, goods, and services over computer networks. It involves the exchange of information and the sharing of information between trading partners in order to achieve business objectives. The term “e-commerce” describes a modern business model that meets the needs of businesses, merchants, and consumers by reducing costs, improving product and service quality, and speeding up service delivery. Information processing is an essential part of e-commerce. Whether it's customer support or new product development, the impact of e-commerce is already being felt in every aspect of business.

Procedure

E-commerce research journals from a broad range of disciplines were considered for the purpose of this study. The scope of the study was expanded to include not only conference papers but also Masters and Doctoral dissertations as well as textbook, published work and unpublished work as well as book commentaries and reviews. Data was extracted from 9 journals chosen for this study. The selected journals included ACM (Academics of Communications), Decision Support systems (Information and Management), IEEE computer (IEEE), IEEE internet computing (Information and Management, Information Management and Computer Security), International journal (E-Commerce) (International Journal of Electronic commerce), internet research (Internet Research) and journal (Organizational Computing and Electronic Commerce). Nine journals are sufficient for the purpose of publishing an e-commerce study. It can be published in a variety of ways, but the IS Journal (E-Commerce Journal) appears to be among the most common. Ngai (2002) considered 35 ISs (Information System) publication outlets Please note that only one journal is specifically dedicated to the topic of e-commerce. Search for online databases: Google Scholar, Inform, Business Source, ACM, Digital Library, Science Direct, SwetsWise, M-Lit. Search for online bibliographical databases: Emerald Full text. Search for literature related to the IS model: E-commerce, Electronic Business Success model, Online commerce research model. Except for the journal of electronic commerce and Organizational computing and electronic commerce.

E-commerce models

Over the years, different research models and theories were used to identify the key factors that drive e-retailing strategies. The traditional IS success model served as the foundation for other contemporary e-retail success models. Many of these models initially proposed shortcomings due to the rapid and dynamic growth and evolution of ecommerce. As a result, more researchers began to identify more important factors for e-business development and proposed new models. Today, ecommerce studies continue to investigate emerging factors that may affect consumer satisfaction in the online world. Technological advances, changing consumer preferences and behavior, changes in cultural trends and development, the ease of accessing online environments, changes in government policies and many other factors have stimulated ongoing research to create comprehensive ecommerce success models. Below are some of the leading ecommerce models:

D&M IS success model/updated D&M IS success model:

Although D&MIS was first published in 1992, it began with theoretical and empirical research from the 1970's to the 1980's. The first paper synthesized previous IS success research into a body of work that served as a foundation for further research. The paper was based on studies by Shannon and Weaver [49], communications research by Mason [1978], information ‘influence’ theory and empirical research on empirical management information system [MIS], which resulted in the development of a multidimensional and holistic model of IS success. In the D&M model, technical success is measured by system quality,

information quality is measured by semantic success, use is measured by individual impacts and organizational impacts are measured by effectiveness success. D&M takes into account both the process and the causal dimensions of success; however, these dimensions are interdependent rather than independent. The model was also updated to include studies on e-commerce based on primary system users, suppliers, consumers or customers. Customers, consumers and suppliers rely on the system to conduct the business of purchasing or selling. The system assists them in making fast decisions and completing their transactions. Integration of communications with commerce resulted in the development of the modernized D&MIS system success model and its six dimensions. Shortly after the publication of the long-term D&MIS model, IS researchers began to propose several modifications to it. "If a system is used on a voluntary basis, then 'use' is a good measure," says Seddon, "but if it is used on a mandatory basis, then usefulness becomes a good indicator of the system's success." According to Loftus, "after assessing the tool from an information systems point of view," the construct 'service quality' should be added to the D&M model."

Technology acceptance model:

The Technology Acceptance Model (TAM) was proposed in 1989. Drawing on social psychology theories such as TRA and TPB, the TAM seeks to explain and predict technology adoption among users by taking into account the relationship between beliefs, attitudes, intentions, and behavior. Davis (1989) emphasized the importance of "perceived utility" and "reliance on ease of use" as factors that reinforce the beliefs that lead to adoption. Utility refers to the extent to which a user or consumer believes that a particular information system (IS) will enhance their overall performance in a task. For instance, a user may believe that an information system will reduce the time needed to complete a task or that it will deliver timely, accurate information.

TAM stands for Technology Acceptance Model. The other two constructs are Approval towards use and Intent to use. The first is used to measure how likely consumers are to use an IS, while the second describes how likely they are to use a particular IS. According to TAM, a person's attitude towards a system is determined by three beliefs:

"How much do I think the system will improve my job performance?"

"How easy am I going to find the system to use?"

"How little effort do I think I will have to make to use the system?"

TAM believes that the impact of external factors on intent depends on how easy the application is to use. In other words, the more efficient the application, the easier it will be to use. The TAM has been shown to be a robust and reliable tool for measuring user acceptance. While there has been a lot of work done to model the factors that affect perceived usability, the factors that impact perceived efficiency have largely been neglected. Designing an operational solution that increases customer adoption and continuous use of the newest technologies necessitates a well-understood perception of utility factors. Many studies focus on expanding TAM to other key determinants of perceived utility and function as well as learning how the outcomes of those determinants change over time as the target structure is interacted with more frequently. TAM has been extensively studied since its introduction over 25 years ago and is well-known for its success in the development adoption studies. Developed in TRA and TPB in the neuroscientific disciplines, TAM has become a key paradigm in predicting future technological uptake or rejection of human behavioral threats. From Kloppping and McKinney (2004) to apply TAM to specific Websites H and Stoel (2009) to understand consumer acceptance, incorporate e-shopping quality, enjoyment, and trust into a technology acceptance model.

E-commerce business model

This model relies on what are the most popular dependent variables utilised in online sales studies; use and contentment of users. Standardized and methodical standards for gauging customer satisfaction and utilization in e-commerce systems are not agreed upon. For example, the standard of measurement for the variable 'use' emphasizes the application of specialised software to analyze specific indices. Page views, hits, bounce rates, click-through rates, sessions, conversion rates, etc. However, that does not mean that this standard extend to identifying the variable that stimulates 'use'. Since none of the complete model or framework that is known to integrate all the different independent variables into 'user satisfaction', an increasing number of researches have trying to figure out what factors might affect e-commerce customer. In the e-commerce success model, the components of information and systems quality are replaced by 'content quality' and the component of e-commerce system in the D&M. However, there are other e-commerce system and content quality constructs that are not part of the traditional system quality & information quality metric. The component of customer e-commerce satisfaction is replaced by the component of user e-commerce satisfaction. The primary reason of the element of user satisfaction proposed in the IS success model literature is very limited in scope. This is limited to services provided by the information technology function and elements of information product. In this model, the element of customer satisfaction is suggested as independent variable. Customer satisfaction is very important for ecommerce business success. The information received or data analysed from e-commerce customers on how they grab their end goals simplifies the task. It also helps in perfecting and conceptualizing and measuring the 'user satisfaction'. In addition, the model introduces two additional factors 'service' and 'trust'. These two component are required to measure the transactional as well as the customer support component of an e-commerce system. This is to understand the relationship between customer satisfaction and use. In most research that follows the success model that D&MIS uses, 'usefulness' replaces 'use'. This was necessary because of the ambiguities of the criterion as to use or not use is mandatory. However, in this model, the use is retained as suggested in the original research paper. According to this model, an e-commerce company 'uses' its e-commerce system mainly by free will. If not, users can refuse to buy, and are not forced to use the system. Don't use a system like a hit counter. Transactional-based metrics of E-commerce systems aren't necessarily a good indicator for any kind of E-commerce goals. Sagala argues that consumer behavior may be explained by 'hedonism' or 'utilitarianism', especially in terms.

TRA and TPB model

The goal of TRA is to better understand the relationships between behaviours, perception, and expectations. Mostly the previous research on these relationships has focused on relatively low relationships between actions and attitudes (TRA (1999)). Many researchers have cross questioned that attitudes are not an essential part of comportment. In Fishbein's (1993) research, he distinguished between attitudes towards an object and actions toward that object (TRA between attitudes and actions). Mostly the researchers have first defined the fundamental principles of normatively, compliance, intentions, and behavior and their evaluation. They have defined valuation specifically. They have shown that it is very significant to have high correspondence between measures (norm) of attitude (normal), perceived control (normal), intention (intrinsic), and behaviour (act), target (targets), context (context) and time. A change in any of these factors will cause a different behavior to be explained. According to TRA (1999), behavioral purpose is the system which starts from the beginning. Our actions (actionality), and our perceived norm (norm attached to the action), are the primary drivers of human behavioural purpose, they argue. They state that it is essential to establish a relationship with behavior, goals, situations, time (intervention), standards, purpose (behaviour), and actionality. A shift in one of these variables will help us understand another action. Believing in the possible outcomes of actions (behavior beliefs), believing in the expected procedural standards, and being willing to meet those expectations (normative beliefs) control beliefs and perception of factors that might support or restrain those

factors. TPB also incorporates implicit conduct management which takes into consideration situations in which the behavior cannot be controlled; it is unlikely that the person would do the prescribed action without some motivation; and four factors that affect actions directly: (c) Crespo (2008), three of which play a critical role in determining whether behavioural expectations lead to actions; (d) the action must be performed with experience; (e) the environment makes it difficult to perform the behavioural performance; and (e) the behaviour should be pertinent to the individual; and (f) behavioural practice makes it normal, so intention is less important in determining the success of the behaviour for all users (Venkatesh (1996)). TPB is, to a large extent, an extension of the TRA and includes both regulation and behaviour management interventions. Ajzen's (1991) idea of a complete TRA with an expected behavior management assessment became widely accepted, and is mainly used within Relational Models of Perception to predict behaviour. The concept of well-being values and the function of the precautionary principle are discussed in these reviews. PBC is thought to affect intention and behaviour, and the rationale for including it is that it supports the prediction of self-directed behaviours. TRA could predict simple behaviours almost accurately, but for example: for volitional control, when there are restrictions on action, the mere formation of an intention was not sufficient to predict behaviour. By adding PBC, we provide information on the constraints on the act that an individual is expected to take, so intentions cannot always be predictive of behaviour. Ajzen (1991), attempting to elucidate the relationship of PBC to intention, argues that the relative importance in predicting intention would vary according to the situation and the behaviours. For example, it is possible for there to be strong normative influences, or for attitudes to be strong, that PBC would not be predictive of intention. There is some indirect evidence for measuring attitude strength, however. This is hypothesised and supported by some studies, including Bandura (1997) and Dwivedi et al. (2019). According to Bandura, measuring attitude strength boosts the relative predictive power of subjective norms, and users are more likely to do what they think they can do. (Bandura, 1997) In a report from Taiwan, the ability to anticipate customer interest in using Internet banking was quite helpful. The authors explained how the values of a person influence behaviours, including mood, social norm, and presumptions about behaviour regulation.

Means-end chain theory

The conventional wisdom is that reliable insights into customer motivations can only be obtained in specific situations. As a result, it's important to measure the utility of consumer use once the consumer thinks they've learned how to use the system more effectively. The mean chains can also be models of cognitive systems relevant to usage, such as how consumers store and process market information. With this approach, we'll be able to predict consumption behaviour by showing which aspects of cognitive systems are activated in a specific situation to influence decision-making, and whether they're connected to the actual decision-making phase. Gutman (1997) argues that motivations of shopping are organized in a hierarchical order with several benefits. Sub-goals deriving from buying are the final goals The connection between value and intent. The connection between benefits and intent also explains the significance of real goals (i.e. benefits) in the decision-making process of an individual's behaviour. The goal hierarchy of the MEC suggests that benefits don't work as a means of achieving values. According to a study by Botschen (1999), "it is extremely difficult to infer directly from the positive effects on repeat purchase". A marketing study by Gutman (1982) mentions the need to study the consumer goals hierarchy. However, in many studies of online repeat purchase behaviours, such as that of Xiao et al. (2019), this challenge has been overlooked. All three links have the potential to provide comprehensive insights into a person's behaviour and the MEC theory gives marketing managers a practical way to gather the data and know-how they need to influence customer purchasing behaviour. The MEC theory states that a consumer's ability to relate to a product is what motivates their behaviour to consume it. Thus, a product's personal importance to a consumer is determined by the relationship between the product's characteristics and the consumer's desired goals and characteristics. According to a research paper, the hierarchical cognitive structure exists in the subconscious mind of

consumers. According to the study, motivation is derived when a consumer is able to connect the product characteristics with the consequences of consuming the product, and with the desired method of attaining the customer's desired outcomes (value). According to Keeney (1999), a consumer will only choose an online store over an orthodox outlet if and only if he perceives higher value in using an online store over a traditional store. According to this theory, online consumers can draw value from both their wants and the particular characteristics of a product. The advantages of online shopping are as follows: Convenience Product quality Privacy Safety Categorisation of online consumers Categorization of consumers according to general characteristics Categorisation according to general characteristics (e.g. lifestyle population characteristics social economy) Categorization according to specific characteristics Consumption Purchasing history Consumption Lifestyle Consumption Social economy Lesser Marie.

Prospect theory:

Prospect theory has been used extensively to analyse customer decision making in situations where there is a chance of losing value. According to a study by the psychologist Daniel Kahneman (2005), online consumers make decisions on the basis of their evaluation of other alternatives, but these evaluations are based on past results and their risk-averse attitudes. Risk aversion is the aversion to making risky decisions. (Kahneman et al, 2005) According to prospect theory, customers are more prone to making different decisions based on the level of risk they are exposed to. Consumers focus more on "guaranteed" outcomes than on "probable" outcomes. These outcomes may include "losses" or "gains" compared to the "expected" outcome. Consumers will set a value for the expected outcome based on the likelihood that it will occur. This enables the consumer to choose the option with the greatest value and the greatest probability of occurrence. To some degree, consumers respond differently to risk. When the issue is presented as loss, the consumer is more likely to look for risk. When presented as gain, the consumer becomes risk averse, which means he or she is more likely to see losses than to see gains. In other words, he or she prefers to see losses rather than seeing gains. The theory of opportunity is one of the most powerful analytical tools in the context of advantages and threats. From this, it's easy to see how the part of danger can play in moderating interest relationships and repeating goal in e-commerce. People make decisions based on the meaning that they ascribe to a situation that is ambiguous. Understanding future losses by consumers can play a larger role in the acceptance of innovative services.

Analytical hierarchy process: e-commerce applications

The Analytical Hierarchy Method (AHM) is a decision-making technique that uses several criteria to assist the planner in selecting the most appropriate solution to complex, multi-layered problems. It was first developed in 1970 to 1980 by Saaty (1988). It uses the comparative principle of expert evaluation to find the value rates. (Khazaii, 2016). It can be applied to quantitatively calculate intangible variables. The analysis is carried out with an absolute spectrum of opinions that demonstrate how much one variable is more than another in relation to a particular attribute. To ensure that goals are selected in a coordinated way, the selection process should be broken down into the following steps: 1) Identify the question 2) Determine what information is needed 3) Determine what the purpose of the judgment is 4) Determine what priorities are from a particular viewpoint 5) Determine what options are 6. Determine which criteria depend on the relevant components

Results:

A total of 291 study papers were published on the different e-commerce model's that have changed over time. The study emphasizes that various factors have been identified as determining the success of an e-commerce business. Previous studies have shown that the IJEC, although published for the first time in 1996, had by far the most articles on the e-commerce model and factors determining its success. The IJEC is a journal dedicated

to the promotion of knowledge and practice in e-commerce. Communications from the American college of machinists and technology (ACM), and internet research account for the second and the third largest percentages respectively. The ACM is a monthly online publication that promotes information technology applications in the arts, sciences and engineering fields. Internet Research journal, focuses on research in the field of the internet, including applications and web applications for corporate and organizational organizations. While the model is not the same, there are a few things that are similar across different models. These are mostly related to the usefulness and performance of the ecommerce platform. Customer behavior factors vary across different models. This is because nobody is the same, and customers have different preferences. Therefore, all factors should be considered when creating an e-commerce strategy.

Conclusions:

As the number of traditional shoppers continues to grow online, the e-tailer is improving their strategies to entice them to buy online and become their loyal customers. In order to ensure the success of e-commerce, research has proposed several constructs and related variables that are essential for the success of any e-business. An e-business's success depends entirely on its ability to provide a good user experience. A good user experience will lead to a happy customer. Over the years, the study has discussed various e-commerce business success models. It has also discussed the determinative factors that are included in the models and, once implemented, will facilitate the e-business success. Each model focuses on different factors that need to be present in an e-store. But the fundamental factors relate to how effective the system is and how well designed to achieve its business objectives. System quality factors are just the tip of the iceberg when it comes to online customer behaviour & perception factors. We found in this study that there is no such thing as a 'one size fits all' model that guarantees customer retention. E-commerce research is constantly evolving as a result of constant innovation, technological advancements, human behavioral changes, etc. The ecommerce model needs continuous research in order to identify emerging factors that impact the ecommerce success based on contextual or user behavior.

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