Identifying and Ranking the Components and Dimensions of E-Commerce Using the Meta-Synthesis Approach

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Abstract. The present study seeks to identify and prioritize the components and dimensions of e-commerce and categorize them as a comprehensive model by using the meta-synthesis method. In this research, total of 58 articles in the field of E-commerce was identified and examined in the first step. Latin articles were in the period of 1996 to 2017 and Persian articles were related to the period of 2001 to 2017. Finally, after three stages of the evaluation of articles, 29 articles remained. Then, based on the results of the meta-synthesis method and the use of open coding, three main fields and a number of subfields were found for the e-commerce
variable. Also, at this stage, the initial data was also introduced in the form of a new subset and added to the comprehensive model by using the indexing, conceptualization and categorization method. The main fields of e-commerce included customer trust and satisfaction in e-commerce, the development and application of e-commerce and the success of e-commerce. Each of these main fields has a number of subfields. Suggestions are presented in accordance with the comprehensive model identified. The e-commerce model can be a good tool for decision making managers and decision-makers, and should be used as a basis for future research.

**Keywords**: E-Commerce, Meta-Synthesis, Indexing, Conceptualization, Categorization.

1. Introduction

In today's world, computers affect all aspects of human life. The basic elements of business such as customers’ personal information, product design, and accounting information are all stored in computers, and this intangible information includes a huge proportion of corporate assets (Willis, 2010). Nowadays, e-commerce is rapidly penetrating organizations and has a profound impact on business, just like people’s ordinary life (Mohanna et al., 2011). E-commerce is a collection of activities and services that allow search and management of information and exchange, creation, reporting, and credit management and virtual payment on the Internet through digital communication. By easiest means, e-commerce means trading through information and communication systems. Although e-commerce is considered an emerging phenomenon, it has been able to have a significant impact on economic and business progress. Information and communication technology is the mainstay of electronics economics. Along with the use of information and communication technology in all aspects of human life, the world is rapidly becoming a modern information society. Nowadays, access to the Internet and the use of information resources in all human societies are progressing rapidly and different organizations with different infrastructures benefit from ICTs. The Internet as a global network and also as a prerequisite for e-commerce is changing traditional business practices. The interaction between technology and business process is the
key to understanding the effects of e-commerce on economic transactions and ultimately on the whole economy (Malkawi, 2007). E-commerce cause more globalization of business, eliminating time and space constraints, creating employment, reducing inflation, expanding market coverage, reducing the price of resources to buy, increasing sales, improving productivity, significantly reducing transaction costs, creating opportunities for the activities of small and medium enterprises and etc. E-commerce is one of the best examples of the use of ICT for economic purposes. Using this technology has led to economic growth, improved business efficiency, and facilitated convergence of countries and especially developing countries in the global economy (Khodadad Hosseini, 2009). Today, companies compete for using e-commerce. This competition is done in a variety of ways and with the purpose of finding a better place in the minds of the customer through competitive prices, the provision of attractive promotional programs for customers, as well as providing the best service for the products delivered to the customer. These programs should be designed in such a way that customers have multiple and more than expected choices to buy goods and services (Tan & Trang, 2017). Globalization of trades, removal of time and place limitations, reducing the price of resources to buy, increasing sales, easy access to information, reducing transaction costs, reducing time costs are the general features of e-commerce. Also, Elimination of the delay caused by the production of documents, reduction in the chance of making mistakes, saving time, manpower and administrative costs, Reduction in labor costs, the information flow, and Reduction of the level of repetitive standards are some benefits of applying the e-commerce (Najafzadeh, 2013).

2. Literature review
"E-commerce" is a multidisciplinary phenomenon, which, on the one hand, is associated with the most advanced concepts of information technology and, on the other, with issues such as marketing and sales, financial and economic issues, and law (Mohammad Zadeh et al. 2010). E-commerce is the establishment of digital business exchanges between organizations and individuals (Farhan and Permana, 2019). E-commerce is the sale of goods and services through the internet communication
tools (Khan and Owemi, 2018). Customer-centric e-commerce is defined as technology-oriented communicational marketing, which is used by companies and with the intention of maintaining customer relationship, due to its significant benefits to traditional e-commerce. (Mang’unyi et al., 2017). The general features of e-commerce include the globalization of business, the removal of time and space constraints, reducing the price of resources to buy, increasing sales, easy access to information, reducing transaction costs and reducing time costs. Also, some of the benefits of e-commerce include the elimination of delays caused by the provision of documents, reducing the possibility of mistakes, saving time, manpower and administrative costs, accelerating the flow of information and reducing the large volume of repetitive standards (Najafzadeh, 2013). In this regard, Naqizadeh et al. (2014) tried to systematically review the findings of qualitative studies related to regional innovation models using the "meta-synthesis method" and, analyze the reasons and the basis for the formation of these models based on the main fields identified. In this research, 300 papers were collected from the Sage and Scopus database in the 1990-2013 period. Finally, after two screening stages, 48 papers were identified as high and medium quality papers for a deeper analysis. Then, based on the results of the meta-synthesis method, which used the open coding tool to analyze the articles, three main fields and its subfields were identified. The main areas include the level of the regions development, especially in the institutional sector, the reduction of the direct involvement of governments in relation to industry and industrial enterprises, globalization and the enhancement of international communication. Each of the main fields includes a number of subfields that were considered in the analysis. Ghasemi and Rayat Pisheh (2015) examined 31 papers to investigate a model for evaluating supply chain sustainability with a meta-synthesis approach using the meta-synthesis method. Before coding the texts, using the CASP methodology, the documents were filtered. In this study, 287 codes were identified by referral software MAXQDA10. Among identified codes, product recycling and reproduction (29 referrals), the image and reputation of the company (24 referrals), performance evaluation and supplier selection (22 referrals) were among the most important codes. Among the innovations of the present research is the identification of indicators and
dimensions of the sustainable supply chain by using the qualitative meta-synthesis research methodology and MAXQDA10 software in the field of the sustainable supply chain. The lack of access to authentic Persian and English scientific documents and resources are considered as the research limitations. In the study of Niroumand et al., (2012), in order to identify and classify mobile business models, after studying mobile business models in 28 article and books, 92 different models were compared, interpreted, translated by using a meta-synthesis method. Model classification criteria were the role of decision-makers, the field of business, business partners, dynamics, type of activity, focus area, mobile generations, transparency, type of network, operator type, marketing and advertising, and the layer level. Finally, the models were analyzed and classified according to the type of product, the content, technology (hardware, software), network and combination. Also, Floyd et al. (2014), in a meta-synthesis study, showed that the importance of providing a high-quality product exceeds the customer expectations and product brand commitments. Additionally, retailers must provide a mechanism to detect defective products and services and reduce these disadvantages by creating procedures as training their employees. Finally, retailers should encourage consumers, who have a good experience of product consumption, to promote or recommend the product on the company's website or on other websites to others. Kim & Peterson (2017), in their study on the meta-synthesis online trustful relationships in e-commerce, examines the role of online trust in B2C e-commerce. In this study, examples of published and unpublished studies with the words: trust, website, e-commerce, Internet, online, and a combination of them in Google Scholar were examined by using the meta-synthesis method. The results of the analysis showed that online trust has a significant relationship with previous variables (such as perceived privacy, perceived service quality) and their results (such as loyalty, the intention of buying again). In addition, more analyzes showed that the methodological features such as the study plan, the type of website, and the type of variables used to measure trust structures are moderating the relationship of online trust. This further analysis showed that relationship between online trust and the history and results of the present research are simultaneously very specific, complex and closer
than the previous studies. The considerations of the analysis of theory, practice and future research are discussed. Hamari and Keronen (2017), by studying the way of buying virtual goods, the answered this question that how people buy virtual goods that are made by using the "meta-synthesis method". The results showed that, unlike traditional goods, the reason that people buy virtual goods is strongly dependent on the place where they are sold. Research findings emphasize the importance of designing services and its relationship with giving value to virtual goods, which is related to the context of the society in which it is used. Many factors can dramatically predict the behavior of buying virtual goods, such as network impacts, personal presentation, enjoyment, and simple usage. These are factors that, along with other general features of virtual goods, are directly related to the design of the way of buying these goods. In this study, the result also showed that enjoyment and usability in a longer period can strongly predict the purchase of virtual goods, especially in games. In this research, it is attempted to identify the relative components of e-commerce and determine their relative importance by using the meta-synthesis method and the indexing method to provide a comprehensive e-commerce model.

3. Method
The method used in the present study is a meta-synthesis method, which has been used to identify the components and dimensions of the e-commerce variable. Also, the indexing, conceptualization and categorization method has also been used to generate the initial data in the form of a new subsystem. All of these components and dimensions identified were used to provide a comprehensive e-commerce model. In the present study, the statistical population consists of scientific articles published from 1996 to 2017, in the section of Latin articles and articles from 2001 to 2017, in the section of Persian articles. These articles gathered from reliable databases and in the field of e-commerce. In this study, the criterion of the sample size is theoretical adequacy, in other words, the review of the articles does not provide a new indicator and benchmark in the field of e-commerce. Therefore, the adequacy criterion of the sample is theoretical saturation. Also, the selected examples of the meta-synthesis method were non-random in nature. The critical
assessment skills program (CASP) was used as selection tools for selected articles. Therefore, the sampling process in meta-synthesis started with higher priority articles and ended with theoretical adequacy. In this study, data were mainly collected from library and web-based surveys. Also, referring to valid papers and reliable data were the criterion for selecting materials. Nowadays, the numbers of synthesis research that expose research on a particular subject in a systematic and scientific way to researchers have been increased. One of the methods used to investigate and synthesize the past research in the last several years is meta-study, which is an in-depth analysis of research done in a particular field. In the past years, it has been called as meta-analysis. However, meta-study is different from the terms such as meta-analysis, meta-synthesis, meta-theory, and meta-method and it includes the study of all these concepts (Paterson and Canam, 2001). It can be said that meta-theory is analysis of the past research theories, meta-method is the analysis of the past research methodology, meta-synthesis is qualitative analysis of past research findings and meta-analysis is the quantitative analysis of past research findings (Bench, 2010). Meta-synthesis is a secondary study that reviews the structure of qualitative studies (Arab et al., 2014). The meta-synthesis explores the information and findings of other qualitative studies related to similar issues. Consequently, the sample for meta-synthesis is composed of selected qualitative studies based on their relation to the research question. meta-synthesis is not an integrated review of the quality literature of the subject matter and the analysis of secondary and main data from selected studies, but rather an analysis of the findings of these studies. In other words, the meta-synthesis is a combination of the interpretation of the main data of the selected studies (Ghasemi Rayat Pishe, 2015). The stages of the "meta-synthesis" procedure are shown in Fig. 1.

4. Findings
In the present research, the first step was the selection of the studies, in which related research were selected. Some of the most important key words used by the researcher, who systematically search for articles in the field of e-commerce, are shown in Table 1.
Fig. 1. Stages of the meta-synthesis method (Baluchi and Rastegar, 2015)

Table 1. Some of the most important keywords and key terms


The databases on which the articles were extracted are as follows: ELSEVIER, EMERALD, IEEE, SCIENCE DIRECT, as well, the following search engines are also used: Google (Google Scholar), Yahoo. In the first step, 58 articles were identified about the components of e-commerce. In the next step, which is "the methodological quality assessment of studies," the goal is to exclude articles that the researcher does not trust in their findings. In this step, the researcher rejects a
number of articles in three stages to improve the quality of selected articles. In the "first stage of evaluation," the researcher establishes a condition for accepting the articles. The basis for determining these conditions was that the initial studies are related to the articles in the field of e-commerce over the mentioned periods and are more similar to the objectives of the present study (p and P are Persian articles, and L and l are Latin articles). (Capital Latin letters show timeframe of all the identified articles and small Latin letters indicate the desired timeframe of the researcher). The result of the first evaluation stage is shown in Table 2.

Table 2. The first stage of the evaluation of e-commerce articles

<table>
<thead>
<tr>
<th>Timeframe of all identified articles</th>
<th>Persian articles 2001≤ P≤2017</th>
<th>Latin articles 1996≤L ≤2017</th>
<th>P+L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of identified articles</td>
<td>34</td>
<td>24</td>
<td>58</td>
</tr>
<tr>
<td>Number of remaining articles in the first stage of evaluation</td>
<td>30</td>
<td>22</td>
<td>52</td>
</tr>
</tbody>
</table>

In the Fig. 2 and in the second stage of the evaluation, articles were reviewed based on parameters such as title, abstract and other details.

Fig. 2. A summary of results
In the "third stage of evaluation," the researcher examines the methodological quality of the study carefully. The tool usually used to assess the quality of the initial qualitative research studies is the critical evaluation program. This program has ten questions that help the researcher to determine the accuracy, validity, and importance of qualitative research studies. The questions focus on these issues: 1. Research objectives; 2. Method logic; 3. Research design; 4. Sampling method; Data collection; 6. Reflectivity, which is the relationship between the researcher and the participants; 7. Ethical considerations; 8. Data analysis accuracy; 9. Clear explanation of the findings; 10. Value of the research (Ja'farinejad et al., 2014). At this stage, the researcher, the supervisor and the advisor give a quantitative point to each of these questions, and then a form is created; therefore, the researcher is able to collect the points given to each article and review the articles and see the evaluation results. Based on the Rubik's 50-point scale, the rating system in this research is considered as the following, and any article that achieves the scores lower than very good (below 30) will be rejected. The summary of the ranking method for e-commerce articles (according to the CASP method) is shown in Table 3.

**Table 3. Scoring method for articles**

<table>
<thead>
<tr>
<th>Row</th>
<th>Article Title</th>
<th>Research objectives</th>
<th>Research Design</th>
<th>Sampling method</th>
<th>Data collection</th>
<th>Reflectivity</th>
<th>Ethical considerations</th>
<th>Data analysis accuracy</th>
<th>Value of the research</th>
<th>Achieved score</th>
<th>Final result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chellappa, Pavlou, 2002</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>49</td>
<td>accepted</td>
</tr>
<tr>
<td>2</td>
<td>Choshin, 2017</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>49</td>
<td>accepted</td>
</tr>
<tr>
<td>3-20</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>43-49</td>
<td>accepted</td>
</tr>
</tbody>
</table>
Accepted and rejected articles (in the third stage of evaluation) are described in Table 4.

**Table 4. Number of remaining articles and rejected articles**

<table>
<thead>
<tr>
<th>Number of articles with excellent score 41-50 (points)</th>
<th>Number of articles with very good score 31-40 (points)</th>
<th>Number of articles with good score 21-30 (points)</th>
<th>Number of articles with an average score 11-20 (points)</th>
<th>Number of articles with low score 0-10 (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 articles</td>
<td>-</td>
<td>16 articles</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>result: Acceptance</td>
<td>-</td>
<td>Result: rejection</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Finally, a summary of the triple stages of accepting or rejecting the e-commerce articles is presented in Table 5.
Table 5. Summary of the triple steps

<table>
<thead>
<tr>
<th>First stage of the evaluation of articles</th>
<th>Second stage of the evaluation of articles</th>
<th>Third stage of the evaluation of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation based on researcher's terms (year of publication)</td>
<td>Evaluation based on parameters of title, abstract and other article details</td>
<td>Evaluation based on critical evaluation skills program (CASP)</td>
</tr>
<tr>
<td>Result: 6 rejected articles, 52 accepted Article</td>
<td>Result: 7 rejected articles, 45 accepted Article</td>
<td>Result: 16 rejected articles, 29 accepted Article</td>
</tr>
</tbody>
</table>

In the third step, at first, all the extracted factors from the studies were considered as codes. Then, considering the concept of each code, they were classified in a same concept. Finally, the main fields of research were formed. Subsequently, selected articles and their dimensions and components were carefully examined by the researcher and the main fields and subfields were identified. Table 6 illustrates the main fields and subfields of e-commerce.

Table 6. Main fields and subfields of e-commerce subfields

<table>
<thead>
<tr>
<th>Main fields</th>
<th>Field 1: customer trust and customer satisfaction in e-commerce</th>
<th>Field 2: Development and application of e-commerce</th>
<th>Field 3: The success of e-commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher subfields are more important and more frequent in selected articles.</td>
<td>Higher subfields are more important and more frequent in selected articles.</td>
<td>Higher subfields are more important and more frequent in selected articles.</td>
</tr>
</tbody>
</table>

Then, the researcher studied their main fields and subfields and codified them. The "open coding" method was used for coding the main fields and
subfields. For example, E5-32 means the second subfield of the third main field, which is related to article number 5. In order to present and introduce a comprehensive e-commerce model based on the meta-synthesis method, relying on literature and theoretical studies of research, there were also relationship between the main fields; for example, customer's trust and satisfaction could cause the development and application of e-commerce, and ultimately the development and application of e-commerce will lead to the success of e-commerce. Subsequently, in order to produce the initial data, the researcher uses the indexation, conceptualization and categorization method to create a subfield variable for each of the main fields and add them to the comprehensive model. In the process of identifying empirical experimental evidences and measuring the abstract concepts is called indexation (Ramezanian Fahandari, 2014). The relationship between indices, concepts, and categories is summarized in Fig. 3.

![Fig. 3. The relationship between indicators, concepts and categories](image)

Then, in Table 7. it is shown how to indicate, conceptualize and categories e-commerce variable.
### Table 7. Indexation, conceptualization and categorization

<table>
<thead>
<tr>
<th>Main fields</th>
<th>Indicators</th>
<th>Concepts</th>
<th>Categories (integration of concepts in a more general form)</th>
</tr>
</thead>
</table>
| Customer trust and satisfaction in e-commerce | - Buy and sell remotely, remove geographical constraints, participate in electronic auctions, reduce disadvantages for people with disabilities (first concept).  
- Reducing the cost of processing, transferring and categorizing information, digital transfer of information, increasing access to goods, especially in deprived countries, more information to increase consumer choice (second concept). (Choshin and Ghaffari, 2017) | 1. Remove or reduce time and space constraints  
2. Ease and affordability of access to information | Removing or reducing barriers and restrictions |
| Development and application of e-commerce | Firm size, firm size, firm ownership, strategic thinking, firm flexibility, employees' ability and willingness to use e-commerce tools (first concept).  
- The size of the company, the uniformity of production technology, the process turmoil (the second concept). (Ranjbaraki and Eskandarian, 2014), (Taqvai et al, 2013) | 1. Internal factors  
2. Underlying factors | Intra organizational factors |
| The success of e-commerce | - telecommunications infrastructure, advanced and updated computer systems, availability of software and hardware, technical personnel skills (first concept).  
2. Commercial infrastructure | Technical and commercial infrastructure |

Finally, in figure 4., the e-commerce comprehensive model derived from the meta-synthesis method and the indexing method is introduced.
5. Discussion and Conclusions

Considering the growing importance of e-commerce studies, this research seeks to identify and classify the components of this key variable in the form of a comprehensive model. On the one hand, by reviewing the literature of the subject, it is found that studies aimed at identifying the components and the dimensions of e-commerce and their relative importance have not reached a consensus, and each research has only identified a limited number of components and dimensions. Therefore, in this research, the e-commerce indexes have been investigated by using the meta-synthesis method and the indexing method. Subsequently, in this study, 29 papers in the field of e-commerce were finally identified and accepted by using the meta-synthesis method and the open coding method, and in the three stages of evaluation. In the following, components and dimensions were extracted and presented in the form of a comprehensive model. Regarding the e-commerce variable, three main fields were identified: customer trust and customer satisfaction in e-commerce, the development and application of e-commerce, and the success of e-commerce. All these main fields have a number of subfields.
According to a comprehensive presentation model, personal privacy in the first main field, infrastructure and technology issues in the second main field, and finally, trust management system in the third main field had the most frequent code in the selected articles and considered to be relatively the most important subfields. Therefore, in comprehensive e-Commerce model, higher sub-fields as the most used code and the highest repetition in selected articles are relatively more important. In the end, the main innovation of this article was the identification of the main dimensions and components of e-commerce and determination of their relative importance. Another innovation of this research was the use of indexing method. The simultaneous use of indexing method, along with the meta-synthesis method, in addition to the secondary data relating to the meta-synthesis studies, could also produce the initial data or a new subfield, and add it to the model. Therefore, understanding and analyzing the comprehensive models proposed in this study, along with the consideration of regional, indigenous, and other environmental, organizational and human constraints, can direct managers and other decision makers in order to make optimal and appropriate decisions for the organization. It will also help the researchers to use the results of this research in other areas of research.

References


IS Development Conference 2002. Riga: Latvia, September 12


