E-Commerce Delivery Order System Based On ISO 9126 Model In Jeddah, Saudi Arabia

Siswanto
Teknik Informatika Fakultas Teknologi Informasi
Universitas Budi Luhur
Jakarta, Indonesia
siswanto@budiluhur.ac.id

H. Riefky Sungkar
Program Studi Magister Ilmu Komputer, Program Pascasarjana, Universitas Budi Luhur
Jakarta, Indonesia
riefkyns@gmail.com

Abstract—The limited mobility of Muslim women in the city of Jeddah who must be accompanied by their Muslim family or husband or with fellow Muslim female friends, if they want to leave the house to shop or entrepreneurship has become a culture in the country of Saudi Arabia. The research objective was to create a prototype e-commerce delivery order system for Muslim women in the city of Jeddah. The development of an e-commerce delivery order system uses a prototype method, and tests the quality of variables with the ISO 9126 model. The result of testing of the application variables for functionality, reliability, efficiency and user usability is 77.3%.

Keywords— E-Commerce, Delivery Order, Jeddah, Muslim Women, Saudi Arabia

I. INTRODUCTION

Jeddah is the main urban center west of Saudi Arabia. It is the largest city in Mecca, the largest sea port in the Red Sea, and the second largest city in Saudi Arabia after the capital, Riyadh. With a current population of 4.2 million, Jeddah is an important commercial center in Saudi Arabia.

When compared to Makkah or Madinah, Jeddah is more sparkling. Not only because of the existence of King Abdul Aziz International Airport as the main entrance where many migrants from various countries arrive at this airport, also because the shopping centers are scattered in Jeddah. In addition to the very popular Balad area a number of other elite shopping centers can be found in Jeddah. The shop provides almost all kinds of goods ranging from fashion, furniture, carpets and prayer mats to luxury cars. Private cars with well-known well-known brands from Japan and Europe, lots of passing and chasing each other on the streets. Every holiday or weekend (Thursday and Friday) shopping centers are always crowded, not only men but also women, whether single or married, for those who are married they always bring children to shop or just eat. Hajj pilgrims usually take advantage of waiting time before returning to their homeland by shopping in Jeddah. During the Haj season, almost all markets and shopping centers are always visible in the Indonesian Hajj group.

The behavior of consumers who do business or shopping in the city of Jeddah, Saudi Arabia, the majority of Muslim women must be accompanied by brother or her husband, if not married must be with parents or siblings or together with fellow Muslim women who generally or majority use a veil or face cover. Daily necessities purchased usually wait for men who shop and are not allowed to receive guests if there is no permission from their husbands or men who are brother.

Shopping or business activities are more dominant after Asr until night and even until dawn. Every event, every Muslim woman has her own room and may not mix with men, such as marriage, invitation to eat, visit or even death events, even just her own family can't find it, except the biological family itself.

The existing e-Commerce in Jeddah is the K-link Stockist. The K-link stockist already exists in Jeddah Saudi Arabia as a form and proof that the K-link Business is a Sharia-compliant MLM business. The city of Jeddah is a very lucrative market share and there is no death either from business, investment, and so on.

The main problems in this study are: the limited space for Muslim women consumers to buy product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home, so that trade transactions are relatively low, there is no online delivery order application which makes it easy for Muslim women consumers to buy product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home. The purpose of this study was to create a prototype e-commerce delivery order system for Muslim women in the city of Jeddah.

The expected benefits of research after this research can solve the problems mentioned above, so that Muslim women in the city of Jeddah can use the e-commerce system delivery order prototype model; if you want to buy product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits or businesses from inside the house, without having to be accompanied by their family or brother or husband, and simply use the smartphone that has an e-commerce application installed delivery order.

E-Commerce is the practice of implementing and managing key business processes such as product design, management of raw material supplies, manufacturing, sales, order fulfillment, and service provision through the use of computerized communication, computer and data technology. E-Commerce uses information technology in the form of the internet and other computer networks to run key business processes, namely buying and selling. The prefix "e" in the word e-commerce means "electronic", which means activities or transactions that are used without exchange or physical contact, transactions are held electronically or digitally, this becomes possible with the support of the rapid development of digital communication.[1]

The International Organization for Standardization (ISO) in ISO Standard 9126 has proposed several characteristics for testing the quality of a software. ISO-9126 identifies six characteristics of a software that are said to be of quality, namely: functionality, reliability, usability, efficiency, maintainability, and portability shown in Table I.[2]
In the Web Quality Evaluation Method (WebQEM), Olsina identifies four characteristics of the user, namely functionality, efficiency, reliability, and usability. The reason for identifying these four characteristics is that in e-commerce the most important Delivery Order is users (women, men, residents, etc.). Every aspect can be measured using different measurement methods. [3]

The prototype: "A potential system version is provided for developers and prospective users who can give an idea of how the system will function if it has been arranged in a complete form. The process of producing a prototype is called prototyping."[4]

Despite the fact that the Kingdom of Saudi Arabia (KSA) is a leading oil and gas producer (CIA 2012), a member of the G-20, has the largest and fastest growing ICT market in the Arab region (US Commercial Services 2008, Alfuraih 2008), including hardware and computer software, and very rich, online retail activities do not run with the same ICT market speed (CITC 2011). For this reason, this research discusses the factors that influence the slow pace of online retail development in Saudi Arabia. While some research is investigating the factors that influence e-commerce adoption by organizations, this research is different because it shows that the maturity level of e-commerce companies is important when considering why companies do or don't implement e-commerce and how companies can do it. Encouraged to move to a higher level of maturity. Thus, this research considers the factors that influence e-commerce adoption by retailers in Saudi Arabia based on the stages of e-commerce maturity of each organization. To evaluate the maturity stage of e-commerce among retailers in Saudi Arabia, the model for the Stage of E-Commerce Business Growth (SOGE).

The study began with the identification of research problems and questions, and a literature review. Data collection includes two stages. The first data collection phase consisted of interviews with 16 retailers covering four stages of e-commerce maturity. The second stage of data collection was designed based on the results of interviews to further examine and explore qualitative findings with a wider sample of retailers; 153 retailers, which cover various sizes, ages, business categories, and the maturity stage of e-commerce. The results show a striking difference between retailers as a function of their company’s growth stage with respect to factors related to consumer perceptions and organizational factors, while at the same time showing agreement between retailers at the company at different stages in relation to environmental factors. The environment is recognized as the same as the respondents in the four stages. This investigation helps identify incentives and barriers for each stage of maturity. This finding shows that it is important to consider the growth stage of e-commerce when considering barriers / incentives for organizations to adopt e-commerce. Based on these findings, recommendations are given based on the stages of e-commerce maturity to contribute to e-commerce development in Saudi Arabia. These recommendations include e-commerce awareness and education programs, with each stage targeted with specific programs, assistance to get lower-stage companies online, introduction of safer online payment systems such as SADAD, improving the legal system for e-commerce, and more much more Efforts to build trust with the Saudi shipping and posting system, and increase the use of mailboxes at home. My research shows that it is important for me researchers to consider the maturity stage of e-commerce companies when considering incentives and barriers to e-commerce development. What one group sees as an incentive, another group may see it as a barrier, or as neutral. [5]

This paper discusses the application of online shopping in Saudi Arabia, focusing on opportunities and challenges. Because several studies to date have investigated this topic, investigations are currently making valuable contributions. In investigating these opportunities and challenges, quantitative and qualitative research methods have been used, as well as the main sources for gathering more useful information and data. The results show that there is a shortage of supervisory institutions in Saudi Arabia regarding online shopping. There is a lack of awareness among consumers, especially regarding issues related to trust and privacy in online shopping opportunities. Internet technology provides an opportunity to be forgotten and the establishment of SADAD, an online payment option, provides a more trusted environment and Saudi Post has established "E-Mall", which is a service where electronic pages are provided for companies to sell their electronic products without the need to build websites. The diversity and diversity of logistics companies and the intent and vision of the Saudi Government have been combined to develop a technological and electronic environment in the country. [6]

II. METHODOLOGY AND RESEARCH DESIGN

A. Research Methods

The proposed study uses quantitative and qualitative research methods to produce comprehensive and important details about the opportunities and challenges of the E-Commerce Delivery Order in Jeddah city of Saudi Arabia. Quantitatively, a two-page internet survey was designed to collect questionnaire data from men and women separately. The aim of creating separate surveys for both sexes is to reflect consumer behavior and to get a better understanding of how different behaviors are exhibited by men and women. A total of 187 responses were collected. Qualitatively, a total of five managers were interviewed, using semi-structural interview methods. According to Hancock, semi-structured interviews contain open questions related to areas and subjects that are being explored by researchers. This method is also open in potential discussions between the researcher and the highlighted participants. In terms of interviews, for this study, interviews were conducted with five different officials from five formal institutions handling E-Commerce Delivery
Orders. Mixed methods, as stated by Creswell, are pragmatic and use investigative strategies involving sequential data collection. This gives researchers the best opportunity to understand this research. Meanwhile, according to Zhang and Wildemuth, interviews are an important tool for providing access to respondents' feelings, attitudes and perceptions.

B. Sampling / Sample Selection Method
The survey questionnaire was sent to 187 respondents (69 women and 118 men), who were categorized by sex, age and level of education in the city of Jeddah, Saudi Arabia. Different results are obtained from each of these categories. First, the survey showed that 50.7% of female respondents were between 21 and 30 years old, and generally consisted of a large proportion of the female survey population. After this, the number of women between the ages of 31 and 40 is around 21.7%; About 19% of respondents are under 20 years old, and around 8.6% are aged between 41 and 50 years. Regarding the level of education, around 70.6% of respondents have diploma and undergraduate education; About 13.2% of respondents hold master's degrees, and 13.2% have associate degrees; Only 3% are PhD holders.

On the other hand, male respondents between the ages of 21 and 30 are 50.8%. This was followed by 33% aged between 31 and 40 years; 7.6% between 41 to 50 years, and 6% under 20 years. Only 1.7% are between 50 and 60 years old, and less than 0.9% are over 60 years old. Most male respondents, 60.1% hold university diplomas, and 22.1% have master's degrees. About 10.1% are high school degree holders, and only 7.6% are PhD graduates. Looking at this percentage, it was found that most buyers, regardless of sex, belonged to the age group 31 to 40 years and had a bachelor's degree.

C. Data Collection Methods
As stated, this paper consists of quantitative and qualitative research methods. In this section, two categories are presented to provide a summary of organized results. The first part refers to the results collected through quantitative research methods. This study uses survey questions to collect data from respondents who live in the Saudi city of Jeddah in Saudi Arabia. In the second part, semi-structured interview responses from the E-Commerce Delivery Order store manager will be presented.

D. Instrumentation
The Challenges of E-Commerce Delivery Orders In Jeddah city of Saudi Arabia many customers are skeptical about E-Commerce Delivery Orders because of problems related to trust and privacy, mainly because they involve the transfer of personal information, and specifically and specifically financial details. The E-Commerce Delivery Order in the city of Jeddah, Saudi Arabia, is generally considered to be an immature industry for some businesses. The lack of supervisory institutions makes it difficult for economic activities and customers to have confidence in the E-Commerce Delivery Order environment. Customers who are not serious about online purchases are a problem for online businesses. This is challenging for businesses to convince customers about the quality of their products in the absence of physical products. There is little consumer awareness about the benefits of E-Commerce Delivery Orders.

Three Opportunities for E-Commerce Delivery Orders in the City of Jeddah, Saudi Arabia. Many of the younger populations are more actively shopping through electronic communication, or using the Internet. This represents a large percentage of the general population that can be utilized by online businesses. Establishment of SADAD Payment Application, an online payment option, provides an opportunity to build a more trusted environment. Now it's easier for companies to set up their own shopping sites by taking part in the EMall site as online shopping, which offers more trustworthy capabilities in the E-Commerce Delivery Order selling clothes, pants, watches, shoes, parfurm, cosmetics, value gifs set, and so on online from thousands of stores. Saudi Post development as a shuttle service for goods online and participation in supporting the E-Commerce Delivery Order will facilitate and contribute to e-commerce recovery. The diversity of logistics companies that drive a more acceptable and reliable shipping process. Individual purchasing power provides an opportunity for investors to enter the online market.

E. Data / System Analysis, Design and Testing Techniques / Model Prototypes, Strategic Plans
- Analysis Techniques
  In doing this analysis several things are made, namely:
  1) Analysis of the current system.
  2) Analysis based on functional and non-functional needs
  3) Technical analysis of the Commerce Delivery Order infrastructure.
  4) Analysis of prototype modeling in the design of e-Commerce Delivery Order infrastructure.
- Design
  In doing this analysis several sections are made, namely:
  1) Design of e-Commerce Delivery Order
  2) Design of a prototype e-Commerce Delivery Order system model
- ISO 9126 testing
  This test adapts from one of the product quality standards produced by ISO 9126 which is divided into 4 parts, namely the quality model, internal metric, external metric and quality metrics. Six characteristics of the software quality model are like Fig. 1: [3]
  1) Functionality, namely the ability in terms of functions of software products that provide user needs.
  2) Reliability, namely the ability of software to maintain with a level of performance.
  3) Usability, which is an attribute that shows the level of ease of operation of the software.
  4) Efficiency, which concerns execution time and capabilities related to physical resources used when the software is run.
  5) Maintainability, which is the ease of the software in accommodating changes.
6) Portability, i.e. capabilities related to software capabilities sent to different environments.

![Product Quality Model ISO 9126](image)

- FGD (Focus Group Discussion)
  That is by doing a direct test of the system from within the system, which is done by several users by logging in according to the level and testing the existing modules so that it can be known whether the Commerce Delivery Order system meets the needs.

F. Analysis of the E-Commerce System in Run

The e-Commerce system currently running in the Saudi city of Jeddah is currently a new K-link Stockist. The K-link stockist already exists in Jeddah city of Saudi Arabia as its manifestation SAMSO2 Foud Ramadan & Captain Saleh Bazaid Villa No.50 Alfatah Street North of Palatine Road Jeddah Saudi Arabia and proof that the K-link Business is a Sharia-based MLM business selling medical drugs, SADAD Payment Application, an online payment option, provides an opportunity to build a more trusted environment. Now it's easier for companies to set up their own shopping sites by taking part in the EMall site as online shopping, which offers more trusted capabilities in the E-Commerce Delivery Order that sells clothes, pants, watches, shoes, parfum, cosmetics, value gifts set and so on online from thousands of stores. Saudi Post Development as a shuttle service for goods online. Overall, in the city of Jeddah, there is no one who sells online (e-commerce delivery order system) product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home.

G. Problems that are being faced

The behavior of consumers who do business or shopping in the city of Jeddah, Saudi Arabia, the majority of Muslim women must be accompanied by brother or her husband, if not married must be with parents or siblings or together with fellow Muslim women who generally or majority use a veil or face cover. Daily necessities purchased usually wait for men who shop and are not allowed to receive guests if there is no permission from their husbands or men who are brother.

The limited mobility of a Muslim woman in the city of Jeddah in Saudi Arabia who must be accompanied by her Muslim family or her husband or with fellow Muslim female friends, if they want to leave home or shop or try a business that has become a culture in Saudi Arabia will be the subject of this research, that is:

a. The limited space for Muslim women consumers to shop, so trading transactions are relatively low.

b. The absence of the E-Commerce Delivery Order Online application that makes it easy for consumers Muslim women to buy product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home.

c. Several companies in the city of Jeddah, Saudi Arabia, did not understand the concept of leading E-Commerce Delivery Orders, thus slowing development in the field of e-commerce in Jeddah, Saudi Arabia. Lack of knowledge and interaction of E-Commerce Delivery Orders by several traders.

H. Proposed Problem Solvers

After studying and analyzing the problems that occurred in the city of Jeddah, Saudi Arabia, finally a solution was proposed to solve the problem without spending a significant amount of money and utilizing an existing internet communication network in Jeddah, Saudi Arabia:

- make a prototype of the E-Commerce Delivery Order system for Muslim women in Jeddah city of Saudi Arabia if you want to buy product categories such as processed foods, meat & poultry, herbs & herbs, fresh vegetables and fruits or businesses from home, without having to be accompanied by their family or brother or husband.

- just use the smartphone that has the E-Commerce Delivery Order system installed.

I. E-Commerce Delivery Order Implementation Techniques

The definition of an e-Commerce Delivery Order prototype system in this study is the implementation based on the results of analysis and design of e-Commerce Delivery Orders. The implementation technique is divided into two, namely:

- Implementation environment, including: hardware, software and communication networks used.

- Implementation of a prototype e-Commerce Delivery Order system

J. E-Commerce Delivery Order Testing Techniques

- Validation Testing

Validation testing aims to assess whether the E-Commerce Delivery Order is easier to use by consumers or residents of the city of Jeddah, Saudi Arabia. System validation testing techniques in this study were carried out by testing functionality and usability using the Focus Group Discussion method. The FGD is a group discussion in which participants are selected according to certain criteria and the discussion focuses on a particular topic.

The researcher prepares from a list of specifications for the e-Commerce Delivery Order requirements that were built. The focus of the discussion is to validate the functional requirements of the e-Commerce Delivery Order developed whether it is in accordance with the specifications of the requirements that have been determined in the analysis phase.

Criteria for selecting the characteristics of respondents as informants for testing this validation based on a group of users who will use the prototype e-Commerce Delivery Order to be built. The technique of selecting informants in the FGD was conducted by selecting informants (discussion participants) based on the following:

1) Owning the duties and responsibilities in the data processing section
2) Having experience managing data
3) Understanding the issues studied in terms of data exchange.

This study aims to test the prototype e-commerce Delivery Order whether it is in accordance with functional requirements specifications. Therefore the researcher selects informants according to functional requirements specifications. Therefore researchers chose informants for this study from one source, namely the chief informant for this study from one source, namely the leader and electronic data manager as the person who has been responsible for electronic data. The informant is the manager and administrator and staff.

- Quality testing
  The quality testing of the e-Commerce Delivery Order is done to test the level of quality of the software produced based on the four quality characteristics of the software contained in ISO 9126, namely functionality, reliability, usability and efficiency.

  The results of identification of ISO 9126, of the six quality characteristics of an application, only four characteristics were used as variables in this study, namely functionality, reliability, usability, and efficiency. Two other characteristics, namely maintainability and portability, are not the focus of research. Testing is only done on the use of e-Commerce Delivery Orders from the client's client side and is not included in the scope of the server. Software quality testing is done to test the hypothesiz in this study.

  Quality testing techniques carried out in this study with the approach to testing connectivity and data security using a questionnaire. Criteria for selecting respondents' characteristics as a research sample for testing the quality of this software are based on the user's level. The respondents were from several users, managers, administrators and staff.

  In this study the measurement scale used is the Likert scale for positive statements. Likert scale is a scale designed to assess the extent to which the subject or respondent agrees or disagrees with the statement on a 5-point scale with arrangements such as Table II.

  Test the validity of the instrument using the test validity test. Testing the validity of the construct is done by calculating the correlation between each statement with the total score. In testing the validity of this research instrument, using Product Moment Pearson correlation with the SPSS Statistics 12 software tool and testing using Wireshack tools.

  The researcher conducted a reliability test by calculating the Cronbach Alpha from each item in a variable. The instrument used in the variable is said to be reliable (reliable) if it has Cronbach Alpha more than 0.60.

In the implementation of data processing this research uses a type or tool in the form of descriptive statistical analysis. Descriptive statistical analysis is a type of research that describes the facts that are then processed into data. The data is then analyzed to obtain a conclusion. Analysis of descriptive statistics is used to describe how the quality level of e-Commerce Delivery Orders.

To answer the description of this research variable, a range of assessment criteria is used, such as formula (1)

\[
\text{Total score} = \frac{(\text{Actual Score})}{(\text{Ideal Score})} \times 100\% \quad \ldots \quad (1)
\]

The actual score is the answer of all respondents to the questionnaire that has been submitted. The ideal score is the highest score or weight or all respondents are assumed to choose the answer with the highest score.

III. RESULTS AND DISCUSSION

A. Analysis of E-Commerce Delivery Order System Requirements

The functional requirements of an e-commerce system delivery order can be seen in Table III.

<table>
<thead>
<tr>
<th>No</th>
<th>Data</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Orderer / user</td>
<td>Data / user profile</td>
</tr>
<tr>
<td>2</td>
<td>Product Data</td>
<td>product Category, name and price</td>
</tr>
<tr>
<td>3</td>
<td>Transaction data</td>
<td>Product ordered, qty, total price, order status, ordering data</td>
</tr>
</tbody>
</table>

In its application, the application of the E-Commerce Delivery Order system requires:

- Hardware requirements on the server
  Server computers are needed to support the application installation process with several specifications, namely:
  1) Processor: Core 7 x64 bit architecture, such as Intel or AMD clocked at 2.6GHz or more.
  2) RAM: 4 GB or more.
  3) Hard drive: 1 TB or more.

- Software requirements on the server
  The software needed to support the application of the E-Commerce Delivery Order system that has been made is:
  1) Windows operating system.
  2) Apache web server v 2.5 or more.

- Hardware requirements on the client
  The hardware needed by the client to access the E-Commerce Delivery Order system is a smartphone with an internet connection.

- Software requirements on the client
  Software to support the running of the E-Commerce Delivery Order System, the Android operating system.

B. Application Interface

- Product Category page

![Fig. 2. Product Category page](image)

Fig. 2 describes the e-commerce delivery order system on the Application page to see the selected Product Category.

- Product Ordering Page
Fig. 3 explains the Application page for the Product ordering transaction.

C. Use Case Diagram

Based on the results of the analysis of functional requirements, it can be described in the use case diagram as Fig. 4:

D. System Testing

Quality factors according to ISO 9126 include four quality characteristics that are tested from 6 characteristics that exist, due to maintainability and portability characteristics if the system will be re-developed because there are changes and connections from one system to another.

In the discussion of the calculation of this questionnaire linear regression was used by using SPSS version 19.0. The results of calculating the usefulness of the Order & Send application prototype are like Table IV.

<table>
<thead>
<tr>
<th>Table IV. Model Summaryb</th>
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<tr>
<td>Mod R</td>
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<td>.477a</td>
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</table>

a. Predictors: (Constant), Efficiency, Functionality, Usability, Reliability
b. Dependent Variable: Respondents

From Table 4 above, the value of R2 is 0.227. Then it will be converted into a percentage by calculating the Coefficient of Determination (KD) with the following formula (1).

\[
KD = R^2 \times 100\% \quad \text{(1)}
\]

While the value of other factors can be calculated by the formula (2).

\[
e = 1 - R^2 \quad \text{or} \quad e = 0.773
\]

This means that the results of testing usability levels of the prototype variable on the needs of respondents is 77.3%, meaning that this system is very useful for Muslim women consumers and they understand, are easy to learn, easy to use, attractive to users and accept e-commerce delivery systems order product categories will be efficiency and effectiveness such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home. The payment methods used were mastercard.

IV. CONCLUSION

The conclusions of this study are as follows: the results of this study are expected to help meet consumer limitations in ordering and buying product categories such as processed foods, meat & poultry, spices & herbs, daily fresh vegetables and fruits from home in Saudi Jeddah city Arabia, especially Muslim women with a value of usability of 77.3%, limited mobility owned by Muslim women in the city of Jeddah which must be accompanied by her family or husband or with fellow Muslim female friends, if they want to leave home or shop or try business that has become a culture in the country of Saudi Arabia is thought to be overcome by using an e-commerce prototype delivery order product categories such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home, this online order-sending application making Muslim women in the city of Jeddah allegedly able to use the system e-commerce delivery order product categories will be efficiency and effectiveness such as processed foods, meat & poultry, spices & herbs, fresh vegetables and fruits from home, or do business safely, freely without violating rules and traditions.

The e-commerce system prototype delivery order can run well on the Android platform. Suggestions that can be given with the development of an online e-commerce delivery order prototype can be added to the features of the service and run the highest version of Android.

REFERENCES


