

Development of Mobile E-Commerce Using the Android-Based User Centred Design Model for MSME Partners

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ABSTRACT

The Institute in the field of education with the name PPA Learning Centre was established in 2014, is an Institute packaged in the form of Private Class. One of the opened Private Class is the class for Business. 80% Alumni from the PPA Learning Centre Institute are Micro, Small and Medium Enterprises (UMKM). This research aims to promote Syariah MSME products as a marketplace built in the form of e-commerce that is accessed by mobile devices. The development of mobile e-commerce in this study uses the User Centered Design model. The design emphasized on the needs or pretention of end-users to use a product. The design adapted to the behaviour of UMKM executants in using mobile e-commerce, so that the developed mobile e-commerce does not force UMKM executants to change their behaviour while using it. The results of mobile e-commerce will indirectly help UMKM to cover the broad market and deliver quick and detailed information about products to prospective customers based on Syariah rules. Based on the outputs, it is expected that this research proposal will be useful for UMKM such as food or beverage industry, furniture, wood or rattan processing, blacksmiths, agriculture, fisheries and aquaculture in Indonesia, especially in Central Java.

Keywords: e-commerce, android, MSME partners

1. INTRODUCTION

The Institute in the field of education named “*Pola Pertolongan Allah*” or PPA Lc, was established in 2014. The PPA Institution is packaged in the form of private classes and held almost throughout Indonesia. One of the opened private classes was for business advanced class. The private classes of PPA class for business are followed by Micro and Small Medium Enterprises participants or UMKM. However, the classic issues about business development and coaching still found on Indonesian UMKM as well as at PPA class for Business, many of their needs have not been accommodated and their problem has not been solved [1]. Several factors hold up the UMKM of class for business alumni PPA to develop the human resources, product marketing, and the use of digital technology which is in line with the concept of syariah and many other obstacles. The problem is about products marketing using digital technology build upon the concept of syariah. Based on the background of the problem, this research aims to apply digital technology in products marketing produced by UMKM in the form of e-commerce using User Centered Design method [2][3] in which the user are mostly Muslim do not feel worried that the transaction process is illegitimate. User Centered Design is needed in this research, so this design is expected to becomes a marketplace for PPA class for business alumni throughout Indonesia, accessed by mobile devices [4].

2. METHOD

Based on the background outlined above, this study designs a system that involving and directing users to use mobile e-commerce positively. Target analysis of this study is Micro and Small Medium Enterprises (MSME) participants.

2.1. Data Collection

This study requires respondents, namely the Micro and Small Medium Enterprises or MSME participants. The approach used is interviews by giving questions related to users, such as age, education, background, experience in using technology, and understanding of business according to Syariah. There were 91 respondents joined. The results of the questionnaire used to identify the characteristics of the user and MSME Business. This research also determines the Characteristics of a mobile application.

2.2. Requirement Design

Steps of this research user centre design are illustrated [3] in Figure 1.

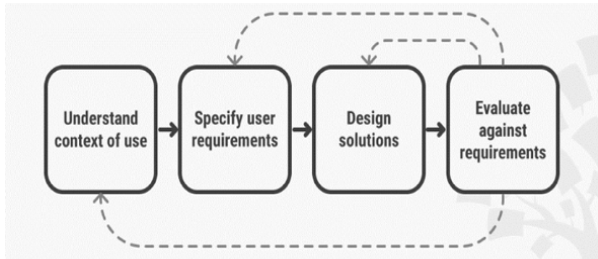


Figure 1 Steps of user centre design

Understand the context of use, at this stage, user understand and able to use the system. The understanding context is identifying MSME participants using mobile e-commerce products, the objection of MSME participants using mobile e-commerce, and in what kind of conditions MSME participants using mobile e-commerce.

Specify user requirements, step of exploring information or data to collect the requirements of MSME users. After information or data has been collected; information of the MSME user requirement data is organized. User requirements are explained in various forms or techniques, such as narratives, or diagrams, etc. User needs are used as business requirements or user goal that must be met for the product to succeed.

Design solutions, this step is designing a solution obtained from MSME participants. In this part the process can be done in stages, starting from a rough concept to a full design.

Evaluation of requirements, at this stage, the step carried out is evaluation and assess results to the opponents and MSME requirements, for the renewal of the design requirements created, ideally through testing the usability using actual assistance - as integral as quality testing for the development of good soft devices [5][2].

3. RESULTS AND DISCUSSION

3.1. Needs Analysis

From the given questionnaire with 6 questions in the form: type of business, age, education, occupation, experience using mobile applications and business experience with social media. There were various types of business; fashion, accessories, food, books, herbal medicines and others. From filling out the questionnaire in the PPA for Business class, the data are obtained as in Table 1.

Table 1 Questioner data table

No	Question	Answer	Highest Percentage
1.	Age	20 - 29 years old	21,7%
		30 - 39 years old	45,7%
		40 - 49 years old	32,6%
2.	Education	SMA	19,6%
		D1	3,3%
		D2	0%
		D3	19,6%
		S1	46,7%
		S2	9,8%
		S3	1%
3.	Occupation	Entrepreneur	25,3%
		Teacher	12,1%
		House wife	26,4%
		Pensioner	1,1%
		Civil Servant	4,4%
		Student/colleges	5,5%
		Unemployment	11%
4.	Experience of Using Mobile Applications	Consummate	30,4%
		Skilful	21,7%
		Good	40,2%
		Occasionally	6,5%
		Never	1,1%
5.	Experience of using social media for business	Always	37%
		Occasionally	37%
		Seldom	25%
		Never	1%
6.	Understanding of Sharia Sale and Purchase	Understand	92%
		Do not understand	8%

3.2. Method Analysis

3.2.1. Stage of usability context

Mobile e-commerce designed has to understand who the application users are, what they are using it for and in what situations they use the application. The targets in this study are actors who will use mobile e-commerce applications on UMKM alumni of the PPA class for Business, the majority of which are Administrator, Entrepreneurs and Housewives. The business patterns and rules in PPA using Syariah

business rules that in tune with Islamic business system[6]. Mobile e-commerce is used by them as their main job, due Syariah rules are not broken up when transaction processes conducted and help to increase the productivity of product promotions.

3.2.2. Stage of user necessity

From the results of the questionnaire in table 1 above, the data with the highest percentage value is taken, to represent the characteristics of UMKM [1] *PPA class for Business* alumni, the highest percentage value are shown in Table 2.

Table 2 Highest percentage value

No	Question	Answer	Highest percentage
1.	Age	30- 39 years old	45.7%
2.	Education	S1	46.7%
3.	Occupation	House wife	26.4%
4.	Experience of Using Mobile Applications	Good	40.2%
5.	Experience of using social media for business	Always and occasionally	37%
6.	Understanding of Sharia Sale and Purchase	Understand	92%

From the results of the percentages in Table 2, a conclusion is made that members of the PPA *class for Business* are very often conduct online business transactions using social media, but from these transactions there are no business transactions in line with Syariah rules. Thus, applications will be designed based on user needs:

- a. The transactions process is not permitted to break up the provisions of the Shari'a. UMKM of *PPA class for Business* alumni here are indeed taught the rules of doing business according to the Shari'a, namely:
 - 1) During the transaction process, the product consumer of UMKM (as buyers) and UMKM actors (as sellers), both are agreed and without any compulsion.
 - 2) Products sold by UMKM are their own products; halal, and products accepted by the consumers. The product must be in accordance with the information provided in terms of its nature, type and form. The products are not usury goods.
 - 3) The amount paid at the time of the transaction must be clear and transparent[6][7][8].

- b. The highest percentage are the user between 30-39 years old and ages 40-49 years for the second highest percentage. Considering the backgrounds of UMKM are the majority of housewives and entrepreneurs, a simple navigation which represents every process in e-commerce is needed.
- c. Designed with a structured transaction processing sequence, so it is easy to understand, remember and learn.
- d. Using three colours to clarify the purpose of the shopping process: Blue, Red and Yellow[9].

3.2.3. Stage of design selection

This stage is to determine the interface design, the design must meet the characteristics of the User Centre Design method [5] as shown in Table 3 below:

Table 3 Characteristics of interface design

Usability	:	Can be used anytime and anywhere (practical and efficient applications).
Convenience	:	Easy access to payment transaction services and avoid to break up Syariah rule.
Localization	:	Supported by GPS (<i>Global Positioning System</i>)
Privacy	:	Users provide personal information carefully and validation of personal data is available
Personalization	:	Prepared information in the form of a sale and purchase agreement which is made at the beginning of the transaction. Original accurate information about the product. The products are not usurious goods and transparent information about the amount to be paid.

It is described with the design concept with the following navigation:

Table 4 Design needs

User	:	Admin
Login Process	:	Login Button Forgot Password Button
Policy Process	:	Change Admin Password Button Block seller or consumer member button Delete and add seller or consumer member button Add tool for sellers and consumers button Verification of seller and buyer data button Security button
User	:	Product Seller and Consumer
Login process	:	Login button Forgot password button
Product Upload Process	:	Add product butoon Delete product button
Share Process	:	Face book button Instagram button
Seller Privacy Process	:	Fill and edit seller data button
Valuation and Transaction Process	:	View Product Ratings Button View Transaction Button (daily, weekly, monthly)
Product Selection Process	:	Category Button Product Sort Button
Transaction Process	:	Buy and sell button Enter the shopping basket Button Payment Button (amount paid, list to be paid) Validation Button

3.2.4. Stage of design evaluation

The evaluation phase of this study was carried out by the usability testing method, which is the testing phase which involves users using mobile e-commerce. The purpose of usability testing is to look for usability issues and determine user satisfaction with the designed mobile e-commerce product[10][11]. The test component in usability testing is effectiveness, efficiency, and user satisfaction. By using the equation:

$$Usability = \frac{(effectiveness(\%) + efficiency(\%) + satisfaction(\%))}{3} \quad (1)$$

To calculate the value of effectiveness, efficiency and satisfaction using the equation

$$effectiveness, efficiency, satisfaction = \frac{\sum_{i=1}^n X_i}{n} \times 100\% \quad (2)$$

NOTE: THAT N IS THE NUMBER OF RESPONDENTS K-I, $X_i = \{0,1\}$

Respondents in the testing are MSME class PPA for Business alumni, who are accustomed to using mobile applications. From the results of the effectiveness, efficiency and satisfaction test can be seen in Table 5 Table 6 and Table 7.

Table 5 Effectiveness test results

Respondents	Element of Effectiveness						Result
	Users Successfully Login and Successfully Forgot Password	Users Successfully Uploaded Products	Users Successfully Share Products	Users Successfully see ratings and transactions	User Successfully Selected Product	Users Successfully Conduct Buy and Sell Transactions	
R1	✓	✓	✓	✓	✓	✓	100%
R2	✓	✓	✓	✓	✓	✓	100%
R3	✓	✓	✓	✓	✓	✓	100%
R4	✓	✓	✓	✓	✓	✓	100%
	etc						
R92	✓	✓	✓	✓	✓	✓	100%
Total Results							90%

Table 6 Efficiency test results

Respondents	Element of Efficiency			Result
	Product Upload Scenarios	Privacy Scenario	Transaction Scenarios	
R1	✓	✓	✓	100%
R2	✓	✓	✓	100%
R3	✓	✓	✓	100%
R4	✓	✓	✓	100%
etc				
R92	✓	✓	✓	100%
Total Results				90%

Table 7 Satisfaction test results

Respondent	Satisfaction Criteria				The Answer			Result
	I like the design that was designed	I understand the flow of the designed interface	I got clear information	I easily repeat if there are mistakes	Agree	Neutral	Disagree	
R1	✓	✓	✓	✓	✓			100%
R2	✓	✓	✓	✓	✓			100%
R3	✓	✓	✓	✓	✓			100%
R4	✓	✓	✓	✓	✓			100%
etc								
R92	✓	✓	✓	✓	✓			100%
Total Results								100%

3.3. Mobile MSME Applications

The concept of PPA for Business mobile e-commerce MSME is a Syariah compliant transaction process. The Syariah process in mobile e-commerce consists of the process of:

- The policy process and the product selection process.
The policy process, the user is an admin. To add product categories and various kinds of product, previously an agreement was made between the admin and MSME. The aim is to ensure that the product to be marketed does not violate the Syariah. A compulsory agreement is to provide information that the product is one's own or another person who has been delegated to the MSME, halal products, non-usury products.
- In the process of buying and selling transactions in Islamic Sharia are preceded by a contract between the seller and buyer. The contract is in the form of an agreement by providing clear information about the product being sold, the terms of purchase and what items are paid, how much is paid, how the goods are sent to the buyer, if both parties agree without coercion then the transaction process occurs.

3.4. Discussion

This research proposes designs created and accepted by users based on respondents' questionnaires, to understand the relationship between perceptions of various application design features and user involvement, which consequently leads to a continuing intention to use cellular e-commerce

in accordance with Syariah in the future. The proposed design is based on the results of the usability test by testing the effectiveness, efficiency and satisfaction resulting in a usability [10][11] value of 93.33%, it means that the proposed design can meet the needs and is easily used by SME alumni of PPA for Business class alumni.

4. CONCLUSION

Research on mobile e-commerce for UMKM in PPA *for Business* which is in line with sharia principles can be realized with mobile applications. Starting from the transparent sale and purchase agreement process, ensuring that the products sold are self-owned products, the products sold are not usury goods, transparent payment processing, delivery of goods according to the contract and the product information provided is in accordance with the original goods so that buyers feel uneasy lied to, all these process can be visualized with a mobile application so that the legal process of the transaction is said to be legally valid. This result has the implication that mobile e-commerce cannot be applied to users who do not understand the law of buying and selling according to Syariah, because the transaction process is carried out by agreement in advance, if the agreement process has not been implemented, then the transaction process cannot be continued.

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