APPLICATION OF DESIGN THINKING AND PROTOTYPE METHODS IN THE DESIGN OF MOBILE-BASED HIJAB E-COMMERCE APPLICATIONS:CV REN

[1]Rizaldi Putra, [2]Ade Oki Pebiansyah, [3]Lambok Rommy Sulaeman, [4]Nurali, [5]Deni Utama
[1,2,3,4,5] Studies Program Business Digital, Takumi Polytechnic

ARTICLE INFO	ABSTRACT
Keywords: Prototype Method, Application, Design Thinking	CV REN is a company engaged in convection. CV REN is one part of PT Minori , a Job Training Institute (LPK) that sends trainees to Japan. CV REN is currently still producing and selling using conventional techniques, namely manually. In addition, at this time Muslim trainees who wear hijab who will go to Japan are not allowed to use hijab that uses needles or similar tools because it is considered to be dangerous for both the trainees themselves and consumers. Therefore, a special hijab e-commerce application was designed that does not use needles, for trainees who want to buy hijab so that it can be used while interning in Japan, easily, quickly trusted. Observations, interviews and literature studies were conducted for data collection. The design thinking method is also used in the analysis stage of application design needs.
E-mail: rizaldi.rip@takumi.ac.id , ade.oki@takumi.ac.id , lambok.lrs@takumi.ac.id , nurali.nrl@takumi.ac.id,denyutama25@gmail.com	

1. Introduction

Use technology moment it's very developed fast . Technology can help man in his job . Eating work plenty of time , got done in a manner fast and precise with utilise technology moment this . technology is also possible for do more from One work in One impossible human time for do it. Besides it's also technology make distance and time No Again something problem big . Like the internet, intelligence artificial , computerized and so on . Technology is also a trigger in Lots thing one of them transformation business and digitization .

Transformation business and digitization become pusher wheel economy national. Many perpetrators business in Indonesia still using conventional techniques in operate the business. From data from the Ministry of Cooperatives and SMEs in 2023 only 21% of MSMEs in Indonesia have go digital. For example in the CV REN that uses application Whatsapp and sales direct to consumer. CV REN is one part from PT Minori which is a Training Institute Work (LPK) that sends apprentice to Japan. Most apprentice is a woman who wears a hijab. Hijab is not something that is forbidden for apprentices in Japan, but using hijab needle considered dangerous its use Because apprentice specifically nurse elderly touch with user in a manner direct. Use the needle on the hijab is considered can endanger user Because Lots required activity nurse for carrying or support user. Use needle Can injure user.

On fields manufacturing , some company No allow apprentice For use iron or sort of moment enter factory . because factory manufacturing in Japan use tool that can detect iron material and can influence performance machine . So Can influential of production and other processes . No only PT Minori, however many training institutes Facing work same problem for example PT Nagomi Kaigo Gakko. Particularly the dispatching LPK apprentice to outside Indonesia. Given that Indonesia is a country with majority Muslims and women who use the hijab, and the hijab used majority use needle as tool the hijab .

From the problems above, it is necessary making A prototype intended e-ommerce application for help CV REN go digital in the manufacturing process application sales will use Prototype and Design thinking method. The prototype method is used Because can carry out the process repeated from planning, modeling, construction, development, delivery and feedback and communication. Besides it also uses deep design thinking method stages analysis User needs remember The nature of design thinking is human centered design that prioritizes corner view the user as base planning application . Design application this is also expected will help apprentices who are outside Indonesia and those who are still in Indonesia to Can buy the appropriate hijab with Need and can used in the apprenticeship process . From the description

above , the author interested For do study with title " Application Prototype Method and Design Thinking in Design Mobile- based Hijab E-commerce application at CV REN".

2.   Literature review
Prototype Method
According to Pressman (2012:50), in do system design to be developed can use Prototype method . Prototype is not something complete, but something that must be evaluated and modified Back Here are Steps or stages in method prototype:
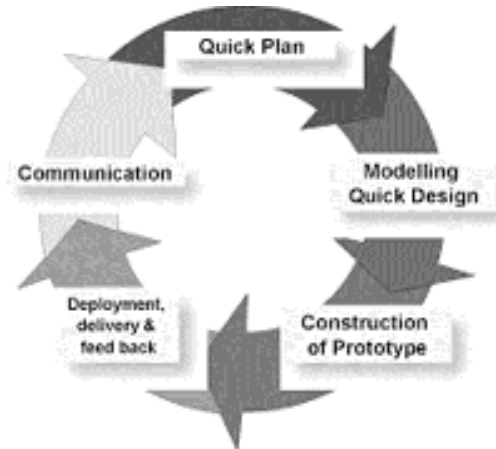

Figure I. *Prototype Model* according to the pressman

a. **Communications** , that is Communication is How obtain information for developer to user about what is needed in framework reach objective research . Before do study has own guess based on theory used, conjecture the called with hypothesis. For prove hypothesis in a manner empirical needed data collection for researched more deep
b. **Quick plan**, planning beginning about Need study with do analysis. In stages analysis this, will decipher analysis System requirements that include analysis technology and analysis user.
c. **Modeling Quick Design**, Modeling Quick Design is planning about channel Work application to be made and also the design of the actors, as well as the process to be interact with the application the with using the Unified Modeling language (UML) to mobile application. With using Use Case Diagrams, Activity Diagrams, Sequence Diagrams, and Class Diagrams
d. **Construction of Prototype**, that is making prototype device included testing and refinement. After analysis and design so done prototype formation in the form of implementation deep prototype design form program writing , next application that has made will done unit testing . Method unit tests used in manufacture application This is blackbox method
e. **Deployment delivery and feedback**, i.e evaluate prototype and refine analysis to Need user. Prototype improvements, that is making actual type based on results from prototype evaluation and so on production end. That is produce device in a manner Correct so that can used by users

Design Thinking
Method This known as a thought process comprehensive focus. For create initial solution _ with an empathic process to something Need certain human -centered (human centered) towards something innovation sustainable based on Need the user. More carry on Again exposed that, initially There are 3 stages consisting from inspiration, that is Need or motivating problem search solution or innovation, ideation, namely the process of producing idea, development and testing idea, and the last one is implementation, namely finalization role to user. In development , third stages the develop into 5 stages basically _ No different Far However there is emphasis on parts certain so that produce more procedures _ detailed
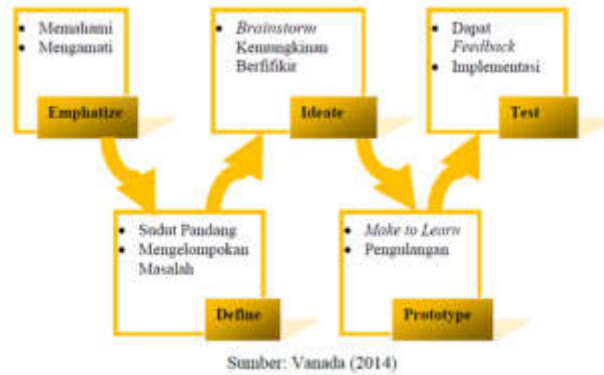
Figure 2. Stage chart Design Thinking method

a. **empathize (empathy)** is considered as the core of the human - centered design process, method This make an effort for understand user in context designed product, with _ do observation, interview and combine observation and interview with especially formerly given in a scenario.

b. **define (determination)** which is the process of analyzing and understanding various insights that have obtained through empathy, with objective for determine statement problem as a point of view or attention major in research.

c. **ideate (idea)** which is a process of transition from formula problem going to settlement problem, as for this ideate process will concentrate for produce idea or idea as base in making a prototype design that will made.

d. **prototype** known as design beginning something product to be made , for detect error since early and earn various possibility new .

e. **testing** done for gather various user feedbacks from various design the end has formulated in the prototyping process before.

3. METHOD

Anything for Method Collection of necessary data as following:

a. Library Studies
Done with method read Relevant references with android / *mobile* based e-commerce

b. Spread *Questionnaire*
Done with method deploy the submitted google form past *Whatsapp*

At stage development System Researcher combines 2 (two) system development models in the form of Method *Prototype* and *Design Thinking,* Sabale (2012) states the *prototype* model places more Lots involvement user For give bait come back to the program starting from planning start and end with interaction between both , meanwhile according to Pressman (2012:50)

Prototype method is shared become a number of part:

a. Communications
At stages This developer meet and interact with customer For define objective from application to be made .

b. Quick plan and Modeling Quick Design
this step done after description general device soft known . Quick plan focuses on design interface user or design output device soft

c. Construction of Prototype
After destination general and structure device soft known , prototype launched

d. Deployment delivery and feedback
After *prototypes* done, prototype submitted to customer for evaluated. At stage this , based on bait back , customer can know is device soft the fulfil his needs . Developer can learn what is necessary improved from *prototypes* made based on bait come back from customer. After customers evaluate *prototype* device soft, phase *communication* and steps furthermore be repeated until customer satisfied with device required software.

Whereas for another system development model is Method *Design Thinking*, the methodology that provides approachbased solution creative cross combining disciplines thinking analytical, thinking creative

and skills practical. *Design Thinking* is approach for engaging learning project learning direct, focused on investigation and resolution problem, investigation possible solutions, create sketch and create *prototype*, collaboration and *feedback*, created a ' product ' or idea, as well as reflection and design repeat If necessary next for stages study *design thinking*:

A. Emphasize

On Stage This researcher do deployment questionnaire with sample in a manner random on 25 people use for look for information start, stage This done with deploy google forms for free direct to candidate apprentice from PT. Minori group. As for the criteria from questionnaire as following:

Table I. criteria Questionnaire .

No	List of Criteria Questionnaire
1	Name
2	Age
3	Type Sex
4	Last Education

Table 2 Question Questionnaire.

No	Question Questionnaire
1	How much often You do online shopping ?
2	What e-commerce do you like the most like ?
3	How your opinion about the design ?
4	Tell me experience bad You when online shopping ?
5	Transaction your payment _ like ?
6	is variant product help you ?
7	Difficulty in shopping online for the first time?
8	is You like simple look ? _
9	From where You know application shop online?
10	is You Once compare application shopping on line?
11	Tell me your process No like in shop online?
12	What excess application your online shopping like with others?

B. Define

on stage *define* researcher do identification of the data obtained at the stage before. After researchers observation to results interviews that have done For know is complaint from candidate user there is something needing problem solution. Then researcher do or categorize the problems that have identified for clarify the essence of the problem based on needs and wants user.

C. Idea

At stage furthermore do discussion with member other For find ideas or solution . At stages This member team with their respective *roles* swap opinion and mutual give ideas for create effective solutions.

D. Prototype

For stages furthermore researcher make Application prototypes Mobile/android for describe the ideas that have been designed. tools figma is the Prototype tool used by researchers. This prototype made for users can interact with expected interface. Can make it easy user in access Application Mobile/android as well as get feedback from user. Design prototypes done use type High Fidelity Prototyping which means designing semi-similar prototype Possible with product to be made.

E. Testing

Testing will be done with displays mobile/android prototypes to candidate user in a manner live and share questionnaire use google forms. If the feedback is given by the user Not yet in accordance with desire user so will be done return stage beginning that is empathize, define, ideate. But If feedback already in accordance so prototypes that have tested Can become reject measuring for development of hijab business ideas to stage next.

4. RESULTS AND DISCUSSION

Emphasize

At the empathize stage it is used for analyze need user. Inside application This Researcher try position self as interns who get distress in looking for hijabs This step is also performed together with the interview process for validation results from empathize stage

Define

In *define* done with pursed diverse need user results from empathize stage . Type needs the can grouped become a number of category . this needed for make it easy designer also for guard consistency from making Hijab application from CV Ren

Idea

This idea stage possible diverse need like hijab search, set as component to be poured in A product. This is what it 's called stage idea finalization, Idea to be made from stages *define* previously is about method produce application capable *mobile* answer problem minimal available means help apprentice in hijab search.

Prototype/Construction Of Prototype

In prototype stage is said the most important stage in study Because in stage here it is he poured results from third stage first. A application developed For next to stage testing . Hijab application is very decisive success usage deep design thinking methodology development A application . According to third stage First , users own need related activity library that has arranged in an appropriate User Flow with Figure 3 below :
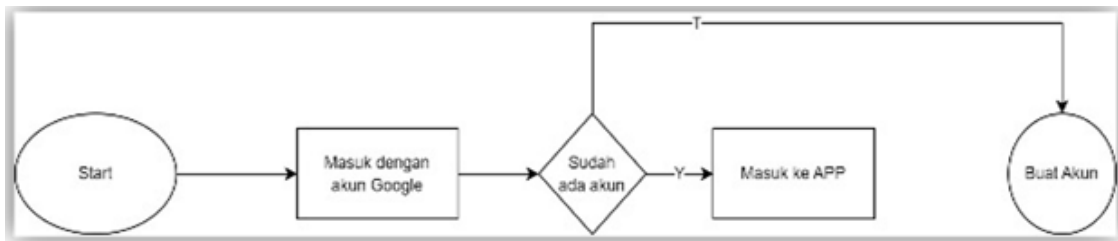

Figure 3. *User Flow* login to Application

Figure 4. *User Flow* Purchase of Hijabs

*Application Of Design Thinking And Prototype Methods In The Design Of Mobile-Based Hijab E-Commerce Applications:Cv REN. **Rizaldi Putra, et.al***

Research results show that majority user state preference to color blue in development Hijab Application. Based on studies literature, it is known that color blue own symbolic stability, intelligence, and trust self because that, use color blue in development The Hijab application has significance and becomes choice dominant in matter election color.

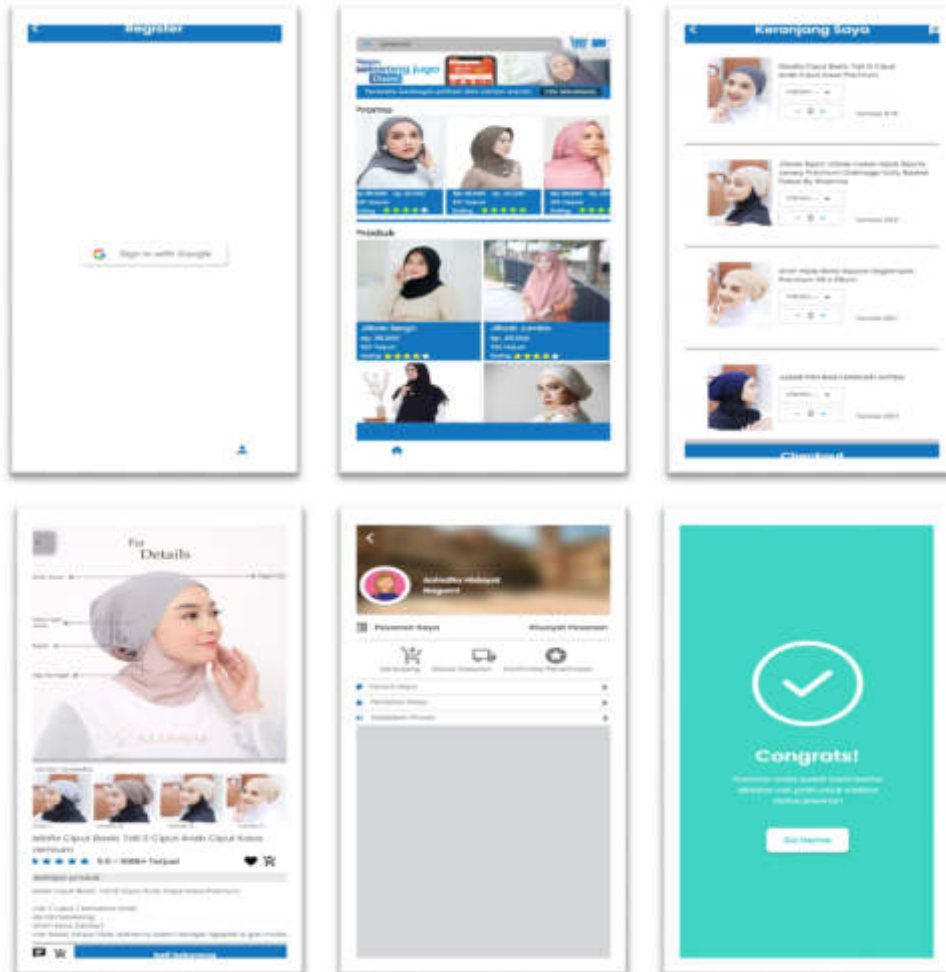Following is appearance prototype For hijab mobile application:

Figure 5. Prototype For Hijab Mobile Application

Testing / Deployments Deliery & feedback

At the testing stage , carried out testing similar field _ with stage evaluation . Basically, stages in methodology research and approach other own similarity. However, differences mainly lies on purpose from this testing stage. Temporary stage evaluation produce percentage bait come back positive from respondent , purpose the testing stage is repair applications and solutions through use information For literacy next .

5. CONCLUSION

Based on results testing, then application has applied with good and appropriate with need. From the results   application of the prototype , then   built Hijab application   has   can run with good and appropriate with need .

REFERENCE

[1] I. G. B. W. Atmaja, K. N. A. Kusuma, A. A. E. Wirayuda, I. K. Widiantara, N. Premadhipa, and G. S. Mahendra, "Penerapan Metode Prototype pada Perancangan Sistem Informasi Pengaduan

Masyarakat Buleleng Berbasis Website," *RESI: Jurnal Riset Sistem Informasi*, vol. 1, no. 2, pp. 56–65, 2023.

[2]   N. Nurwanto, "Penerapan progressive web application (PWA) pada e-commerce," *Techno. Com*, vol. 18, no. 3, pp. 227–235, 2019.

[3]   D. Darmansah and R. Raswini, "Perancangan Sistem Informasi Pengelolaan Data Pedagang Menggunakan Metode Prototype pada Pasar Wage," *J-SAKTI (Jurnal Sains Komputer dan Informatika)*, vol. 6, no. 1, pp. 340–350, 2022.

[4]   N. H. Maulida, "Studi Literatur Penerapan Metoda Prototype dan Waterfall dalam Pembuatan Sebuah Aplikasi atau Website," *Jurusan Teknik Informatika Fakultas Teknik Universitas Palangkaraya*, 2022.

[5]   N. R. Dewi, R. S. Hartati, and Y. Divayana, "Penerapan Metode Prototype dalam Perancangan Sistem Informasi Penerimaan Karyawan Berbasis Website pada Berlian Agency," *Maj. Ilm. Teknol. Elektro*, vol. 20, no. 1, p. 147, 2021.

[6]   A. Ristekdikti, "Penerapan Metode Prototype Pada Perancangan Sistem Informasi Penggajian Karyawan (Persis Gawan) Berbasis Web," *Paradigma*, vol. 23, no. 2, 2021.

[7]   P. Yoko, R. Adwiya, and W. Nugraha, "Penerapan Metode Prototype dalam Perancangan Aplikasi SIPINJAM Berbasis Website pada Credit Union Canaga Antutn," *Jurnal Ilmiah Merpati*, vol. 7, no. 3, pp. 212–223, 2019.

[8]   R. Widyastuti, "Penerapan Model Prototype pada Sistem Penggajian Karyawan PT. Sutera Agung Properti," *PROSISKO: Jurnal Pengembangan Riset dan Observasi Sistem Komputer*, vol. 9, no. 1, pp. 1–13, 2022.

[9]   H. Y. Madawara, P. F. Tanaem, and D. H. Bangkalang, "Perancangan Ui/Ux Aplikasi Ktm Multifungsi Menggunakan Metode Design Thinking," *Jurnal Pendidikan Teknologi Informasi (JUKANTI)*, vol. 5, no. 2, pp. 111–125, 2022.

[10] A. F. M. Candra, "PENERAPAN METODE DESIGN THINKING DALAM RANCANG PROTOTIPE APLIKASI BERBASIS WEB SISTEM PEMINJAMAN DOKUMEN ARSIP DI DINAS KOMUNIKASI DAN INFORMATIKA PROVINSI JAWA TIMUR," *PRAJA observer: Jurnal Penelitian Administrasi Publik (e-ISSN: 2797-0469)*, vol. 3, no. 02, pp. 196–205, 2023.

[11] F. D. Chandra, F. Namas, R. Laxi, A. Syura, D. Sebastian, and M. R. Pribadi, "Perancangan User Experience Dan User Interface Pada Aplikasi Gameku Dengan Menggunakan Pendekatan Design Thinking," in *MDP Student Conference*, 2022, pp. 518–525.

[12] S. H. E. Wulandari, "Penerapan Metode Design Thinking dalam Pembuatan Prototype Startup," 2022.

[13] T. B. Ayu and N. Wijaya, "Penerapan Metode Design Thinking pada Perancangan Prototype Aplikasi Payoprint Berbasis Android," in *MDP Student Conference*, 2023, pp. 68–75.

[14] H. Herfandi, Y. Yuliadi, M. T. A. Zaen, F. Hamdani, and A. M. Safira, "Penerapan Metode Design Thinking Dalam Pengembangan UI dan UX," *Building of Informatics, Technology and Science (BITS)*, vol. 4, no. 1, pp. 337–344, 2022.

[15] Y. Syahrul, "Penerapan Design Thinking Pada Media Komunikasi Visual Pengenalan Kehidupan Kampus Bagi Mahasiswa Baru Stmik Palcomtech Dan Politeknik Palcomtech," *Jurnal Bahasa Rupa*, vol. 2, no. 2, pp. 109–117, 2019.