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Application Design Go-DES with ADDIE for Implementation the Digital Economy Sharia-Based

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ABSTRAK

2021 merupakan tahun proyeksi untuk pemerintah Indonesia dalam perencanaan largest digital economy di Asia Tenggara. Oleh sebab itu, pengembangan dan pemerataan kualitas sumber daya manusia adalah. kunci utama guna mencapai largest digital economy. Langkah awal dalam memperkenalkan sistem ekonomi digital terpadu mulai dari dunia pendidikan dengan konsep berbasis syariah. Hasil riset menunjukan bahwa ekonomi syariah dalam 10 tahun terakhir berkembang dengan pesat. Maka tujuan penulisan ini adalah melakukan perancangan aplikasi bernama Go-DES (Go-Digital Economy based on Sharia) dengan ADDIE : (1) Analyze, (2) Design, (3) Development, (4) Implement dan (5) Evaluate. Hasil dari penulisan ini adalah perancangan aplikasi dan memiliki fungsi : (1) E-Bank terdapat Saldo-Ku dan E-Godes, serta (2) E-Market terdapat E-ATK, E-Seragam, E-Kantin dan E-SPP.

Kata kunci: Largest Digital Economy, Islamic Economy, ADDIE Model.

ABSTRACT

2021 is the year of the projection to the Indonesian government in the planning of the largest digital economy in Southeast Asia. Therefore, the development and deployment of human resources quality is the main key to achieve the largest digital economy. The initial step in introducing a system of digital economy in integrated from the world of education with the concept of sharia-based. The results of the research showed that the islamic economy in the last 10 years is growing rapidly. The purpose of this writing is the design and application called Go-DES (Go-Digital Economy based on Sharia) with ADDIE: (1) Analyze, (2) Design, (3) Development, (4) Implement and (5) Evaluate. The results of this paper is the design of the application and has the function of: (1) E-Bank there is a Saldo-Ku and E-Godes, as well as (2) E-Market there is an E-ATK, E-Seragam, E-Kantin and E- SPP.

Keywords: *Largest Digital Economy, Islamic Economy, ADDIE Model.*

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INTRODUCTION

The rapid development of digital technology is marked by the presence of a number of cutting-edge communication tools. Then everyone can easily access, process, and send all forms of communication messages without being hindered by space and time. Along with this rapid progress, various aspects of life have undergone many changes, one of which is the economic aspect (Machmud, 2010). 2021 is the year of the Indonesian government's projection in the declaration of the largest digital economy and is targeted to become the largest in Southeast Asia. One of the cornerstones of national development in this launch is the digital sector. The government targets e-commerce transactions to reach a value of US$ 130 billion and create 1000 technopreneurs with a business value of US$ 10 billion by 2020 (Ministry of Communication and Information of the Republic of Indonesia, 2020). There are

undoubtedly many problems in achieving these targets, one of the factors of sociculturation of society that is not able to quickly adopt the digital economy system (Rosa & Shalahuddin, 2014). Therefore, improving and equitable distribution of human resource quality is an important key to success in the digital economy.

One way that can be done to anticipate this subject is to implement and introduce an integrated digital economy system in the world of education (Hamdani, 2011). Based on data from the National Bureau of Statistics (2020), the majority of the population can only educate up to the top level of high school. This condition can be seen from the dominance of unemployment among high school graduates occupied by Indonesia by 8.63% in February 2020. Thus, the government can start implementing an integrated digital economy system between high schools as a definite step to improve the quality of human resources (HR) in Indonesia so that economic literacy is achieved. The application can use a digital economic system, based on sharia (Ismail, 2011). Given that Islamic economics is an economic thought that is considered an alternative to economic thinking and in the last 10 years has developed rapidly around the world (Ansori, 2016).

In addition, based on the 2020 census of the Central Statistics Agency, the number of Muslim people in Indonesia is around 229.62 million people (Budy, 2019). This condition must be used very well, especially in this day and age which has changed everything instantly. One thing that is familiar to be discussed today about the presence of a new era, namely the Industrial Revolution 4.0. Where all manual systems become digital-based auto-manuals (Prasetyo & Sutopo, 2018). Therefore, the author made a simple draft to deal with the development of the digital economy. Through the design of the Go-DES (Go-Digital Economy based on Sharia) application aimed at the high school level. The purpose of this writing is to design and apply a design and application called Go-DES (Go-Digital Economy based on Sharia) with ADDIE: (1) Analyze, (2) Design, (3) Development, (4) Implement and (5) Evaluate. Android was the first platform to be open in its development and comprehensive for mobile devices (Zachman, 1999). The software used can run mobile devices. Without thinking about the ownership constraints that hinder mobile technology innovation (Teguh, 2011). Unified Modeling Language (UML) is a modeling language for object-oriented software systems or paradigms. The basic concepts of UML consist of: structural classification, dynamic behavior and model management (Davis, 2013). This can be understood through concept play as a term that will appear at the time of diagramming and display (ISO/IEC 9126-1, 2001). UML describes various diagrams as use case diagrams, class diagrams, statechart diagrams, activity diagrams, sequence diagrams, collaboration diagrams, component diagrams and deployment diagrams (Nugroho, 2010).

Previous Writing/Research

Here are some of the results of previous writing/research that are used as parameters in writing. Research conducted by Luthfil Hakim, Husniyatus Salamah Zainiyati, Rudy Al Hana and Siti Farrohah Alimina: The findings of his research with the application of the ADDIE model help the designed Autoplay media (Hakim, et al., 2021). Research conducted by Aan Ansori: The results of the research show that the digitalization of the sharia economy can be penetrated in various economic aspects, both micro and macroeconomic (Ansori, 2016). Research conducted by Maulidina Ila Suci Nurani and Anggara Sukma Ardiyanta: The results of the study use the ADDIE model approach with a more generic application design (Nurani & Ardiyanta, 2019). Research conducted by Muhammad Zainul Majdi, Baiq Yuliana Rizkiwati and Rizki Suandi: The results of the research using the Research and Development (R&D) method and the ADDIE model approach (Majdi, et al., 2018).

Research conducted by Siti Aminah: The results of the successful research with optimal application are using the ADDIE model in application design (Aminah, 2018). Research

conducted by Nadya Fadillah, Aditya Pratama and Susan Febriantina: The results show that the development process must follow the plot and development procedure through the ADDIE model which is considered very good by users (Fadillah, et al., 2021). Research conducted by Putri Rachmadyanti and Ganes Gunansyah: The research produced an e-book and to measure the feasibility of the product with several stages of testing through the ADDIE model (Rachmadyanti & Gunansyah, 2020). Research conducted by Nisa Novaeni, Dharminto, Farid Agusyahbana and Atik Mawarni: Research and Development Methods with the ADDIE development model through the stages of requirements analysis, design concepts and application development (Novaeni, et al., 2018). Research conducted by Tatang Supriatna, Matahari and Muhammad Ihsan: The results of the research using the ADDIE model of student presentations were successful as much as 65% were categorized as effective (Supriatna et al., 2020). Meanwhile, the research conducted by Zainal: The study produced an alternative to media learning using Edmodo and the ADDIE approach model (Zainal, 2019). The results of several previous writings/research show that the use of the ADDIE model in application design has very good value. This is because the ADDIE model has stages in a structured form, namely: (1) Analysis, (2) Design, (3) Development, (4) Implementation and (5) Evaluation.

METHOD

This research was carried out with an RnD (Research and Development) approach to find answers to existing problems. RnD is used to produce certain products accompanied by product effectiveness testing (Sugiyono, 2012). Here are the steps in developing the Go-DES Application. As shown in Figure 1. below.

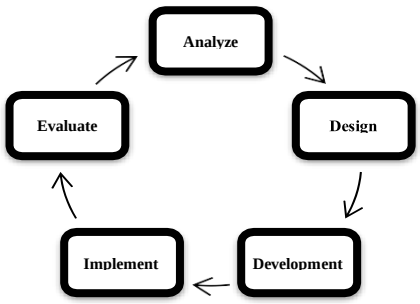

Figure 1. The development of writing with the ADDIE model

Based on Figure 1. Above is the development of stages/flows that have been carried out. Go-DES Application Development uses ADDIE's stages: Analyze, Design, Development, Implement, and Evaluate. The ADDIE model is considered suitable for research that focuses on the development of design analysis and instructional systems (Woods, 2019). Before the analysis of the phase identification problem. This aims to determine the formulation of the objectives and benefits of the results of the research conducted. This research uses literature and field studies. In literature studies based on the results of literary studies, such as: journals/books/proceedings. While conducting field studies through direct observation, interviews and questionnaires with several high schools. The design stage is the design stage consisting of: (1) Use Case Diagram, (2) Activity Diagram, (3) Entity Relationship Diagram and (5) Design Interface. In the next stage of development, in this design stage, it is then implemented into the programming language, database, software and installation and application usage flow. In addition, it tests the feasibility of the application by using black box testing and profitability tests. The evaluation stage explains related to the results of system development and testing. If there is a mismatch between the

application and the user's needs or the performance imperfection of the application, repair or maintenance is required on the stage that is declared problematic.

RESULTS AND DISCUSSION

Analyze

At this stage, identify the opportunities that will occur in the current problem. With this hope, it can be used as a reference to be able to develop the Go-DES Application into the future. In 2030, the digital economy in Indonesia is projected to grow eightfold, from IDR 632 trillion to IDR 2,531 trillion. Electronic commerce or E-Commerce will have a considerable role, amounting to IDR 1,900 trillion, or around 34% of what is predicted. In 2030, Indonesia will also have a GDP greater than ASEAN's digital GDP, which is around 55% and the agency's desire will be IDR 417 trillion, which is IDR 323 trillion (Ministry of Finance of the Republic of Indonesia, 2021). Based on the results released by the Central Bureau of Statistics in February 2021, the majority of the population can only get education at the highest level of high school. This condition can be seen from the Open Unemployment Rate (TPT), the largest population in Indonesia occupied by Vocational graduates, which is 11.45% (Central Statistics Agency, 2021).

Thus, the government can start implementing an integrated digital economy system between high schools as a definite step to improve the quality of human resources in Indonesia, so that Indonesia can be digitally literate. As for the application, it can use a sharia-based digital economy system called Go-DES Apps (Go-Digital Economy based on Sharia Application). The application solutions that can be developed are: Go-DES Apps is an application used for student transactions in digital-based schools through smartphones with sharia economics applications with the contract used is wadiah yad adh-dhamanah. The Go-DES application is designed with features for the needs and needs of students, namely saving (E-Bank) and shopping (E-Market). E-Bank is a feature that consists of saving students, saving content and transaction data. The contents of the E-Bank that are My-Balance and E-Godes, where the content of these E-Godes is Top up E-Godes and My-Transactions. E-Market is a feature that consists of student and internal school needs. The contents of the E-Market are E-ATK, E-Uniform, E-Canteen, and E-SPP. Based on an analysis of opportunities, problems and solutions in the development of the Go-DES Application. Obtain some functional and non-functional requirements as follows.

1. Functional Requirements Analysis, there are several roles in the implementation of this application, including: cooperative school officers as application managers such as managing digital finance students and providing tools and needs of students and students as the main users of the application save money and make purchases. The list of functional requirements from cooperative school officers is 9 functional requirements, as shown in Table 1. below.

Table 1. Functional needs of cooperative school officers

No.	Code Description	Description
1.	SL01	Entry and exit
2.	SL02	See the cooperative school account officer
3.	SL03	Edit the account of the cooperative school officer
4.	SL04	Displays current customer (student) balances
5.	SL05	Edit student balances
6.	SL06	View fee payments
7.	SL07	View student transaction results
8.	SL08	Show available items
9.	SL09	Edit items, prices, and item codes

The list of functional requirements for students is 9 functional requirements, as shown in Table 2. below.

Table 2. Functional needs of students

No.	Code Description	Description
1.	SL01	Entry and exit
2.	SL02	View student accounts
3.	SL03	Edit a student account
4.	SL04	View student balance
5.	SL05	Payment of fees
6.	SL06	Show available items
7.	SL07	View transaction results
8.	SL08	Search for items
9.	SL09	Scan item code

2. Non-Functional Requirements Analysis There are several non-functional requirements based on the Go-DES Application development analysis. The non-functional requirements of the specification include the minimum Android device required to run the Go-DES App. The non-functional requirements are as shown in Table 3. below.

Table 3. Non-functional requirements

No.	Thing	Specifications
1.	Ponsel	Android-based phones
2.	OS	OS 4.0, android (jelly bean), kitkat, and lollipop
3.	Processor	528 Mhz, chipset qualcomm

Design

In the development process, system design is carried out by making model diagrams to describe the flow of the work system based on previous specifications and requirements. So that it can provide a systematic work system flow. The diagram is divided into several sections including:

1. Modeling Diagram: Use Cases, Modeling a diagram of a use case or user interaction with a system is modeling, which is described based on the functional requirements that have been in place in previous analyses. As for the modeling use case diagram, as shown in Figure 2. below.

Figure 2. Go-DES application using case modeling diagram

2. Activity Diagram:
   a. Activity Diagram for User List, in Figure 3. below is an activity chart for the user list. Users can enter their name, phone number, email and password, later the system will process the input into the database, then the availability of email will be checked. If email is available then registration is successful and if it is not available then it will return to the original list.

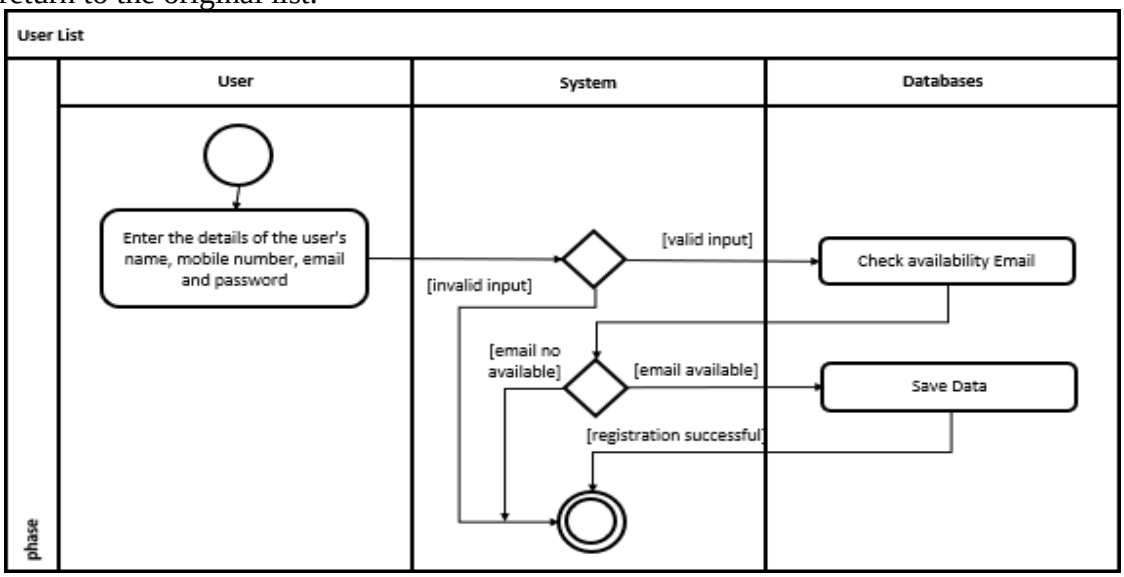

Figure 3. Activity diagram for user lists

   b. Activity Diagram for User Login, in Figure 4. below is an activity diagram for user logins. Users can enter a username or email and password, then the system will process it into the database, then it will verify whether the username or email and password have been registered in the system. If your username or email and password are available and valid, then the registration is successful and if it is not available and invalid it will revert to the original login.

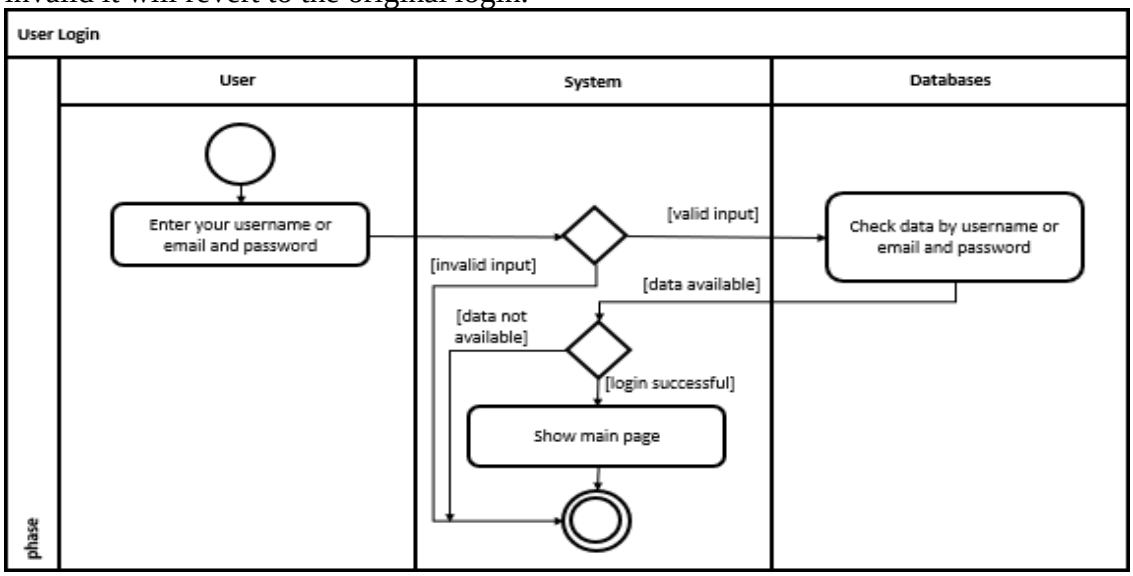

Figure 4. Activity diagram for user login input

   c. Activity Diagram for Input Balance, in Figure 5. below is an activity chart for the input balance. Cooperative school officers can enter the username and amount of money (Rp)

of students into the account of each student, then the system will process the data into a database, then the database will store the balance. If it is true, it will enter the My-Balance page.

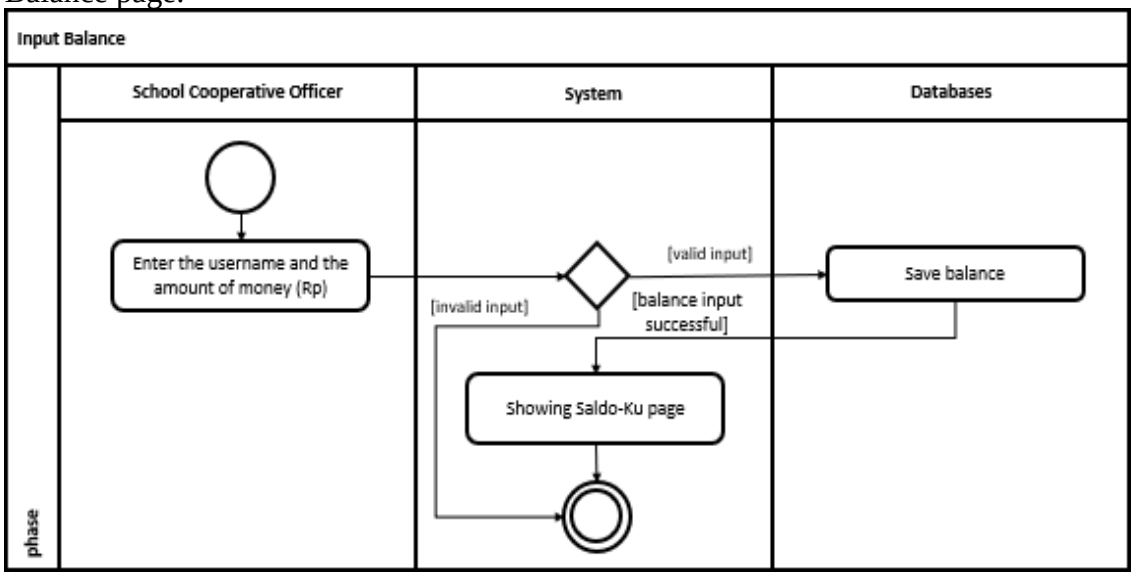

Figure 5. Activity chart for balance input

d. Activity Diagram for Input Goods, in Figure 6. below is an activity diagram for item inputs. Cooperative officers, schools can list the name, image, price and barcode of each item, then the system will process the data into a database, then it will be checked for conformity with the specifications of the goods and barcodes. If it is valid, it will enter the E-Market display page and if it is invalid, it will return to the display of input goodsl.

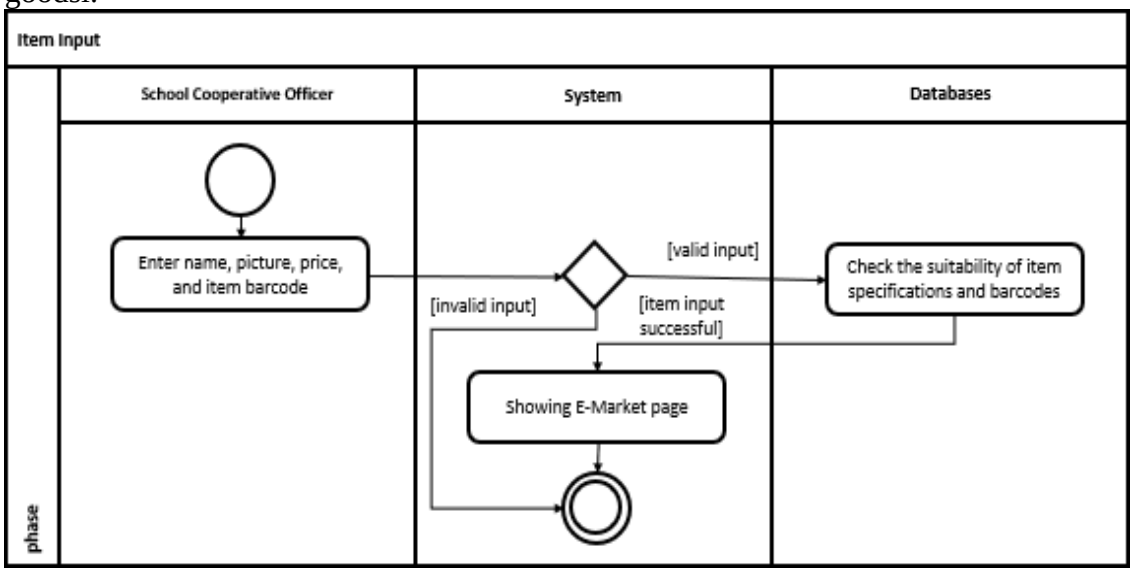

Figure 6. Activity diagram for item input

e. Activity diagram for the input scan barcode, in Figure 7. below is an activity diagram for the Scan barcode input. Students can scan the barcode of the goods to be purchased, then the system will verify the availability of goods and the balance in the student's account is insufficient or not in the database. If valid, the barcode scan is successful and the student's balance will be reduced and if it is invalid, it will return to the barcode scan display earlier.

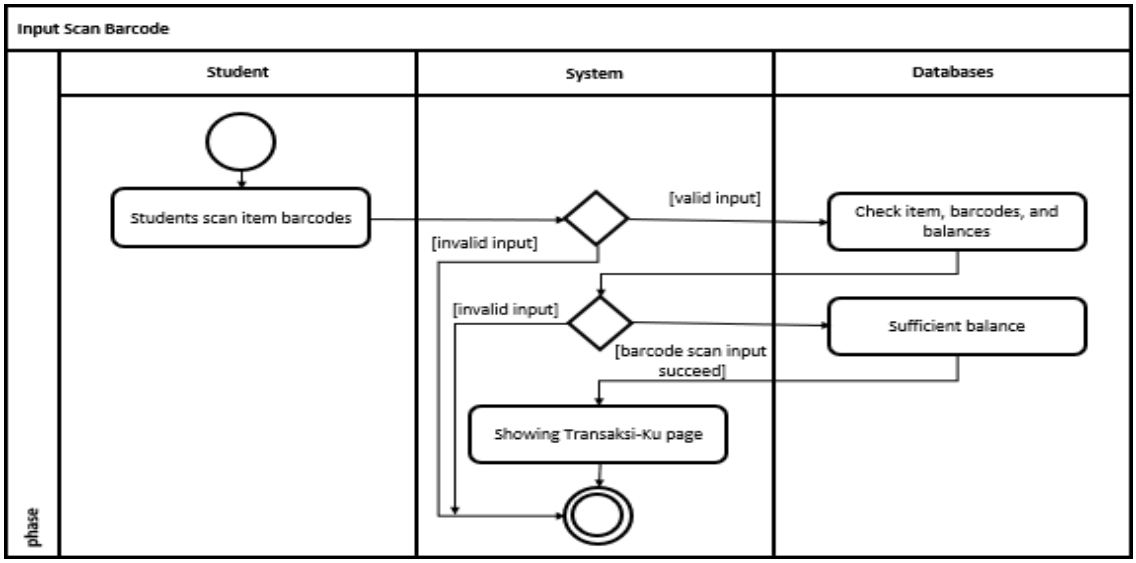

Figure 7. Activity diagram for barcode scan inputg

f. Activity Diagram for Cost Input Payment, in Figure 8. below is a diagram of the activities for the input of the payment of the tuitui fee. Students can enter their name and bill number, then the system will be processed into a database, then the name and balance will be checked whether the name and balance are enough to make a payment or not. If applicable, the payment of tuition fees will be successful, and the student's balance will be reduced and if not applicable, it will return to the initial fee payment input display.

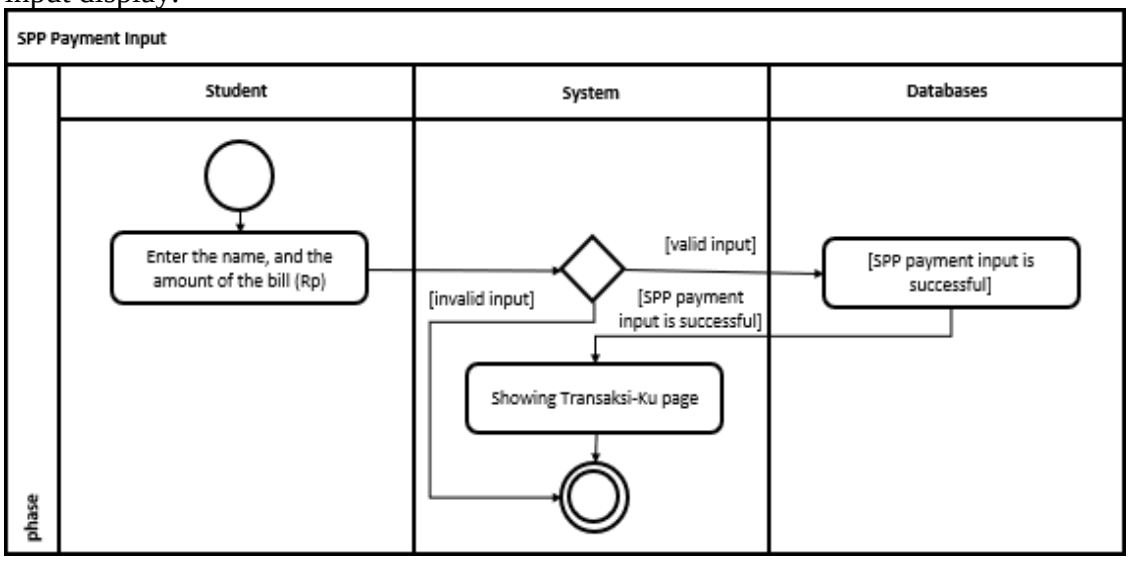

Figure 8. Activity diagram for tuition fee payment input

g. Activity Diagram to display the transaction results, in Figure 9. below is an activity chart to show the results of the transaction. Students can make purchase transactions, then the system will be processed into a database, then the transaction history will be automatically saved on the My-Transactions page.

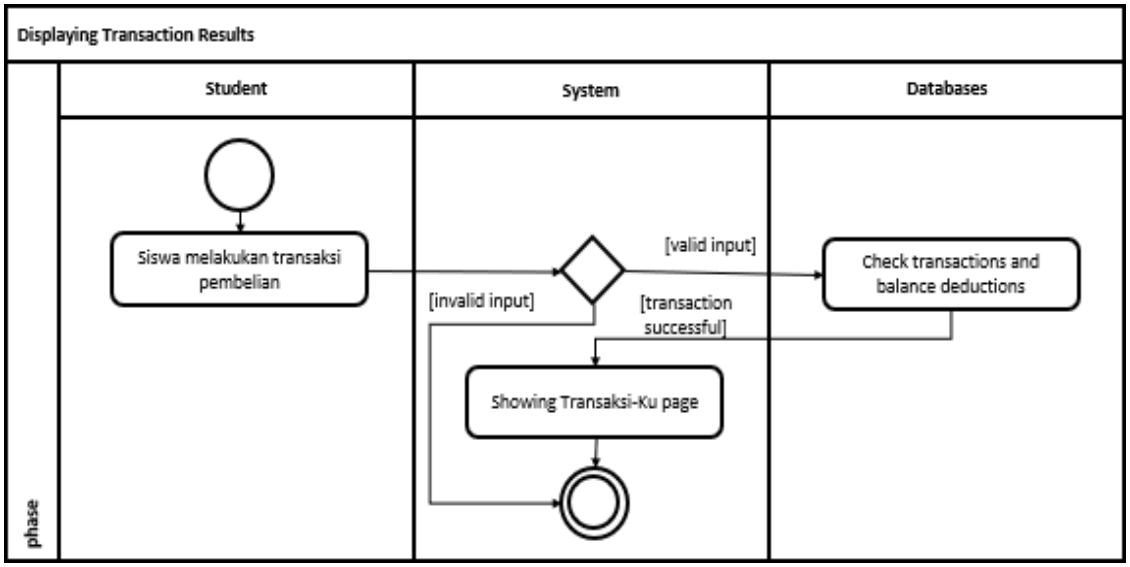

Figure 9. Diagram aktivitas untuk menampilkan hasil transaksi

h. Activity Diagram for locating items, in Figure 10. below is an activity diagram for input looking for items. Students can enter the name of the item to be searched, and then the system will be processed into the database, then it will be checked against the name of the item, specification and availability of the item on the E-Market page.

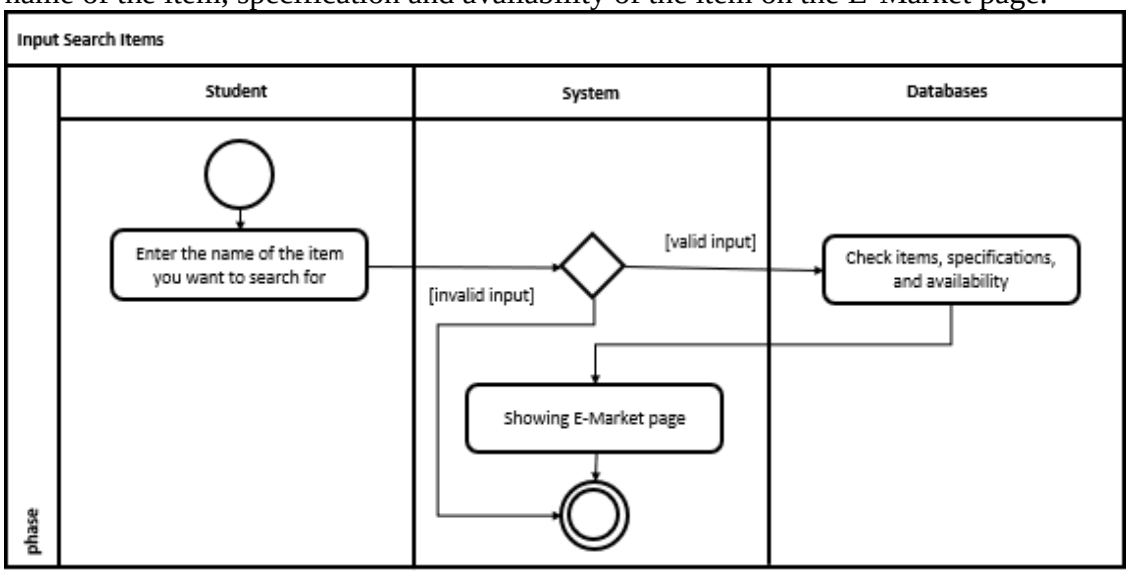

Figure 10. Activity charts to search for items

3. Entity Relationship Diagram (ERD), ERD is a database design that will be used to perform process coding. In ERD you will see the entities and attributes in them and also the relationships between entities. Hasill from the ERD, as shown in Figure 11. below.

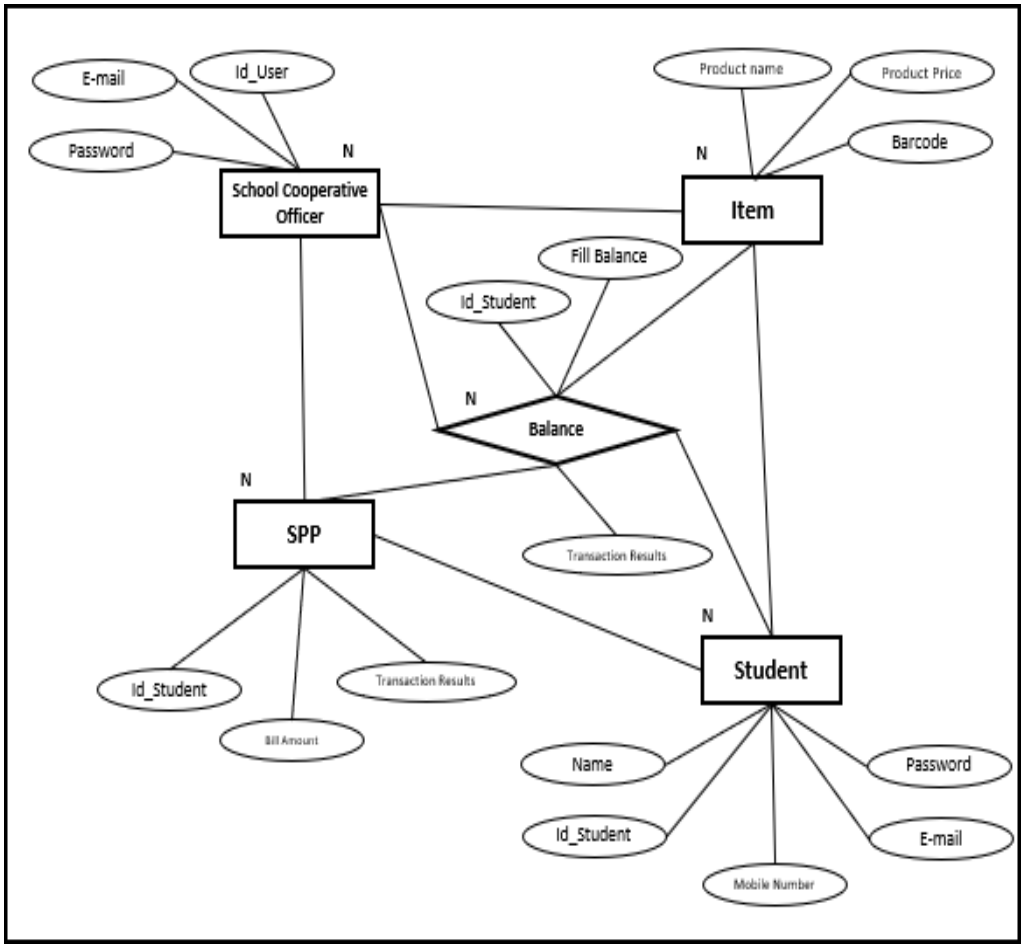

Figure 11. Entity relationship diagram (ERD)

4. Interface Design, interface design is the stage of creating the design appearance of the Go-DES Application. With the aim that users can connect directly with the software. The app has a simple design interface, is easy to apply (apply), and can be easily accessed by users.

Development

The following are the working steps of the application as an implementation of the development results that have been carried out:

1. Go-DES is an application used for digital-based student transactions in schools through smartphones.
2. In practice, the Government of the Ministry of Finance and the Ministry of Education and Culture "collaborate with high schools to implement an integrated digital economy, sharia-based system through the implementation of Go-DES. This system can be applied after entering offline or post-covid-19 learning.
3. The implementation of Go-DES is designed so that students are economically literate, especially with the advancement of digitalization, and through the system it is hoped that it can produce creative human resources or graduate students in the era of high technology based on industry 4.0.
4. Schools can implement the Go-DES system by utilizing BOS (School Operational Assistance) assistance or funding other agreements between schools and the government (Ministry of Finance and Ministry of Education and Culture). The funds used are utilities to create a Go-Des network system and fill in the completeness of school needs in the Go-DES application such as ATK, school uniforms, food and beverages, fee payments, and others.

5. Go-DES is an integrated system that has been designed for the needs and needs of students, namely E-Bank and E-Market:
    a. E-Bank is a feature consisting of My Balance and E-Godes:
        1) My Balance serves to raise student funds or in other words student savings. The system is based on sharia, where the contract used is wadiah yad adh-dhamanah. A contract where the bank (school) can manage the customer's (student) money and the customer can also take the money anytime they want, and the bank (school) must give it in full. So that the contract is suitable to be applied to the Go-DES system, because it is protected from the elements of riba'.
        2) E-Godes is a digital feature consisting of:
            a) E-Godes top up, this feature functions to make various transactions on E-Godes. Before a student makes a transaction in the E-Market, they must first fill out the E-Godes. Of course, this can be done if the balance in each student's E-Godes Top-up account is sufficient.
            b) My Transaction, displays this link and matches the E-Godes feature. This feature is the content of the E-Market system. Any student can purchase all the objectives of their Market Me system through the features of E-Godes without having to use real money. As for transactions, Jajanan-Ku consists of E-ATK, E-Uniform, E-Canteen and E-SPP.
    b. E-Market is a feature that consists of student and internal school needs. The contents of the E-Market are E-ATK, E-Uniform, E-Canteen, and E-SPP.
6. The students' money collected in the form of My Balance savings can be used by the school as the owner of the E-Bank to run it as an E-Market business. This is in connection with the contract used in the Go-DES system, namely wadiah yad adh-dhamanah. But the benefits of money management are entirely owned by the bank (school), customers (students) do not have the right to get the benefits of managing the funds. However, in general, banks (schools) will give bonuses to customers (students) voluntarily.

Implement

A diagram of the flow of steps to implement Go-DES as an implementation of the sharia-based digital economy can be seen in Figure 12. below.

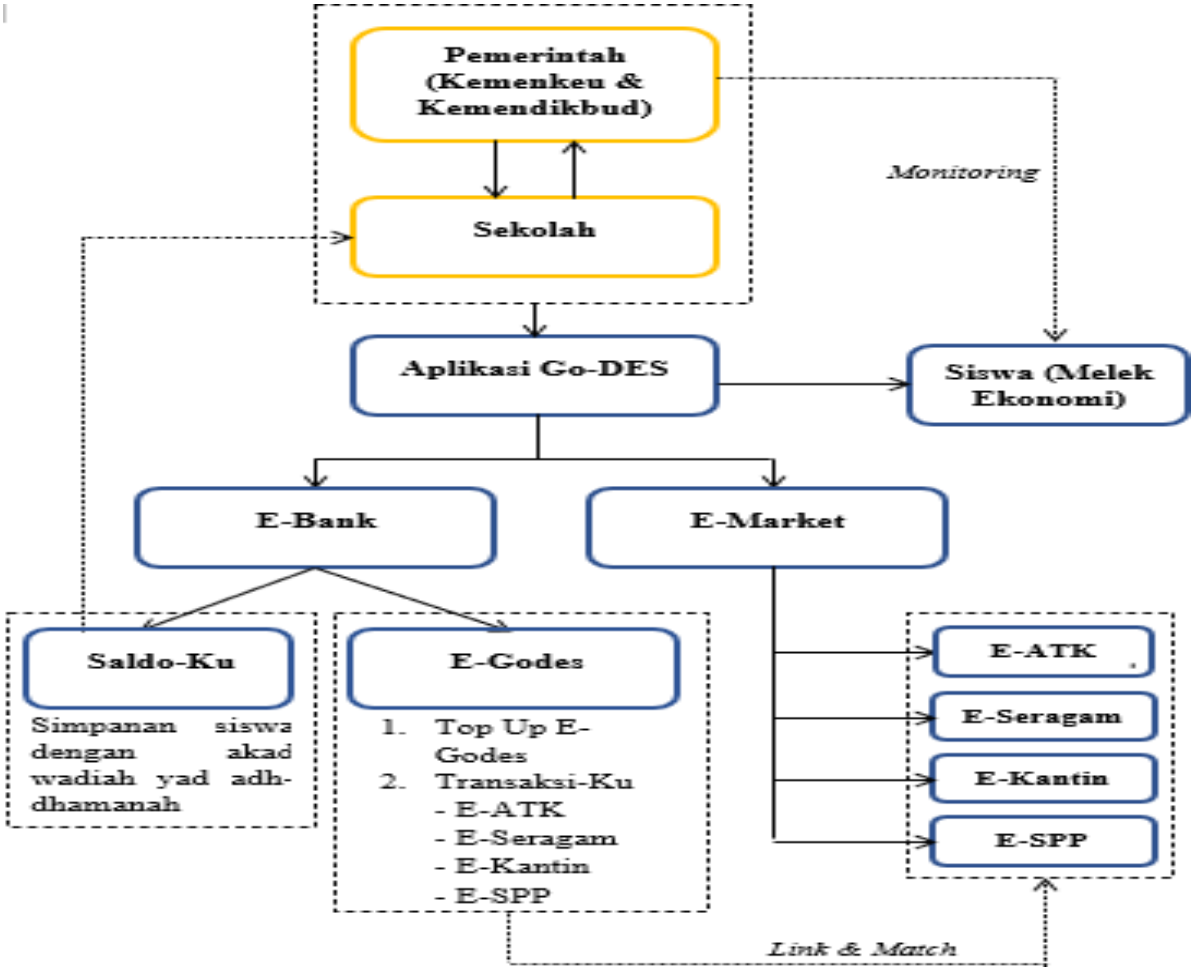

Figure 12. Go-DES application implementation flowchart

As for some interfaces, the beginning of the Go-DES application can be seen in Figure 13. below.

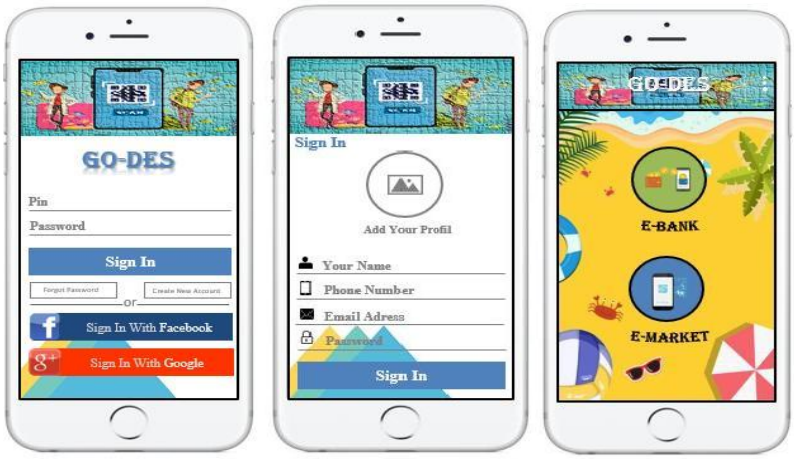

Figure 13. Go-DES app initial interface

A more detailed explanation of the appearance of the Go-DES application, can be seen on the Go-DES application, can be seen in Figure 14. below.

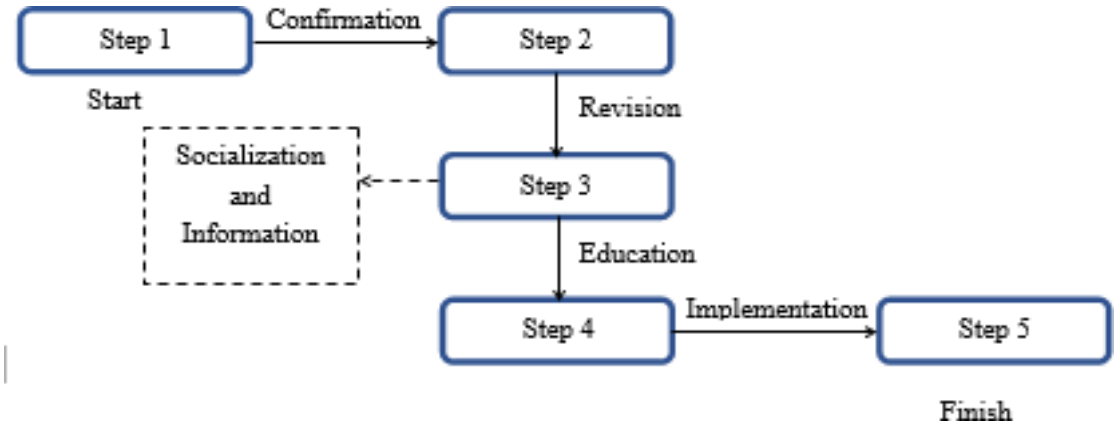

Figure 14. Stages of application development and deployment

1. Stage 1 is the confirmation stage, which explains when the application already has a design or interface and key features. Then confirm to cooperate with related parties.
2. Stage 2 is the revision stage, after receiving confirmation from the relevant parties. Then there is a revision or replacement of the application display interface that is still lacking, starting from the main features, the content of each feature and others. So that it is in accordance with the expected demand, so that the application can be used as needed.
3. Stage 3 is the socialization and information stage, after obtaining the results of the interface displaying the appropriate application. Then before using learning and application, the socialization phase is needed in terms of application direction. Coupled with conveying information about the application in terms of target users.
4. Stage 4 is the education stage, after the previous stage is completed. Then the next stage is the stage that explains how to use, function and purpose of the application At that time it is necessary to learn about the application, so that it is in accordance with the direction, and goals in the future.
5. Stage 5 is the implementation stage, after the learning stage is delivered well and is easy to understand. Then next is the application that can be downloaded by the user. However, it must continue to be developed, in order to continue to answer the challenges and problems that are happening.

Evaluate

At the evaluation stage, profitability testing was carried out on 5 smartphone devices, ranging from android version 11 to android 5.1 with the aim of finding out whether the application can be run on various smartphones with different types of androids (Naziihah, et al., 2021). The results of the profitability test are shown in Table 4. below.

Table 4. Profitability test results

No.	Tools	Android	Install	Process
1.	Vivo V20	Android 11	Succeed	Good
2.	Samsung A10	Android 9.0 (Pai)	Succeed	Good
3.	Asus Zenfone M2	Android 8.0 (Oreo)	Succeed	Good
4.	Xiaomi Mi A1	Android 7.1 (Noughat)	Succeed	Good
5.	Oppo A37	Android 5.1 (Lollipop)	Succeed	Good

CONCLUSION

Based on the Research and Development of the Android-based Go-DES Application, which has been carried out using the ADDIE method. Then some conclusions can be drawn: (1) The development of the Go-DES Application has been successfully carried out in accordance with the draft system requirements, use case diagrams, activity diagrams, entity

relationship diagrams and user interfaces. (2) The test results of the Go-DES Application show that all functions in the application can be carried out better, according to the needs of users. (3) With the android-based Go-DES Application, it will allow students to meet the needs in school. The development suggestions that can be carried out in future research add to the current needs of students' features. As well as Apps can be created to other operating system versions such as IOS. So it could include all mobile device users. In addition, payments are also made outside the app. Therefore, it must be added to the payment feature through the app by using a partner payment service.

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