AppYourself Instant Store (Case Study: SMEs Industry in Aceh Province)

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Abstract: The purpose of this study is to implement the use of AppYourself to create an Instant Store that can be used in Small and Medium Enterprises (SMEs) Industry in Aceh Province. The Software Development Life Cycle method used is IDI. IDI is a combination of iterative design / iterative method and incremental build model that is used for software development. Testing and measurement based on usability level using the People at the Center of Mobile Application Development (PACMAD) model based on its seven aspects. This research uses Performance Measurement, SUS Questionnaire, NASA-TLX Questionnaire, and RTA Questionnaire in data collection. The data was measured using usability metrics, statistical tests, and calculation formulas from the questionnaire. The results of this study have succeeded in making an application called InstantStore by involving several stages from data collection to testing. The results of the initial test or pre-evaluation and final testing or post-evaluation, it can be concluded that after an evaluation by designing a prototype of improvement recommendations using the rules of The 4 Golden Rules Of User Interface Design, there is a significant increase, based on the results of statistical tests on testing Pre-evaluation shows that there are significant differences between respondents in South Aceh Regency and Banda Aceh City on aspects of efficiency, memorability, satisfaction, and cognitive load. In addition to the aspects of effectiveness, learnability, and errors there is no significant difference between respondents. While the results obtained from statistical tests in the final test (post-evaluation) there are no differences between respondents to the seven aspects of the usability of the PACMAD model.

Index Terms: AppYourself; Instant Store; Small and Medium Enterprises (SMEs) Industry; Aceh Province; Software Development Life Cycle; PACMAD.

1. Introduction

Digitalization has entered all sectors of human life, including in the business sector [1]. In this sophisticated era, there are many repetitive jobs, such as customer service (CS), tellers, or administration that have been replaced by technology. This change is certainly not a bad thing for companies and business people. This is because technology can help businesses reduce costs and time invested in their business [2][3]. There are many digital technologies that can facilitate business management, one of which is the application of selling goods [4][5]. This application is very much needed by business people, especially in the current digital era [6][7]. With the application of sales of goods, business people can more easily compile sales reports in real-time [8][9]. In addition to being more efficient in terms of cost and time, the application of selling goods can also help speed up the sales process with an automation system [10], so there is no need for manual recording [11]. In addition, the use of an application for selling goods will also minimize losses to the business that may be caused by human error [12].

Nowadays, many people decide to shop online to fulfill their daily needs [13]. Practical, easy, many choices, and more affordable prices are the reasons why online shopping is increasingly in demand. In addition, there are many attractive offers for buyers such as discount promos, cashback, and free shipping. The trend of online shopping has indeed increased significantly, especially during the pandemic period [14]. Quoting the statement of Ahmad M. Ramli (Directorate General of PPI Kemenkominfo) on CNNIndonesia, online shopping activities of the community increased by 400% in 2020. This is quite reasonable considering that due to social restrictions and having to stay at home, people find ways to get rid of boredom while looking for their personal needs, one of which is by shopping online. The national economy had experienced a slowdown at the beginning of the pandemic period [15]. Some businesses have had time to do massive efficiency, there are also those that went out of business due to declining sales [16]. At that time, many people were delaying their spending due to economic uncertainty and fears of a pandemic. Slowly, people began to make adjustments to their consumption patterns, namely by switching from physical shopping to online shopping as an effort to limit physical interaction [17]. Changes in consumer behavior that need to be considered by Small and Medium Enterprises (SMEs) to regulate marketing strategies. Digital or die, currently digital marketing is a solution to increase sales [18][19]. The problem is that not all business actors understand what platforms can be used as sales media. As a first step, business actors need to choose and determine the right platform, know its uses, and weigh the pluses and minuses.

Various platforms are available for doing business online either through social media, marketplace [20], to selling on personal or company websites [21]. Websites can be used by business owners to build brand identity and interact with consumers [22]. Information about the company, mission, vision, values, logo, logo philosophy, color identity, business concept, and so on can be included on the website page to build a positive impression and emotional attachment to consumers. Having a personal website also allows us to freely manage the sales system and interact with consumers or other parties who want to collaborate. Another advantage of having a personal website, our online store can appear on the Google search engine when someone searches for keywords related to the products offered. Until now, the Google search engine is still the most reliable tool to find the items you need. Unlike the case with social media and marketplaces, which have a more limited reach of consumers. Before creating a personal website, of course we need to know what is needed and done. Managing a website requires the independence and initiative of business owners because they need to prepare a sales system and always update product photos, product information, and educational content. In addition to having a website, having an application that can be used on the Android and IoS operating systems is also important for a business to have. All available platforms actually function as marketing media to optimize product sales. If we are currently considering which platform should be used, we need to question our business goals and assess our capabilities. Ideally, business actors who are serious about doing business online need to have all three, namely sales channels on social media, marketplaces, and personal websites. The variety of sales channels provides choices and convenience to consumers, thereby increasing the opportunities for transactions to occur.

Soraya & Wahyudi (2021) explain that conventional marketing strategies do not show sales success [23]. In the research, Andipradana & Hartomo (2021) confirmed that the web-based online sales application is one of the efforts to provide a platform and market MSME products digitally [24]. Furthermore, research by Tamsir & Soetikno (2021) says that by utilizing android and web-based sales information technology, it minimizes several mistakes both in transacting, producing and distributing goods [25], and can be used as a medium in promoting goods by developing mobile applications that can be run by a variety of people. mobile device platforms [26]. It is clearly known that there is no opinion that digitalization in product sales has an impact on failing to increase sales. However, another problem is the ability of business actors to develop a sales medium, both in terms of capital for making applications and the capabilities of their human resources. According to Rifani & Aini (2016), the ability to have an information system is currently available so rapidly and some are free to use and some are without the need for expert staff to use it [27]. Liu, Au, & Choi (2014) examined the effect of the freemium strategy on Google Play, an online marketplace for Android mobile applications. By analyzing a large panel dataset of 711 ranked mobile apps, and finding that a freemium strategy is positively associated with increased sales of paid mobile apps. These findings suggest that while offering free trial versions is a viable way to increase mobile app visibility, offering quality free apps is more important in increasing sales of paid apps [28]. So it is clear that the question whether every business must have a large capital in building a sales application? the answer is that no capital and expert resources are needed, but user understanding still needs to be known in order to maximize the use of the application from the features offered.

To make an application easily and quickly, there are several instant maker applications that can be used, and they do not need to be proficient in mastering programming languages, one of which is AppYourself [29]. App Yourself is an app builder for HTML5 based apps. It is cross platform and relies mainly on HTML5 [30]. Building apps with AppYourself is very easy, and there are some great business-centric features like Open Table synchronization [31]. Berlin-based app maker AppYourself was founded in 2011 to help people create 'high-quality business apps at a fair price'. Ecommerce seems to be the focus with these app makers, and is one of the highlights of the platform. AppYourself offers small businesses several options for displaying their wares within the app, while also allowing purchases to be made directly from within the app itself via direct credit or PayPal. With AppYourself being able to create its own product catalog within the app builder, AppYourself offers the advantage of keeping your customers in the same environment, rather than sending them externally to complete their purchases. The new addition to the app builder involves not only creating a web version of your app, but also a desktop website. This is more useful, because web applications often look clunky on

full-size desktop screens. It's automatically generated from your content, so it's not very flexible, but you can decide which features are visible and still look decent [32]. Seeing the capabilities possessed by AppYourself, this research implements the use of this tool to create a sales product catalog that can be used in Small and Medium Enterprises (SMEs) Industry in Aceh Province.

2. Research Method

Research activities were carried out during 2022, starting from February to October. Data collection methods used in this study are as follows:
1) Literature Study
   Collecting data by studying, researching and reviewing various literatures from libraries sourced from books, texts, scientific journals, websites on the internet and readings related to application development.
2) Interview (interview)
   At this stage, the authors conducted observations in the case study sites, namely 20 MSMEs in Aceh Province, of which 10 of them were MSMEs in South Aceh Regency and 10 from Banda Aceh City which were taken to determine system requirements, user characteristics and supporters in system development.

The Software Development Life Cycle method used is IDI. IDI is a combination of iterative design / iterative method and incremental build model that is used for software development. A long-term and broad combination has been suggested for large-scale development.
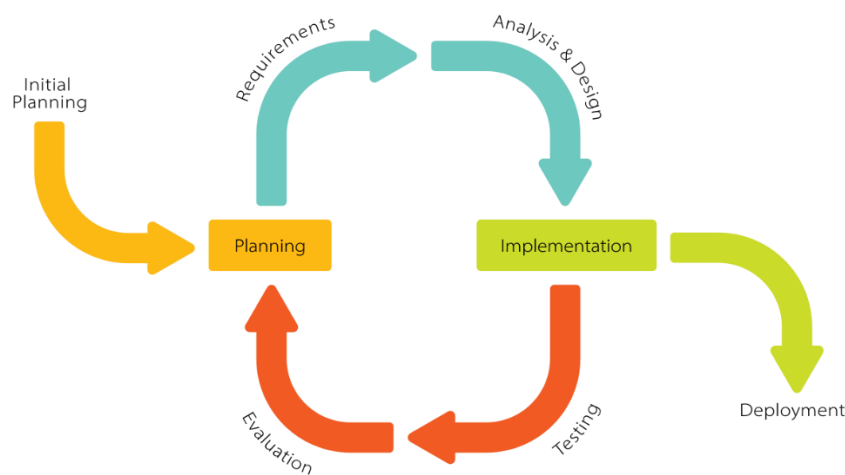

Fig 1. Model Iterative and Incremental Development

The flow of the Iterative and Incremental Development Model is as follows:
1) Start
   Start started by creating a small program consisting of small elements that will be used to create a web application and android builder AppYourself Instant Store and make sure it runs well.
2) Analysis
   Determine the next improvements to the application to be made by making small changes.
3) Design
   Determine how or which features will be used to make changes.
4) Coding
   Perform the coding process that has been made to ensure the code does not have errors or errors in making the output of the application itself.
5) Testing
   Run the application then test it by creating a static html page using a web application builder, enumerator and debugging in doing the application development itself. Because the development is done little by little so to detect the source of the error will be very easy. In the testing process, the usability level of the PACMAD model is used. Some of the usability models that have been mentioned previously have not been considered in terms of mobility factors on mobile devices and their consequences. In conducting testing at the usability level for mobile devices, a special usability model is needed that can meet the system quality of the mobile application. The PACMAD usability model combines the Nielsen model with ISO standard attributes and adds an important attribute to mobile applications, namely the cognitive load attribute. The PACMAD model also identifies several important factors that can affect mobile applications in the usability aspect, these factors are User, Task, and Context of Use. This model

aims to develop existing usability models such as the ISO model and Nielsen model into the context of mobile applications.

Table 1. Important Factors in the Usability of the PACMAD Model

Usability Factor	Usability Attribute
User	Effectiveness
	Efficiency
Task	Satisfaction
	Learnability
Context of use	Memorability
	Error
	Cognitive Load

In research related to System Quality Testing on the AppYourself Instant Store Application Based on the Usability Level of the PACMAD Model, it was carried out around the Small and Medium Enterprises (SMEs) Industry in Aceh Province in South Aceh Regency and Banda Aceh City, starting from February 10, 2022 until according to time conditions in the field. In this study, it will be carried out based on the stages that have been prepared previously. In the testing process carried out by a team of experts to test the correctness of the data by the research division of PT. Jaga Citra Inti. The flow of procedures in this study is also a framework for solving existing problems. This study to evaluate usability was carried out using the PACMAD model as a usability testing model and using a user-based evaluation method which later involved the user directly as a participant. There are three stages to be carried out, namely; Conducting initial testing or pre-evaluation of the usability of the AppYourself Instant Store application using the People at the Center of Mobile Application Development (PACMAD) model. Designing recommendations in the form of prototype improvements to the AppYourself Instant Store application based on the results of usability testing by following the rules of The 4 Golden Rules of User Interface Design, and Performing post-evaluation final testing of the usability testing improvement recommendations given to the AppYourself Instant Store application.

3. Result and Discussion

3.1 Results

With AppYourself there are many templates that you can choose from for free and have the features to offer. However, here we customize the display to make it more attractive and in accordance with the interests of MSMEs in Aceh Province where the menu can generally be used even though some MSMEs have different sales areas. To start making the application store, you can access it through appyourself.net and choose the template provided and at the beginning of the AppYourself application it can be seen in Figure 2.
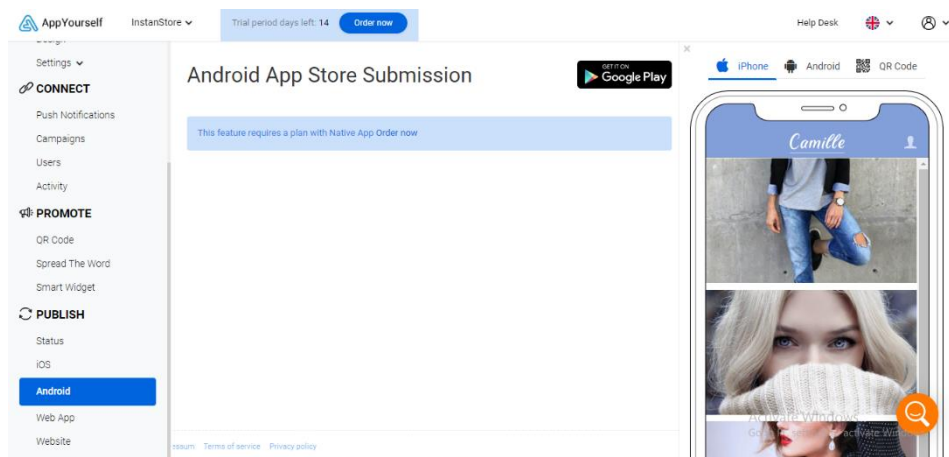

Fig 2. AppYourself Initial Screen

Several menus have been modified which consist of categories, products, wishlists, shopping carts, checkouts, blogs, reports, contact us, login and register as shown in Figure 3 below.
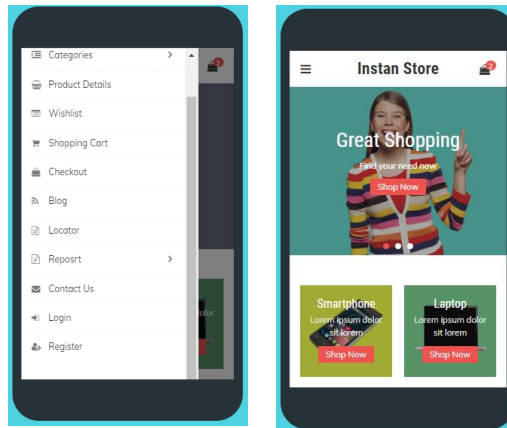
Fig 3. InstantStore Application Results with AppYourself

3.2 Discussion

At the data collection stage, the steps are determining the population and sample, initial testing or pre-evaluation, and distributing questionnaires. This study also explains the obstacles or obstacles that occur during the activity and also suggestions for further research. The registration from the google form was obtained by participants with a total of 20 respondents consisting of 10 MSMEs in South Aceh Regency and 10 MSME respondents in Banda Aceh City. At the initial testing stage or pre-evaluation, this is a stage carried out by testing the application to obtain the appropriate data. The tests carried out have 3 stages, namely the testing stage using the Performance Measurement method stage 1, the Performance Measurement method stage 2 and the testing stage using the System Usability Scale (SUS) Questionnaire, Retrospective Think Aloud (RTA), and the NASA-TLX Questionnaire. The documentation on the initial test or pre-evaluation. In the initial testing process in obtaining data during the performance measurement process, it is carried out using a screen recorder device or tool found on the user's android smartphone, this is because it can find out the amount of time required, the number of clicks and the number of errors made on each given scenario task. . There are 2 techniques used, namely the stage 1 performance measurement technique and the stage 2 performance measurement technique to obtain the data. Calculation and Data Analysis (Pre-Evaluation or Pre-Evaluation) mapped the problems obtained to design recommendations for improvement. Results of Calculation and Data Analysis for Each Aspect in the PACMAD Model (Pre-Evaluation) resulted in an assessment of each aspect in the PACMAD model. Recapitulation of Calculation Results and Quantitative Data Analysis for Each Aspect in the PACMAD (Pre-Evaluation) Model can be seen in table 2.

Table 2. Recapitulation of calculation results and quantitative data analysis for each aspect of the PACMAD (Pre-Evaluation) model

Usability Factor	Usability Aspect PACMAD models	Calculation Formula	Results Data analysis
User	Effectiveness	Completion Rate (Percentage of Success)	60.37% (below standard)
	Efficiency	Overall relative Efficiency	53,01%
Task	Satisfaction	SUS Questionnaire	59 (below standard)
	Learnability	Comparison of the effectiveness value of stage 1 and stage 2 performance performance measurement	Good
Context of Use	Memorability	Comparison of the combination of effectiveness and overall relative efficiency values of performance measurement stage 1 and stage 2	Good
	Errors	Error rate	14,27%
	Cognitive Load	NASATLX Questionnaire	61.67 (medium)

Based on the recapitulation of the results of the calculations and data analysis above, it can be concluded that of the 20 user respondents and 27 task scenarios at the initial testing or pre-evaluation stage, it is indicated that recommendations for improvement are needed for this AppYourself Instant Store application. This is because the application can be seen from the aspect of effectiveness and satisfaction which still has a level of value below the standard with each value being 60.37% and 59. In addition, the cognitive load aspect related to the cognitive load felt by the user is still at a moderate

level and in other aspects as well. low value, although the aspects of learnability and memorability are good. Then from the statistical test, it was found that there were differences between high school student respondents and student respondents in the aspects of efficiency, memorability, satisfaction, and cognitive load. In addition, in terms of effectiveness, learnability, and errors, there is no difference between respondents using MSMEs in South Aceh Regency and MSME respondents in Banda Aceh City. So from the results of the calculations and data analysis, this study will try to solve the problems that arise by providing design recommendations for improvements to the AppYourself Instant Store application in the form of a prototype by following the rules of The 4 Golden Rules of User Interface Design from Nick Babich. In designing the design recommendations for improvement for solving problems that have previously been mapped. According to the previous explanation, this design refers to the rules of The 4 Golden Rules Of User Interface Design with recommendations for improvement in the form of a prototype made using AppYourself. Because the results of this design are in the form of a prototype, the data in this improvement recommendation only uses static data. At the final testing stage or post-evaluation is a test carried out on the design of improvement recommendations to determine changes that occur in terms of usability. This stage is carried out using the same technique as was done during the initial test or pre-evaluation, namely, using the Performancen Measurement technique and distributing the System Usability Scale (SUS) questionnaire, the Retrospective Think Aloud (RTA) questionnaire, and the NASA-TLX questionnaire. In addition, this stage also invites back users who participated in the pre-evaluation stage with the same number of 20 MSMEs. The recapitulation of the results of calculations and data analysis for each aspect of the PACMAD model is shown in table 3.

Table 3. Recapitulation of calculation results and quantitative data analysis for each aspect of PACMAD (Post-Evaluation) model

Usability Factor	The Usability Aspect of the PACMAD Model	Calculation Formula	Results Data analysis
User	Effectiveness	Completion Rate (Percentage of Success)	97.59% (already Meet the standards)
	Efficiency	Overall relative Efficiency	98,67%
Task	Satisfaction	SUS Questionnaire	82.25 (already fulfilled standard)
	Learnability	Comparison of the effectiveness value of stage 1 and stage 2 performance performance measurement	Good
Context of Use	Memorability	Comparison of the combination of effectiveness and overall relative efficiency values of performance measurement stage 1 and stage 2	Good
	Errors	Error rate	0,87%
	Cognitive Load	NASATLX Questionnaire	43.13 (rather light)

After obtaining the results of the assessment from the final test or post-evaluation of the design recommendations for improvement of the AppYourself Instant Store application, then this section will explain the final stages, namely by comparing the results of the initial test or pre-evaluation and the final test or post-evaluation. The comparison can be seen in Table 4.

Table 4. Comparison of Results from Pre-Evaluation and Post-Evaluation

Usability Factor	The Usability Aspect of the PACMAD Model	Initial Test (Pre-Evaluation)	Final Test (Post-Evaluation)
User	Effectiveness	60.37% (below standard)	97.59% (have met the standard)
	Efficiency	53,01%	98,67%
Task	Satisfaction	59 (below standard)	82.25 (already meet the standard)
	Learnability	Good	Good
Context of Use	Memorability	Good	Good
	Errors	14,27%	0,87%
	Cognitive Load	61.67 (medium)	43.13 (rather light)

Based on table 4 comparison of the results of the initial test or pre-evaluation and the final test or post-evaluation, it can be concluded that after an evaluation was carried out by designing a prototype of improvement recommendations using The 4 Golden Rules Of User Interface Design, there was a significant increase. The increase that occurred based on the results of the Usability Metrics, the SUS Questionnaire, and the NASA-TLX Questionnaire in several aspects, the results obtained include the effectiveness aspect which was originally 60.37% to 97.59%, the efficiency aspect which was originally 53.01% to 98.67 %, there is no change in the learnability and memorability aspects, the results are both good. In addition, the errors aspect decreased from 14.27% to 0.87%, the satisfaction aspect from 59 to 82.25, and the cognitive load aspect decreased from 61.67 to 43.13. Furthermore, based on the results of the statistical test in the initial test (pre-evaluation), the results showed that there were significant differences between respondents in South Aceh Regency and Banda Aceh City on aspects of efficiency, memorability, satisfaction, and cognitive load. In addition to the aspects of effectiveness, learnability, and errors there is no significant difference between respondents. While the results obtained from statistical tests in the final test (post-evaluation) there are no differences between respondents to the seven aspects of the usability of the PACMAD model.

4. Related Work

The results have shown the success of the Instant Store application which was made according to the interests of MSME users in Aceh Province. Initial testing or pre-evaluation and final testing or post-evaluation are carried out to ensure that the fulfillment of the results of the design and implementation of the application is in accordance with the standards and aspects. According to AlWadani & AlOtaibi (2019) explaining that mobile application services can provide a convenient, efficient, and convenient 'customer' shopping experience by applying image processing techniques in Android mobile applications [33]. Another study by Razgallah et al (2021) confirmed the Android operating system to be a threat to malware attackers and a threat to its users [34]. Research conducted by Permana & Azizah (2022) developed an application for Pink Donuts SMEs for the sale of donuts which was developed using the Kodular MIT App Inventor [35]. Kodular has similarity with AppYourself as well as a tool for developing mobile applications quickly. Some similar applications can also use Appery.io [36], App Maker [37], Appy Pie [38], Thunkable [39] but there is still no research that discusses application development with AppYourself. Some things that need to be taken into consideration is the lack of templates provided by AppYourself for free makes some developers or users need to rethink, especially the Smart, Business, Business PLUS, Enterprise packages that AppYourself offers starting from 49 € to 349 € are a problem even though they also help entrepreneurs digital business.

5. Conclusion

The results of this study have succeeded in making an application called InstantStore by involving several stages from data collection to testing. The results of the initial test or pre-evaluation and final testing or post-evaluation, it can be concluded that after an evaluation by designing a prototype of improvement recommendations using the rules of The 4 Golden Rules Of User Interface Design, there is a significant increase, based on the results of statistical tests on testing Pre-evaluation shows that there are significant differences between respondents in South Aceh Regency and Banda Aceh City on aspects of efficiency, memorability, satisfaction, and cognitive load. In addition to the aspects of effectiveness, learnability, and errors there is no significant difference between respondents. While the results obtained from statistical tests in the final test (postevaluation) there are no differences between respondents to the seven aspects of the usability of the PACMAD model. Some things that need to be considered as suggestions for further research are the lack of templates provided for free by AppYourself that makes some developers or users need to rethink, especially the Smart, Business, Business PLUS, Enterprise packages that AppYourself offers starting from 49 € to 349 € are a problem even though they also help digital business entrepreneurs. Several choices of tools that can be used for mobile application development such as; MIT App Inventor, AppyPie, AppYet, AppsGeyser, Andromo, BuildFire, Mobincube, Shoutem Swiftic, MobAppCreator can be considered in further research.

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