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Implementation of Web-based of E-Marketplace for UMKM at XYZ University

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Abstract: One of the private universities in Pekanbaru, which has nine postgraduate faculties and 10 faculties with 21 study programs. The number of the academic community is quite large, there is already a whats app group that facilitates the entire Academic Community in terms of transacting selling goods or services online. However, in practice it has not been fully effective, one of which is because there are no clear rules in trade ethics, for example, one person may only post a maximum of two products a day because if there are too many, it will overwrite other seller's product postings as well. This often happens, causing whats app groups are only dominated by one or two people who post all the products sold along with their customer testimonials. This of course can harm other sellers, it can also disturb the comfort of the group for both sellers and buyers. Therefore, to answer these problems, a market place is proposed specifically for the entire XYZ's Academic Community. In addition to reviving UMKM at XYZ University, it is also a forum to make it easier for lecturers, employees and also students to make transactions that are comfortable and effective for both sellers and buyers. Furthermore, system development will be carried out both from adding features, android-based and matters related to user convenience in interacting with the system.

Keywords: e-commerce, e-marketplace, online transaction, waterfall, web-based

INTRODUCTION

The progress of the development of information technology has changed the way of life of the world's people in carrying out their daily activities. The development of information technology by every country in the world has a different focus. For example, the United States of America, it appears that the focus of information technology development is directed at developing business applications. Another Japanese country, the development of information technology is related to robotics, artificial intelligence, and cloning. The country of Singapore with the Intelligent island idea with the basic principle of making Singapore a giant Hub, Malaysia with the Multimedia super corridor, India with Bangalor is able to become a supplier of software developer experts and many other countries have different focuses.

It is undeniable that the rapid development of information technology has not only changed the way people communicate and work, but has further created a new world of competition. In general, the company's strategy to win the competition is how to make products cheaper, better quality, and faster service. To create competitiveness, companies usually choose to build e-commerce to market their products and transact online.

The development of e-commerce in Indonesia has been very rapid in the last two decades. (Sfenrianto et al., 2018) mentions that in 2016 it is estimated that there are more than 180 million internet users and has reached 40% of the 250 million population. Based on the survey, there are four most popular online vendors in Indonesia, such as: Lazada, Tokopedia, OnLine eXchange and Bukalapak, with a strong customer base. E-commerce is a new system or paradigm in the business world, which shifts the paradigm of traditional commerce to electronic commerce by utilizing ICT (Information and Communication Technology) (Erlyana & Hartono, 2017).

Meanwhile Marketplace is part of e-commerce. The difference between the two is in terms of the platform. Marketplace is a place for various shops that sell goods that have been registered on the marketplace platform itself, while e-commerce focuses on selling its own products from its website and does not require intermediaries. Even though you can make transactions directly, the problem is that the goods cannot be sold quickly, the seller does not automatically sell the goods quickly. This prompted the research conducted by (Le et al., 2018) , where in a marketplace a broker also plays an important role, where a broker can map the prices

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given by sellers for the goods they sell including quality and quantity, as well as being a liaison with buyers who have requests for goods with different quantities.

LITERATURE REVIEW

In today's business world, E-commerce is not a new thing anymore. E-commerce is a new paradigm that shifts the old conventional trading paradigm into electronic commerce by utilizing ICT (Information and Communication and Technology). The use of ICT in the field of e-commerce is also in line with the use of the internet for anything (Internet of Things).

E-commerce is one of the triggers for the formation of a new economy known as the digital economy. This has certainly brought about a major change in the way business and marketing is conducted. Many terms have been created to represent electronic concepts and applications, apart from e-commerce, there are also e-marketing and e-business (Andry et al., 2019).

E-business is currently an important part of the economy, where customers rely heavily on e-marketplaces for their daily needs (Li et al., 2016). Likewise with business people and organizations, where they compete in this e-business environment. E-commerce is here to answer the demands of modern human lifestyles that demand convenience and speed in all fields. In today's business world, E-commerce is nothing new. E-commerce is a new paradigm that shifts the old conventional trading paradigm into electronic commerce by utilizing ICT (Information and Communication and Technology). The use of ICT in the field of e-commerce is also in line with the use of the internet for anything (Internet of Things).

Meanwhile, E-Marketplace is part of e-commerce. The difference between the two is in terms of the platform. E-Marketplace is a place for various shops that sell goods that have been registered on the market place platform itself, while e-commerce focuses on selling their own products from their website and does not require intermediaries.

E-marketplace is a platform where sellers can provide products or services, where transactions are carried out online by involving operators from e-marketplaces (Ismail et al., 2020). Researchers create an e-marketplace intended for students in a university. The creation of an e-marketspace for students aims to help students earn additional income, encourage students to start new businesses and also inspire other students who have business ideas to help them start their business.

The existence of a market revolution occurs due to the shift of traditional markets to online markets (e-marketplace) this cannot be separated from the sophistication of technology and the significant use of the internet and smart phones. (Prihastomo et al., 2018) conducted a study to explore the key to the success of an e-marketplace using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) method.

The existing e-marketplace ecosystem evolved from internet technology which plays an important role in the global economy (Chang et al., 2019). Researchers develop a blockchain-based e-marketplace. The application of this blockchain is related to transaction security. Where with blockchain technology is able to maintain transaction processes, efficiency, implementation of tracking systems, identifying product authenticity, and synchronizing data recording to all parties (Adiyanto & Febriyanto, 2020).

All transaction processes can be recorded on the blockchain including product launches, purchases, shipments and payments. All forms of transactions can be tracked and can be used as electronic evidence to resolve disputes in transactions.

The use of other e-marketplaces is also applied to Micro, Small and Medium Enterprises (UMKM). (Ahsyar et al., 2020) create an e-marketplace as a medium for developing UMKM promotions at the Pekanbaru City Cooperative Service. Researchers conducted an analysis using the calculation of the Payback Period and Return on investment (ROI). As for the testing, the researcher uses the User Acceptance Test (UAT).

The following is an image of the e-marketplace business model:

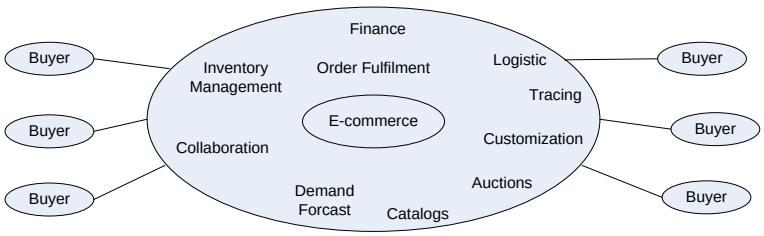

Fig.1 E-marketplace business model(Alfiah & Damayanti, 2020)

On research (Samsumar & Salman, 2019) stated that universities as one of the leading mediators and facilitators in building the nation's young generation have an obligation to teach, educate, train and motivate their students so that they become a smart generation that is independent, creative, innovative and able to create

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various job opportunities (business). For this reason, it is a must for every university to change the direction of higher education policies from High Learning University and Research University to Entrepreneurial University or balance the two policy directions so that both policy directions are achieved, both high Learning University, Research University and Entrepreneurial University.

To welcome the era of society 5.0, the creation of an e-marketplace at UNILAK was created. Where the University does not only focus on education and research, but also makes the university an entrepreneurship ecosystem. This ecosystem has been seen with the development and number of digital start-ups in Indonesia (Safanta et al., 2019). This is in line with the era of society 5.0, where as the main component, this concept will create a technological development that is able to minimize inequality in humans. Socio-economic activities are now not only domestic, but have expanded to foreign countries and new ideas are emerging from different sources that contribute to competitive advantage (Fukuda, 2020).

METHOD

The system development method used in this research is the waterfall method. The waterfall model is usually treated as a conservative system development where requirements are determined in advance and feedback is given after the product is implemented (Dima & Maassen, 2018).

The Waterfall model assumes the following sequence in the software development phase, starting with instructions regarding customer requirements and then followed by their practical implementation with product construction, as shown in Figure 2:

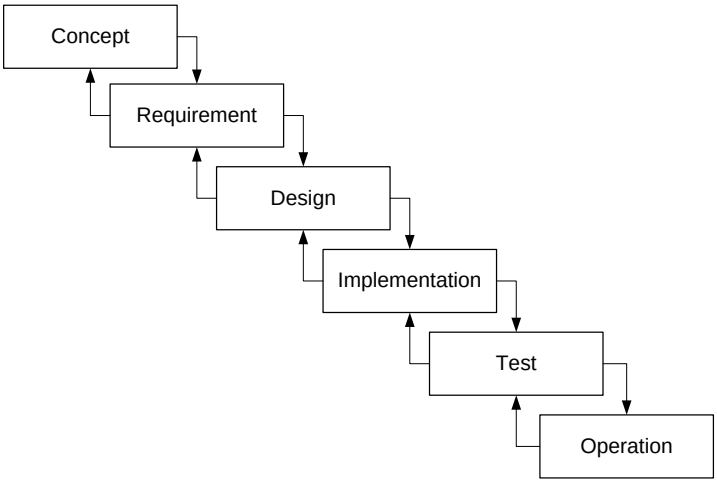

Fig.2 Waterfall Phase

Research Methods explain the sequence of processes, data, locations, and evaluation methods used in a structured manner regarding the algorithms or methods used in research (Devega et al., 2022).

The following are the stages of this research:

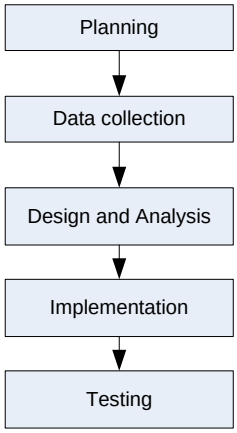

Fig.3 Research Stages

The explanation of each stage in Figure 1 can be explained as follows:

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1. Planning, at this stage conducting research planning so that the research process runs smoothly. As for what is planned in this research is to formulate problems, determine related libraries, and determine research objectives. The purpose of this research is to build an e-Marketplace system that can help UMKM's based on the problems encountered.
2. Data collection, at this stage direct observations of the related objects being studied, conducting interviews with the actors, namely the academic community who are in the group and conducting literature studies as secondary data to strengthen this research. Sampling of data for system functionality is also carried out at this stage such as data on UMKM members in Unilak.
3. Analysis and Design. At this stage, analyze the problems and the current system, analyze the costs and benefits, analyze the needs of the proposed system, and design the database and system interface. The method used in this research is to analyze and design the system using Object Oriented Analysis and Design System (OOAD).
4. Implementation, at this stage perform coding based on the results of system analysis and in accordance with the design that has been made at the system design stage. The system built is an e-Marketplace system as a forum for UMKM's based on the problems they want to solve.
5. System Testing, At this stage testing the system using the User Acceptance Test (UAT) method. This method is used to see if the system can be well received by potential users of the system. Apart from that, previous tests were carried out on several popular web browsers that will be used by users.

RESULT

The test used in the implementation of this e-marketplace is blackbox testing. Testing using black box testing or commonly called behavioral testing, focuses on the functional requirements of the software. In black box testing, it allows software developers to obtain a set of input conditions that will fully implement all the functional requirements of a program.
The following will display the system functionality testing table:

Table 1. Account Testing

Input	expected	Result	Conclusion
First Name, Last Name	The system is able to perform validation data, if the first name data and back less than 2 characters then an error notification appears.	Error notification appear	OK
Password	The system is able to perform validation data, if the password is entered less than 5 characters then an error notification appears	Error notification appear	OK
Email address	The system is able to perform validation data, E-mail address less than 6 character or writing email not quite right, then it appears error notification	Error notification appear	OK

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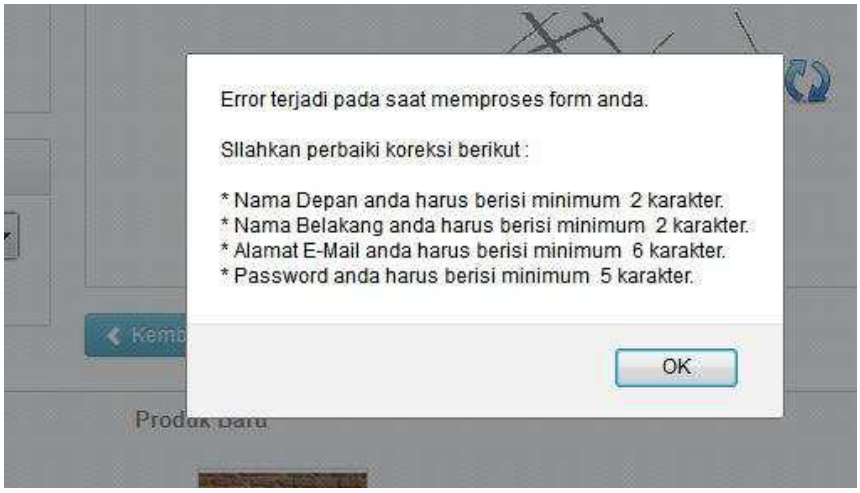

Fig.4 account form error notification

Table 2. Tests on order,delivery, billing and payment flows

Input	expected	Result	Conclusion
Billing Information Form	The system is able to perform validation data, if the item name is first and last name is missing than 2 characters, street address is less than 5 characters, less district/city of 4 characters and no. phone less than 3 characters it will be error notification appears.	Error notification appear	OK
Delivery Information Form	The system is able to perform validation data, if the item name is first and last name is missing than 2 characters, street address is less than 5 characters, less district/city of 4 characters and no. phone less than 3 characters it will be error notification appears.	Error notification appear	OK
Payment Infprmation Form	The system is able to display error notification if not enter the coupon code on the way payment by coupon.	Error notification appear	OK
Order Review Form	The system is able to display order review, in the form of data shipping, billing, method delivery, payment method, details order and cost	Error notification appear	OK

Table 3. Admin Testing

Input	expected	Result	Conclusion
Userame: egha Password: admin	The system is able to display page/admin access rights	Admin Authorization appear	OK

Table 4. Customer Login Test

Input	expected	Result	Conclusion
Email address: marizadevega@unilak.ac.id Password:momof3	System capable to display customer authorization access to view product, add to cart, and order goods	Show page customer access to see product, enter to cart, and order goods	OK

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The following will show the interface that represents the results of this research:

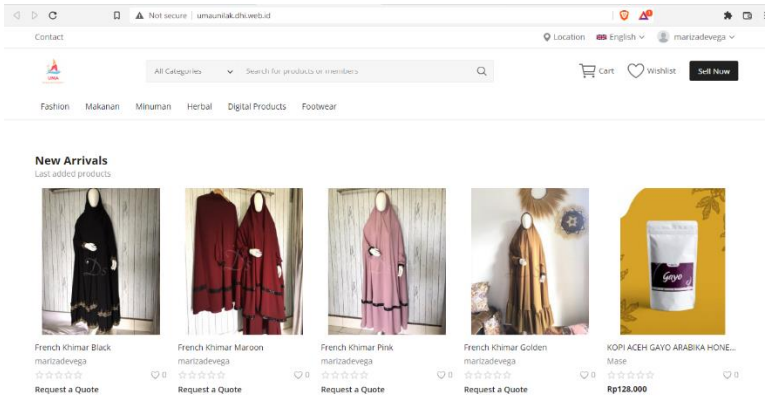

Fig.5 Homepage Display

Each of the above product categories also has several sub-categories, as shown in Figure 5 below:

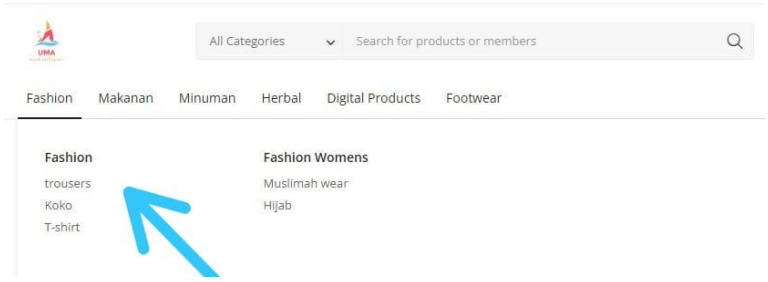

Fig.6 Sub-category

The following admin panel will then be shown showing the authorization of an administrator on this e-marketplace:

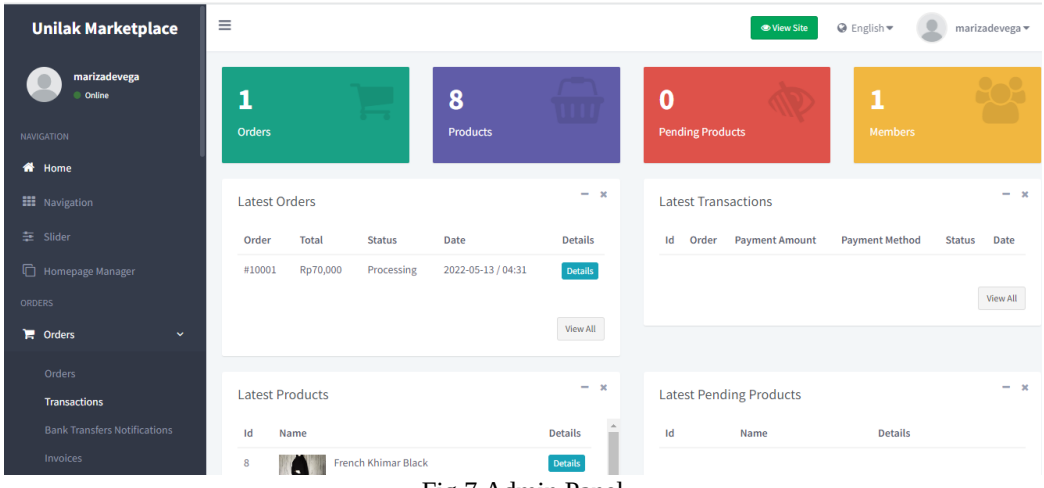

Fig.7 Admin Panel

For the transaction process and invoice can be seen in the following image:

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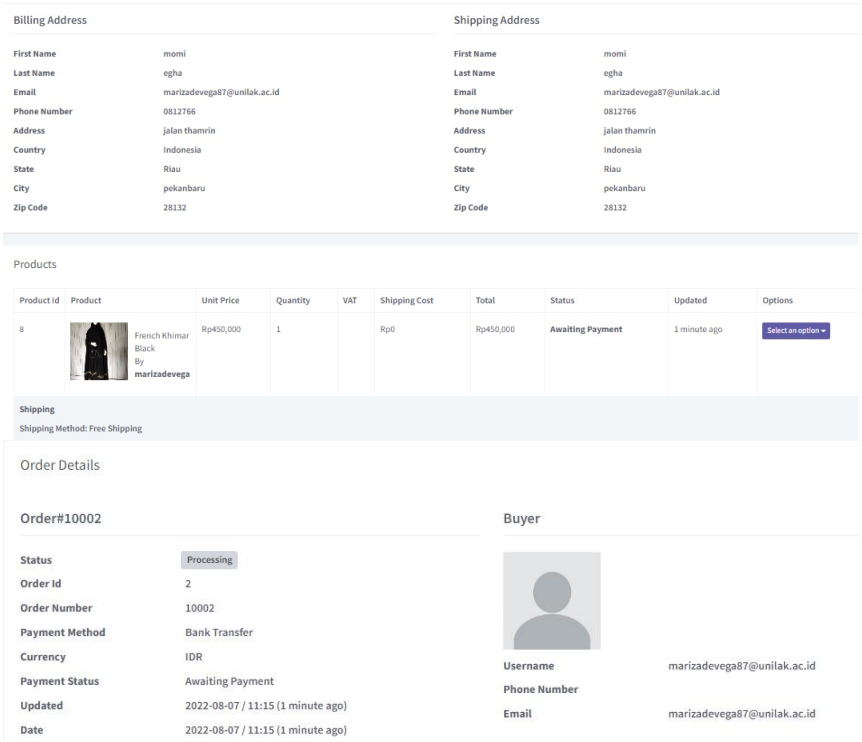

Fig.8 Transaction Process

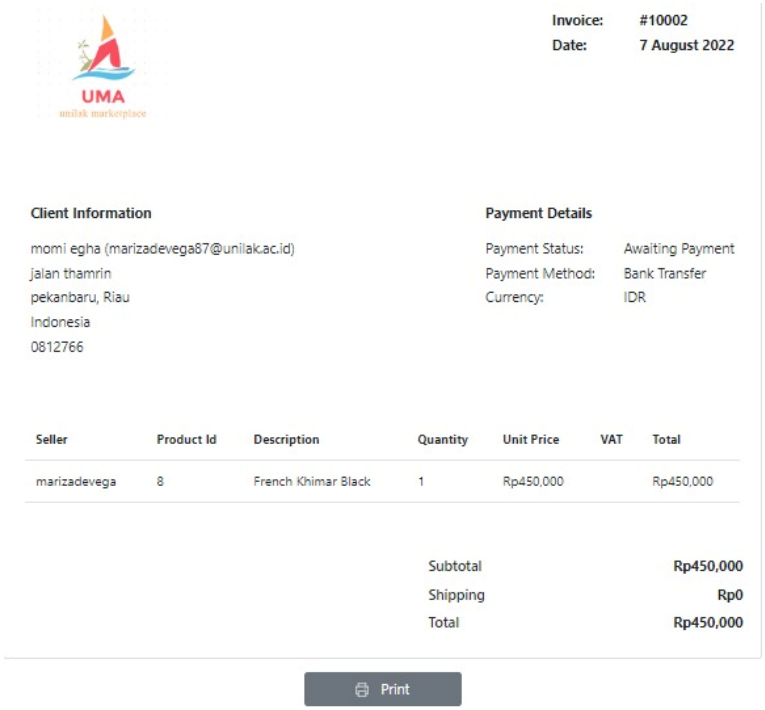

Fig.9 Invoice

DISCUSSIONS

The results above represent a marketplace that have been created. starting from the homepage interface, admin authorization, to transaction processing.

In Figure 4 which is the homepage interface, you can see the product categories being sold, starting from Fashion which has more sub categories in it such as pants, t-shirts, koko and others. Furthermore, there are also

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categories of food, beverages, herbs, digital products, and also footwear. Each of the above product categories also has several sub categories, as shown in the Figure 5. This sub-category, it makes it easier for visitors to choose products that have been grouped

Next, the admin panel display from the administrator will be shown Figure 6. Where the admin has access rights to manage user data, sales, transactions, input and so on. From figure 6 there are control buttons that can be inputted, changed and deleted. Starting from orders, products, users, management tools and so on. Admin has access and control rights to all parts of the Unilak Marketplace.

For the transaction process (figure 7) the buyer only needs to select the desired item, if he agrees, he can check out and proceed to the transaction process. The following will show a screen shot of the order details along with the invoice (Figure 8).

The e-marketplace that was built did not involve delivery services in a single process like e-marketplaces in general, because the basis for making this e-marketplace was originally intended for Unilak internally, which aims as a convenient transaction forum for UMKM actors in the Unilak environment, as well as build an entrepreneurial university.

CONCLUSION

This e-marketplace application is made specifically for UMKM, including lecturers, employees, and students, specifically for Unilak, it is hoped that this e-marketplace will make it easier for business actors to make convenient and efficient transactions. In the future, it is hoped that it can be developed by adding features to the delivery process while at the same time involving local delivery start-ups and being developed again into a mobile-based e-marketplace.

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