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Digital Transformation of Woven MSMEs Traditional: Development Android Application –OpenCart for Online Marketing and Sales

Firdaus Annas¹, Nita Fitriani²

***Correspondent:**

Email: firdaus@uinbukittinggi.ac.id

Affiliation:

^{1,2} UIN Sjech M. Djamil Djambek
Bukittinggi, Indonesia

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Abstrak

UMKM (Usaha Mikro, Kecil, dan Menengah) memiliki peran strategis dalam mendukung perekonomian lokal, khususnya di Kecamatan Lembah Melintang yang dikenal dengan produk anyaman tradisional. Namun, keterbatasan dalam pemasaran dan promosi menjadi kendala utama bagi para pengrajin untuk menembus pasar yang lebih luas. Penelitian ini bertujuan merancang aplikasi berbasis Android dengan integrasi Opencart sebagai sarana promosi digital produk UMKM anyaman. Pengembangan dilakukan dengan metode Research and Development (R&D) secara deskriptif melalui pendekatan iteratif yang mencakup analisis kebutuhan pengguna, perancangan antarmuka intuitif, serta integrasi fitur e-commerce. Hasil penelitian menunjukkan bahwa aplikasi yang dikembangkan mampu menyediakan katalog produk interaktif, sistem pemesanan daring, metode pembayaran digital, serta manajemen inventaris yang mudah digunakan. Kontribusi utama penelitian ini adalah menghadirkan solusi teknologi yang tidak hanya meningkatkan visibilitas dan aksesibilitas produk UMKM di era digital, tetapi juga memperkuat daya saing pengrajin lokal hingga ke tingkat nasional. Implementasi aplikasi berbasis Opencart ini membuktikan bahwa transformasi digital dapat menjadi strategi efektif dalam mendukung keberlanjutan dan ekspansi pasar UMKM berbasis kearifan lokal.

Abstract

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in supporting the local economy, particularly in Lembah Melintang District, which is renowned for its traditional woven products. However, limitations in marketing and promotion remain major challenges for artisans to compete in wider markets. This study aims to design an Android-based application integrated with Opencart as a digital platform for promoting MSME woven products. The development employed a descriptive Research and Development (R&D) method through an iterative approach, involving user needs analysis, intuitive interface design, and the integration of e-commerce features. The findings reveal that the developed application successfully provides an interactive product catalog, online ordering system, digital payment methods, and user-friendly inventory management. The main contribution of this study lies in presenting a technological solution that not only enhances the visibility and accessibility of MSME products in the digital era but also strengthens the competitiveness of local artisans at the national level. The implementation of this Opencart-based application demonstrates that digital transformation can serve as an effective strategy to support the sustainability and market expansion of MSMEs rooted in local wisdom.

INTRODUCTION

Various system life in the world experiences significant changes as consequence from wave the fourth industrial revolution. This is characterized by increasing the rise utilization information technology to encourage creativity and discovery, which ultimately turn upside down various aspect global life, including competition economics. Changes rapid growth brought about by the internet of things, intelligence artificial intelligence (AI), interface human-machine, and its growth phenomenon economy share is example from disruption This is the the urge to make MSME entrepreneurship supported by innovation and creativity as key success in the global economy. The growth MSME entrepreneurship is one of the challenge strategic that requires attention together we are in the era of revolution industry 4.0, especially in ensuring policy development that supports a progressive Indonesia (Robustin, 2022).



One of sectors that provide contribution significant to growth the Indonesian economy is business micro, small, and medium enterprises (MSMEs). This is because Power absorb the very large workforce of MSMEs and their closeness to the community general (Yusuf & Mulyono, 2018). In Indonesia, business Micro, small and medium enterprises (MSMEs) are an important part from public business. In addition, it is proven that this business group and its benefits capable endure to various shock economy. Therefore, the MSME group that involves many groups need to be strengthened. According to laws, requirements for companies that comply condition as MSMEs are regulated within the framework law. MSMEs play role important in creating employment and absorb workforce, which is one contribution. Formation Product Gross Domestic Product (GDP). Building net safeguards, especially to enable area earning low involved in business profitable economy (Prasmadewa & Tanone, 2016).

Amount absorbed workforce from this sector can increase in a way proportional to the expansion of MSMEs. Of course, MSMEs employ more people than company big, and share they to workforce has increase over the past five years, increasing from 96.99% in 2016 to 97.22% in 2016. It is estimated that that MSMEs in Indonesia will Keep going develop and emerge as one of the strength the main thing behind expansion the economy of this country (Krisnawati, 2018).

As of now, Law No. 20 of 2008 has been arrange in a way specifically related to businesses anything that can be classified into the types of MSMEs (Apriani & Said, 2022). MSME actors as must potential taxes in state cash revenue through taxes, resulting in order the exit policy taxes, especially for MSMEs, through regulation Government Regulation Number 46 of 2013 concerning taxes income on income from business received or obtained must taxes that have certain gross circulation (PP No. 46 of 2016) (Kumaratih & Ispriyarso, 2020).

MSMEs are classified as small business However has proven capable push progress the country's economy (Widiyono et al., 2023). The existence of MSMEs cannot be eliminated or avoided from public nation currently. Because its existence is very useful in terms of distribution community income. In addition, it is also able to create creativity that is in line with efforts to maintain and develop elements traditions and culture of the local community. One of them approach strategic steps that can be taken by MSME owners are make interesting and friendly concept environment and involved in development marketing product through digital marketing (Pasaribu et al., 2023).

To improve MSMEs in Indonesia, MSME owners need to do promotion via the internet. Moreover lots of promotions now done via social media either by using Android via application *Openchart* and applications others. Promotion be one of a very reliable means of marketing product in a way *online* (Nurjaman, 2022). Good advertising will convey detailed and complete messages and information as possible with support picture so that displayed ads become more interesting and get trust from consumers to make purchasing decisions. This has been proven to increase sale (Susanti et al., 2024).

Lembah Lintas District, located in the district West Pasaman, West Sumatra, is one of the an area rich in potential local arts and culture, including craft woven crafts from This area often uses material material natural such as bamboo and rope rumpia. However, along with developments over time and increasing market competition tight, the craftsmen in Lembah Melintang face challenges in marketing product they to a wider market. To answer this challenge, digital technologies such as applications *openchart* which can be accessed through Android devices become a relevant solution.

Opencart is open-source e-commerce platform that enables users to create online stores with easy options accessible. By utilizing device Android, craftsmen in Lembah Melintang can market product woven they to local, national, and even international markets international. Users This application provides flexibility for craftsmen to manage business in a way independent without need devices or infrastructure expensive technology.

Opencart is one of the web application based on CMS (Content Management System) specifically for sales online (*ecommerce*). *Opencharts* is webstore application (*online shop*) based on PHP and MYSQL which can be managed with a CMS system, where its use is nature open (Opensource) and free for

anyone and is used under the GNU General Public License. *Opencharts* developed by Daniel Kerr and started launched in October 2008, until now the application This online sales has reached version 1.5 (Store, 2022).

Opencart is an open-source e-commerce platform designed to help owner efforts in creating and managing online store. With complete features, openchart become ideal choice for selling various products, including product craft hand - woven products. woven, which is rich in mark culture and architecture, requires fletfrom that can highlight uniqueness product at a time simplify the transaction process (Utari et al., 2018).

In addition, using OpenCart on Android provides chance to the artisans to create a more successful marketing plan. For example, artisans can utilize OpenChart's SEO (Search Engine Optimization) capabilities to create their online business is more visible in search results or advertising goods merchandise they are on the networking platform accessible social from telephone smart Android. In this way, the wider market can find out goods Lembah Melintang weaving. However, the use of this technology is not without difficulties. To ensure that they can use this technology is maximum, required training and mentoring Because part big Lembah Melintang craftsmen may not be used to it use device e-commerce software. Maintain quality products are also needed to succeed in the highly competitive digital market. Taking advantage of OpenChart Android app is calculated steps to connect potential original Cross Valley with technology contemporary. This provides significant contribution to preservation culture local in the digital era, as well as continuity economy local. Woven goods from the Transverse Valley not just craft hand but also representation wisdom areas that have meaning international blessing combination between Power creation traditional and innovative technical. (Sulistiani et al., 2022).

Weaving process involving knitting or crossing ingredients natural become forms certain materials, such as bamboo, rattan, pandan leaves, or fiber natural others. Weaving is manual techniques that produce various useful and beautiful items, including mats, baskets, walls, and decorations. Apart from being tool In general, weaving also shows creativity and knowledge local society. This method is component important from history culture Because has used for several generations. In addition, because weave use ingredients naturally, this encourages sustainability. (Sinyo et al., 2017).

In Lembah Melintang sub-district there are potential that can be developed to improve the community economy, namely craft woven. In the sub-district valley transverse, woven own mark high culture Because often associated with tradition and life the daily life of the people there. Crafts weaving in Lembah Lintas sub - district is craft home-based business managed by one of the inhabitant there namely Mr. Mustofa. craft This weave is made of bamboo and rope modified rumpia become A work hands that have mark aesthetic and functional. Craft bamboo and rumpia are processed products from dry bamboo and rope rumpia Then processed become crafts that have mark high selling (Fibriyanti et al., 2021).

Craft woven Mr. Mustofa is known as craftsmen woven home made from bamboo and rope rumpia. This weaving business has been established about 15 years, and Mr. Mustofa succeeded develop this craft becomes products that are in demand in the community. With ingredients base bamboo and rope rumpia, he produce various products such as bags, mats, baskets and decorations wall. Every woven Made with care, prioritizing details and details beauty pattern traditional typical area. Mr. Mustofa also involved his family in the production process. And able to create positive work atmosphere. Mr. Mustofa is also not stingy to science, he often teach others who want to learn about how to make craft made of rattan and rope this rumpia.

But several problems were encountered from the past few years business woven pack Mustafa face various threatening problems continuity his efforts. The following The problems faced by Mr. Mustofa are : 1). Competition with modern products, products Mr. Mustofa has to compete with modern products that are produced manually by using machines. And the products sold buy it cheaper

from product artificial Mr. Mustofa, and faster in the production process. This makes product woven traditional Mr. Mustofa lost on the market Because The products produced by Mr. Mustofa require a long time and the workmanship must be meticulous. 2). Limited marketing, limitations in marketing products also become constraint big. Mr. Mustofa only depend on sale in the market local or through direct orders from customer. He has not yet taken advantage of digital technology such as social media or e-commerce to reach a wider market. As a result, products woven difficult compete in the increasingly modern era connected digitally. 3). Lack of innovation in design, products woven Mr. Mustofa Most of them Still maintain design traditional. Even though this is becoming superiority alone, sometimes modern consumers want products with a more functional and aesthetic design. Lack of innovation in design make product woven difficult interesting attention consumer young.

With the development technology and information that is increasingly advanced own a huge impact in developing economy especially in terms of sales and marketing. So by utilizing IT or being able to We call it e-commerce which can be a trading market online by utilizing excess from facility internet.ada Lots the advantages that are owned especially for satisfaction customer start from cost Operational costs are relatively cheaper, then filter the desired goods as well as marketing can be widely reached by the community. In We can use this information system or information technology development develop using *Opencart* (Martadinata & Zaliman, 2021).

With consideration above and personal writers who want to designing A web applications by utilizing opencart as the media and apply knowledge gained so far then done research and design for the promotion of woven SMEs Using Android with Apps *Opencart* in *Lembah Melintang District*.

RESEARCH METHODOLOGY

Methods used in study This is method development *Research and Development* (R&D) is methods used For produce product new or improvement products that have been there is, and test its effectiveness (Termulo et al., 2024). In R&D research, researchers will do a number of steps, such as : collecting the required data, developing system, do testing and evaluation to the system that was created. Some method Yanng used in R&D research with development Descriptive. Development descriptive is method research used For documenting, describing, and analyzing condition certain. And the resulting products from R&D research must fulfil criteria quality, standards, effectiveness and efficiency certain. Report research conducted must attached with the products produced, their specifics, and their explanations. The objectives of R&D research include : bridging gap between findings study with practice, discover, develop, and validate something product (Nusantara et al., 2023). Development model used is ADDIE (*Analysis, Design, Development, Implementation, and Evaluation*). The ADDIE model is systematic framework in development product learning and application based technology. ADDIE consists of of five stages main that is :

a. *Analysis*

At this stage it is done identification needs, problems, and objective development. Analysis includes : Analysis need users (SMEs and consumers), analysis problem main, such as limitations promotion and marketing, and analysis context use application Android based as well integration *Opencart*. Results from this stage becomes basis for determining specification applications that suit the needs of weaving MSMEs in *Lembah Melintang*.

b. *Design (Planning)*

Stage design focused on compiling draft application Activity includes :. (1) Designing interface simple and intuitive user interface, (2) Designing channel interaction user (*User Experience*) from catalog products, orders, up to payment.. (1) Determine database structure to support management products and transactions. (1) Determine integration e-commerce features, such as systems digital payments and management inventory.

c. *Development*

At this stage, the design realized become product real in the form of application. Activities carried out : (1) Developing Android application with support *Opencart*. (2) Integrate feature catalog products, online ordering, methods payments, and inventory. (3) Conduct initial trials (alpha testing) to ensure function goes according to plan. This stage produces prototype ready application further tested.

d. Implementation

Stage implementation done by testing application directly to users (MSMEs and consumers). Activities includes : (1) Socialization method use application to MSME actors. (2) Mentoring use application in uploading product, manage order, and do transactions. (3) Collecting response beginning from users about convenience and benefits application.

e. Evaluation

Stage evaluation done in a way formative and summative. (1) **Evaluation formative** done on every steps to ensure quality development. (2) **Evaluation summative** done after implementation, to assess effectiveness applications in improving visibility MSME products and market expansion. Evaluation results used for repair and improvement application at the stage next.

RESULTS AND DISCUSSION

Results

Analysis

Analysis process done through observation fieldwork, interviews with craftsmen, and studies literature related to development application e-commerce based. Analysis results show that MSMEs need practical and easy digital promotional media operated, and capable reach a wider market. Problems main issues faced is limitations in doing marketing in a way conventional, low access to digital technology, as well as lack of literacy use of online platforms. In addition, analysis context usage is also done by adjusting characteristics of MSMEs towards the devices owned, namely Android -based smartphones, as well as election *Opencart* as a supporting platform Because flexible, easy integrated, and provides complete e-commerce features. Thus, the results of the next stage this analysis becomes base important in design an application that is not only answer need MSME actors, but also serves to facilitate promotion, increase visibility products, as well as expand the market to the level national.

This needs analysis is based on data obtained from observations conducted in Lembah Melintang District and the data was taken from several methods, namely:

- a. Interviews and Observations: Data was collected by visiting MSMEs in Lembah Lintas District, specifically Mr. Mustofa's woven fabric business. We met with the relevant parties and inquired about the processes and problems encountered by Mr. Mustofa's woven fabric business.
- b. Go to the library, look for references with the same problem as the research problem being studied by the researcher, look for books and look for sources for the research being carried out.

Design (Planning)

At the stage design, this research produces several artifacts design the system that becomes reference in the development process application. First, **Use Case Diagram** designed to illustrate interaction main between users (MSMEs and customers) with the system. This diagram maps core functions which include account registration, login, management products, orders, and payment processes.

Use case diagram

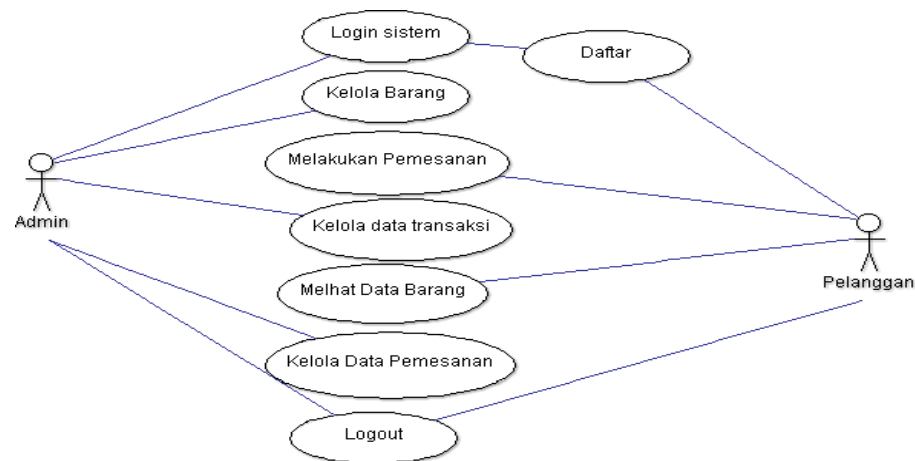


Figure 3.1 use case diagram

Use case diagrams are used to describe a system from the point of view of the system's users, which are used for users (actors) with a particular system. This diagram helps us to understand what the system's uses are and who the actors involved are.

Activity Diagram

Activity Diagram created to visualize channel activity users within the application. This diagram explains steps operational start from the login process, account verification, to channel ordering and storing transaction data. With the activity diagram, the flow system become clearer and can minimize ambiguity in implementation.

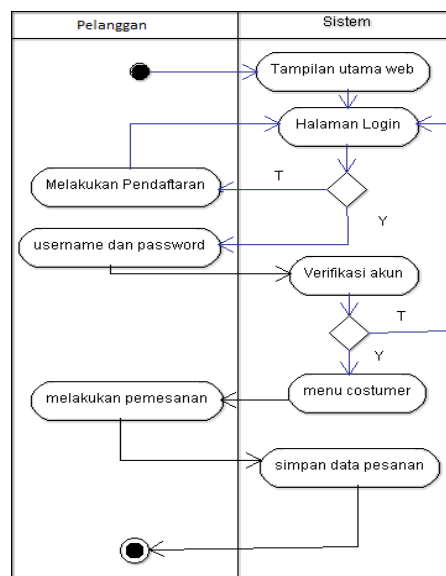


Figure 3.2 Activity diagram for customers

Class Diagram

Class Diagram is designed to describe structure system from side objects and relations between classes. This diagram includes entity main elements such as *User*, *Product*, *Order*, and *Payment*, along with relevant attributes and methods. Class Diagram works as framework logical in the implementation process program code.

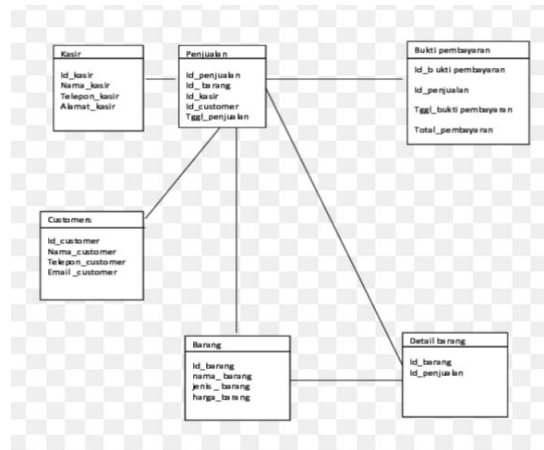


Figure 3.3 class diagram

Database Design

Database design is created to ensure that data can be managed. in a way structured and efficient. This design contains tables important as a table *users*, *products*, *orders*, and *payments*, with relationships between designed table use principle normalization to avoid data redundancy.

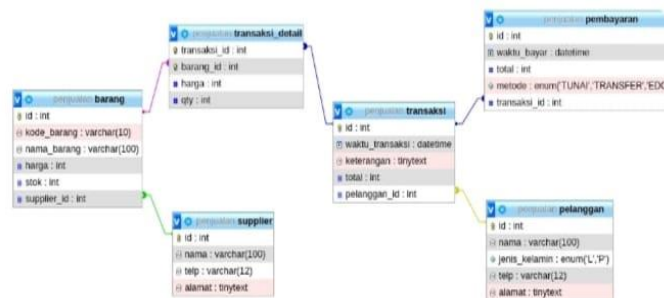


Figure 3.4 database design

Development

At the stage development, design the system that has been arranged beforehand starting realized in form applications that can be used. Development process done in a way iterative with reference to artifacts design, namely *use case diagrams*, *activity diagrams*, *class diagrams*, and database designs that have been determined in the previous stage.

Opencart on login section

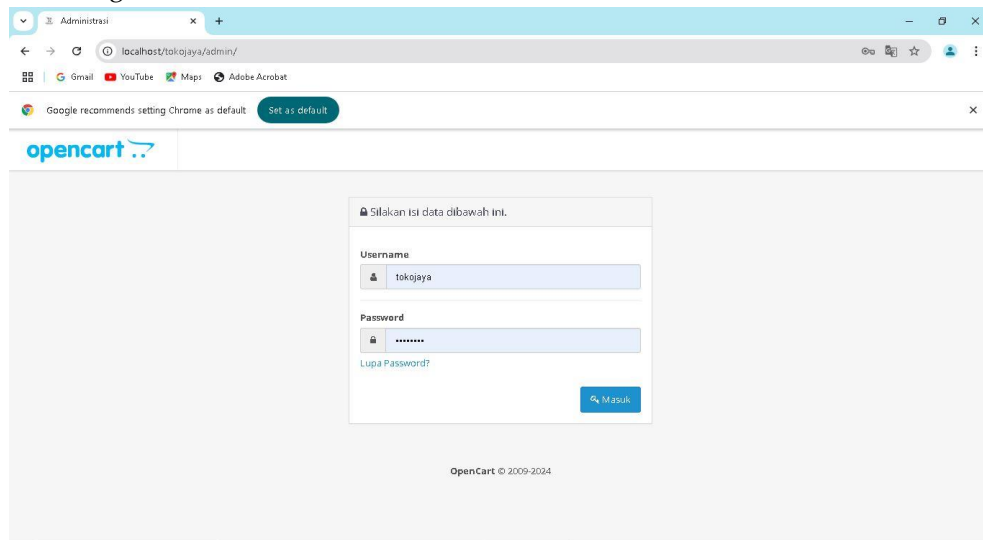


Figure 3.1.4.1 OpenCart login

In the login section in OpenCart, there is a section that can allow access for administrator and customer users.

Category

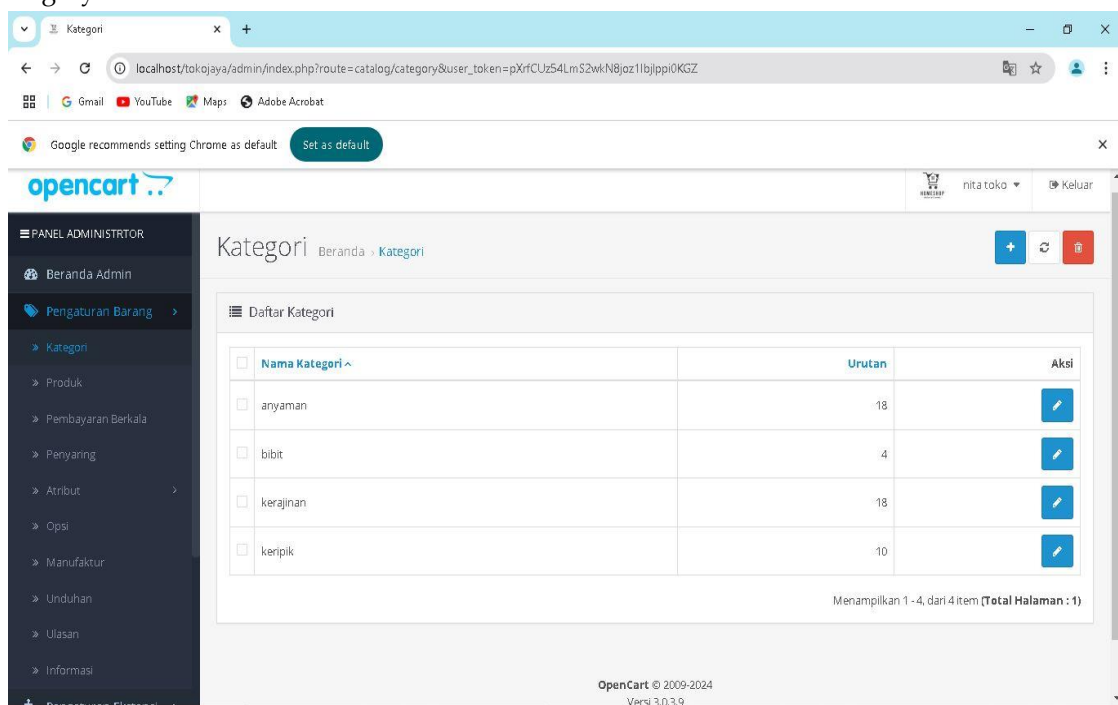


Figure 3.1.4.2 categories

These categories serve as product groupings, making it easier for customers to navigate the online store. Structured categories can help improve the user experience.

Product

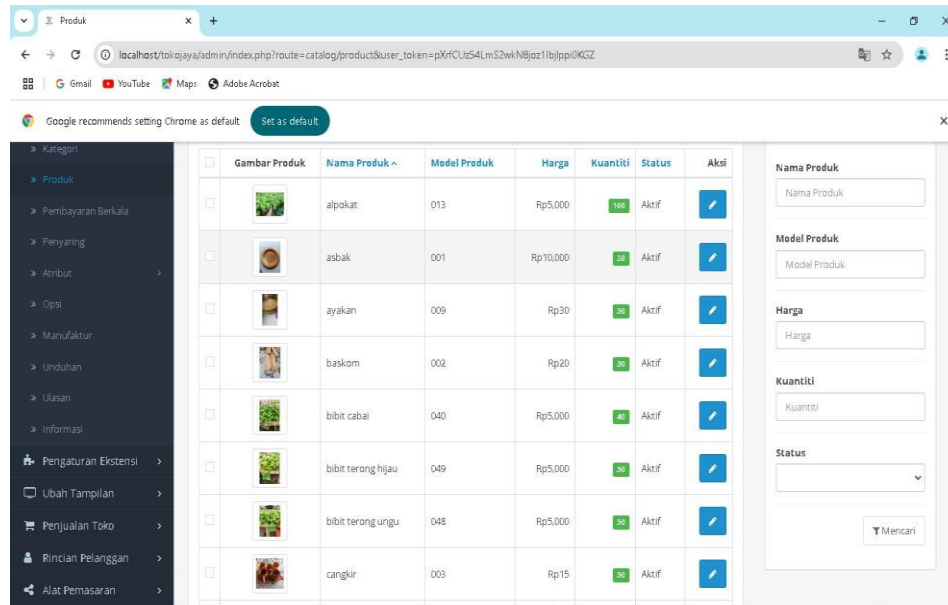


Figure 3.1.4.3 product

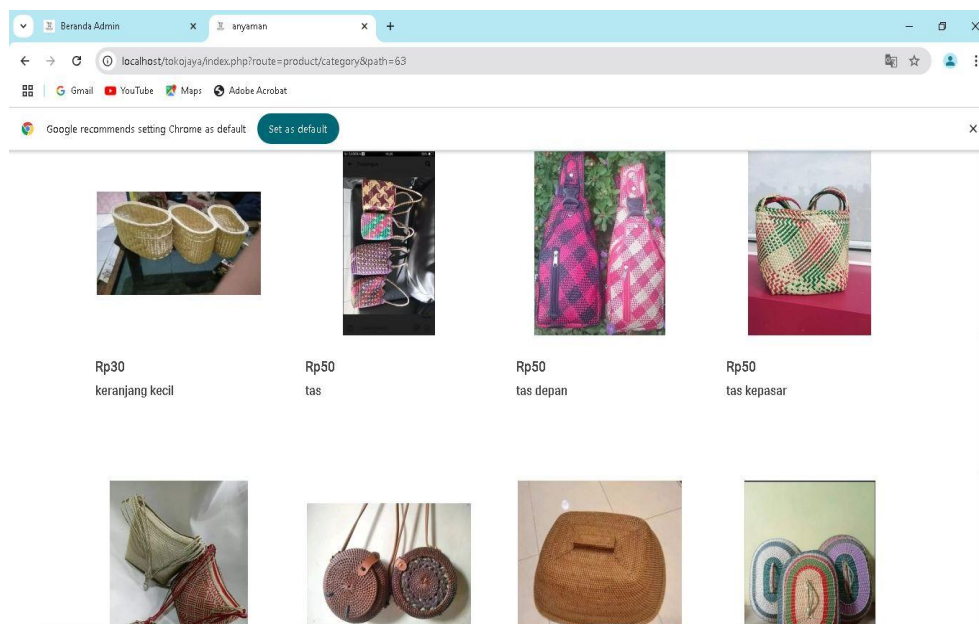


Figure 3.1.4.3 [2] product

Products in OpenCart are the main element of an online store, encompassing information about the goods or services being sold. The OpenCart product management system is designed to make it easy for administrators to add, edit, and organize products so that customers can easily find and purchase them.

Home page

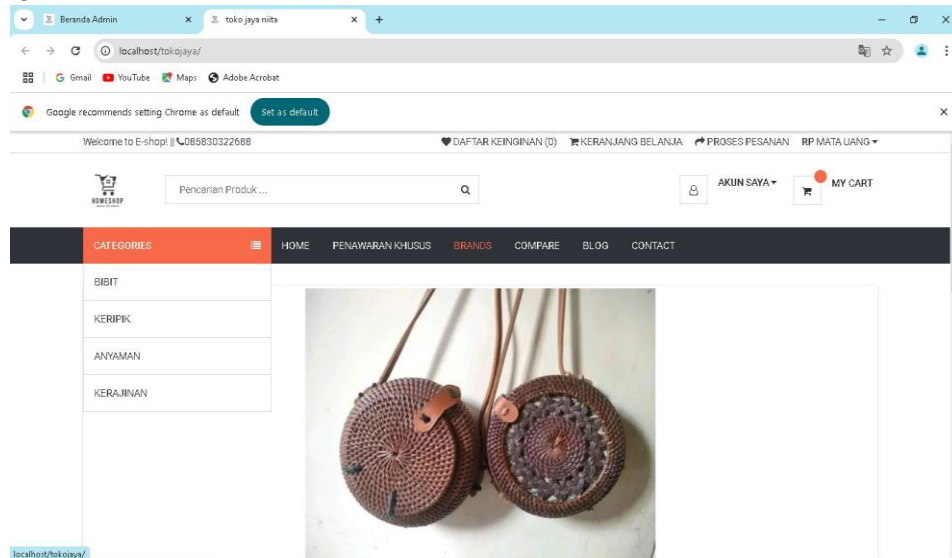


Figure 3.1.4.4 main page

This is the main page on OpenCart, the first page visitors see when they access the online store. The design of this homepage is designed to attract attention, provide easy navigation, and promote featured products.

Result of stage this development is system application Android based which has equipped with features catalog interactive, system online ordering, method digital payments, as well as order data management. This system is ready further tested at the stage implementation to assess its effectiveness in helping weaving MSMEs in Lembah Melintang District expand range marketing product they.

Implementation

Stage implementation done by testing application directly to users consisting of from MSME actors and consumers. Activities starting with socialization about method use application, which includes the registration process, login, and introduction feature main like catalog products, systems ordering, and methods digital payments. This outreach aims to ensure that MSME actors understand channel use application before starting practice it in activities business daily.

After socialization, carried out mentoring incentives for MSMEs in uploading product, manage orders, and processing transactions so they can take advantage of feature application optimally even though own limitations literacy technology. At this stage, responses are also collected beginning from users regarding ease of access, clarity interface, as well as benefit applications in support marketing product. Implementation results show that application capable make things easier online promotions and transactions, as well as give a more practical experience for consumers in making purchases booking product woven.

Table 3. Product testing

No	Link Admin	Results Which expected	Results Test
1	Home	Can display page main	Okay
2	List Contact	Can display info Contact List	Okay
3	Edit About We	Can display page edit about we	Okay
4	List Customer	Can display Info List Customer Newsletter	Okay

5	Happy Come Admin Shop	Can display info add, delete And change password admin	Okay
6	Edit Category	Can display page For edit category	Okay
7	Plus Item Data	Can display page Plus Data Goods	Okay
8	List Transaction	Can display page list transaction	Okay
9	Edit/delete	Can display <i>info edit</i> or delete product	Okay

In OpenCart, product testing is the process of ensuring that the products you add to your online store function as expected. This includes testing the product's features and appearance on the website before the store launches.

Evaluation

Stage evaluation conducted to assess how far the application is developed capable fulfil need MSMEs and consumers. Evaluation beginning done in a way formative during the trial process, by directly observing the interaction users to application as well as identify constraint emerging technicalities. Feed return earned show that part big MSME actors feel helped by the existence of feature catalog products and systems digital ordering, although Still required improvement in aspects access speed and clarity instructions on some menus.

Next, evaluate summative done through response data collection users about level convenience, satisfaction, and benefits applications in support marketing product. Evaluation results show that application Android based with integration This Opencart is significant increase effectiveness promotion, making things easier management transactions, as well as expand range marketing of woven MSMEs in Lembah Melintang District. Thus, this application is considered worthy of further development and implementation in a way sustainable as digital solutions in support transformation business small based wisdom local.

Discussion

Research conducted towards weaving MSMEs in Lembah Melintang District produce A application Android based integrated with *Opencart* as system promotions and sales product online. This application is designed with the aim of main to make it easier MSME actors in managing product, display catalog interactive, facilitating transactions, as well as give alternative digital payments. Findings main from this research is that utilization *Opencart* as E-commerce *Content Management System (CMS)* has proven to be more effective Because nature *open source*, easy managed, and has various features such as search products, basket shopping, management orders, and integration payment. Thus, this research was successful present solution technology simple However functional according to conditions MSME actors who have limitations digital literacy.

study also shows existence distinction compared to previous research. For example, research Patriani (2020) developed a CMS -based e-commerce model for the needs of convection, whereas Dedi 's (2021) research focused on Indonesian stores in Japan. The differences offered This research is based on the selection The more popular *Opencart*, supports multilingual, and provide greater flexibility for local MSMEs. In addition, the results of this study contribute to strengthening literature related to the digitalization of MSMEs, especially those based on wisdom local like products woven. The importance of the results of this study is not only lies in the aspect technology, but also on its impact to improvement economy community. Implementation application enable MSMEs to market the product without having to rent shop physical, expanding range consumers, and increase Power compete in a wider market.

The impact caused from This research includes three aspect main. First, for MSME actors, this application provides ease of opening online store without need skill technical high, so it can reduce cost operational at a time increase market accessibility. Second, for consumers, the application simplify the

ordering process goods without having to come in person, with the option digital payments as well More flexible *cash on delivery (COD)*. Third, for the government area, implementation This application can support strengthening strategies economy local, at the same time generate statistical data sales and behavior useful customers for planning policy. Thus, this research contributes to encouraging digital transformation of MSMEs and strengthening Power competition product local in the era of industry 4.0.

CONCLUSION AND SUGGESTIONS

The results of this study were successful produce A system promotion based *Opencart* is specifically designed to support weaving MSMEs owned by Mr. Mustofa in Lembah Melintang District. This system is capable of facilitate promotion product woven digitally, expanding market reach, and provide convenience for consumers in accessing product information, making booking, as well as transact online. In addition, this system also provides feature complete management for administrators, starting from from management products, order reports, sales, payments, up to stock goods. With integration Android based, this application provides superiority in the form of convenience use, friendly interface users, as well as support to digital transformation of MSMEs at the level local.

Implementation technology *Opencart* on woven SMEs show step strategic in improving Power competition perpetrator business small in the digital era. The existence of This system is expected not only assisting MSMEs in promotions and transactions, but also encouraging sustainability business by utilizing information technology optimally. Thus, this research provides contribution real in strengthening digitalization of MSMEs based on wisdom local, improve visibility product wickerwork in a wider market, as well as potential give impact positive to growth economy community in Lembah Melintang District.

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Researchers convey accept greatest love to self Alone for hard work, dedication and sincerity heart in completing this research. Speech accept love is also directed to both parents who always give prayers, moral support, and help material so that This research can be carried out well. Furthermore, the researcher sayaccept love to Mr. Mustofa as owners of woven UMKM in Lembah Melintang District who have grant permission and opportunity to researchers to conduct observation as well as make his business as object study.

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