# Distribution and Delivery Model on E-Commerce Service for MSMEs

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**ABSTRACT:** This research aims to develop an e-commerce service application model for Micro, Small, and Medium Enterprises (MSMEs) that facilitates the sale of MSME products online. The application model allows MSMEs to expand market reach and sell products more efficiently through the internet. In this application, data about customer locations, product locations, and information about available road networks are collected and entered into the system. Furthermore, using Dijkstra's method, the shortest route from the initial location or distribution point to the customer can be calculated automatically by considering factors such as distance, time, and transportation that may affect the speed of delivery. The MSMEs e-commerce service application model can optimize distribution and delivery with the aim of increasing the competitiveness and growth of MSMEs in the digital era. The results obtained in this study provide guidance and contributions in the development of a sustainable e-commerce system for MSMEs.

**KEYWORDS:** Model, e-commerce, MSMEs.

## I. INTRODUCTION

MSMEs are one of the sectors most affected by the COVID-19 pandemic. Online business or e-commerce is an alternative chosen by many MSMEs to survive the pandemic. However, under the pressure of the pandemic situation, online sales provide new hope. With the rise of online sales, there are obstacles in the delivery and distribution process that often hamper the growth of MSME e-commerce businesses. Therefore, an application model is needed in the product distribution and delivery process that can help MSMEs increase efficiency and effectiveness in terms of shipping and distributing their products. The application of an application model that is in accordance with the distribution and delivery process can help MSMEs in various aspects, such as predicting consumer demand, optimizing delivery routes, reducing delivery time, and speeding up the product delivery process. Thus, the application model by applying AI (artificial intelligence) technology can improve the quality of MSME distribution services that have an impact on increasing customer satisfaction. Entrepreneurial orientation affects the improvement of MSME competitiveness which is dominated by good business strategies. The lack of creativity of MSMEs in creating superior products with technological innovation and limited resources causes MSMEs to not be able to maximize the performance of distribution services. This is what makes MSMEs less competitive and difficult to penetrate the global market. The main problem of MSMEs in Indonesia is the lack of readiness of MSME actors to face global competition. This problem is caused because MSMEs do not yet have an entrepreneurial orientation, creative programs and technological innovation and mutually supportive partners . Facing the challenges of the situation in running a business, MSMEs, especially in North Sulawesi,

must build high awareness to be able to adapt to technological sophistication, especially digital technology, because the development of a digital-based entrepreneurial ecosystem is one of the strategies for economic recovery during the pandemic. E-commerce is the activity of buying or selling products electronically on online services or over the Internet. E-commerce refers to technologies such as mobile commerce, electronic funds transfer, supply chain management, internet marketing, online transactions, electronic data interchange, inventory management systems, and automated data collection systems. E-commerce is in turn driven by technological advances in the semiconductor industry, and is the largest sector of the electronics industry. E-commerce typically uses the web for at least part of the transaction lifecycle although it may also use other technologies such as email. Typical e-commerce transactions include the purchase of products (such as books from Amazon) or services (such as music downloads in digital distribution forms such as the iTunes Store).There are three areas of e-commerce: online retail, electronic marketplaces, and online auctions (Wienclaw, 2013).

## II. RESEARCH METHODS

This research uses descriptive methods in data collection through literature review, document study, observation and interviews to obtain physical evidence to be processed. Based on the results of descriptive analysis, a model was developed in the use and utilization of e-commerce by MSMEs.

The system design method made in this study is divided into two parts. The first discusses the design of the application made, described in the form of context diagrams and flowcharts. Second, the method used for calculating the distance between application users and the location of MSMEs.

## 2.1 System Model Design

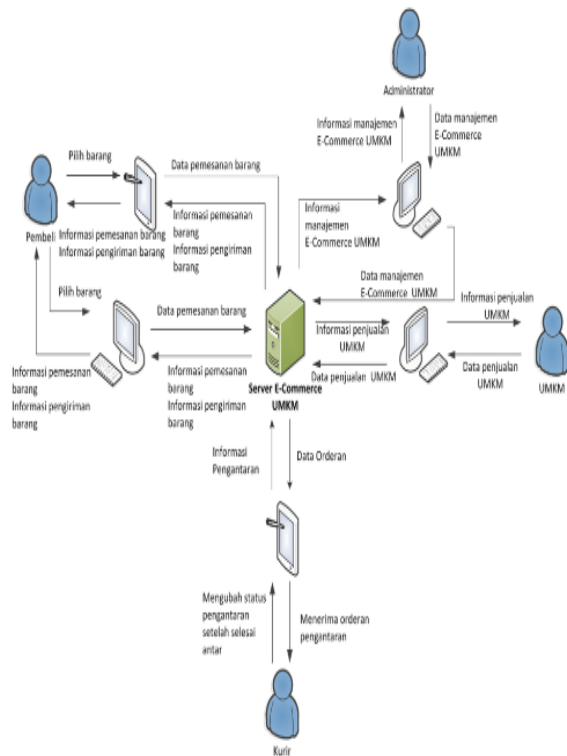The system design is described in the form of a model system as shown in Figure 1.



**Fig 1.  System Model**

## 2.2 Flowchart

In the flowchart (fig.2), explain the steps of the application model created. The first step is to pull data from the web server, then save the seller/shop data and coordinates. Furthermore, data from GPS will be retrieved, if the store coordinate data is within a radius of 1000m from the location, a notification will appear. Otherwise the notification status is changed to N so that if it is within the radius it can send a notification. If the notification is already displayed, the status will be changed to Y so that the notification is no longer displayed. The last is the request to close the application.
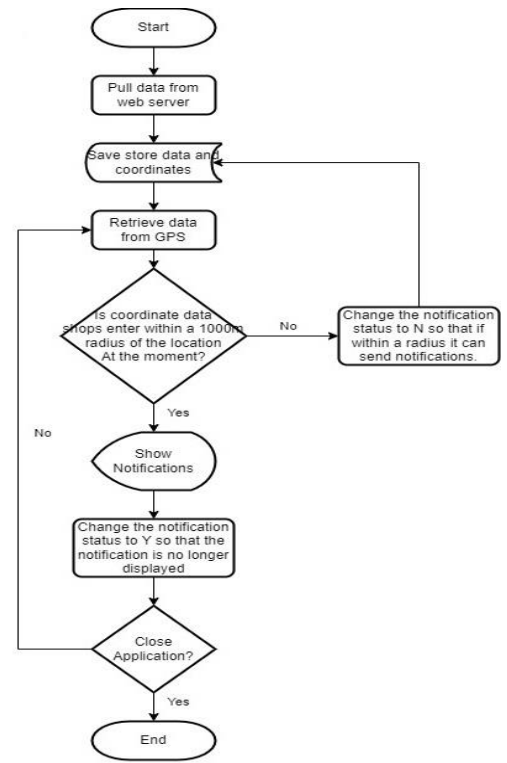


**Fig 2.  System Flowchart**

## III. RESULTS

The e-commerce model developed in this research refers to Fig.1 above by involving related components that complement each other for the sustainability of MSME activities. Administrators perform e-commerce data management such as activating MSMEs that register on e-commerce and can view all transaction data that occurs between MSMEs and buyers. Users (buyers) can place orders for goods/products via mobile devices or using personal computers. Users can select products, checkout products and see shipping costs and choose the shipping and distribution service method registered on the system. The courier will deliver the product according to its destination, for the courier according to the one chosen by the buyer when checking out.

Model trials were conducted at CV. JILIS MSMEs by calculating distances using the harversine method where the input variables used latitude (longitude) and longitude (lattitude) by assuming the shape of the earth is perfectly round. For harversine formula calculation by using online calculator:

Some e-commerce applications offer integration with shipping and logistics services. This makes it easy for MSMEs to manage product delivery to customers easily. Some apps even provide a shipment tracking feature so that customers can monitor the status of product shipments. The application model developed is as shown below :
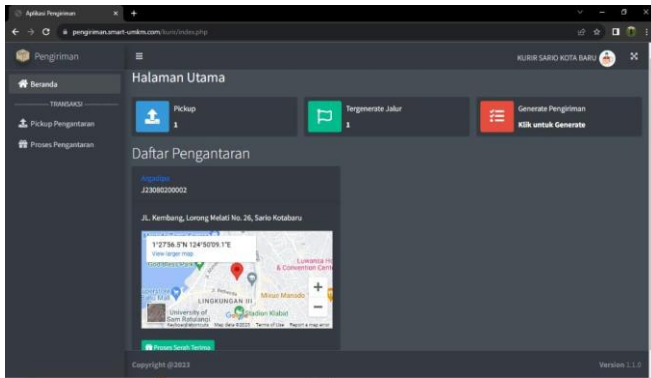
**Fig.3 generate delivery**

When the process of distributing and delivering goods to courier consumers will generate shipments and will display a list of delivery locations closest to the courier's position and maps for the consumer's location point to make it easier for couriers to deliver goods. the delivery path will change according to the destination.

For distribution and delivery models using drop points where the transportation services used must be in one location that can be reached via land transportation according to a predetermined path.
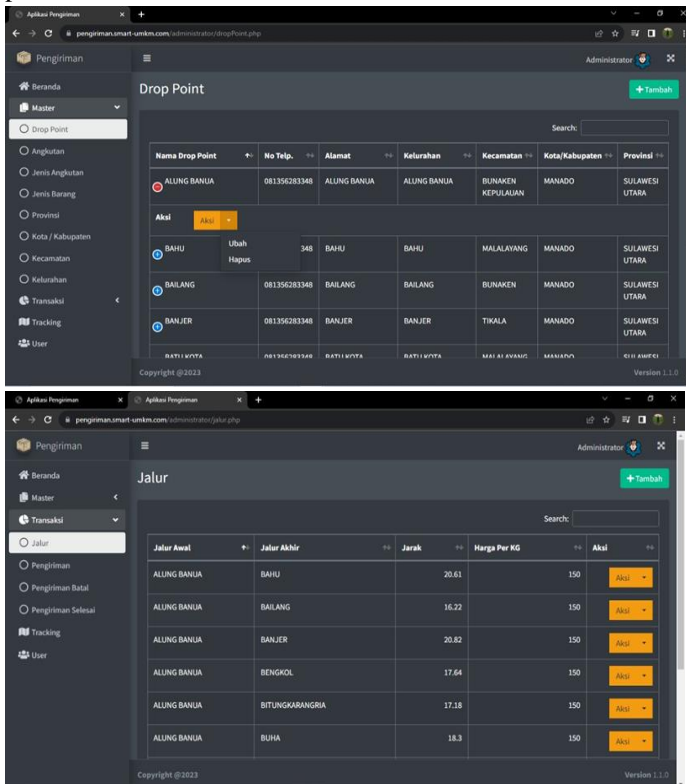


**Fig.4 drop point model.**

The e-commerce model developed can be utilized by MSME players and is expected to facilitate activities in terms of distribution and delivery and increase business competitiveness in the digital entrepreneurship ecosystem in North Sulawesi. In the aspect of digital technology infrastructure, the existence of e-commerce for MSMEs in North Sulawesi can help increase the growth of the number of new entrepreneurs who can encourage sustainable local economic growth.

The existence of e-commerce platforms for MSMEs in North Sulawesi will contribute to the development of digital multi-sided platforms where digital technology users and entrepreneurial agents meet. This digital multi-sided platform serves as an intermediary for transactions of goods and services, and also a medium for knowledge exchange that enables and facilitates experimentation, entrepreneurial innovation, and value creation (Song, 2019). The utilization of e-commerce platforms integrated with virtual networks such as social media, as well as their use in business-to-business and business-to-consumer transactions will further strengthen the capabilities and competitiveness of entrepreneurial agents, in this case MSME players.

Some companies rely on e- commerce platforms for distribution and delivery. This allows consumers to order goods or services online and receive delivery directly at their place of residence. Some companies have also used third-party delivery services to optimize the distribution and delivery process. Overall, distribution and delivery is an important part of the supply chain and plays a vital role in ensuring that goods or services reach consumers efficiently, on time, and in good condition.

Consumer motivation is one of the important factors for developing a business. E-commerce business provides opportunity for consumers to carry out shopping mechanisms via the web and provide opportunities for MSMEs to expand a cognitively and aesthetically rich business environment in a way that is unique and not easily replicated in conventional shopping places.

## IV. CONCLUSIONS

The e-commerce model for MSMEs in North Sulawesi was created and developed with the aim that it can be utilized by MSMEs to increase their business competitiveness in the digital entrepreneurship ecosystem in North Sulawesi, more specifically in delivery and distribution services. Based on the results of this research study, the existence of an e-commerce platform for MSMEs in North Sulawesi will have a positive impact on MSME actors and will contribute to local economic growth.

## ACKNOWLEGMENT

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