Implementation Of Management Information System Using Economic Order Quantity (EOQ) Method In Micro, Small, Medium Enterprises

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Abstract: Jangur Village is a village located in Sumberasih district, Kab. Probolinggo. The majority of the population make a living as kapok farmers and craftsmen. In Jangur Village there are several problems, among others: Lack of types of employment, low education level, small entrepreneurship development of the community is not optimal. In Jangur Village most of the people work as kapok craftsmen, but the processing is on a small industrial scale and carried out partially. Some of the leading handicraft products are mattresses, pillows and bolsters. To improve the economy of the community, in 2018 the proposals carried out community service activities and focused on establishing kapok craftsmen groups. In the service that has been done, the solutions offered are diversification of kapok processed products and processing of kapok seed waste. Jangur village has potential community resources and potential raw material resources. Raw materials for kapok are found in the vicinity of Jangur Village and abundant. After the formation of kapok craftsmen groups began to emerge some new problems, namely the poor management of kapok craftsmen and marketing group partners who were not done well. The issue arose because there was no management capable of managing production and finance well. Existing problems also cause income gaps among kapok craftsmen because the production division is not evenly distributed. See the potential and problems then designed an e-commerce information system that is able to manage product management and marketing. Product management is done by applying the EOQ method in managing inventory of goods. To increase revenue and increase orders, it is considered integrated E-commerce, marketing media includes website media and social media. Collaboration of a support team that has a background in economics and agriculture is needed to develop "Kampoeng Kapuk Jangur. Proposers also have a lot of experience in managing and developing Micro small and medium enterprises.

Index Terms: E-commerce, EOQ, Kapok.

1. INTRODUCTION

Jangur Village is a village located in Sumberasih district, Kab. Probolinggo. The majority of the population work as kapok farmers and craftsmen. Kapok fruit is processed into pillows, bolsters and mattresses. In Jangur Village there are several problems, among others: Lack of types of employment, low education level, small entrepreneurship development is not optimal. In Jangur Village, almost all people process kapok, but the processing on a micro, small, medium enterprise (UMKM) and its business is done partially. The village of Jangur saves the potential for great human resources where most of its people work as kapok craftsmen. Kapok raw materials are found around Jangur village and the stock is always available throughout the year. Product sales are carried out directly to consumers around Probolinggo district. In 2018 researchers conducted community service activities and focused on establishing kapok craftsmen groups [1]. The solution offered is diversification of kapok processed products and processing of kapok seed waste. After the formation of kapok craftsmen groups began to emerge several new problems, namely poor production management, poor financial management and marketing methods that have not been effective. Poor management can be seen from the uneven distribution of production between kapok craftsmen. Quality standards for products produced by each group of craftsmen have not yet been determined. Production division is only carried out origin without considering the factors of effectiveness and efficiency. Some of the problems experienced by UMKM include: Management of product management is done manually, there is no standardization of the quality of goods produced, inventory of kapok product stocks is not well controlled, and the marketing system has not been integrated. Based on these problems the "kapukjangue.id" system is designed using the EOQ method. In previous studies researchers also developed a hosting panel that is useful for developing website-based applications [2]. The implementing members of the community service program are researchers who have different scientific backgrounds. The first research member is an expert in economics, the second member is an expert in agriculture. Each member has experience in developing small and medium businesses [3][4].

2 INVENTORY MANAGEMENT

Inventory management is the process of implementing certain objectives that are carried out under supervision. Definition of inventory management according to Indrajit in his book that, "Inventory management is an activity that is related to planning, implementing, and monitoring the determination of material needs in such a way that on the one hand operating needs can be met on time and on the other hand material investment can be reduced optimally [5]. Manullang defines "Inventory management is an arrangement of activities and activities and supervision of the procurement of material needs in accordance with the amount and time required with minimum costs in determining the level and composition of inventories”[6]. From the definition above, it can be concluded that, inventory management is an activity related to planning, implementation, supervision of determining material needs, and activities to determine the level and composition of inventories in protecting the smooth production.

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3 ECONOMIC ORDER QUANTITY (EOQ)

Model Economic Order Quantity (EOQ), which was derived by Ford W. Harris, became the basis for many reverse logistics models because of their simplicity and clarity [7]. For example, we consider the model of repair and disposal of EOQ waste introduced by Richter [8]. The first store provides a homogeneous product used by the second store in a constant demand level of item d per unit of time. The first store is the manufacture of new products also repairing products used by the second store, which are then considered as new items. That products are employed by the second store and collected there according to the level of improvement E. Others the product is immediately disposed of as waste according to the level of waste disposal D E = 1. On end of some time period [0,] T, the collected product is brought back to the first store and will become stored as long as needed and then repaired. If all repaired products have been sold, then the creation process starts including the remaining requests for time intervals. There are three inventory in this model: NII, inventory of goods produced and reproduced (or new goods inventory) and UII1 and UII2, used goods inventory for the first and second stores.

4 METHODOLOGY

Based on the description of the solutions to the above problems, we arrange the steps to be taken so that the objectives can be achieved. The preparation of work steps is prioritized in solving urgent problems can seen in Fig 1

- Discussion and socialization
- Data and information collection
- System planning
- Determination of prototype design
- Revised prototype
- Initial trial prototype
- Making a prototype system
- Purchase of equipment and materials according to the budget made
- Final trial and prototype improvements
- Evaluate the overall application of the KUDB system
- Making system documentation

**Fig. 1 Stage of Activity**

a. Pre-Activity Stage

In the pre-activity phase, it is focused on gathering information and making equal perceptions with partners and stakeholders to develop an integrated e-commerce system.

1. Discussion and socialization
   - The first activity that needs to be done is to hold discussions with partners and all stakeholders related to the service program that will be carried out. At this stage a personal approach was taken to attract the interest of cottonwood craftsmen in using an integrated e-commerce information system. The discussion on developing jangvillage with the "Kampoeng Kapuk Jangur" branding was carried out by inviting village officials as policy makers.

2. Data and information collection
   - Data collection is done to get information about the functional and non functional requirements of the system to be made. Functional requirements needed in the form of what features are needed.

b. Stage of activity

The implementation phase of the activity is the core activity of the community service activities consisting of the process of designing, making prototypes and initial testing of the prototype system

1. Making a prototype system
   - In designing this system prototype software development models are used. This model makes it possible to make a prototype so that users can provide input regarding the system being made. This development model makes it possible to get fast input from users.

2. Initial trial prototype
   - The initial prototype trial is a step taken to find out whether the initial prototype was made well. Prototype testing is done by testing each feature whether it meets the requirements at the time of system design. A trial was also conducted to see the level of performance of the system made.

3. Revised prototype

**Fig. 2 Prototype Model Life Cycle**

5. Purchase Of Equipment And Materials According To The Budget Made.

The purchase of materials and tools is carried out to support activities starting from the socialization to the making of the final report.
At this stage the prototype was improved based on the results of the tests that had been carried out. Program revision is also based on user feedback

4. Final trial and prototype improvements
This stage is the final stage of making the program. At this stage the finished program is published on a web server.

c. Post-Activity Stage

The post-activity phase is an activity that is carried out after the system is finished. At this stage it focuses on evaluating and making documentation of the system

1. Evaluation of the implementation of the kapukjangur.id system as a whole System evaluation includes evaluation of usage for 3 months. Evaluation is divided into 3 topics, namely: marketing evaluation, product management evaluation and evaluation of the use of e-commerce systems.
2. Making system documentation
System documentation contains overall system data and system userguide creation. Userguide system contains an explanation of every feature contained in the system.

Calculation of minimum inventory of kapok product diversification. The analytical tool used is guided by several parameters, namely: Calculation of order quantity, determination of the number of order frequencies (N), Determination of reorder point levels (ROP).

5 RESULT AND DISCUSSIONS

Based on the observations and implementation of the e-commerce system, a significant increase in soft skills was obtained. Increased partner soft skills in the form of: increasing awareness in developing businesses, increasing the amount of diversification of products produced and increasing the ability of partners in marketing products. Based on observational data, it can be seen that a comparison of the types of products that can be produced increases from 15 products to 30 products. Data on increasing the amount of product diversification can be seen in Fig. 3

![Fig. 3 Graph of Increased Sales](image1)

Increased partner soft skills in terms of marketing increases this can be seen from the ability of partners to use the e-commerce system. Based on the marketing results for 3 months, the average sales turnover of partner members increased from 3 million per month to 10 million per month. In more detail the increase in partner turnover can be seen in Fig 4

![Fig. 4 Graph Increasing Number of Products](image2)

The e-commerce system was developed using the prototype live scycle development software. With the prototype user method in this case the partners can provide input to the developed system. When developing the system, it was done 2 times to improve the prototype. features that get improvements are payment features and product management features. Based on input from the user the payment feature only accommodates proof of payment so partners can check whether the payment has been made correctly. Product management features have also improved, that is, each partner can enter criteria and a large number of photos so as to convince consumers to buy partner products.

5 Conclusons

Based on the results of observations and implementation of programs that have been run, it was found that the partners' soft skills improved both in terms of product management and product marketing. eq method implementation in e-commerce systems makes a significant contribution to partners in managing products. the application of e-commerce systems results in an even distribution of production between group members. The integrated e-commerce system has been
successfully implemented so that it simplifies the process of product management and marketing. Based on the results of tests conducted over 3 months, the partner's revenue has increased significantly because marketing has reached many places in many cities. Marketing constraints that have been experienced so far can be overcome using an integrated e-commerce system.

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