Marketing Development of Beef Cattle, Sheep, Goat and Derivative Products through the Application of Digital Marketing in Facing the Impact of Covid-19 Pandemic

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Abstract. Livestock business especially beef cattle, sheep and goat, experienced the marketing problems during the pandemic of Covid-19, which resulted a decrease in farmers income. Although there was a decline in purchasing power, data showed that during the pandemic, the demand of processed livestock products increased 3-4 times compared to before the outbreak of pandemic. This condition due to the changes in consumer preferences who wanted the product that have quality standards of health and food safety, and indicated a great opportunity for increasing the sales of processed products for beef cattle, sheep and goats. To support the level of sales of both primary and processed products, it was necessary to change the promotion and marketing strategy. Utilization of digital marketing platforms as a new philosophy and modern business practice related to the marketing products, services and information that can be carried out by small-scale farmers. The digital platform which developed for digital marketing of livestock products is Vilstock.id. The application used the SDLC (*System Development Life Cycle*) Waterfall method, while the comparative analysis of the value of implementing digital marketing platforms before and after using was the Return Cost Ratio (R/C ratio) a comparison between revenues and costs. The result of the analysis showed that there was an increasing income of SME farmers as indicated by the value of the R/C ratio from 1.014 (before) to 1.072 (after). This shows an increase in product sales by 5.4% within 4 weeks.

1 Introduction

The Covid-19 pandemic has impacted several sectors. Starting from economic sector, education and also agricultural include the agribusiness sector of livestock, fisheries, plantation and other sectors. The impacts experienced by the agricultural sector include: (a) farming activities are disrupted, especially in the food crops and horticulture sectors, as well as animal husbandry and fisheries because of an appeal to limit activities outside the home so that the cultivation and farming are less than optimal and have an impact on farmer's

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income receipts and breeder, (b) difficulties in conducted marketing of agricultural products, (c) the decline in people's purchasing power and the ability of the households to access affordable food also has an impact on the economic resilience of farmers and breeders.
However, compared to the industrial sector, tourism services, and others, the agricultural sector on a large scale is considered as one of the most stable sectors in facing the crisis due to the COVID-19 pandemic. Based on the data of Badan Pusat Statistik Indonesia [1], it is said that the agricultural sector is able to absorb 35.41 million workers. This should be used as a momentum to realize food self-sufficiency and make the agricultural sector on a broad scale which includes livestock, fisheries, plantations, forestry as well as agro-industry as a priority sector for development, this condition also related to the sustainable development goals (SDGs) program.

Livestock businesses, especially beef cattle, sheep and goats, during the Covid-19 pandemic were also affected, which resulted in a decrease in farmer's income and obstacles in marketing livestock products, especially beef cattle. In fact, livestock business as one of the agricultural sub-sectors providing protein has an important role and contributes greatly to national income receipts. The decline in sales of livestock products (beef cattle, sheep and goats) was due to the declining purchasing power of the people due to the large number of workers being laid off (termination of employment) and the low economic turnover of the community since the Covid-19 pandemic broke out. This condition much more alike with what happen in US. The research model used the dynamic system demonstrate the likely effects of a pandemic on the USA's food system and it reveals that a severe pandemic like Ebola for example with greater than a 25 % reduction in labor availability can create significant and widespread food shortages [2]. With low purchasing power, people tend to look for beef cattle substitutes with food sources that have relatively the same protein level as beef, goat or sheep meat. This causes the level of demand for beef cattle and meat to decrease relatively. However, another problem that also affects the low level of sales is the reluctance of consumers to have direct contact with sellers, especially if transactions are carried out in the market because they avoid to get exposure to COVID-19. This is evidenced by the low level of household consumption which only grew 2.84% in the first quarter of 2019-2020 compared to the first quarter of 2018-2019 which reached 5.02% [1].

Consumers of beef, goat and lamb on average are people from upper-middle income, so that with the Covid-19 pandemic situation, this consumer group still has relatively purchasing power to buy meat and its derivative products, so it is estimated that the demand level, although in aggregate, will still decline in the positive range. Data shows that during the COVID-19 pandemic, the level of demand for processed products increased 3-4 times compared to before the pandemic [3]. This shows that the opportunity to sell processed products from beef cattle is still wide open to be increased. The increase in demand for processed products is due to changes in consumer preferences which tend required products that meet quality standards of health and food safety.

Marketing strategies that can be optimized to increase sales are promotional strategies. One form of change in marketing strategy (promotion) is through digital marketing platforms. Electronic marketing through digital marketing can be viewed as a new philosophy and modern business practice involved with the marketing of goods, services, information and ideas [4]. Digital marketing is a supporter of marketing strategies because it is considered very effective in selling and marketing products and is considered an option to meet purchasing needs quickly [5]. Marketing activities involved in the digital marketing series are part of marketing management.

During the COVID-19 pandemic, consumer characteristics and preferences were different from before. The old consumer behavior has begun to be disrupted by the presence of network technology. This is done by consumers to avoid the risk of being exposed to covid19. According to Kotler et.al., [6], consumer decisions nowadays are strongly influenced by

advertising, public opinion, personal knowledge, and experience. Advertisements, public opinion, and personal knowledge are now formed from online interactions sourced from websites, social media, and business platforms such as e-commerce that disrupt media such as newspapers, billboards and magazines. The digital marketing system is considered capable of responding to the needs in the era of the COVID-19 pandemic, so that companies (SMEs, cooperatives and farmer/livestock groups) can survive the disruption caused by the Covid-19 pandemic [7].

Marketing is one of the spearheads of companies in reaching consumers in order to get revenue for a business. In the conditions of the Covid-19 pandemic, many business sectors, especially beef cattle agribusiness, experienced difficulties in marketing agricultural products. Large-scale social restrictions which is a policy to limit the movement and physical space of people, in fact also have an impact on the flow of goods and the sustainability of the business sector. This is one of the factors that underlies research studies on the development of marketing for beef cattle and their derivatives through the application of digital marketing in the face of the COVID-19 pandemic which is expected to be one of the contribution efforts of universities in conducting collaborative efforts with the business world (SMEs, Cooperatives and Farmer/Livestock Group).

Demand for cattle, sheep and goats from consumers, both in the form of livestock (primary) and derivative products, must be balanced with efforts to implement the latest technology. How to compete with feedloters and meet the demand for qurban cattle (cows), for example, cannot be done traditionally, especially in the midst of the COVID-19 pandemic, but must be directed at marketing development that require a managerial role, besides that the provision of sales services that must fulfill the protocol standards for handling covid-19 . This is important to do, so that consumers become comfortable in the transaction process. Digital marketing that will be carried out includes creating consumer value, capturing consumer value, and maintaining consumer value [8]. Therefore, in implementing digital marketing, it is necessary to use digital marketing platforms such as websites, social media, and supporting applications. Therefore, these are the aims of our research:

1) Assisting in solving marketing problems for beef cattle (cows, sheep and goats) and derivative products through digital marketing applications for SME Animal Husbandry companies

2) Performing a comparison analysis of the value of using digital marketing platforms for SME and Animal Husbandry companies before and during the COVID-19 pandemic

2 Materials and Method

2.1 Digital Application System

One of the goals of this research is to produce a digital marketing application prototype that is easy to use by business actors in the field of agribusiness, especially SMEs, Cooperatives and Farmer/Livestock Groups that cultivate cattle, sheep and goats who want to sell online. Technically making digital marketing designs using the waterfall method.

The software life flow approach is sequential or sequential starting from analysis, coding, testing and support stages. The stages of the Waterfall method are described as follows:

1) Software Requirements Analysis in this software requirements analysis aims to analyze all requirements including the documents and interfaces needed to determine the software solution that will be used as the process of computerizing the system.

2) Design at this stage, a design according to system requirements will be made regarding the database design, software architecture and User Interface that will be created. The use of

the Unified Modeling Language (UML) is intended to explain in more detail in the program design and database design. The UML that will be used is the Activity Diagram.
3) System Development (Code Generation). At this stage, the design implementation is made into a software program. At this stage a new system is created using Visual Studio 2010 as the programming language, MSQL to create a database. ODBC Connector as database connection, XAMMP as database server liaison and Crystal Report 8.5 as report generation tools.

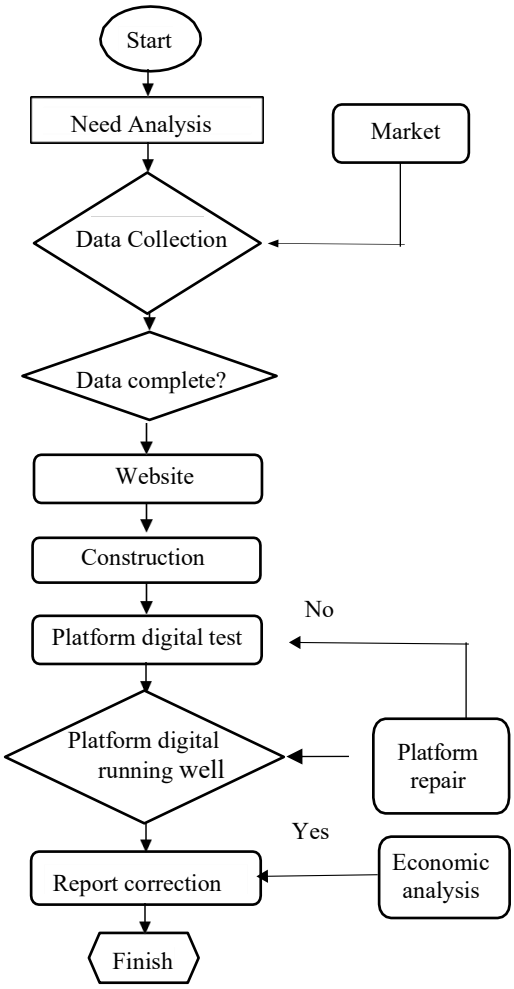

Fig. 1. Research Framework Flowchart

1) Testing program testing using black boxes by producing in accordance with previously designed expectations. The use of black boxes in application testing will provide an explanation of the suitability of expectations in program making.
2) Support the process or maintenance, The author seeks to develop a system that has been made related to the software and hardware that will be used. The stages in this research can be seen in Figure 1.

This digital marketing application design research uses the SDLC (System Development Life

Cycle) Waterfall method. This model takes a systematic and sequential approach starting from the level of system requirements and then moving on to the analysis, design, coding, testing, and maintenance stages. It is called a waterfall because the stages that are passed must wait for the completion of the previous stage and run sequentially, for example the coding stage must wait for the design stage to be completed [9].

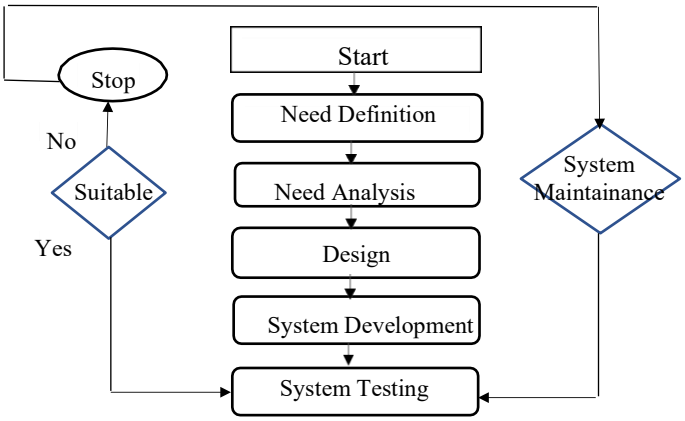

Fig. 2. SDLC (*System Development Life Cycle*) Waterfall Method

2.2 Economic Approaches

2.2.1 Profit-Lost Analysis (L/R)

Profit and loss analysis is a report that describes the results of operations in a certain cycle which contains the amount and source of income as well as the amount and type of costs incurred [10]. Profit and loss analysis is carried out by analyzing all revenues and expenses incurred during one year to find out the actual amount of profit and loss that the company earns. The income statement has components, namely sales, variable costs, fixed costs, gross profit and before tax, net income, interest and taxes.

This analysis makes it easy to determine the amount of cash flow obtained by the company and can calculate the company's minimum sales either quantity or value for money to find out the break even point. The income statement is also used to estimate taxes to be included in cash flow. The preparation of the income statement needs to be done as an illustration of the company's performance in achieving its goals, whether the planned business can provide benefits or vice versa by carrying out two activities, namely:

a) Calculating Total Cost (TC) is the expenditure of production costs to produce goods to be marketed by adding Total Variable Cost (TVC) and Total Fixed Cost (TFC)

b) Calculating Total Revenue (TR) as company revenue originating from marketing the main or side products sold

Through the income statement, the company obtains information about the business being run, whether it is profitable or not and the amount of net profit earned by the company. This analysis can make it easier to determine the amount of cash per year obtained by the company. Profit and loss analysis can be calculated using the following formula:

Total Revenue : TR = P x Q
Description : TR = Total Revenue (IDR)
: P = Output Price (IDR)
: Q = Output Quantity (Unit)
Total Cost : TC = TFC + TVC

Description : TC = Total Cost (IDR)
: TFC = Total Fixed Cost (IDR)
: TVC = Total Variable Cost (IDR)

(TR – TC) > 0 the company gains profit and (TR – TC) < 0 the company lost

a) R/C ratio Analysis

R/C ratio (Return Cost Ratio) is a comparison between revenues and costs. The analysis of the R/C ratio can be calculated using the following formula:

$$R/C\ ratio = TR/TC$$

Description:
Total Revenue (TR) = The company revenues/ incomes (IDR)
Total Cost (TC) = The company expenditures (IDR)

The R/C ratio is used to assess the efficiency of a business. Efficiency is a figure of the best comparison between an effort and the results achieved. The efficiency of a business is determined by the size of the results obtained from the business, as well as the size of the costs required to obtain these results. If the R/C ratio >1 the business is said to be efficient, the R/C ratio = 1 the business is at the break-even point, and the R/C ratio <1 the business is said to be inefficient and lost [11].

3 Result and Discussion

3.1 Economic Small and Medium Business Partner

This research involves two Small and Medium Enterprises (SMEs) whose products are used in digital marketing, namely: UKM Mitra Tani Farm and UKM Happy Farm.
(1). Mitra Tani Farm UKM: Mitra Tani Farm is an SME engaged in the cultivation and trading of sheep. In addition, MT Farm entered the processing of derivative products into various canned products. Mitra Tani Farm or better known as MT Farm was established in 2004 with its initial business only focusing on the sale of sacrificial animals, over time and increasing market needs, MT Farm built a cage with a capacity of 1,000 goats, sheep and 250 cows. Currently MT Farm also serves aqiqah packages with an average of 4-5 aqiqah packages per day. The development of derivative products is also continuously carried out by producing around 500 canned products per day. The types of canned products produced include: lamb rendang, beef rendang, lamb tongseng, lamb fried rice seasoning, kebuli rice, lamb curry, lamb curry, lamb soup and tengkleng lamb. The average sales of canned products are 800-900 canned products per month.
2) Happy Farm UKM: Happy farm is a sheep breeding and cultivation farm located in Caringin District, Bogor. Happy farm was founded 4 years ago in Caringin Bogor, and currently has a nursery development branch in Tenjo District, Bogor. In addition to fattening sheep, Happy Farm also sells breeds and breeds of sheep from crosses between New Zealand sheep and superior local sheep. Another business carried out by Happy Farm is running *Aqiqah* packages. The products sold on the digital marketing platform are breeding sheep and sheep breeds.

The method that the author uses to make the Vilstock.id website is the System Development Life Cycle (SDLC) waterfall model proposed by Pressman [12]. The following is a discussion of the stages used for the development of the Radal Smart application.
(1). Analysis

At this stage several things related to the scope of work that will be needed to make decisions in making this system are described.

a) Problem Identification
At this stage, the identification of the problem is carried out, the following is a description of it:

a. Ruminant livestock producers do not have knowledge of website building
b. Customers often have difficulty finding information about existing products and their prices.
c. The online product purchase service is not yet available so that the sales system is still going on conventionally where customers buy goods by coming directly to the cage or shop directly.

b) Current System Analysis
The current system works manually. It is felt that there are still many obstacles because there are so many outputs that must be printed and there are many other shortcomings. And in this system the customer still has to come directly. Therefore, as a solution to the problems above, the authors propose some changes that will be made with an integrated system using a web-based interface and can be accessed via a web browser via the internet.

c) Analysis of the Proposed System
From the previous system problems, a new system is needed that is developed with better information technology so that it can facilitate data processing and tracing any information that is done by the system because the application to be submitted is web-based or online.

In this analysis stage the author describes the ideal online ordering system or the proposed system for Vilstock.id with the following steps:
a. To start the ordering process and purchase transactions, the user can select the product he wants to buy.
b. If the user has selected the product, then click the buy button.
c. If the user wants to continue shopping or buy other products, the user can click the click back button on the selected product.
d. Then click the shopping data menu, to see the shopping list that we have selected.
e. If you want to delete the shopping list that we have selected, please click cancel.
f. Next, click the menu fill in personal data, then fill in the form provided clearly such as name, address, telephone number, e-mail. Then click finish shopping.
g. Then the order form or invoice will be displayed as evidence that the customer has made a transaction.
h. User orders will be processed by Vilstock.id and the ordered items will be sent immediately. The proposed system can be seen in Figure 3.

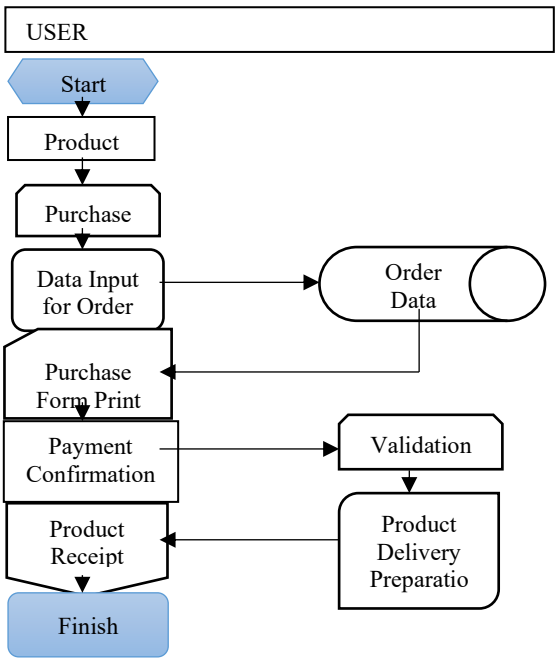

Fig. 3. Proposed System flowchart at *Vilstock.id* website

According to figure 3. Proposed System flowchart is implemented in e-commerce form with the order flowchart system that can be seen in figure 4.

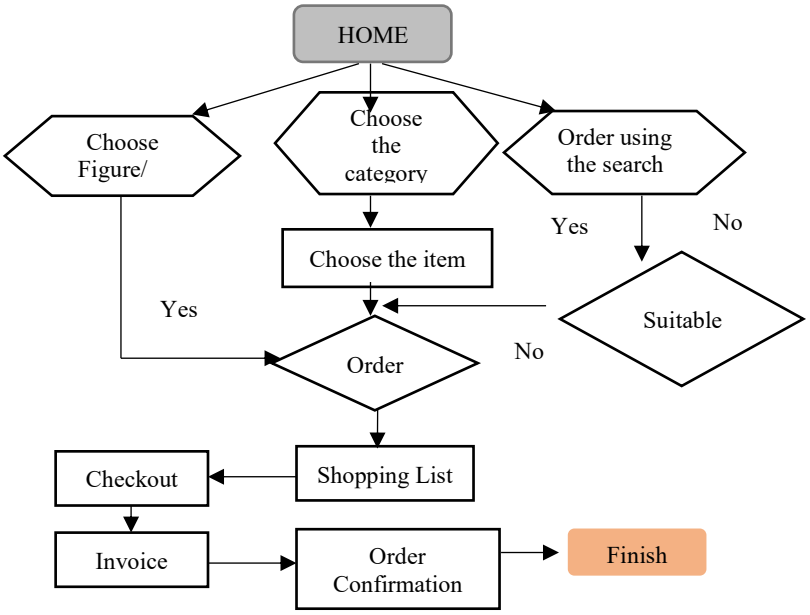

Fig.4. Order Flowchart System at *Vilstock.id*

3.2 Website Design Results

The results of the website design are the final result after going through all the stages in making the website. The design result consist of the main page display, shopping page, cart page, shipping page, payment page, and admin page.

3.2.1 Vilstock.id Platform Performance

Digital Marketing is marketing that uses platform found on the internet in carrying out activities to reach target consumers. Basically, digital marketing is marketing that uses digital platform on the internet. In the formation of a digital marketing strategy, vilstock.id utilizes 3 platforms such as Instagram, Facebook, and Website which then uses internet advertising using social media and website. This social media is widely used as a medium for online promotion of goods/ services through various application features, namely photos and descriptions. Instagram and Facebook play a role in providing information regarding what products are sold in vilstock.id. The following is a display of social media Instagram and Facebook of Vilstock.id.

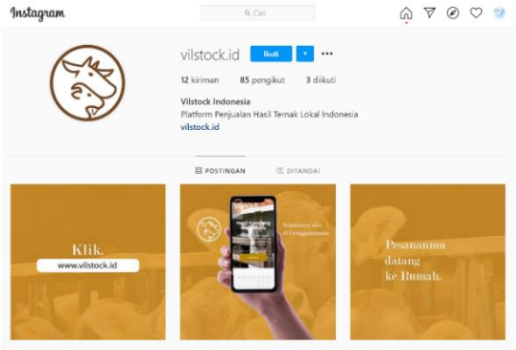

Fig. 5. Vilstock.id Instagram social media display

Social media and website must be connected to form a good digital marketing ecosystem. So that in doing internet advertising the results obtained will be more optimal and an increase in sales will be achieved. In doing digital marketing, vilstock.id through 2 ways, first organic way through Search Engine Optimizing (SEO) and second the paid way through Facebook ads that are linked to the website. Here's an example of how to display SEO and paid ads from vilstock.id

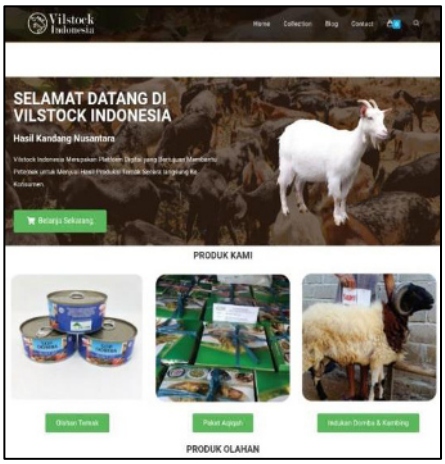

Fig.6. Vilstock.id front page display

The advertisement was made aimed to consumers that have an interest in consuming processed meat especially whom live in Bogor. The advertising reach is set at 153-400 people per day for one month. For one month, the website is always shared to various existing platform with the aim of maximizing traffic to the website. Then the result obtained are seen in figure 7.

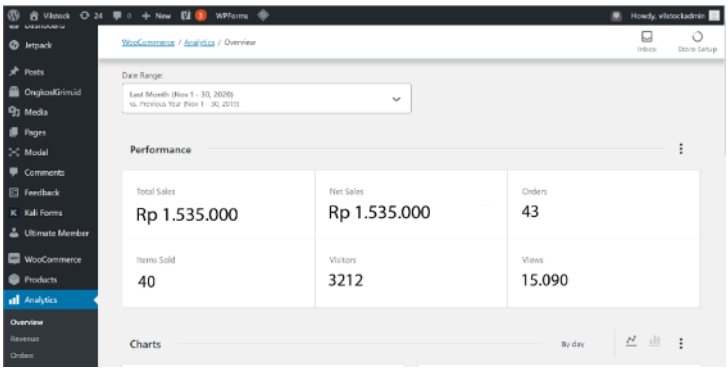

Fig.7. D*igital marketing* result display

Figure 7 shows that ads with a full reach of 12000 people per month there are about 26% of people who see the ad and then decide to come to the website to visit. The average visit from each person is 4-5 times. Repeated visits will potentially trigger the desire to buy the promoted product. The results of the promotion resulted in a conversion value of 1.2%, which means that each IDR 1,000 of promotional costs incurred will generate an income of IDR 1,200**.**

3.2.2 Income Analysis

Income analysis is used to determine the income of farmer from the sale of products from SME Mitra Tani Farm. SME Mitra Tani Farm's revenue is done by adding up the receipts from 9 products sold on vilstock.id then the average revenue is reduced by the average total cost incurred. For the time dimension used in this income analysis, revenue is for 3 months, namely September, October and November according to the length of the research period.

3.2.2.1 Breeder SMEs Acceptance

Revenue in this study is the result of multiplying the total sales of 9 Mitra Tani SME's products with the selling price set for each product. Sales of MT Farm SEME products through two events, namely conventional sales (offline) and online sales. The result of offline sales during September to October reached 1,172 products with the most sold product being beef rendang. While online sales reached 379 products with the most sold product was also beef rendang that reached 172 pieces products. Thus, the result of online sales are still greater than online sales. In addition, it's turn out that in the two types of sales, the product that is most favored by customers both offline and online is beef rendang. This can seen from the the sales of beef rendang which reached 403 cans or about 24% of total sales. The prices set for 9 item products are IDR 40,000 and some are IDR 35,000 per can with an average price of IDR 37,222 per each can. With total sales reached 1,679 item products, the total revenue for there month is reached IDR 58,785,000.

3.2.2.2 Production cost

Production cost consist of fixed cost and variable costs. Fixed costs include: depreciation cost, taxes, levies and other costs. While the variable cost consist of the cost of raw and supporting materials, marketing cost, labor cost, and transportation cost.

The average cost per can is IDR 4,000. The average tax and retribution cost are IDR 4000 and other cost are IDR 1,000. Based on the variable cost component, the highest cost in producing canned products is the cost of raw and supporting materials. The average cost of raw and supporting material reaches IDR17,555,56 or about 74% of the total variable cost. With the average fixed cost per can IDR 9,000 and the average variable cost of IDR 23,566 so the total cost per can is about IDR 32,636 with the average selling price per can is about IDR 33,500 then the profit earned per can is IDR 4,566.44. If the total sales per 3 month reached 1,679 item products, then the total revenue will reach IDR 58,785,000. If the average total cost per can is Rp. 32,636, then sales are 1,679 products, so the total cost is IDR 54,828,677.78, so the profit obtained is about IDR 3,956,322.22.

3.2.2.3 R/C Ratio Analysis

Based on the results of the study, it was found that the feasibility level of selling processed food products on raw materials for beef cattle (cattle, sheep and goats) after selling them through digital marketing vilstock.id showed that R/C = 58,785,000 / 54,828,677,78, then R/C = 1.072. Thus, the production of canned products is feasible because the R/C > 1. Whereas before sales were made through digital marketing the R/C ratio reached 1.014. So that with digital marketing, it can increase sales by 0.058 within only 4 weeks.

3.2.2.4 Analysis of Digital Marketing's Contribution to Sales

Product sales through digital marketing vilstock are expected to increase SME sales results. Since the launch of the vilstock.id platform in late October or early November, 40 cans have been sold. Of the 9 products on the platform, shredded beef is the product that consumers buy the most. The number of shredded beef sold was 10 cans or 33% of the total product sold. In November, MT Fam's off-line sales reached 735 products, with sales through vilstock in the same month totaling 40 products. So, by marketing through the vilstock platform, sales of 40 product items increased or an increase of 5.4%. Thus, sales through digital marketing can increase product sales. An increase of 5.4% is quite good because the platform has only been introduced to the public for a month. To increase sales through vilstock, it takes longer time and more intensive promotions so that more people are familiar with the vilstock.id platform and make vilstock.id an option for online shopping.

4 Conclusion

Digital marketing also helps solve problems in marketing beef cattle products (cattle, sheep and goats) and products at partner companies (SMEs, Cooperatives and Farmers/Livestock Groups). This can be seen from the comparative analysis of the value of using digital marketing platforms in partner companies (SMEs, Cooperatives and Farmer/Livestock Groups) before and during the COVID-19 (New Normal) pandemic. sheep and goats), namely R/C = 58,785,000 / 54,828,677,78, then R/C = 1,072, whereas before the implementation of digital marketing the R/C ratio reached 1,014. Thus, the production of canned products is feasible because R/C > 1. In addition, the successful use of digital marketing platforms as a means of marketing beef cattle and derivative products during the Covid 19 (New Normal) pandemic shows that there has been an increase in product sales of 5.4% in a period of 4 weeks.

The Vilstock.id website is expected to continue as a marketing strategy development for beef cattle products (cattle, sheep, goats) and their derivative products by SMEs by developing content to reach more consumers. In addition, the development of livestock derivative products also needs to be added to be more varied and provide consumers with a more diverse choice of products, so that consumer interest will be higher and SMEs will gain the customer satisfaction and loyalty. This will certainly have an impact on increasing the sales volume of SME products in the future.

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