The Effect of barcode system on efficiency and effectiveness of agribusiness management in oil palm company

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Abstract

The development of data technology is very developed and is also used in agribusiness science so that it urges organizational sectors or other institutions to be able to use it as a support for work activities so that they can create accurate data. PT. Langkat Nusantara Kepong (LNK) is an industry that is engaged in palm oil agribusiness. One of the things that can be a pattern for sending data is the barcode system where there are still many other palm oil companies that have not used this system. The research population is all employees at PT. Langkat Nusantara Kepong (LNK), as many as 159 people consisting of 31 administrative employees and 128 operational employees. Finally, the barcode system can increase employee productivity, where each employee can immediately find out the amount/amount of premiums obtained from the harvest one day ago. So that harvesters can calculate for themselves the amount of income that will be obtained in 1 month, and efficiency and effectiveness in agribusiness management can be established.

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1. Introduction

The production process is a component of processes and costs in manufacturing companies. Companies must certainly focus on the efficiency and effectiveness of resources to maximize production results. The debate about resource efficiency, especially related to waste reduction and management, is not only a concern for scientists and environmental activists but also company management [1]. where Management understands and knows that the current traditional system has limitations. These limitations will be felt especially if the system is linked to business operations related to management.

To contribute to this problem, a barcode system is needed which is very useful in all fields to provide financial and non-financial information to support waste reduction decisions by managers. This renewable method of code is a key tool of a management approach called flow management which aims specifically to manage manufacturing processes related to the flow of materials, energy, and data so that the manufacturing process can be more efficient and by the set targets. Where this research makes a stable profit and stability from the use of the MFCA model is to increase profits and

productivity (internal) and reduce negative impacts on the environment (external) which in turn contributes to the development of corporate sustainability (corporate sustainable development). The results of the study show that MFCA can be used as a model to detect the company's production and business at the same time. Ulhasanah and Goto's research (2012) describes another model of production cost assessment, namely the Material Barcode concept [2].The development of oil palm plantations has made Indonesia the country with the largest land area and palm oil production in the world since 2006 [3]. Based on data from the Ministry of Agriculture of the Republic of Indonesia. Palm oil production on the island of Sumatra has increased significantly in the last 5 years. Table 1.1 shows that oil palm production in Riau Province in 2020 was 9,775,672 tons. this illustrates that Riau is the province that produces the most palm oil on the island of Sumatra. Then. Table 1.1 also shows that North Sumatra Province experienced an increase in palm oil production from 2016 (3,983,730 tons) to 2020 (6,601,399 tons). This confirms that North Sumatra is the second largest province in terms of oil palm production. Other than that. The Riau Archipelago is the province on the island of Sumatra that produces the least palm oil.

It can be seen in Table 1 that the Riau Islands Province is only able to produce as much as 33,272 tons in 2020.

Table 1. Oil Palm Production in SumatEra Island. 2016-2020 (in tons)

No.	Province	Years				
		2016	2017	2018	2019	2020
1.	Aceh	732.714	911.697	1.037.402	1.081.822	1.158.631
2.	North Sumatera	3.983.730	5.119.497	5.737.271	6.163.771	6.601.399
3.	West Sumatera	1.183.058	1.302.952	1.248.269	1.298.038	1.390.199
4.	Riau	7.668.081	8.113.852	8.496.029	9.127.612	9.775.672
5.	Riau island	21.434	28.664	28.853	31.067	33.272
6.	Jambi	1.435.141	1.849.969	2.691.270	2.891.336	3.096.621
7.	North Sumatera	2.929.452	3.199.481	3.793.622	4.075.634	4.365.004
8.	Bangka Belitung island	726.623	853.648	900.318	958.013	1.026.031
9.	Bengkulu	750.182	893.322	1.047.729	1.073.531	1.149.752
10.	Lampung	425.867	486.714	487.203	508.772	544.895
Total		**19.856.282**	**22.759.796**	**25.467.966**	**27.209.596**	**29.141.476**

The increase in the amount of oil palm production is in line with the rapid growth of oil palm plantations in Indonesia which reflects the revolution in oil palm plantations. Indonesian oil palm plantations are growing in 22 of the 33 provinces in Indonesia. where two main islands are centers of oil palm plantations in Indonesia. namely the island of Sumatra and the island of Borneo [4]. Based on data from the Ministry of Agriculture of the Republic of Indonesia. The area of oil palm plantations on the island of Sumatra has also increased.

In meeting the goal of increasing palm oil production, there are various types of technologies that are applied in various companies, as well as in various countries. GIS (Geographic Information System) technology can be used to analyze the dose of plant fertilizer needs and at the same time monitor crop yields to ensure efficient fertilization. This technology has the convenience of displaying oil palm plantation land from processed image data to monitor, analyze, and manage plantation land so that production continues [5].

Palm oil companies need to predict the amount of palm oil production in a certain period. These predictions are made so that the strategies and work plans are taken by a company can increase the production of palm oil and the allocation of costs during the production process can be optimized. Furthermore, the use of Information and Communication Technology (ICT) is also the right choice to help increase oil palm production. The application of ICT can be in the form of an expert system for diagnosing oil palm plant diseases [6], a system for recommending oil palm seeds, a system for recommending areas for oil palm mill development [7], and an information system for oil palm production [8].

One method of ICT that can be used in palm oil companies is the Barcode System or barcode system. This system is used to collect data for each employee to get work efficiency for employees who work in a company. Efficiency in the HR field is related to work activities and the time it takes employees to complete the tasks assigned by the company [9]. Thus, an appropriate work system design is needed to get the effectiveness and efficiency of a good production process through the barcode system. One company that has implemented this barcode system is PT. Langkat Nusantara Kepong (LNK), which is an Operational Cooperation company engaged in the agro-industry business, where the main commodity managed is palm oil.

This company cooperates operationally with PT. Perkebunan Nusantara II (PTPN II Persero) with Kuala Lumpur Kepong (KLK) Plantation Holdings sdn Bhd Malaysia which is engaged in the Agroindustry business. PT. LNK applies a barcode system at all levels of employees, such as assistants, fruit counting clerks / Field Foreman, Senior Managers / Managers, Office clerks, and Field Staff which are used for attendance and fruit count data. In the fruit count data in the field, employees can provide information in the form of harvest date and time, some fruit, harvester name, and harvester location through the barcode system. Then, the data that has been obtained will be sent to the data center to be processed into wage distribution for employees. Furthermore, employee attendance data were taken in the form of names of employees who attended, date and time, type of work/employee account load, and fields on the barcode system. Furthermore, the data is sent to the data center to be processed into salary slips or wage distribution.

2. Literature and methods

2.1. Revolutionary Era 4.0

In world history, the industrial revolution occurred because it was triggered by innovations that capable of changing the entire social, economic and cultural order. Those who refuse innovation will be left far behind. Technology innovation has taken over any sector and it's everywhere. In the past, Maslow's pyramid of needs theory stated that basic needs (physical needs) become the basis of the pyramid, in the future that will be at the base of the pyramid are data connection needs, aka the need for data access, because people seem to be unable to live without data access. Smart devices (smart devices) have now become part of the daily life of Indonesian people work, on the way, waiting in line, even when eating, we always make time themselves use smart devices for various purposes.

2.2. Financial Technology

Fintech is caused by a bottom-up movement driven by technology companies and startups. The evolution of fintech is as follows:

a. Fintech 1.0 occurred from 1866 to 1967, when the financial services industry was largely remains analog even though it is closely related to technology.

b. Fintech 2.0 which ran from 1968 to 2008, an era characterized by development of digital technology for communication and transactions, thus increasingly the digitalization of finance.

c. Fintech 3.0 runs from 2009 to the present, new start-ups and technology, e-commerce, and social media companies that deliver products and services direct financial services to the public and businesses, including banks [10].

2.3. Technology Acceptance Model

Technology Acceptance Model (TAM) is designed to predict the acceptance of information technology users and their use on the job [11]. This theory model a person's behavior as a function of behavioral goals. TAM more detail describes the acceptance of information technology with certain dimensions that can affect the easy acceptance of information technology. Technology Acceptance.

The model (TAM) developed by Fred Davis (1989) describes the acceptance of technology to be used by technology users. This theory was adopted from several models built to analyze and understand the factors that influence the acceptance use of new technology. In theory, the Technology Acceptance Model consists of several The variables used in this study include: Perceived Usefulness, Perceived Usefulness Ease Of Use, Attitude Toward Using, and Behavioral Intention to Use.

2.4. Barcode

Barcode offers many benefits, such as limit the amount of paper used in transactions. Barcode has capabilities error correction to restore data if the code is corrupted or dirty. There are four levels of correction that can be used and selected by the user-customized with the operating environment. By increasing the correction rate can increase error-handling capability, but also increase the amount of data size in Code System. [12]

2.5. Method System

The study was conducted in oil palm companies that have factories and plantations with the data used in this study is primary data and secondary data. Primary data collection was carried out through previous research and also interviews with the company's internal and external management parties, namely 30 experienced experts. Secondary data is sourced from data from the financial statements of PT Langkat Nusantara Kepong for the period 2011–2014, literature studies, and related literature from the internet and journals. Financial statement data will be processed and described according to the description of the research variables. The sampling technique to obtain information and knowledge was followed by expert surveys from the respondents to justify the determination of indicators and their values.

Tprofile of agribusiness leaders needed in the future. From this study, a global and universal conclusion is drawn that future agribusiness leaders or managers must have strong interpersonal and communication skills. One of the key variables in interpersonal skills that must be mastered by future agribusiness leaders or managers. Results of Rante (2011) study are also expected to examine differences in the influence of ethnic and cultural entrepreneurial behavior on the performance of micro, small and non-Papuan Papuans engaged in various agribusiness sectors, especially in increasing sales volume. The results of this study can be concluded that: first, that ethnic culture has a positive and significant effect on the performance of MSEs; second, entrepreneurial behavior has a positive and significant impact on the agribusiness performance of MSEs; third, in general, all variables and indicators influence the performance of agribusiness MSMEs showing significant and valid results, the performance of agribusiness MSMEs [13].

The results of research by Ahmad Zikri, (2018) where the background of this research is to find out how effective the performance of employees in production management is from a sharia economic perspective [14]. The techniques used in this research are observation, interviews, questionnaires, and literature study. The data analysis is a qualitative analysis that aims to describe, analyze and draw conclusions regarding the state of the object under study based on the facts contained in the production management of PT. Palm Mas Nusantara. After research by collecting and analyzing data, the author can conclude that the effectiveness of employee performance in Production Management at several palm oil companies, in general, is by the indicators of effectiveness in achieving the targets set by the company. This is evidenced by the high number of answers the respondents gave. However, in terms of achieving the

production target at the company, it has not been achieved because of the obstacles faced in production management. namely regarding raw materials such as palm fruit which is always small, thus hampering the desired production target.

The method used is because the data used is based on the perspective (point of view) and experience of the informant. As the object of research is one of the palm oil processing factories in Indonesia. To get an overview of data and information quality management, the researchers collected data by direct interviews conducted in a semi-structured manner, namely by making a list of open-ended interview questions (interviews with open answers/no restrictions). 19 respondents were interviewed according to their respective roles in data and information quality management in factories. In addition to conducting interviews, this study also uses other data, namely observations of the use of SI, and tracing documents related to factory operations.

The research population is all employees at PT. PT. Langkat Nusantara Kepong (LNK), as many as 159 people consisting of 31 administrative employees and 128 operational employees. Of all employees totaling 159 people. Then the sample was taken based on the Slovin method.

The sampling technique carried out by the researcher was using simple random sampling, namely taking sample members from the population at random without regard to the existing strata in the population. To collect the data and information needed in this study, the researchers used questionnaires. Likert scale measurement, where the researcher will give weight to each answer from the available statements and the score given to the answer.

The likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena. the business management model that occurs in the application of this research is facilitated by various system methods information. One of them is the method of checking employee data and performance with a Barcode Business management method.

4. Conclusions

This paper introduces an assessment model and business management based on Barcode or ICT system for the supply chain that very useful for the formulation of a good strategy at the corporate level and the macro level. The application of this concept has been carried out for the business management of sustainable palm oil companies in Indonesia Indonesia. This study proposes performance indicators that are useful in implementing business.

The model application shows that employee performance and results in sustainable palm oil in Indonesia are at the usual level. However, several indicators with a fairly high level of risk, namely demand volume, palm oil quality, delivery schedule accuracy, palm oil availability raw and distorted information.

So in the research that will be made with a combination of previous research that was built with the barcode method so that it can increase the efficiency of palm oil production within the company.

3. Result and discussion

This is still newly introduced and is still being developed by the government in preparing a strategy so that all processes to get the right efficiency with this method can be applied. From the results of in-depth interviews that have been done, the receipt of Barcodes in company management transactions is still not maximized in society. Of the 13 informants who were interviewed, three of them did not know about Barcodes. The reason they didn't know about this method was because of the lack of knowledge and lack of socialization from the banking sector. For people who don't understand the Barcode, it is necessary to provide socialization and guidance on business management methods.

The role of the company becomes very important to implement the program which has been declared. So far, employees are still accustomed to using the old method in the business processes of palm oil companies in the company's performance process and its efficiency and effectiveness because many employees still do not know the procedures for the Barccode information system, the work process using a Barcode is useful for implementing cashless programs in Indonesia. public. Besides being safe, transacting with a Barcode doesn't need to take a lot of time time, so transactions can be completed quickly. To informants who have been using Barcode, acceptance of this payment method is very good and suitable to continue its development so that people are accustomed to using computer information technology examinations. Barcode system on the efficiency and effectiveness of agribusiness management in oil palm companies is part of Smart Farming [15] [16], Precision Agriculture/Precision Farming [17], Decision Agriculture [18] and Agriculture 4.0 [19].

Two things can be done for further studies, namely the design of a user-friendly decision support system and the application of concepts performance-based risk assessment.

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