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Performance Analysis of Oil Palm Companies Based on Barcode System through Fit Viability Approach: Long Work as A Moderator Variable

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Abstract

Novelty technology will be capable of increasing the performance company's coconut palm oil, one of them being the barcode system. So from that, I needed something to study to know how to influence suitability, continuity and use of the barcode system against the performance company coconut palm. Study this using a long working variable as a moderator variable. The study aims to analyze the effect of fit, viability, and use on the performance of a business company's coconut palm based on the Barcode System. Study this using 237 samples of employee data collected through stratified proportional random sampling at PT LNK from April 2022 to June 2022. Data were analyzed by SEM-PLS analysis with SMARTPLS software 3. An overview of the Barcode System via the Fit-Viability approach has been presented in the paper. Research results show that the performance of the business is affected by viability and use, but not affected by compatibility. Working time takes effect compatibility and compatibility to the assignment will be the taller when working long hours. Paper contributes to the development barcode system at PT LNK. Expected barcode system used by all companies coconut palm oil and can be integrated into the cloud-based data so that it could generate production data in real-time.

Keywords: *Sustainability, Suitability, SEM-PLS, Barcode System*

1. Introduction

Indonesia is a manufacturer and exporter of Oil Palm oil Raw or the largest Crude Palm Oil (CPO) [1]. With an increasing trend from 1998 to In 2017, Indonesian CPO has powerful comparative market competitiveness [2]. The increased production of coconut palm is in line with the rapid growth of coconut palm oil in Indonesia that reflects the revolutionary plantation of the coconut palm. Coconut plantation Indonesian palm oil is growing in 22 of the 33 provinces, where there are two islands, the main being center plantation of coconut palm oil in Indonesia, namely Sumatra and Kalimantan [3]. Land area is one of the influencing factors significant to the production of coconut palm oil [4]. As a commodity export, the coconut palm is commercialized through the production process commercial [5].

It is important for palm oil firms to forecast future palm oil output. Companies in the modern digital age may facilitate their employees' productivity by using available technologies. Increasing Palm oil output and making precise predictions about how much will be produced is made easier by using ICT. Technologies such as oil palm information systems, expert systems for diagnosing oil palm plants, and proposing locations for coconut groves and oil palm mills are all examples of ICT applications [6].

The part discusses the importance of forecasting future palm oil output for palm oil firms and how available technologies can facilitate this process, ultimately increasing productivity. Forecasting future palm oil output is crucial for palm oil firms as it helps them make informed decisions about production levels, pricing, and distribution. By accurately predicting how much palm oil will be produced, companies can optimize their resources and reduce waste, ultimately increasing profitability.

Precision Agriculture is a term that is gaining popularity in the field of agriculture due to its use of technology [7]. Precision farming, also known as Precision Agriculture, is an advanced farming method that utilizes a combination of technology and data analysis to optimize farming practices. This involves the use of sensors, GPS systems, and remote control devices to gather information about the fields, such as soil moisture, temperature, and nutrient levels. With this information, farmers can make informed decisions about when and how much to irrigate, fertilize, and apply pesticides to their crops [8].

Technology can help organizations operate more efficiently by streamlining processes, automating tasks, and reducing the likelihood of errors. It can also improve business transparency by providing real-time access to information and increasing accountability. For example, digital record-keeping systems can help organizations maintain accurate and up-to-date records, which can be easily accessed and shared by relevant parties. However, the success of technology adoption in organizations is influenced by various factors, such as technology availability. This refers to the accessibility of technology, including both hardware and software. Organizations that have limited access to technology may find it challenging to adopt new technologies, which can impact their efficiency and competitiveness. [9].

According to Baig and Gururajan (2011) information technology is one of the means to improve company and business performance. Rahmawati (2008) explains that task suitability relates to the extent to which an individual's ability to use information technology in carrying out tasks to improve individual performance and make technology users more productive and creative. Companies that implement information technology governance will contribute to increasing the company's business value. Technology and information will work systematically and effectively and can be controlled properly and efficiently, and this will increase the competitiveness of the company. Therefore, companies that adopt technology and information can improve company performance, especially through profitability. There have been many companies that have implemented information technology intending to gain a competitive advantage over other companies. So this is a positive impact of technology on company performance.

One of the ICT methods that can be used in palm oil companies is the 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 field of HR is related to work activities and the time it takes employees to complete the tasks assigned by the company. Therefore, it is necessary to design the right work system 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), is an Operational Cooperative company engaged in agro-industry, with the main commodity being managed as palm oil.

Indonesia is a large and diverse country with a rapidly growing economy. However, the adoption of technology in various sectors of the economy, including the corporate sector, has been slow. This lack of technology adoption has affected the performance of companies, making them less competitive in the global market. This thing powered by Jelita et al, who concludes that the utilization of technology renewable is still dominated by company private foreign. Novelty technology will be capable of increasing the performance of the company's coconut palm. Due to that, research examining the analysis performance of coconut palms through the Fit Viability approach and including a variable as moderator was needed.

2. Research Method

2.1 Framework

This theoretical framework expands upon the Task Technology Fit by analyzing technology adoption and use from the user's perspective. Fit-Viability Both "Fit" and "Viability" are theoretical considerations when determining how an ICT product will be utilized inside an organization. The term "fit" is used to quantify how well new information and communication technology items integrate with the established norms and values of an organization. The potential value-add of an information and communication technology (ICT) item, together with its associated demands for human resources, financial resources, and so on, are all factors into its viability. To sum up, this idea clarifies how the acceptance of technology and the consistency with which it is used may influence performance.

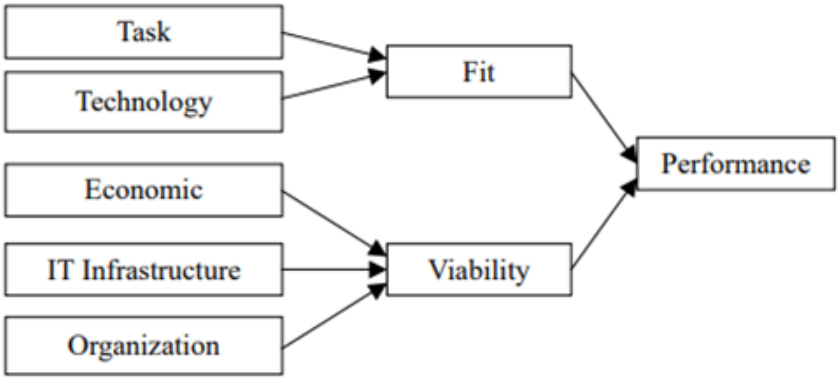

Figure 1 . Fit-Viability Model

The Fit-Viability theory is a framework that is used to evaluate the effectiveness of implementing IT systems in organizations. The theory consists of two main constructs, namely Fit and Viability. The Fit construct refers to the extent to which the IT system is aligned with the organization's tasks and goals, while the Viability construct refers to the extent to which the IT system is feasible and sustainable within the organization's context.

The Task construct is an indicator of the Fit construct and refers to how well the IT system supports the tasks and responsibilities of employees within the organization. For example, in the case of a barcode system, the Task construct could refer to how well the system supports employee absenteeism tracking or fruit harvest calculation.

The Technology construct is another indicator of the Fit construct and describes the characteristics of the IT system, including its functionality, usability, and compatibility with existing technology within the organization.

The Viability construct is measured by its dimensions, which include the economy, IT infrastructure, and organization. The Economic construct refers to the cost-effectiveness of the IT system and how well it aligns with the organization's budget and transaction costs. The IT Infrastructure construct refers to the availability and quality of software, hardware, and data management systems required to support the IT system. The Organizational construct refers to how well the IT system aligns with the organization's production processes, employee competence with ICT, and re-engineering efforts.

Finally, the Performance construct describes the impact of the IT system on employee satisfaction, positive influence, and consistency in helping employees perform their tasks. This construct is an important measure of the overall effectiveness of the IT system within the organization.

To achieve these results, a performance triggeris needed, namely measures that cause these results to be achieved [10]. Many studies have already shown this. According to Gozi and Felicia's (2019) study, ICTCan impact worker performance quality. Company performance includes employee performance, hence it follows that bettering employee performance via the use of ICT may have a positive effect on overall business performance. Need there is an addition of a moderatorvariables (Long Work) to support the renewability of the model used.

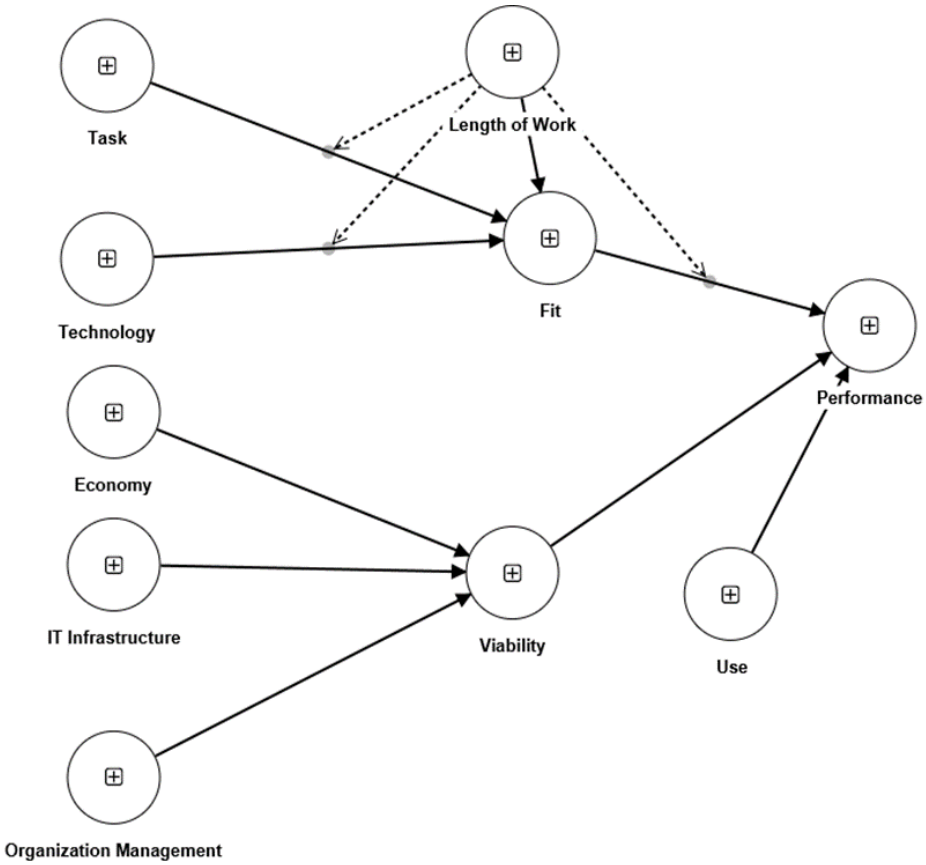

Figure 2. Framework

In Figure 2 can see that Fit is a construct that Task and Technology influence. Then, the Viability construct is influenced by the Economy, IT Infrastructure, and Organization. Furthermore, the Use, Fit, and Viability constructs can influence Performance Construct. From Figure 2 can also see that there are moderator variables marked with arrows dotted, variables that are longer working. Because of that, the research will use Partial Least Square (PLS) as a method of analysis. PLS is a method alternative for solving complex multilevel models that do not need many samples. _ Besides that, there are also some advantages of PLS, including optimal implications for accurate prediction. The PLS method is method powerful analysis _ because no assumed scale measurement data and can also be used for confirming the theory.

2.2 Time and Location

The selection of the research location was carried out purposively based on the affordability of the respondents and the research location. The time of research was carried out for 3 (three) months starting from April to June 2022.

2.3 Data Source

This study uses primary data and secondary data. Primary data was obtained from the results of employee interviews. Secondary data were obtained from each plantation such as production data and production increase.

2.4 Method Sampling

Padang Brahrang, Bekiun, Tanjung Keliling, Marike, Bukit Lawang, Gohor Lama, Tanjung Beringin, and Basilam were all included as part of the study's sample population. The sample of this research was chosen: Basilam, Bekium, Padang Brahrang, and Gohor Lama.

The number of employees in the 4 plantations is 1,870 people. A stratified proportional random sampling method was used to collect data. The sample chosen ensured that each member of the population was equally represented. If the population of interest, in this case, PT. Langkat Nusantara Kepong's oil palm plantation workers, is very similar to one another, serious thought should be given to using stratified proportional random sampling.

Determination of the number of samples from a certain population developed by Issac and Michael for error rates of 1%, 5%, and 10% [11] can be calculated using the following formula:

$$s = \frac{x^2.N.P.Q}{d^2(N-1) + x^2.P.Q}$$

Notice:
s = Sample
N= Population
X2 = - The value of chi-squared with degrees of freedom = 1
P= Probability of accepting that an event is said to be true, assuming the value = 0.5 (50%)
Q= Probability of accepting that an event is said to be false, assuming the value = 0.5 (50%)
d= The value of precision/percentage of difference in answers from the questionnaire for each question item, assuming the value = 0, 0 5 (5%)

$$s = \frac{2{,}706 \text{ x } 1870 \text{ x } 0{,}5 \text{ x } 0{,}5}{(0{,}05)^2\,(1870 - 1) + (2{,}706 \text{ x } 0{,}5 \text{ x } 0{,}5)}$$

$$s = 236{,}45 \text{ (rounded to 237)}$$

Sampling in each garden was carried out randomly so that it could represent the population in the garden. The distribution of the population and samples in each oil palm plantation which is the research location is presented in Table 1.

Table 1. Population and Sample

No	estates	Population	Samples
1	Basilam	1048	132
2	Bekiun	250	32
3	Old Gohor	373	47
4	Brahrang Field	199	26
	Amount	1,870	237

Source: PT. Langkat Nusantara Kepong, 2021.

2.5 Partial Least Square Analysis

The analysis mentioned utilizes PLS (Partial Least Squares) analysis which is a statistical technique used to model complex relationships between multiple independent and dependent variables. When dealing with limited sample sizes or non-normally distributed data, PLS excels where other methods fail. PLS performed as effectively as the other techniques in detecting actual paths, and not falsely detecting non-existent paths. The SMARTPLS 3 program is used to analyze the effect of Fit Viability and the use of the barcode system on Company Performance and other variables that affect Fit Viability.

PLS analysis has several advantages as pointed out by Hair et al. (2022). Firstly, it can operate complex models with a large number of dependent and independent variables without causing any problem. This makes it an efficient and reliable method for analyzing complex relationships between multiple variables. Secondly, PLS analysis is capable of processing data that have multicollinearity problems between independent variables, which is a common problem in statistical analysis. This helps to avoid any spurious or misleading results that may arise due to this issue.

Thirdly, PLS analysis is capable of processing data with some missing or non-normal data, and the results obtained are still solid and reliable. This makes it a robust method for analyzing data in real-world situations where data may not be complete or may not follow normal distribution. Fourthly, PLS analysis can be used on reflective and formative constructions, which allows it to capture the complex interrelationships between multiple variables.

SEM and PLS have some differences. One key difference is that PLS is more predictive in nature, while SEM is more focused on testing the theory. This means that PLS is better suited for predicting outcomes, while SEM is more appropriate for testing hypotheses.

Additionally, PLS has both a measurement model and a structural model, which are used to analyze the relationship between observed and latent variables. The measurement model focuses on the relationship between observed variables and latent variables, which are variables that cannot be directly observed or measured. The goal of the measurement model is to ensure that the observed variables are valid and reliable indicators of the underlying latent variables.

The first step is to assess the outer reflective indicator model. There are 3 criteria to assess the outer reflective indicator model: convergent validity, compositor reliability, and discriminant validity. After everything meets the requirements, the second step can be carried out, namely assessing the inner model. This test is done by looking at R-square, Q-square, Goodness of fit (GoF), and F-square. R-square is used to assess the effect of the dependent latent variable and whether it has a substantive effect. Q-square is used to measure how well the observation value generated by the model is. The goodness of Fit (GoF) is used to measure whether or not the structural model is valid [12].

2.6 Variables

The variable study is a concept that can be measured. Variables to be used in a study consist of latent variables and variables manifest as indicator latent variables. Could measure latent variable required variable indicator. A variable indicator or variable manifest is an explanatory variable _ or measure latent variable [13].

Table 2. Latent and Indicator Variable

Latent Variable	Manifest Variable (Indicator)	Information
Task	Worker discipline (TS1)	The level of discipline of workers on the barcode system
	Work System (TS2)	Planning, implementation, and evaluation
	Business Process Sustainability (TS3)	Carried out continuously with the same system and there is always maintenance
	Task Understanding (TS4)	Workers understand the tasks assigned
Technology	Selling System (TC1)	Barcodes on sales
	Collecting system (TC2)	Barcodes on fruit collection
	Delivery tracking system (TC3)	Barcodes in shipping tracking
Economic	Total Cost (EC1)	Cost compatibility with budget
	Transaction Fee (EC2)	More efficient transaction fees
IT Infrastructure	Software (IT1)	App availability
	Hardware (IT2)	Device availability
	Data management (IT3)	Management of stored data every day
Organization	Organization System (OG1)	Structuring the position structure within the company
	Production Process (OG2)	The role of the organization in the production process
	Worker Competencies (OG3)	The ability of workers to carry out work
	Work Culture (OG4)	Culture formed in the working environment of the barcode system
Fit	Suitability (FT1)	The suitability of the work system desired by workers
	Dependencies (FT2)	Dependence of workers with a working system with a barcode system
Viability	Improvements (VB1)	Possibility of continuous system improvement
	System Continuity (VB2)	Continuity between planning, implementation to evaluation
Use	Intensity (US1)	The intensity of using a barcode system and irreplaceable
	Planning, implementation, and evaluation (US2)	Use of barcodes in planning, implementation, and evaluation
Performance	Production Volume (PF1)	Number of fruits produced
	Increase of Production (PF2)	Increased production during the implementation of the barcode system
	Error System (PF3)	Barcode error rate

Source: Liang *et al.* 2007

2.7 Measurement Model Evaluation

Evaluation is needed to find out whether the manifest variable (indicator) measurement model can measure the latent variable (construct) correctly. We can assess the level of validity of the manifest variable based on the value of the loading factor. If the loading factor value shows greater than 0.7 then the manifest variable is declared valid, but if it shows a number less than 0.7 then the manifest variable must be discarded because it is considered unable to measure the latent variable [14].

Table 3. Convergent Validity and Internal Consistency Reliability

Construct	Manifest Variables	Outer Loading	Cronbach Alpha	Rho_A	Rho_C	AVE
Task	Worker Discipline (TS1)	0.888	0.850	0.869	0.930	0.869
	Work System (TS2)	0.881				
	Business Process Sustainability (TS3)	0.884				
	Task Understanding (TS4)	0.9 00				
Technology	Selling System (TC1)	0.157	0.645	0.645	0.849	0.738
	Collecting system (TC2)	0.945				
	Delivery Tracking System (TC3)	0.945				
Economy	Total Cost(EC1)	0.944	0.787	0.812	0.874	0.698
	Transaction Cost (EC2)	0.92 0				
IT Infrastructure	Software (IT1)	0.797	0.861	0.895	0.905	0.705
	Hardware (IT2)	0.851				
	Data Management(IT3)	0.857				
Organization Management	Organization System (OG1)	0.886	-1,278	0.865	0.520	0.774
	Production Process (OG2)	0.865				
	Worker Competencies (OG3)	0.7 00				
	Work Culture (OG4)	0.893				
Fit	Suitability (FT1)	0.857	0.911	0.912	0.937	0.789
	Dependencies (FT2)	0.861				
Viability	Improvements (VB1)	0.974	0.599	0.884	0.779	0.603
	System Continuity (VB2)	0.975				
Use	Intensity (US1)	0.933	0.760	0.828	0.890	0.802
	Planning, implementation, and evaluation (US2)	0.867				
Performance	Production Volume (PF1)	0.959	0.947	0.947	0.974	0.949
	Increase of Production (PF2)	-0.888				
	Error System (PF3)	0.784				

The evaluation results based on the loading factor value of the first stage model can be seen in Table 3. The model shows that the Sales System (TC1) and Increased Production (PF2) have a loading factor value of less than 0.7 which means it is not valid. Based on the results of

this evaluation, it can be seen that the Sales System (TC1) variable has not been able to measure the Technology variable, meaning that the PT LNK barcode system has not yet reached the sales stage. In addition, the variable Production Increase (PF2) is not able to measure performance. This is because plantations with the highest average production experienced a slight increase compared to other plantations with low production averages, which experienced a significant increase after implementing the barcode system [15].

Based on the results measurement model evaluation, it looks that not all variable indicators in this model could explain the latent variable. Need to be conducted in testing Step second without enclosing an invalid variable. The repair model gives valid results, all indicators used _ have more loading factor value of 0.7. The model obtained at this stage second is the final model used in a study [16].

The final model gives reliable results. The requirement for a reliable model is that the model has an AVE value and composes reliability of more than 0.5. Besides _ Rho_A must have value among Cronbach Alpha. A model that has good reliability means that all indicators used can be trusted to measure the construct [17].

Furthermore, an evaluation is carried out by looking at discriminant validity. This stage is to ensure that the different constructs do not have to be highly correlated. How test discriminant validity can use the Fornell and Larcker method which explains discriminant validity can be seen through the cross-loading value which must be greater than 0.50 which means at least 50 percent of the indicator variation can be explained [18].

In this model, the cross-loading value of all variables is greater than 0.500 which can be seen in Table 5. This shows that there is no discriminant validity problem in all the models that have been evaluated. After meeting all the requirements, the model is declared as the final model [19].

2.8 Structural Evaluation Model

Table 6. R-square Value

Latent Endogenous Variable	*R-Square*	Information
Viability	0.711	medium
Fit	0.610	medium
Performance	0.892	strong

The structural model can be evaluated by looking at the R-square (R 2) on the endogenous variables and the estimated value of the path parameter coefficients A strong model has an R-square of 0.75, the medium model is 0.50, while a weak one has an R-square of 0.25 [20].

Based on the R-square value in Table 6, it can be interpreted that the factors used to measure the Fit, Viability, and Performance variables can explain the values of 71.1 percent, 61 percent, and 89.2 percent, the rest is explained by other variables, not in the model.

The next step is to look at the Q-square value (predictive relevance) to measure how well the observed values produced by the model and the parameter estimates are. The Q-square value has a range from 0 to 1 where the closer to 1, the better.

$$\begin{aligned} Q\text{-}square &= 1 - (1 - 0.711)\,(1 - 0.610)\,(1 - 0.892) \\ &= 1 - (0.289)\,(0.490)\,(0.108) \\ &= 1 - 0.015 \\ &= 0.985 \end{aligned}$$

The result of the Q-square is 0.985, meaning the model can explain 98.5 percent of the phenomena that occur, and the rest is explained by other variables that are not in the model.

2.9 Goodness of Fit

The goodness of Fit (GoF) is used to measure whether the structural model is valid or not. The GoF value is obtained manually by using the formula for the root mean of the AVE multiplied by the average R-square. Calculation of goodness of fit using the formula:

$$GoF = \sqrt{\overline{AVE} \; x \; \overline{R^2}}$$

The result of the Goodness of Fit on the model is 0.770, meaning the suitability of the model is high.

2.10 Hypothesis Testing

Hypothesis testing can use the t-table value, for alpha 5% is 1.96. The hypothesis is accepted if t - value > t-table and the hypothesis is rejected if t - value < t-table. The results of direct effect hypothesis testing can be seen in Table 7. The result of indirect effect hypothesis testing can be seen in Table 8[21].

Table 7. Direct Effects

Hypotheses	Std. Beta	Std. Error	t-value	p-value	bias	Confidence Interval		Decision
						5.00%	95.00%	
Eco -> Viab	0.314	0.042	7.404	0.000	-0.001	0.244	0.383	Accepted
Fit -> Perfect	-0.034	0.087	0.385	0.350	0.011	-0.182	0.102	Rejected
IT Infra -> Viab	0.250	0.093	2,672	0.004	0.002	0.094	0.404	Accepted
LW -> Fit	-0.527	0.036	14,791	0.000	0.001	-0.587	-0.470	Accepted
LW -> Perfect	-0.003	0.057	0.049	0.480	0.007	-0.095	0.091	Rejected
Organiz - > Via	0.403	0.093	4.316	0.000	-0.001	0.243	0.549	Accepted
Tasks -> Fit	0.348	0.049	7.099	0.000	0.001	0.268	0.432	Accepted
Tech -> Fit	0.045	0.045	0.985	0.162	0.000	-0.032	0.119	Rejected
Use -> Perf	0.475	0.055	8,584	0.000	-0.002	0.389	0.573	Accepted
Viab -> Perfect	0.566	0.046	12,361	0.000	0.000	0.488	0.639	Accepted
LW x Task -> Fit	0.158	0.061	2,582	0.005	0.002	0.052	0.254	Accepted
LW x Tech -> Fit	-0.042	0.051	0.840	0.201	-0.001	-0.126	0.040	Rejected
LW x Fit -> Perfect	-0.018	0.030	0.606	0.272	-0.003	-0.069	0.032	Rejected

Note: * t(0.05): 1.96

Table 8 . Indirect Effect

Hypotheses	Std. Beta	Std. Error	t-value	p-value	bias	Confidence Interval		Decision
						5.00%	95.00%	
Eco -> Perfect	0.177	0.026	6845	0.000	-0.001	0.138	0.222	Accepted
IT Infra -> Perf	0.141	0.053	2,688	0.004	0.001	0.055	0.230	Accepted
LW -> Perfect	0.018	0.046	0.386	0.350	-0.006	-0.054	0.097	Rejected
Organiz -> Perf	0.228	0.061	3,742	0.000	0.001	0.131	0.330	Accepted
Task -> Perf	-0.012	0.031	0.373	0.355	0.003	-0.072	0.033	Rejected
Tech -> Perfect	-0.001	0.006	0.271	0.393	0.002	-0.015	0.002	Rejected
LW x Task -> Perf	-0.005	0.015	0.358	0.360	0.003	-0.034	0.014	Rejected
LW x Tech -> Perfect	0.001	0.006	0.246	0.403	0.000	-0.003	0.019	Rejected

Note : * t(0.05): 1.96

3. Results and Discussion

This company is a collaboration between PT. Perkebunan Nusantara II (PTPN II Persero) with Kuala Lumpur Kepong (KLK) Plantation Holdings Malaysia which is engaged in the Agroindustry business. PT. LNK implements a barcode system at all employee levels, such as assistants, fruit counter clerks, Field Foreman, Senior Managers/Managers, Office

employees, and Field Staff which are used for attendance data and fruit counting. Barcodes allow workers to record data such as the time and date of harvest, the amount of fruits harvested, the harvester's identity, and their position in the field, all of which may be used in the oil palm calculation process. The collected information will then be sent to the data center, where it will be converted into a salary payment to the appropriate personnel. Other information on the barcode system include the employee's name, the time they were there, the sort of task they were doing, and the date. Furthermore, the information is sent to the data center, where it is used to generate pay stubs or other forms of monetary disbursement [22].

Overtime, off-day, premium, and adjustment information are only few of the types of information that have to be input by hand into the barcode checkroll system (overpayment, underpayment, and health discount). To sum up, PT. Langkat Nusantara Kepong's (LNK) barcode system is meant to maximize oil palm output by facilitating the efficient management of the company's human resources and facilitating the accurate calculation of fruit harvests. While the barcode system's adoption has been significant, there are still many palm oil producers who have not adopted it. Harvesters, for example, will be assigned a certain area to harvest and will be unable to leave that area without first being entered into the system, which is just one example of how the barcode system might boost productivity. Moreover, the barcode system can determine which areas have not been harvested and provide information on the harvest rotation and output of each region. The foreman, field assistant, or manager will therefore be able to quickly access information on employees who are on duty during subpar harvests, such as the number of times they have been on duty and the quality of ripe fruit and loose fruit that has been harvested. The harvest foreman will no longer have to manually record information such as crop status, harvested area, or crop rotation [23].

Every information about the harvest is public knowledge, from the planting year and geographic area to the names of the harvesters themselves. The ability to precisely monitor output and productivity also facilitates root-cause analysis and the development of workable solutions in the event that an area is found to be underperforming. Finally, the barcode system may increase output since employees will always know how much they received in incentives from the day before. In order to help harvesters plan for the month ahead financially. Several production-related research projects have also evaluated the barcode system. For instance, Ong’s et al (2019) study demonstrates that switching to a barcode system might reduce the need for expensive paper while simultaneously increasing productivity [24].

3.1 Fit

The Fit variable is explained by the Suitability and Dependency variables, indicating that these two variables significantly affect barcode system Fit. Worker Discipline, Work System, Business Process Sustainability, and Task Understanding influenced Fit. This suggests that disciplined workers, an efficient work system, sustainable business processes, and a good understanding of tasks can improve barcode system-task fit.

Technology did not affect Fit. Collecting and Delivery Tracing Systems were Technology construct indicators. Some employees reported that the barcode system did not meet their work requirements, suggesting that there may be technology implementation or design issues.

The result suggests that improving the Task construct—worker discipline, work system efficiency, business process sustainability, and task understanding—will improve barcode system Fit. To ensure the barcode system meets employee needs and supports their work, technology issues must be addressed.

3.2 Viability

Indicator variables Improvement and System Continuity explain viability factors. The findings demonstrate that Barcode System Viability in palm oil enterprises increases with increases in Economics, IT Infrastructure, and Organization. Organizational factors impact the most with 0.403. Research on the Barcode System as a Management Information System helps executives make choices and uncover alternate alternatives. Information systems may assist uncover issues by suggesting ideas, actions, and feasibility, according to Paoki.

3.3 Use

The research found that using barcodes led to improved business outcomes. There are various benefits to using a barcode system in oil palm farms, including a reduction in the likelihood of human error, improved accuracy in assessing fruit quality, reduced need for paper records, and faster transmission of data. According to Istiqomah's research, using barcodes in warehouses can help reduce human error, save time, and improve the accuracy of the following processes: receiving goods; determining storage locations; storing goods; picking goods; retrieving goods; identifying shortages or surpluses; determining the viability and quality of goods to be sent; checking goods; reducing human error; minimizing paper use; speeding up the checking process. Barcodes may also be used to speed up the distribution of reports containing information or data. Hence, barcodes in the warehouse management system may help the warehouse run more smoothly. Using barcodes in a warehouse allows for all tasks to be completed much more quickly and precisely than they could be in a warehouse that still relies on human handling.

This paper is also in line with Akmal's research (2018) which shows that the application of barcodes in warehouses has many benefits, including minimizing errors in receiving goods and accelerating receipt of goods and being able to automatically determine storage locations. Minimize errors in storing goods in the storage area, minimizing errors in location and retrieval of goods by pickers, minimizing errors in location and retrieval of goods by pickers, minimizing errors in location and retrieval of goods by pickers, minimizing errors in location and retrieval of goods by pickers, minimizing locations.

Fresh fruit bunches in oil palm must be harvested at optimal ripe conditions. The barcode system rejects unripe fruit. The use of a barcode system supports companies to produce high quality CPO.

3.4 The Effect of Fit, Viability, and Use Barcode System on Performance

This hypothesis predicts that as viability and use grow, so will performance. It contradicts the premise that Fit has no bearing on corporate performance. It has been discovered in the field that many workers dislike the barcode system since it is difficult to alter harvest statistics for vested interests, particularly in high-yielding farms.

PT LNK has only been using barcodes for the last five years. In spite of widespread approval for the system's introduction due to its positive effects on efficiency and output, some employees may feel otherwise due to its potential financial implications for them, and the firm may be unaware of this..

3.5 Length of Work

Employees who don't happy with the application of the suspected barcode system are senior employees who have worked before the barcode system was implemented. This is what underlies us to include the variable length of work (length of work) as a moderator variable. Based on results data analysis , we found that long working takes effect to match . In addition , the old variable works with the assignment variable by taking effect to match . This thing explains influence compatibility to assignment will the taller when working a long employee the lower .

The Effect of Task, Technology, Economic, IT Infrastructure and Organization on Performance Economy, IT Infrastructure and Organization have a significant effect on business performance indirectly. different from tasks and technologies that have no effect on performance. This is because the application of the barcode system, especially in calculating attendance, does not affect employee discipline. This contradicts the theory but is in line with Cay's et al. (2001) study that concluded that fingerprint absenteeism does not affect discipline .

4. Conclusion

According to the hypothesis every increase in Viability and usage will increase performance. While Fit has no effect on business performance, it is not in accordance with the hypothesis.

An overview of the Barcode system through the Fit-Viability approach has been presented in this paper. The barcode system provides many benefits such as cost savings, accuracy of fruit counting, improvement of work culture, and ease of evaluation for leaders to determine the right policy, among others.

Long time working takes effect to compatibility and compatibility to assignment will be the taller when working a long employee the lower .

Use and Viability have a significant impact on the company's success, therefore growing these factors should boost business results. Since the barcode method has only been in use for the last five years, it purportedly requires more research than compatibility, which has been shown to have no influence on performance. In conclusion, the research confirms that the barcode system may be used successfully in all palm oil businesses.

5. Suggestion

In doing so, this paper aids in the development of PT LNK's barcode system. It is anticipated that all palm oil enterprises would use the barcode system and that it will be incorporated with cloud-based data to create production statistics in real time.

Businesses must incentivize workers to embrace the company's new Barcode System and provide quality results in order to achieve financial success. Managers are the gatekeepers for new information technologies, therefore it's crucial to know what motivates them to adopt them. Improving one's skills is just as crucial to a company's success as investing in new technologies. Research shows that the Barcode System is only useful for tracking shipments and not yet at the sales stage, thus it must be connected with the sales system.

References

[1] M. R. Aulia, C. P. H. Saragi, and R. Simbolon, “The Effect of Entrepreneurial Characteristics on Entrepreneurial Competence and Entrepreneurial Competence on Business Performance of Micro and Small-Scale Coffee Shops in Bogor,” *BASKARA: Journal of Business and Entrepreneurship*, vol. 4, no. 1, pp. 37–48, 2021.

[2] S. Baskaran, H. S. Lay, B. S. Ming, and N. Mahadi, “Technology adoption and employee’s job performance: an empirical investigation,” *International Journal of Academic Research in Economics & Management Science*, vol. 9, no. 1, pp. 78–105, 2020.

[3] D. Cherie, R. Rini, and M. Makky, “Determination of the optimum harvest window and quality attributes of oil palm fresh fruit bunch using non-destructive shortwave infrared spectroscopy,” in *AIP Conference Proceedings*, 2019, vol. 2155, no. 1, p. 020034.

[4] B. M. Zerihun, T. O. Olwal, and M. R. Hassen, “Design and Analysis of IoT-Based Modern Agriculture Monitoring System for Real-Time Data Collection,” in *Computer Vision and Machine Learning in Agriculture, Volume 2*, Springer, 2022, pp. 73–82.

[5] L. Lifianthi, E. Rosana, and T. Thirtawati, “MARKETING FUNCTIONS AND FARMER’S SHARE OF OIL PALM FRESH FRUIT BUNCH OF SELF-SUPPORT FARMERS IN BANYUASIN REGENCY SOUTH SUMATRA,” *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis*, pp. 255–270, 2022.

[6] D. K. Singh, R. Sobti, A. Jain, P. K. Malik, and D. Le, “LoRa based intelligent soil and weather condition monitoring with internet of things for precision agriculture in smart cities,” *IET Communications*, vol. 16, no. 5, pp. 604–618, 2022.

[7] D. L. Goodhue and R. L. Thompson, “Task-technology fit and individual performance,” *MIS quarterly*, pp. 213–236, 1995.

[8] N. Septiani, N. Lutfiani, F. P. Oganda, R. Salam, and V. T. Devana, “Blockchain technology in the public sector by leveraging the triumvirate of security,” in *2022 International Conference on Science and Technology (ICOSTECH)*, 2022, pp. 1–5.

[9] U. N. Gozi and U. Felicia, “THE EFFECT OF TECHNOLOGICAL CHANGE ON EMPLOYEE PERFORMANCE,” *INTERNATIONAL JOURNAL OF MANAGEMENT AND ENTREPRENEURSHIP*, vol. 1, no. 1, pp. 70–82, 2019.

[10] N. A. Istiqomah, P. F. Sansabilla, D. Himawan, and M. Rifni, “The implementation of barcode on warehouse management system for warehouse efficiency,” in *Journal of Physics: Conference Series*, 2020, vol. 1573, no. 1, p. 012038.

[11] C. W. Ong *et al.*, “A randomized controlled trial of acceptance and commitment therapy for clinical perfectionism,” *J Obsessive Compuls Relat Disord*, vol. 22, p. 100444, 2019.

[12] T. Liang, C. Huang, Y. Yeh, and B. Lin, “Adoption of mobile technology in business: a fit-viability model,” *Industrial management & data systems*, 2007.
[13] A. Williams and E. Dolan, “Application of Blockchain Technology in e-LoA Technopreneurship Journal,” *Aptisi Transactions On Technopreneurship (ATT)*, vol. 2, no. 1, pp. 98–103, 2020.
[14] A. Hafeez-Baig and R. Gururajan, “Preliminary Study to Investigation the Determinants that Effect IS/IT Outsourcing,” *International Journal of Information and Communication Technology Research*, vol. 1, no. 2, pp. 48–54, 2011.
[15] N. Misron, N. A. Aliteh, N. H. Harun, K. Tashiro, T. Sato, and H. Wakiwaka, “Relative estimation of water content for flat-type inductive-based oil palm fruit maturity sensor,” *Sensors*, vol. 17, no. 1, p. 52, 2016.
[16] M. Makky, D. Yanti, and I. Berd, “Development of aerial online intelligent plant monitoring system for oil palm (Elaeis guineensis Jacq.) performance to external stimuli,” *Int J Adv Sci Eng Inf Technol*, vol. 8, no. 2, pp. 579–587, 2018.
[17] D. Manongga, U. Rahardja, I. Sembiring, N. Lutfiani, and A. B. Yadila, “Pengabdian Masyarakat dalam Pemberdayaan UMKM dengan Melakukan Implementasi Website Menggunakan Plugin Elementor Sebagai Media Promosi,” *ADI Pengabdian Kepada Masyarakat*, vol. 3, no. 1, pp. 44–53, 2022.
[18] M. L. Meuter, A. L. Ostrom, R. I. Roundtree, and M. J. Bitner, “Self-service technologies: understanding customer satisfaction with technology-based service encounters,” *J Mark*, vol. 64, no. 3, pp. 50–64, 2000.
[19] J. F. Hair Jr, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications, 2021.
[20] M. Yanita, D. M. T. Napitupulu, and K. Rahmah, “Analysis of factors affecting the competitiveness of indonesian crude palm oil (cpo) export in the global market,” *Indonesian Journal of Agricultural Research*, vol. 2, no. 3, pp. 156–169, 2019.
[21] T.-P. Liang, R. Kohli, H.-C. Huang, and Z.-L. Li, “What drives the adoption of the blockchain technology? A fit-viability perspective,” *Journal of Management Information Systems*, vol. 38, no. 2, pp. 314–337, 2021.
[22] M. Yanita, “What Factors Determine the Production of Independent Smallholder Oil Palm?,” *Indonesian Journal of Agricultural Research*, vol. 4, no. 1, pp. 39–46, 2021.
[23] T. Nurhaeni, K. W. Karts, and M. Hardini, “Viewboard Effectiveness on Raharja Internet Cafe Website as Sales Information Submission Media,” *Aptisi Transactions On Technopreneurship (ATT)*, vol. 1, no. 1, pp. 20–26, 2019.
[24] D. Rahmawati, “Analysis of Factors Influencing the Utilization of Information Technology,” *Journal of Economics and Education*, vol. 5, no. 1, 2008.