

Effectiveness of Logistics Information System Use and Logistics Information System Quality on User Performance through User Satisfaction

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Keywords

Logistics Information System, Usage Effectiveness, System Quality, User Satisfaction, User Performance

Abstract

The effective use of information systems in logistics companies will assist company management in changing business growth strategies. Information system quality is a measurement that focuses on the output processed by the system. This study aims to determine the effectiveness of using the Logistics Information System and its impact on performance and user satisfaction. The research method uses a quantitative approach. The research was conducted at Puninar Logistics with a sample size of 100 employees. Data was collected through a questionnaire with a Likert scale model that had been tested. The data analysis method used is SmartPLS (Partial Least Square) 4.0. The effectiveness of the Logistics Information System cannot be separated from information systems and information technology. The presence of information technology systems has had a lot of influence on an individual/ organization, not only on individuals/ organizations, but this influence extends to business processes and organizational transactions. In addition, effectiveness is a very important concept in organizations because it is a measure of the success of the organization in achieving its goals. This means that it can be said that effectiveness is directly related to achieving goals and is the key to the success of an organization. Research on the effect of information system effectiveness on employee performance has been carried out in many previous studies, but there are inconsistencies in research results regarding this relationship. Research results such as in research show that the effectiveness of the use of information systems has a positive effect on employee performance.

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INTRODUCTION

The logistics industry is undergoing a digital transformation. As time goes by, new and innovative technology continues to be developed, one of which aims to improve employee performance as users report the position of goods sent in real-time to customers (Tubis & Rohman, 2023).

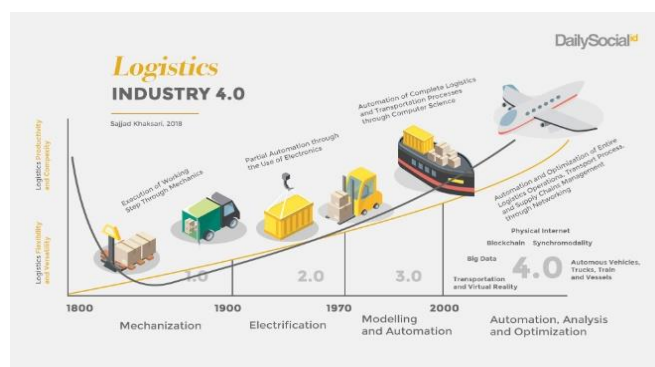


Figure 1 Logistics Industry 4.0

Source: (dailysocial.id, 2019)

According to researchers, Industry 4.0 has a significant influence on logistics, which can be seen in Figure 1.1. Individual demand for goods and services will continue to increase (Manavalan & Jayakrishna, 2019). Therefore, logistics both within and outside the industrial system must change to adapt to the changing environment. Logistics information systems will become increasingly complex so that planning and control practices usually cannot handle them.

The use of information technology in a company to support information systems has an influence on employee performance. Because employees are the main drivers of company operations and performance, employees must have expertise in their field of work (Tjahjono, Hermanto, & Kurnia, 2019). According to researchers, Employee performance as a user is the result of an employee's work which is measured based on quality, quantity, working time and cooperation to achieve company goals (Julvia, 2017).

Employee performance is one of the influencing factors in improving the quality and progress of the company. Employee performance can influence the level of success of a job because with the results achieved we can find out how much an employee's performance is. Efforts to improve individual performance from a logistics perspective include providing accurate and real-time delivery reports that can be used as information and a basis for decision making (Tjahjono et al., 2019).

The progress of an information system must also be supported by many factors that are expected to provide success for the system. However, two things happen when implementing a system in an organization: success or failure. The way the system is run, the ease of the system for its users, and the technology used influence the success of a company's information system application (Zarkasi, Rijal, & Iswahyuningsih, 2023).

The use of computers as data processing tools is used in work management because it has been proven to speed up performance. As a business that uses information technology, logistics companies must pay attention that the success of information systems can improve employee and organizational performance as a whole (Zarkasi et al., 2023).

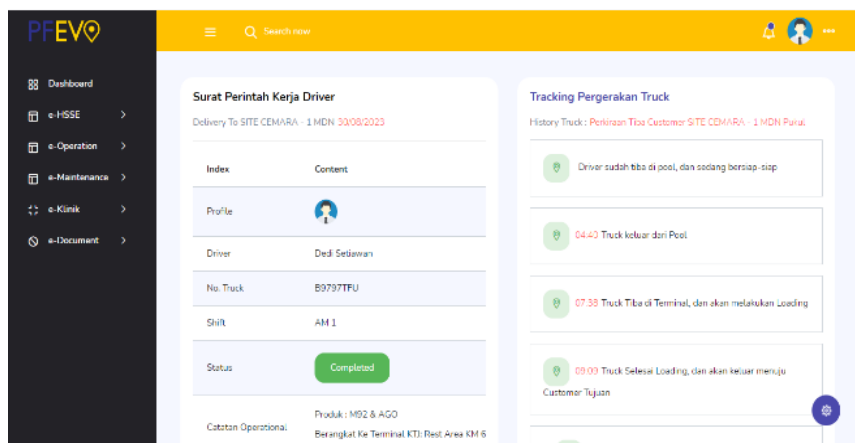


Figure 2 Image of the PFEVO Logistics Information System

Source: (Puninar Logistics, 2023)

Logistics Information System (PFEVO) is a software/application program that utilizes information and communication technology to facilitate Puninar Logistics' operational activities, especially in shipping via land transportation. Logistics Information System Software called Puninar Evolution (PFEVO) which can help and ease the work of employees can be seen in Figure 1.2. This is very important; especially to serve customers in meeting their necessary needs to make the service process easier and faster.

Logistics information systems must be able to meet different information needs. Implementation of an information system will be in vain if the information produced is not in accordance with user needs. On the other hand, if the information produced is in accordance with the user's needs, the user will feel they have quality information. If this can be achieved, then the objectives of the logistics information system can also be achieved (Zarkasi et al., 2023).

Due to the complexity of the problems, the obstacles faced by the Puninar Logistics Company as a company operating in the transportation and logistics sector are in terms of delivery preparation and delivery tracking (Qasem & Zayid, 2019). Processes such as driver attendance are still carried out using an attendance form which means drivers are not present on time. Then the process of checking the driver's health before delivery is still manually carried out at the clinic by the doctor on duty. The Tool Box Meeting activity, which discusses the latest issues related to traffic conditions, is only held weekly, face to face, which is not effective because traffic conditions change rapidly every day. Drivers are also given work order documents, resulting in the use of a lot of paper for deliveries every day. Unit checking activities before leaving and after leaving are carried out using the daily Inspection and Checking form and then collected in the document collection box and will be recapitulated later by the maintenance team, so if there is damage or abnormality to the unit the information will not be circulated in real time between the driver and the maintenance team.

Delivery tracking also still relies on GPS and if the GPS condition is damaged then the tracking process is still carried out manually by the operations team contacting the driver to ask where the unit is so that information on the position of the goods cannot be conveyed in a timely manner to the customer. Then the road money settlement process is still done manually by submitting petrol or toll receipts to the cashier.

So in 2018 Puninar Logistics began trying to transform towards digital by launching Logistics Information System Software called Puninar Evolution (PFEVO) which can help and ease the work of its employees, which can be seen in Figure 1.2. This is very important; especially to serve customers in meeting their necessary needs to make the service process easier and faster.

Using the Logistics Information System (PFEVO) application will provide higher quality information. Complex Logistics Information System (PFEVO) application activities are usually managed effectively because complexity requires effective arrangements, procedures and documentation. This usually produces higher quality and faster information for company management. Puninar Logistics believes that the information produced by the Logistics Information System (PFEVO) application is reliable, Puninar Logistics management will use this information for better management decisions.

Logistics Information System (PFEVO) is a software/application program that utilizes information and communication technology to facilitate Puninar Logistics' operational activities, especially in shipping via land transportation. Users of this application consist of Drivers, Operations Division, HSSE Division, Fleet Workshop Division and Finance Division. Initially this application was created only to support the needs of the HSSE (Health, Safety, Security, and Environment) Division which included reporting Unsafe Action, Unsafe Condition, Potential Incident, Pre Trip Discussion and Fit To Work where previously drivers filled out the form manually, collected into box then H+1 Safety Officer collects the form from the box and inputs manually in Microsoft Excel.

With the Logistics Information System (PFEVO) facilitated with a web-based network on the intranet and an interface developed for Android, drivers can report in real time on the system, so that in the process of achieving information which includes reporting Unsafe Action, Unsafe Condition, Potential Incident, Pre Trip Discussion and Fit To Work for the HSSE Division and customers carried out by Puninar Logistics can be carried out quickly and accurately, thereby expediting the information process for driver partners, customers, the Operations Division and Puninar Logistics management quickly. Apart from that, the Logistics Information System (PFEVO) was also developed to facilitate the performance of the Operations Division in planning truck units, scheduling drivers, issuing electronic work orders and Monitoring DWH (Driver Working Hours)

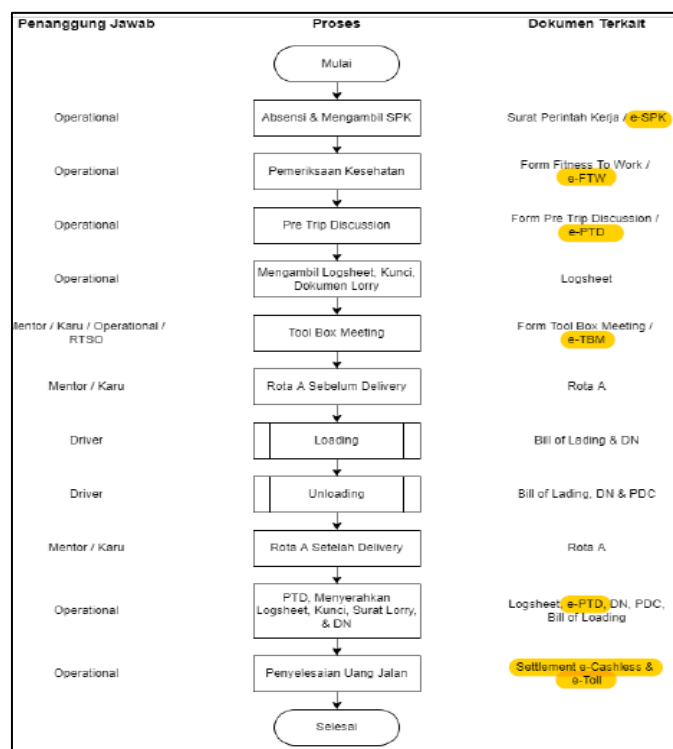


Figure 3 Flowchart of the Running PFEVO Logistics Information System

Source: (Puninar Logistics, 2023)

Apart from that, the Logistics Information System (PFEVO) was also developed to facilitate the performance of the Operational Division in planning truck units, scheduling drivers, issuing electronic work orders and Monitoring DWH (Driver Working Hours) Logsheet Delivery All Base which can be seen in Figure 1.4. The Logistics Information System (PFEVO) was also developed to assist the performance of the Fleet Workshop Division to carry out E-maintenance, monitor preventive maintenance schedules and monitor license validity periods.

The use of information technology can be seen in that most transactions carried out in organizations are no longer carried out via paper, but are made paperless (reducing paper use) such as e-SPK (Electronic Work Order), e-FTW (Electronic Fit To Work form), e-PTD (Electronic form Pre Trip Discussion), e-TBM (Electronic Form Tool Box Meeting) and e-Cashless & e-Toll (Travel Money Settlement). All these transactions can be carried out via internet access.

Thus, Puninar Logistics hopes that the Logistics Information System Software (PFEVO) will contribute to achieving employee performance, namely providing reports related to daily transactions. To determine the success of the Logistics Information System (PFEVO) in achieving optimal employee performance, it can be seen from several employee performance indicators as explained by researchers, including: Accomplish tasks more quickly, Improve Job Performance, Increase Productivity, Increase Effectiveness on Job, Easier Undertake Task, Useful In Job (Fragouli & Ilia, 2019). From several of these indicators, it is hoped that employees will have the ability to use Logistics Information System Software (PFEVO) including data/information analysis, evaluating work and completing work on time so as not to hamper the process of conveying information to customers and Puninar Logistics management.

The effectiveness of Logistics Information Systems cannot be separated from information systems and information technology. The presence of information technology systems has had a lot of influence on an individual/organization, not just the individual/organization, but this influence extends to business processes and organizational transactions. Apart from that, effectiveness is a very important concept in organizations because it is a measure of the organization's success in achieving its goals. This means that it

can be said that effectiveness is directly linked to achieving goals and is the key to the success of an organization. Research regarding the influence of information system effectiveness on employee performance has been carried out in previous research but there are inconsistencies in research results regarding this relationship. Research results such as in research show that the effectiveness of using information systems has a positive effect on employee performance (Astika & Dwirandra, 2020). However, on the other hand, there is also research which shows that the adoption of information systems cannot improve performance as in research (Tarhini et al., 2015).

System quality means the combination of hardware and software in an information system. The focus is system performance, which refers to how well the information system hardware, software, policies and procedures can meet user needs (McKnight, Lankton, Nicolaou, & Price, 2017). Good quality information systems are one of the advantages possessed by the company. Research conducted stated that the quality of information system implementation carried out had a significant positive effect on employee performance (McKnight et al., 2017). However, there are inconsistencies in research results regarding the relationship between information system quality and employee performance, namely research which states that information system quality has no significant positive effect on company performance (Wijaya, Pratami, Yudiastra, & Arista, 2019).

User satisfaction is used as an intervening variable to determine the extent to which user satisfaction is expected to influence individual performance and whether it is possible to significantly influence the effectiveness of using logistics information systems and the quality of logistics information systems and ultimately improve user performance substantially. Research conducted states that user satisfaction mediates the quality of information system implementation which has a significant positive effect on employee performance (Wijaya et al., 2019).

The implementation of AIS will not be free from problems such as users not understanding how to operate the system so that the performance of the information system implemented will not be optimal as expected, and the system used in a company is not suitable. The success of a company's information system depends on how the system is run, the ease of the system for its users, and the use of the technology used.

From the description above, it is clear that the Effectiveness of Using Logistics Information Systems and the Quality of Logistics Information Systems must be evaluated and improved to make users satisfied and improve users' performance as employees if they receive what is expected.

RESEARCH METHODS

The SEM method used is Partial Least Squares (PLS) - Structural Equation Modeling (SEM). SmartPLS 3.0 software will be used to analyze the relationship between variables for each hypothesis. PLS is a multivariate statistical technique that compares multiple dependent variables and multiple independent variables. If ratios are used in the same model, the sample does not have to be large, and the data does not have to be multivariate normally distributed (indicators with theoretical, ordinal, or interval scales). PLS can not only be used to confirm the theory but can also explain whether there is a relationship between variables. The purpose of this research analysis technique using PLS is to measure whether there is an influence between variables or correlation between constructs through the t test of PLS itself. The PLS-SEM evaluation in this study, in terms of outer model evaluation, uses a reflective model evaluation. This evaluation includes: (i) Indicator reliability, provided that the outer loading must be between 0.5-0.7 because this research is exploratory research; (ii) Discriminant validity, provided that the cross loading of indicator variables on latent variables must have a greater value on other latent variables. (iii) Internal consistency, provided that the composite reliability ≥ 0.7 because it is for exploratory research; Cronbrach's alpha must be ≥ 0.7 because it is for exploratory research, and (iv) Convergent validity, provided that the Average Variance Extracted (AVE) must be greater than 0.5 (Widarjono, 2015, pp. 277-278).

RESULTS AND DISCUSSION

The results of testing the first hypothesis found that the effectiveness of using the logistics information system has a direct positive and significant effect on user performance at Puninar Logistics.

The effectiveness of information systems, especially in today's Industry 4.0, definitely influences a company's logistics management performance. With today's technology and internet networks, everything has become automatic and easy. Therefore, Puninar Logistics launched a Logistics Information System (PFEVO) which makes employee performance easier as users by using an online information system, which can be accessed via the web or application. User performance is the result of the interaction between ability and desire to use information technology.

Based on the results of cross loading, the effectiveness of using the logistics information system shows that the highest value is in the information indicator according to the rules. It can be seen that the Logistics Information System (PFEVO) is effective in its use because it provides information that complies with the rules. In terms of user performance, the highest value is in indicator Y.5, which is related to Easier Undertake Task, meaning that the use of Logistics Information Systems (PFEVO) makes it easier for users to complete work needs.

According to users, the effectiveness of using the Logistics Information System (PFEVO) helps improve employee performance as users in completing work easily and according to the rules. However, some users feel that using this system has not been effective in improving user performance, especially in terms of speeding up work completion. This is due to the transition from manual processes to technology, which requires adaptation in the future when they are used to involving the system in their work. will simplify and speed up user performance and it is necessary to periodically refresh the use of the Logistics Information System (PEVO) in a persuasive manner and create a System Implementation Instructions Module.

The results of testing the second hypothesis found that the quality of the logistics information system (PFEVO) had a negative and insignificant effect on user performance at Puninar Logistics.

System quality refers to how well the information system itself is processed. System quality is defined as desirable features in an information system from a user and technical perspective that indicate how well the system can work. Users see system quality as a need that must be met so that the system can help and make work easier. Employees with good performance have a big impact on goodness and the achievement of organizational goals will always be maintained. Performance is the ability, motivation and opportunity to use information technology in carrying out their duties in accordance with the responsibilities given to them. To achieve the organization's initial goals, employee performance must be optimized.

Based on the cross loading results, the quality of the logistics information system shows that the highest value is in the integration indicator. It can be seen that an integrated Logistics Information System (PFEVO) can show transparency of shipping activities which helps improve user performance. In terms of user performance, the highest value is in indicator Y.5, which is related to Easier Undertake Task, meaning that the use of a Logistics Information System (PFEVO) makes it easier for users to complete work needs supported by system integration so that delivery activities can be monitored transparently.

Whether the quality of the system is good or not is also influenced by the user's own performance. If users delay updating information in the system, it can affect the Quality of the Logistics Information System (PFEVO). To prevent this from happening, the e-News feature provides reminders to users to always run the Logistics Information System (PFEVO) and provides warnings or warnings to users who do not update the system on time.

The results of testing the third hypothesis found that the effectiveness of using the logistics information system (PFEVO) has a direct positive and significant effect on user satisfaction at Puninar Logistics.

Puninar Logistics, in facing the era of massive digitalization, launched a Logistics Information System application called PFEVO (Puninar Evolution). Information systems in the modern business competition climate play an important role in creating, manipulating and capturing information issues that develop both internally and externally, where previously this information was manually reported, took a long time and the reported information was not integrated between divisions (Berisha-Shaqiri, 2015). However, in implementing the Logistics Information System (PEVO), the effectiveness of using the system has never been evaluated or measured whether the system is in accordance with the company's objectives and provides a sense of satisfaction for users of the Logistics Information System (PEVO). User satisfaction is a comparison between users' expectations and reality after experiencing the ease of implementing an information system carried out by an organization and the impact of interacting directly with the information system.

Therefore, through this research, we measure whether the use of the Logistics Information System (PEVO) is effective and provides a sense of satisfaction for its users. Based on the results of cross loading, on the effectiveness of using the logistics information system, the highest value is in the indicator X1.9, which is relevant. It can be seen that the Logistics Information System (PFEVO) provides information in accordance with the rules. In terms of user satisfaction, the highest scores are in indicators Z.4 and Z.6, which are related to User Expectations, meaning that the Logistics Information System (PFEVO) makes it easy to find the information needed because the Logistics Information System (PFEVO) display is easy to learn.

Users feel that the Logistics Information System (PFEVO) has been used effectively because it provides information that complies with the rules and feels satisfied using the system because it makes it easy to find the information they need because the Logistics Information System (PFEVO) display is easy to learn. Before this system existed, all work processes were carried out manually by filling out forms using paper and collecting them in collection boxes. This can lead to the potential for forms to be scattered, lost and damaged so that the information cannot be conveyed properly. With this system, work processes can be carried out paperless and become easier and faster because all work processes can be carried out one (1) door through this system safely without worrying about data being lost or damaged.

However, users feel that the Logistics Information System (PFEVO) is still not effective in its use because it cannot speed up the completion of work and is difficult to access on low-bandwidth intranet networks, so quota usage is not too large, but in fact this system still absorbs high quota usage. This can be optimized by using the cloud and socializing it to users to eliminate unnecessary internet activity and system developers updating data backups more regularly outside operational hours so as not to disrupt network traffic.

The results of testing the fourth hypothesis found that the quality of the logistics information system (PFEVO) had a direct positive and significant effect on user satisfaction at Puninar Logistics.

Logistics Information System Quality (PFEVO) can be measured by focusing on the output that has been processed by the system, and is related to user satisfaction and the use value of the information itself. Based on the results of cross loading, the quality of the logistics information system shows that the highest value is in indicator X2.3, namely timeliness. It can be seen that the information produced by the Logistics Information System (PFEVO) is in the form of reports on business activities which are updated regularly and systematically. In terms of user satisfaction, the highest scores are in indicators Z.4 and Z.6, which are related to User Expectations, meaning that the Logistics Information System (PFEVO) makes it easy to find the information needed because the Logistics Information System (PFEVO) display is easy to learn.

Users feel that the Logistics Information System (PFEVO) is of high quality and are satisfied because this system produces information in the form of reports on business activities that are updated regularly and systematically in accordance with user expectations in finding the information they need, supported by an easy-to-learn display. However, users feel dissatisfied if the system is difficult to access on a low-bandwidth internet network, which results in a low-quality system due to the potential for delays in updating information in the system.

The results of testing the fifth hypothesis found that logistics information system user satisfaction (PFEVO) has a direct positive and significant effect on user performance at Puninar Logistics.

User satisfaction is described by how well or poorly the logistics information system performs, as well as how well the logistics information system matches the user's goals. User performance is the ability, motivation and opportunity to use information technology in carrying out their duties in accordance with the responsibilities given to them (Saputra, Eliyana, Sariwulan, & Buchdadi, 2020). If users are satisfied with the information system they use, they are likely to feel comfortable and safe while working with it, which will help them complete tasks and improve User Performance.

Based on the results of cross loading, user satisfaction shows that the highest value is in the Z.4 indicator, namely User Expectations. It can be seen that the Logistics Information System (PFEVO) makes it easy to find the information needed because the Logistics Information System (PFEVO) display is easy to learn. In terms of user performance, the highest value is in indicator Y.5, which is related to Easier Undertake Task, meaning that the use of a Logistics Information System (PFEVO) makes it easier for users to complete work needs supported by system integration so that delivery activities can be monitored transparently.

Users are satisfied with the Logistics Information System (PFEVO) because it makes it easy to find the information they need and the display is easy to learn, making it easier for users to complete their work needs, supported by system integration so that delivery activities can be monitored transparently and is useful in improving user performance. This can be maintained if users are given the opportunity to provide opinions and suggestions for improvements related to performance, so that users psychologically feel that performance is their responsibility. This sense of responsibility causes users to be better at improving and developing their performance.

The results of testing the sixth hypothesis found that user satisfaction mediates the influence of the effectiveness of using the logistics information system (PFEVO) on user performance at Puninar Logistics.

Using Logistics Information Systems to manage information and data. Faster, more accurate, effective and efficient information can be used to plan various logistics functions and utilized according to user needs (Wang, Gunasekaran, Ngai, & Papadopoulos, 2016). Several literatures show that information technology has revolutionized and helped traditional logistics and supply chains achieve many benefits such as increased efficiency and responsiveness (Gunasekaran, Subramanian, & Papadopoulos, 2017).

The use of the Logistics Information System (PFEVO) makes it easier for users to complete their work needs thereby increasing user performance. This user's performance is also influenced by the effectiveness of the Logistics Information System (PFEVO) in providing information in accordance with the rules. Mediated by user satisfaction because the information needed in the Logistics Information System (PFEVO) is very easy to obtain, supported by a display that is easy to learn.

To improve user performance, companies must strive to develop the effectiveness of the Logistics Information System (PFEVO) in speeding up work completion and making it easier to access the system. Routinely carry out socialization and refreshment of the Logistics Information System (PFEVO) to users so that users have good abilities in completing assigned work

The results of testing the seventh hypothesis found that user satisfaction mediates the influence of logistics information system quality (PFEVO) on user performance at Puninar Logistics.

Using the Logistics Information System (PFEVO) application will provide higher quality information. Complex Logistics Information System (PFEVO) application activities are usually managed effectively because complexity requires effective arrangements, procedures and documentation. This usually produces higher quality information and can improve employee performance as users.

The use of the Logistics Information System (PFEVO) makes it easier for users to complete their work needs thereby increasing user performance. This user's performance is also influenced by the quality of the Logistics Information System (PFEVO) in producing information in the form of reports on business activities which are updated regularly and systematically. Mediated by user satisfaction because the information needed in the Logistics Information System (PFEVO) is very easy to obtain, supported by a display that is easy to learn.

To be able to create a Logistics Information System (PFEVO) with higher quality and improve user performance, companies must strive to prioritize user satisfaction by providing easy access to the Logistics Information System (PFEVO). Developing pop up and notification features to provide reminders to users to timely update the logistics information system (PFEVO). Because late updates to the system can potentially reduce system quality and hinder user performance in completing work.

CONCLUSION

The effectiveness of using the Logistics Information System (PFEVO) has a positive and significant effect on user performance. This can be interpreted as meaning that using the system makes it easier for users to complete work tasks, thereby improving their performance. User performance is also influenced by the system's effectiveness in providing information according to the rules. On the other hand, the quality of the Logistics Information System (PFEVO) does not have a significant influence in improving user performance. This is caused by delays in updating information in the system, which can affect the quality of the system and the information produced. However, system quality has a positive and significant effect on user satisfaction, because the information produced is high quality and easy to access. User satisfaction itself has a positive and significant effect on their performance.

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