

## THE INFLUENCE OF INFORMATION QUALITY AND INFORMATION TECHNOLOGY ON SUPPLY CHAIN PERFORMANCE THROUGH THE APPLICATION OF INFORMATION SHARING

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### **Abstract**

*In this study, technological advances have encouraged the use of AI-based systems to facilitate various activities. This study examines how AI can simplify a company's work and help solve problems related to supply chain performance, thereby improving company performance with the support of information quality, information technology, and information sharing, which helps the smooth running of the supply chain for the advancement of the company. This research facilitates the identification of key problems and their effective and efficient resolution for issues that arise in companies. This research uses quantitative data obtained from a survey of the community in the city of Batam. The results obtained from the survey show that AI can simplify various aspects for companies. The results of the study show that the influence of information quality and information technology on supply chain performance through the application of information sharing has a significant effect. This study shows that using current technology can improve company performance. For current developments, the most important thing for companies is to utilize AI for technological advancement at this time.*

**Keywords:** AI-Based, Information Quality, Information Technology, Information Sharing, Supply Chain Performance.

### **Introduction**

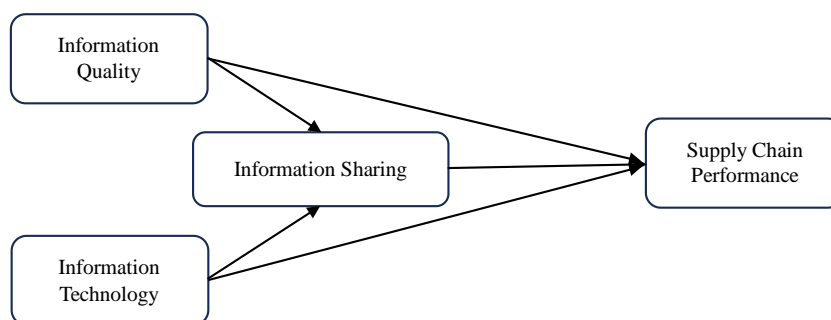
In the era of globalization, technological developments have experienced significant growth in various companies in Indonesia (Priyono & Wahyuningsih, 2023). This progress has encouraged the implementation of AI-based systems in daily operational activities, which facilitates the efficient execution of various tasks (So et al., 2024). With this innovation, AI-based systems can complete many tasks that were previously done manually. This allows companies to work in a shorter amount of time. The ability to meet customer needs by ensuring product quality and timely delivery is an important component of the supply chain (Chopra, 2019). Companies have begun to use AI to assist in decision-making and operational execution, improving the efficiency of these processes. AI is also considered to be able to drive global economic growth through automation and business process efficiency (Kankam et al., 2023).

Companies that use AI can evaluate the impact of AI on operational performance by creating strategic programs. AI-based systems are crucial for improving company performance and work efficiency because the application of AI in supply chain performance management enables more creative supply chain management that is ready to face future challenges (So et al., 2024). AI can also facilitate analysis of internal company problems, making the process faster and more accurate (Zai et al., 2024).

In this case, entrepreneurial competence, supply chain competence, and technological competence are some of the factors that can improve supply chain performance. These three competencies have a direct impact on company performance. Therefore, if companies want to achieve effectiveness and efficiency in their operations, they must manage these variables strategically. By monitoring and evaluating processes from micro and macro perspectives, supply chain performance can be improved. This improvement in performance will give companies a competitive advantage in an increasingly competitive environment (Bahrami et al., 2022).

In addition to economic principles, supply chains are highly dependent on the acquisition, interpretation, and utilization of adequate information to support the implementation of future corporate strategies (Gupta et al., 2018). The effectiveness of supply chains is greatly influenced by challenges such as large-scale data analysis and the use of complex artificial intelligence (Forbes, 2018). Therefore, companies need to ensure that the process of integrating technology into the supply chain system is carried out appropriately and according to need. Improving information technology capabilities is an important step in driving corporate digital transformation. The exchange of information supported by modern technology enables companies to be more adaptive to changes in the business environment. This study was developed with the aim of introducing AI technology as a solution to improve the efficiency of company operations (So et al., 2024). From an employee perspective, the application of AI in work processes, especially in the context of supply chains, has been proven to simplify work processes and improve decision-making accuracy (Sundram et al., 2020). This study combines IT elements, which in previous studies were not considered as components that help improve supply chain performance. This makes this study unique. This case study will investigate the influence of IQ and IT in improving SCP through IS. The Uniqlo retail store in Batam prompted this case

study because it has collaborated with a number of companies, including Gojek, Indomie, and Talok Angin. With Uniqlo's latest innovation, consumers have a different experience. Uniqlo asks each of its customers to create their own products. By combining elements of interactivity and customization, Uniqlo creates a variety of emotional experiences. To create unique and distinctive products, customization is key (Siswanto & Yunidar, 2023).



**Figure 1.** Conceptual Framework

### Methods

The data collected consisted of initial data collected through Google forms filled out by supply chain employees in Batam City personally and through social media. Sampling was conducted randomly. A method with 24 indicators was used to calculate the number of research samples. By collecting samples (300 respondents, Batam) (Jr et al., 2014) that were distributed to investigate how data quality and information technology affect supply chain performance. The models studied in this research were IQ, IT, IS, and SCP. The technique used to collect data was a survey conducted on supply chain employees. The Smart PLS and SPSS applications were used to process the research results.

### Results and Discussion

The research results were obtained using the Smart PLS and SPSS applications. These results were obtained from a survey given to all people who have worked in the company.

In supply chain research, companies need a supply chain from start to finish in the course of their business. The goal is to meet the needs of the company in terms of assessing technological developments and customer needs. This is to improve performance in work and the course of work, which tends to decline over time due to problems that arise in the corporate world (Sundari et al., 2024).

Research results for current Batam employees. Thus, the data can be processed using Smart PLS and SPSS applications. From this data, 300 individuals were selected to participate in the study. The majority of the 173 respondents were male (57.7%). The highest number of respondents were between 17 and 23 years old, with 150 (50%). The highest level of education was high school/vocational school, with 174 (58%), and the highest occupation was 128 (42.7%). The data was processed using SPSS (Jr et al., 2014).

Reliability and validity analysis, this reliability and validity analysis uses Smart PLS in the research section to process data from a survey conducted on employees in the city of Batam. Reliability and validity were tested to determine the average results of data processing. The data can be seen in Table 2. The average IQ result is 0.646, while the average IT, IS, and SCP results are 0.677, with an average IS of 0.649 and an average SCP of 0.686. With an average above 0.5, these results have passed the reliability and validity tests.

This study shows that data processing with Smart PLS is valid. The data taken from the Variance Inflation Factor (VIF) is sufficient, and the data processed using the Smart PLS application shows discriminant validity results, such as data from the Fornell-Larcker Criteria and the heterotrait-monotrait (HTMT) ratio. However, the heterotrait-monotrait ratio (HTMT) value is above the specified value, which is more than 0.9. Therefore, the Smart PLS results do not meet the requirements for discriminant validity data (Jr et al., 2014).

With a T-statistic value of 8.170 and a P-value of 0.000, the results indicate that H1 has a significant effect on IS, both in terms of product quality and the information provided to companies that can facilitate data exchange. Previous research on the effect of IQ on IS by Rahayu & Sulistyowati, (2024) also found that IQ has a significant effect on IS. In the study by Sundari et al., (2024), the results obtained also had a significant effect. In the study by Mugonya et al., (2021), the results obtained had a significant effect in the research conducted. In the study conducted by Kankam et al., (2023), the results also had a significant effect. The results obtained in this study show that IQ has a significant effect on IS.

The results of H2, with a T statistic of 4.770 and a P value of 0.000, indicate that H2 has a significant effect on the course of IQ on SCP. The IQ provided by customers can help improve SCP. In the variables studied by previous researchers, conducted by Rahayu & Sulistyowati, (2024), the results of the study had a significant effect. in their research (Kankam et al., 2023) that the results obtained had a significant effect, in their research (Hotlan et al., 2019) that the results obtained had a significant effect, in the research conducted by Namagembe & Mbago, (2023) that the results obtained had a significant effect, according to Hani, (2022),

the results obtained had a significant effect, and in the research conducted by (Priyono & Wahyuningsih, 2023), the results obtained from the research did not have a significant effect because the results obtained did not affect the IQ on SCP. However, the results obtained in this study, which examined IQ on SCP, showed that the results obtained had a significant effect.

In hypothesis H3, the T-statistic value of 5.052 and the P-value of 0.000 indicate that IT can influence IS implementation. For example, instant access to customer data facilitates data processing. In previous studies, the variable taken, namely IT, was compared with IS from research conducted by Sundram et al., (2020), which found that the results obtained in their study had a positive effect. In the study by (Sugito & Kusri, 2023), the results obtained had a significant effect. In the study conducted by Omar et al., (2020), the results obtained had a significant effect on the results given. In the study conducted by Yuliana et al., (2022), the results given in this study had a significant effect. From the results obtained in this study, IT has a significant effect on IS.

SCP can be influenced by IT, according to the H4 result value, with a T statistical value of 2.374 and a P value of 0.018. The results obtained in previous studies, namely according to Anantadjaya et al., (2023), show that the results obtained from this variable have a significant effect in their research. In the study by Riyadi et al., (2021), the results obtained have a positive effect on the course of IT on SCP. In the study conducted by Sundram et al., (2020), the results obtained from this variable had a positive effect. In a study conducted by (Alghofeli, 2023), the results obtained had a positive effect, and in a study conducted by Fekpe & Fiagbey, (2021), the results obtained had a significant effect. The results obtained in this study indicate that IT has a significant effect on SCP.

The results of the H5 study show that SCP is significantly influenced by IS. The T-statistic value of 3.996 and the P-value of 0.000 indicate that the IS value can be included in SCP. A comprehensive analysis of the Smart PLS application of the data surveyed among Batam employees shows that everyone is aware of the company. Previous research on the IS variable that influences SCP, according to Dwiastuti et al., (2023), shows that the results obtained are positive. In the research conducted by Kankam et al., (2023), the results obtained are positive. According to research by Rahayu & Sulistyowati, (2024), the results obtained in their study had a positive effect. In their study, Andiana et al., (2024) found that the variables studied had a positive effect, and in their study (Ngxesha et al., 2024), the results obtained had a positive effect. The results of the study show that the IS variable has a significant effect on SCP.

The results of the bootstrapping method on the specific implied effect of H6 are shown by a T-statistic value of 3.813 and a P-value of 0.000. The results indicate that IS mediates IQ and SCP and is greatly influenced by the information provided by customers to the company during IS; this can result in better SCP. Previous studies that found this variable, according to Sundari et al., (2024), showed that the results obtained were significantly influential. Research by Rahayu & Sulistyowati, (2024) showed that the results obtained were positively influential, and research conducted by Kankam et al., (2023) showed that the results obtained were positively influential. The results obtained show that the IQ variable has a significant effect on SCP through IS as a mediator.

According to the results of H7, the T-statistic value of 2.835 and the P-value of 0.005 indicate that IT influences SCP through IS as a mediator. The flow of information from the internet processed by this technology influences SCP. In previous studies, the results obtained by Hotlan et al., (2019) showed that the results were significantly influential, and in the study by Yuliana et al., (2022), the results were also significantly influential. In the variables studied, IT influenced SCP through IS as a mediator and was significantly influential.

This study shows that IS functions as a mediator between IQ and IT application on SCP. The results indicate that IS improves IQ and IT application on SCP, although SCP can still operate well without sacrificing IQ (Sundari et al., 2024).

## **Conclusion**

The results of the study show that IQ in this study has a significant effect on SCP because the information provided to the supply chain helps supply chain activities. IS affects the flow of information related to SCP. This affects how companies depend on information, such as input for the future of the company and the availability of adequate technology to complete tasks. Further research should adopt a new approach to help the information exchange process as an intermediary to improve SCP. In the retail world, technological changes can change the way supply chains operate.

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