

RESEARCH ARTICLE

Improving operational efficiency and customer experience in logistics: A case study in a logistics company

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Abstract – This study explores the effect of automation technology on the level of service quality and customer satisfaction in the logistics industry. A case study method was employed to investigate the problems faced by a logistics company in terms of operational and service efficiency and how the integration of an automated scanning and sorting system can streamline these issues. The findings indicate that the proposed automated system facilitates parcel handling, reduces mistakes and costs, and improves employees' well-being. In addition, automation enables the logistics company to cater to the growing needs of its customers, thereby ensuring service reliability and customer satisfaction and loyalty. These findings underscore the importance of automation to the logistics industry and its potential in fostering greater customer loyalty, enhanced competitive position, and long-term business sustainability.

Article History

Received : 22 May 2025

Revised : 14 August 2025

Accepted : 6 September 2025

Published : 30 September 2026

Keywords

Operational improvement

Customer satisfaction

Logistic

Crowd logistic

Case study

1. Introduction

In today's world, logistics has become more critical than ever because it deals with the regular movement of products and services to and from, starting from production to the place of utilisation (Ding, 2023). According to Richey et al. (2022), logistics is a broad set of activities required to move goods and services and to manage information in connection with the movement process. Logistics is an integral sector that contributes to business development and fosters international trade, thereby contributing towards the country's fast economic growth. Moreover, a disruptive, quickly developing "crowd logistics" model has revolutionised the delivery environment (Ding, 2023; Michel et al., 2023). As noted by Richey et al. (2022), the logistics market has been able to utilise digital platforms and resource-sharing technology. Malaysia has adopted a strategic direction in the development of logistics through investment in transport infrastructure and capacity to accommodate the growing demand for logistics services (Salim, 2023). Logistics firms have been actively engaged nationwide in utilising their market expertise for constructing distribution and operation centres as well as warehouses in urban and rural locations. This broad network is beneficial as it enables logistics services to cater to various geographical areas, thereby enabling inclusion and increased access within the delivery system (El Moussaoui, 2024). The capability of staying ahead in a competitive market is highly associated with improvements in customer satisfaction (Haron et al., 2023b). Such improvement in customer satisfaction also stimulates economic growth in Malaysia (Salim, 2023). Logistics companies can expand their operations through fast, efficient, and reliable logistics services. This growth creates a demand for fulfilling orders within shorter timeframes to meet increasingly aggressive customer expectations (Ding, 2023). Moreover, crowd logistics provides budget-friendly delivery choices and allows small businesses and entrepreneurs access to wider customer bases. The development of logistics services has also contributed to advancements in trade, economic well-being, and job opportunities (Aripin et al., 2024).

Despite these benefits, logistics services face several problems within the industry. Delivery delays have been a primary concern among many customers, which can affect their expectations and cause disappointment (Saha & Sarma, 2025). The absence of accurate and timely tracking information can also frustrate customers with logistics providers (Čižiūnienė et al., 2025; Saha & Sarma, 2025), with many highlighting the expectations for real-time updates on the location of their shipments and precise delivery windows (Puram et al., 2022). Another concern entails the mishandling of parcels that can happen at distribution centres or from the sender to the recipient (Puram et al., 2022). Therefore, efforts to improve tracking accuracy, eliminate delivery delays, and enhance parcel handling and management are integral for promoting customer satisfaction and long-term loyalty (Čižiūnienė et al., 2025; Haron et al., 2023a; Haron et al., 2023b; Salim, 2023). This paper reports the findings of a case study conducted at Company A, a logistics company established in 2017 that provides land, sea, and air couriers and has expanded rapidly across China, the United Arab Emirates, and Southeast Asia, including Malaysia, Vietnam, the Philippines, Thailand, Singapore, and Cambodia. Despite its performance, Company A is facing significant challenges due to an unexpected surge in online orders, leading to extensive delivery delays. One of the main issues is limited storage space, which imposes significant difficulties in managing incoming products effectively. The company's inability to forecast demand has also resulted in poor staff management and a disorganised parcel sorting process. Consequently, many packages, especially fragile ones, have arrived damaged despite proper packaging. Hence, this study aims to achieve the following objectives:

- i) To identify the problems faced by the case company to enhance operational and service efficiency.
- ii) To propose the implementation of an automated scanning and sorting system to enhance operational and service efficiency.

2. Literature Review

2.1 Customer Satisfaction

Customer satisfaction is an important key performance indicator (KPI) that measures how well a company meets the expectations of its customers (Saglietto, 2021). It occurs when the psychology of product or service performance meets or surpasses customer expectations. Companies that value customer satisfaction are known to have higher sales, customer roster, and brand loyalty (Tahir et al., 2024). Several studies have explored the relationship between customer satisfaction, loyalty, and service quality, including those in the logistics industry. For instance, Heskett et al. (1994) reported that satisfied customers repurchase from organisations and refer others through word-of-mouth (Sharma & Singh, 2023; Singh et al., 2023). Good customer service through technological support will boost market position and increase customer loyalty. Furthermore, incorporating customer feedback into decision-making allows businesses to respond more effectively to the increasing customer demands (Pereira et al., 2022; Singh et al., 2023).

2.2 Issues and Challenges

2.2.1 Quality of orders

Order accuracy and fulfilment significantly impact customer satisfaction in logistics and supply chain management (Pereira et al., 2022). Accurate order processing is essential for building customer trust and establishing lasting relationships. For Company A, the accuracy of picking, scanning, and delivering packages is key to sustaining its service quality. This is because customers place great importance on receiving a package in good condition, and any deviation from this expectation can result in a negative perception of the service (Čižiūnienė et al., 2025). According to Heskett et al. (1994), customer satisfaction positively affects customer retention. Therefore, courier services must ensure that packages are handled and packaged carefully to prevent item breakage. This is important since the cause of such damage is often difficult to detect (Pascual-Nebreda et al., 2023).

2.2.2 Quality of information

The decision on consumer satisfaction with logistics services depends on the quality of information (Lin et al., 2023). Moreover, customer perception and happiness depend on current and accurate information. Automatic scanning and sorting systems assure transparency by providing real-time data of the parcel's location and expected delivery date (Gupta et al., 2023). Customer confidence depends on real-time tracking and accurate delivery time prediction (Lin et al., 2023). According to Karjalainen (2012), customer satisfaction and loyalty can be explained through service quality, perceived value, and the fulfilment of customer expectations. Effective, user-friendly, and regularly updated digital platforms are crucial for success. Therefore, implementing 24-hour support and accurate tracking tools is vital to significantly enhance digital consumer offerings. A reliable tracker can improve assistance through updated software applications and a better technology platform in an evolving logistical environment, which enhances customer engagement.

2.2.3 Timeliness

In the logistics sector, prompt delivery is essential for service quality. Two key factors of customer satisfaction and loyalty are the speed and timeliness of delivery services (Zaato et al., 2023). By utilising technological systems like scanning and sorting devices, logistics companies are taking the right steps to prevent late deliveries and ensure fast order processing, which is essential for customer satisfaction. The companies' status as a reliable delivery service provider, which includes next-day delivery and the ability to do it on weekends and public holidays, clearly indicates their commitment to timeliness (Sarifah et al., 2023). Customers frequently associate their positive experiences with timely deliveries, noting specific locations where the service met their expectations. This prompt fulfilment is essential for overall satisfaction. Additionally, excellent customer service is a crucial factor in building customer loyalty and influencing future purchasing decisions (Wibowo et al., 2021). Reliable distribution is also essential for customer retention.

2.2.4 Ergonomics

Proper ergonomics provide health and efficiency benefits for logistics employees (Aripin et al., 2023). Company A seeks to manage workplace injuries to enhance productivity. These considerations arise from working in a logistics environment where employees lift, shift, push, or pull parcels for several hours (Farooq et al., 2024). Company A aims to achieve ergonomics in the work systems to avoid injuries and increase productivity. Past evidence shows that improving ergonomics in logistics reduces fatigue and musculoskeletal disorders and enhances job satisfaction (Mohd Aripin et al., 2024). The initiative will help the company achieve its goals for a safe, healthful, and effective workplace. Investing in ergonomic tools, such as automatic scanners and adjustable workstations, will help maintain Company A's reputation as a leader in logistics.

2.2.5 Integrating automated scanning and sorting machines

According to Krishnan et al. (2024), technology drives the logistics sector and impacts its performance positively. Aripin et al. (2023) also stated that automation systems eliminate human errors and enhance processing speed, thereby serving as an important factor in increasing customer satisfaction. Technologies within logistics enable proper demand forecasting, route planning, and cost-effective operations. For Company A, implementing these technologies could enhance its communications with customers and offer real-time tracking, which are good factors affecting customer experience and retention. The use of sorting machines could also minimise workers' physical effort and shorten the time required to sort parcels. However, advancements in logistics technologies come with their own set of challenges. Sumbal

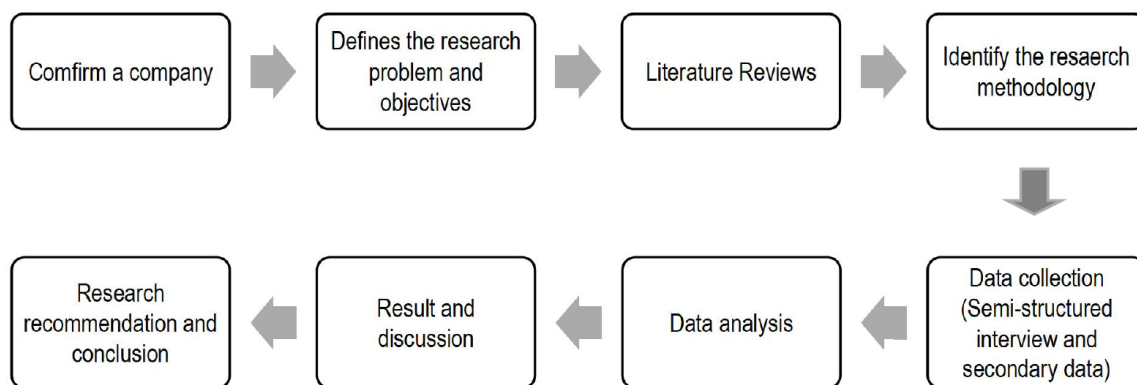
et al. (2023) emphasised that significant investment is required to install technological machines. Additionally, their successful implementation depends on having the right people who are trained to use them effectively.

3. Methodology

Figure 1 shows the steps involved in the research flow of this study. The first step was determining the case-study company. Company A was selected as the case company due to its experience in courier and logistics services. The next step was establishing the research problems in line with the first research question. Subsequently, a literature review was conducted to obtain relevant information from previous research related to the issues and challenges faced by logistics companies. It was followed by deciding the research methodology. This study employed the qualitative research design to investigate the operational challenges related to customer satisfaction. Data were obtained from semi-structured interviews with a General Manager from Company A. The informant was selected as he was responsible for logistics operations in various aspects, including overseeing the entire parcel sorting and delivery process and ensuring service quality. Secondary data were also obtained to gather a deeper understanding of the company's problems and their connection to customer satisfaction. Both primary and secondary data were analysed to answer the first research question. Finally, several recommendations were proposed for the case company, thereby answering the second research question.

Figure 1

Research flow



4. Results and Discussion

A key finding obtained from the interview was the practice of manual scanning using smartphones in Company A. The scanning of each parcel took approximately five seconds, after which workers would hand-segregate the parcels by delivery regions. The process was manual and time-consuming, thereby delaying the entire delivery chain. This caused delivery delays and negatively affected customer satisfaction and the company's reputation. Additionally, the existence of backlog increased costs, making operations more expensive due to the time spent resolving these issues. On-site observations revealed that workers were involved in repeated bending to lift and handle parcels manually. This poses ergonomic hazards since the high frequency of manual labour increases the risk of musculoskeletal disorders, ultimately affecting workers' health and efficiency. Repetitive motion can lead to chronic back pain, strain injuries, and other long-term health issues, particularly when employees do not employ proper lifting techniques. It is essential to address ergonomic hazards through interventions that can improve occupational safety and enhance operational efficiency. These findings highlight that manual processes cause delivery delays, ergonomic hazards, and operational inefficiency. Therefore, the introduction of automated scanning and sorting machines directly addresses these issues by reducing processing time, improving accuracy, and mitigating physical strain on workers.

4.1 Introduction of Automated Scanning and Sorting Machine

The implementation of an automated scanning and sorting machine was proposed as a targeted solution to the problems faced by Company A, aimed at increasing operability and enhancing customer satisfaction. These devices were designed to facilitate the parcel scanning and sorting processes by removing the need for manual operations and reducing ergonomic risks for logistics workers. Figure 2 shows an automatic sorting machine developed by Datalogic, one of the global leaders in factory automation and automatic data-capture technologies. The company specialises in designing and producing bar code readers, mobile computers, RFID vision, laser marking systems, and sensors for detection, measurement, and safety. It was suggested that Company A implement Datalogic's automatic sorting solution to optimise their parcel flow and improve customer satisfaction.

4.2 Improvements in Company A's Operations and Their Impact on Customer Satisfaction

Figure 3 illustrates the benefits of introducing automatic scanning and sorting machines at Company A across four areas of its operations. First, the new technology will significantly mitigate workplace risks by reducing manual parcel handling, which often leaves employees tired and prone to errors (Mocan et al., 2022). The automation will also increase sorting accuracy by eliminating misrouted parcels that could lead to delays and cost overruns (Tan et al., 2021). From a cost

perspective, the proposed technology will enable efficient allocation of manual labour and improve the output. This technology investment will provide many benefits in terms of reducing costs and increasing efficiency. Moreover, the efforts on delivery performance will be improved through automatic parcel processing systems, resulting in a more precise prediction of parcel delivery time and the impact on optimised routing to minimise delivery time (Orenstein et al., 2019). Quality control can also be enhanced, as the accuracy of automated handling reduces package breakage and improves service levels within the logistics network (Klomjit et al., 2020). These improvements in operations will enable Company A to strengthen its competitiveness as a logistics player.

Figure 2

Example of an Automated Scanning and Sorting Machine

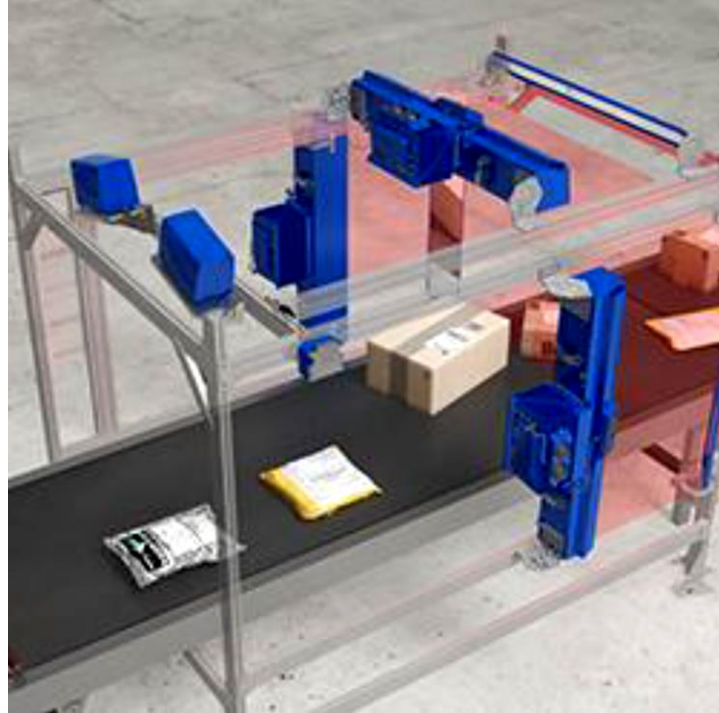
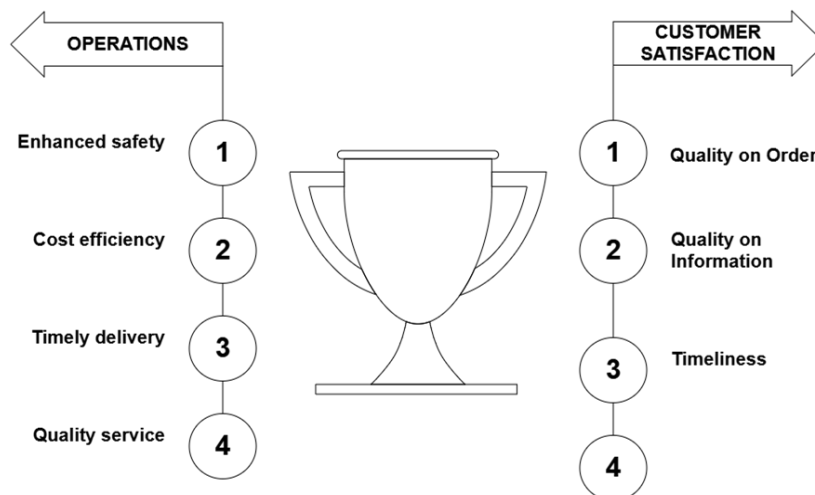


Figure 3

Benefits on Company A's operations and customer satisfaction



The efficiencies realised through automation will improve customer satisfaction in three critical areas. Order quality will be increased as the automated systems pick and transport to final dispatch smoothly, ultimately reducing damage upon arrival while maintaining advanced tracking throughout the process. Additionally, the tracking tools will improve information quality by ensuring that customers receive accurate and real-time updates of shipment information across digital channels (Klomjit et al., 2020). The transparent sharing of real-time operation information will assist Company A in building trust with the customers (Horizral et al., 2025). Finally, another significant improvement concerns timeliness, where the implementation of automated logistics enables more precise and reliable delivery windows and significantly improves adherence to promised delivery schedules (Thogaru et al., 2025). This will result in better-protected packages,

more reliable tracking information, and the timely delivery of packages and goods, thereby increasing customer satisfaction and brand loyalty. These customer-centric improvements are valuable in the highly competitive logistics market, where dependability and transparency are paramount to both consumers and business clients.

5. Conclusion

This study emphasises the importance of automation in improving the level of service in the logistics sector. Deploying the suggested automated scanning and sorting technologies will enable Company A to resolve several significant operational challenges by improving the accuracy, speed, and efficiency of parcel processing. Automation will foster efficiency and reduce problems associated with the lack of timeliness and parcel breakage, thereby improving customer satisfaction. These new technologies will also enhance the company's competitiveness in the logistics industry by offering more efficient customer service and an expanding market for customer groups. The integration of automation aligns with Company A's mission to offer faster and more reliable services that will ultimately earn customer loyalty and continued success in the long run. Additionally, automation technology will deliver clear advantages to Company A, including cost savings, increased operational productivity, and improved employee conditions. This improvement will prove the company's dedication towards operational excellence and fostering good working conditions, as it has the capabilities to scan and process more parcels efficiently and faster, resulting in decreased employee stress.

However, this study has several limitations that warrant attention. First, the observation was conducted at one branch of Company A's sorting centre, which could not capture the operational problems across all of its outlets. Although invaluable data were collected by observing field operations at this branch, other branches may experience other forms of problems, which were not addressed in this study. Furthermore, although the semi-structured interview with a manager contributed in-depth information, only a few employees' views were obtained, which may not fully reflect the operational obstacles within the company's diverse working levels. Future studies can improve the external validity by observing various branches of Company A and interviewing more employees to gain a better insight into the company's logistics operations.

5.1 Implications

As the study sheds light on the impact of adopting the automatic scanning and sorting system on customer satisfaction in Company A, its implications are of utmost importance for the logistics industry and academia. From the theoretical perspective, the findings aid in understanding how transformative logistics technologies may affect logistics operations at the level of customer experience and service quality. By examining the relationship between automation and customer satisfaction, the findings of this study can produce a cause-and-effect relationship that goes beyond purely basic theoretical discussion and support logistics firms in their strategic planning and decision-making structure. The findings also serve as a pertinent guide to tailor the use of digital technology with developing consumer behaviour.

The findings also offer practical implications for the operationalisation of logistics companies. First, it portrays how the implementation of automated scanning and sorting systems can influence the achievement of KPIs. This will establish a more targeted means for logistics companies to make investment decisions to improve efficiency, reduce manual dependence, and improve service quality. Second, the study can improve the productivity and competitive edge of Company A in the logistics industry by considering both employee ergonomics and the implementation of technology. Third, the findings provide a futuristic view of the logistics sector and the development of a technology-based customer-oriented service. With the integration initiative considering automation technology, logistics industry players like Company A can enjoy far-reaching advantages such as strengthening the organisation's brand loyalty, contributing to competitive positioning in the market, and producing ultimate real business success.

Acknowledgements

This research was conducted as part of the Individual Field Project (IFP) for the Bachelor of Business Engineering programme at Universiti Malaysia Pahang Al-Sultan Abdullah. The authors would like to express their gratitude to the Faculty of Industrial Management for their support and to the case company for their cooperation and valuable insights during the data collection process.

Funding

This study was not supported by any grants from funding bodies in the public, private, or not-for-profit sectors.

Declaration of Competing Interests

The authors declare no conflicts of interest.

CRedit Authorship Contribution Statement

All authors contributed equally to this work.

Availability of Data and Materials

The data supporting this study's findings are available on request from the corresponding author.

Ethics Declarations

This study did not involve human or animal participants and did not require ethical approval.

Generative Artificial Intelligence Declarations

The authors claim that artificially intelligent-assisted technologies in the form of generative AI were not used to generate content, ideas, or theories. AI was only used to enhance readability and refine the language. This was used with extreme human control and oversight. The authors take full responsibility for reviewing and approving the content.

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