

i-RIC 2024

INTERNATIONAL RESEARCH & INNOVATION CONFERENCE

PROCEEDING

“HARMONY IN DIVERSITY: FOSTERING UNITY
SUSTAINABLE RESEARCH AND INNOVATION SOCIETY”

24 & 25 JULY
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Published by:

Politeknik Nilai Negeri Sembilan (PNS)
Kompleks Pendidikan Bandar Enstek,
71760, Bandar Enstek,
Negeri Sembilan

2024

eISBN 978-967-2742-35-7

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PREFACE

It is a great privilege for us to present the proceedings of the International Research and Innovation Conference (i-RIC 2024) to the authors and delegates. We hope that you will find it useful, exciting, and inspiring. The International Research and Innovation Conference (i-RIC 2024) was held online from 24 to 25 July 2024, organized by Politeknik Nilai in collaboration with Universitas Logistik dan Bisnis Internasional (ULBI) with the theme, “Harmony in Diversity: Fostering Unity Sustainable Research and Innovation Society.”

i-RIC 2024 aims to gather more researchers, students, government agencies, and private sectors in an event with a larger international impact. The organization of this program also serves as a platform for sharing research findings, ideas, and knowledge among members of polytechnics, community colleges, higher education institutions, public universities, as well as government and private agencies involved. Researchers, academics, and experts from various sectors will have a global stage at i-RIC 2024 to discuss the latest findings and research that support sustainable development goals. The conference aims to generate knowledge to make our world greener and better for us and our future generations.

There were 4 keynote speeches covering different areas of the conference. The first day started with Associate Professor Dr. Ir. Agus Purnomo (ULBI Indonesia) talk on "How to Boost Green Supply Chain Resilience?" and Professor Dr. Mohamed Kchaou (University of Bisha, Saudi Arabia; University of Sfax, Tunisia) on "Latex Based Membrane for Oily Wastewater Treatment Technology Process and Perspectives". The second day featured Professor Dr. Recai Kus (Selcuk University, Turkey) on "Load Optimization of AISI 1040 and AISI 5140 Joint" and Dr. Umawathy a/p Technamurthy (Universiti Kebangsaan Malaysia) with her talk on "Harnessing the Potential of Maker Education in Enhancing Student Learning Outcomes".

A total of 124 presenters participated in the parallel presentation sessions, which ran smoothly over the two-day event supported by 109 i-RIC 2024 organizing committees. This included 16 online presentation moderators, 42 reviewers, 19 judges, and all participants who took the time to attend the online sessions. A total of 124 research papers and 56 innovations were presented in this program across 7 fields, namely:

- A. Engineering and Technology
- B. Business Management
- C. Education, Teaching, and Learning
- D. Health and Life Sciences
- E. Social Sciences
- F. Information Communication Technology
- G. Logistics and Supply Chain

Information regarding i-RIC 2024 can be accessed through the Program Book at <https://heyzine.com/flip-book/521619ef82.html> and overall results can be found at <http://iric.polinilai.edu.my/.../confe.../results-innovation>.

We would like to express our heartfelt thanks and sincere appreciation to all the authors for their contributions to this publication. We also express our gratitude and appreciation to all of the reviewers for their constructive feedback on the papers. Warmest thanks to the members of the organizing committee for their hard work and dedication in ensuring the success of the event.

Congratulations to everyone involved in making this conference a success.

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LOGISTICS AND SUPPLY CHAIN MANAGEMENT

**“HARMONY IN DIVERSITY: FOSTERING UNITY
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A Literature Review: Analysis of Courier Business Strategies in Facing Global Challenges

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Abstract

Indonesia's courier sector is expanding rapidly as a result of new technology such as e-commerce and shifting consumer behavior. The Courier Express Parcel (CEP) section accounts for more than half of total production, with a projected 12.55% increase in 2029. This study investigates the elements that influence profitability fluctuations, focusing on liquidity, company size, and appropriate capital structure. Future study should look into scale verification, customer patience impact, digitalization effects, implementation difficulties, and expectations for new technology. Optimisation strategies for courier dispatching systems and collaborative models are also covered. This study will identify using the literature study with 12 articles selected between 2017 and 2022.

Keywords: Study Literature, Courier Business, Strategies, Global Challenges

1. Introduction

In the current era of globalization and digitalization, the courier industry has become an integral part of the global supply chain. Industry with the emergence of new technologies such as e-commerce and changes in consumer behavior, courier companies are faced with increasingly complex challenges. Diversification will be SF's main strategy in the future (S.M. Yuen & Yu, 2019). The e-commerce market makes the largest contribution to the CEP (Courier Express Parcel) segment in Indonesia with an average contribution of >50% of total production, so there is a big opportunity to increase market share in CEP logistics. The e-commerce market in Indonesia also has very good growth, namely with a CAGR of 44% and causing e-commerce logistics growth of CAGR of 31%.

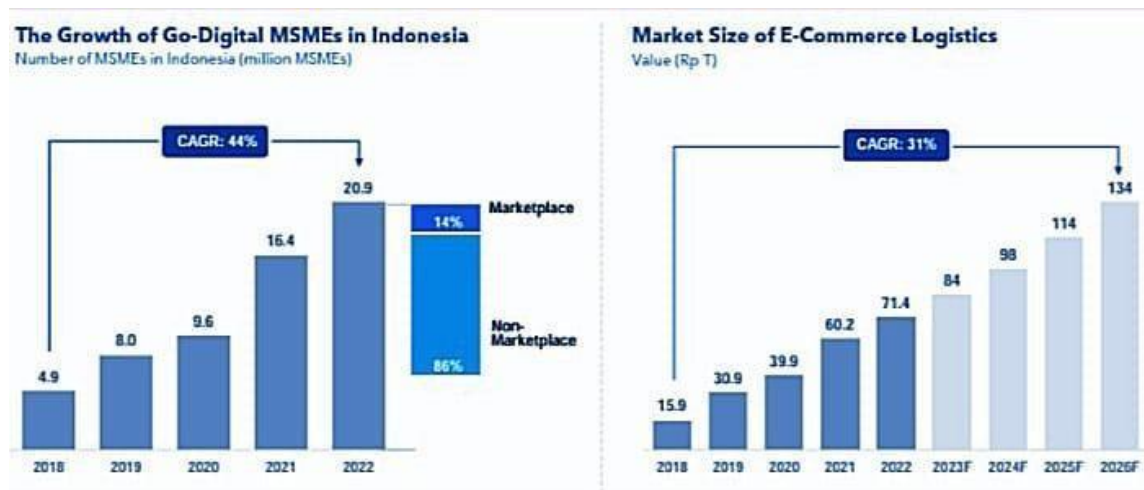


Figure 1: Diagram of the Growth of E-Commerce MSMEs and the E-Commerce Logistics Market in Indonesia
Source: Indonesian Ministry of Communication and Information, Indonesian Data

With the challenges and opportunities of the current potential of the courier business market in Indonesia, the growth of the courier industry in Indonesia is very rapid. Although companies have created their own added value, have a team of dedicated employees, an established

workplace, innovation, and so on, but the motive of this research is the need to explore the internal and external factors that drive changes in profitability levels. Profitability cannot be measured individually, but it relates to one another (Abdul Manaf et al., 2022). This study will analyze factors that can influence the probability of creating a business strategy to face increasingly fierce market competition. The researchers have employed a panel-data technique, which has included the time-series and cross-sectional data, to ensure that all the essential data have been acquired (Abdul Manaf et al., 2022).

According to Siddik dan Chabachib (2017) and Panjaitan et al., (2023), liquidity affects company value. According to Thaib (2017) and Panjaitan et al., (2023), profitability is the level of profit a company obtains when carrying out its operations. High profitability demonstrates the company's ability to earn high profits for its stockholders (Nugroho, 2019). Panjaitan et al., (2023) states that company size is the size or amount of assets owned by the company. According to Kartika and Dana (2015), an optimal capital structure is a capital structure that optimizes the balance between risk and return, thereby maximizing stock prices. The input criteria are assurance, empathy, and real nature is the criterion effective to improve in order to improve business performance (Teoh et al., 2020).

2. Research Methodology

The study of literature is a way to solve the issue by searching for the sources of writing that have ever been made before. According to M. Nazir in his book entitled *Methods of Research*, the study of libraries or literature studies is a technique of data collection by conducting investigative studies of books, literature, records, and reports that are related to solved problems (Salmaa 2023). Whereas SLR (Systematic Literature review is a method used in research to analyze or review and summarize the result of previous studies and the result of this SLR can be used as recommendations for researchers to conduct subsequent studies (Maniah et al. 2022).

After conducting a systematic search, the author obtained 12 international articles in 2017–2022 from several foreign university countries, such as Malaysia, Kenya, Korea, China, Hong Kong, Indonesia, Colombia, and Bulgaria. These are research articles with open access and can be opened in full. The subject of this study is the strategy that courier business companies are implementing to deal with global challenges.

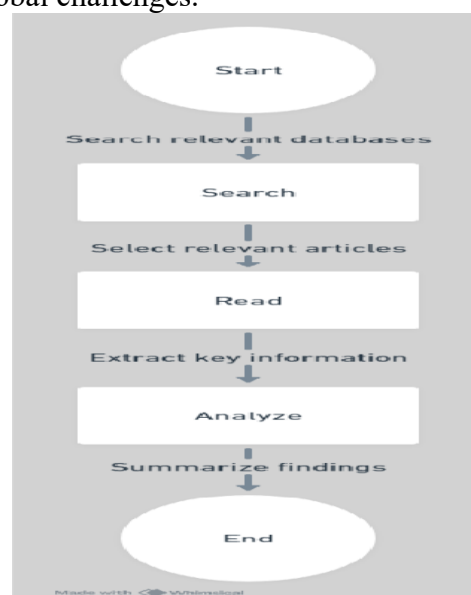


Figure 5: The Step used in Literature Review Study

Source: (Salmaa, 2023)

3. Result and Discussion

The writers looked over twelve articles published abroad. Articles matching the keywords courier business and courier company, which correspond to the titles of the writings the author raised, are the ones that were used in the literature study. The author presents the findings from her review of twelve papers in the following table.

Table 1: Result Study Literatur Analysis of Courier Business Strategies in Facing Global Challenges

No	Title	Author	TL; DR	Problem Statement	Method	Conclusions
1	Analysis of the Performance of Courier Companies in Selected Listed Counters in Malaysia	(Abdul Manaf, Mohd Said, and Adenan 2022)	In this study, the writers analyzed the factors that affect courier firms' profitability during an eight-year period (2014-2020). They utilized the Random Effects Model to analyze profitability.	Factors affecting profitability of Malaysian courier companies. Impact of firm size, liquidity, leverage, inflation, and unemployment	Random Effects Model used for profitability analysis. Variables: firm size, liquidity, leverage, inflation, unemployment discussed	Firm size, liquidity, leverage positively affect profitability. Unemployment rate negatively impacts profitability of courier companies in Malaysia.
2	Innovations in the courier services	(Cywiński 2022)	In this article, the impact of innovation on the courier services market, resulting in savings and improved efficiency is discussed, as well as organizational solutions that improve the market and make savings.		IT systems are the basis for innovative solutions in courier services. Organizational solutions are also used to improve efficiency and save money.	Innovations in courier services lead to cost savings. IT systems and organizational solutions improve market efficiency.
3	Last Mile Logistics Innovations in the Courier-Express-Parcel Sector Due to the COVID-19 Pandemic	(Sułkowski et al. 2022)	In this paper, the authors present a diagnostic of the possibilities of utilizing the potential of customer experience for the development of firms based on last-mile delivery technology, using Poland as an example.		Primary (fragmented) explanatory study that is descriptive and illustrative. Diagnostic survey using a computer-assisted web interview (CAWI)	Impact of COVID-19 on last mile logistics services. Recommendations for technologization of last mile deliveries

4	Determinants of Courier Service Quality in e-Commerce from Customers' Perspective	(Gulc 2020)	In this paper, the authors presented a complex review of literature concerning determinants of courier service and the original scale, which can be used to measure courier service quality in e-commerce.	Identify determinants of courier service quality in e-commerce. Develop a scale to measure courier service quality	Literature review on determinants of courier service quality. Survey method to collect data from online shoppers in Poland.	Key dimensions affecting courier service quality: reliability, visual identification, service complexity, relational capital, social responsibility, responsiveness, technical quality. Further research needed to verify the scale and explore other stakeholders' perspectives.
5	Courier Dispatch in On-Demand Delivery	(M. Chen and Hu 2021)	A courier dispatching problem in an on-demand delivery system where consumers are sensitive to delay is investigated, and it is discovered that the dispatching strategy is significantly dependent on customers' patience level, the size of the service zone, and the firm's ability to endogenize demand.	Courier dispatching strategies in on-demand delivery systems. Effect of temporal pooling vs. dedicated strategy on delivery efficiency.	Dedicated strategy (one order per trip). Pooling strategy (batch of sequential orders per trip)	Pooling strategy optimal for large service areas with endogenized demand. Dedicated strategy preferable for large service areas with exogenous demand.
6	Strategies for Improving the Quality of Logistics Courier Services Through Priority Problem-solving Based on Multiclass Classification	(Hendayani and Dharmawan, 2020)	In this paper, the authors used a sentiment analysis method with classification models of Naive Bayes Classifier and Support Vector Machine as well as multiclass classification to evaluate and find strategies to improve the quality of logistics services.	Identify and prioritize problems in JNE's logistics services. Improve response time and personnel contact quality for customer complaints.	Naive Bayes Classifier. Support Vector Machine	JNE faces high priority issues in Personnel Contact Quality and Timeliness. Negative sentiment dominates JNE's Twitter mentions with 97.82%.

7	Data Envelopment Analysis for Malaysia Courier Services Performance and Customer Satisfaction	(Teoh, Abu Hasan, and Zahari 2020)	This study presents a practical approach for determining the level of consumer satisfaction with courier service firms using Data Envelopment Analysis, using 4r courier services selected in Hulu Terengganu: Poslaju, City-Link Express, J&T Express, and GD Express.	Efficiency of courier services in Malaysia. Identifying customer satisfaction levels towards courier services	Data Envelopment Analysis (DEA). Questionnaire survey.	Poslaju is ranked as the most efficient courier service. GD Express is ranked as the least efficient courier service.
8	Trends in Courier Services in Terms of Digitalization of Commerce	(Gramatiko va 2019)	In this article, the authors examine changes in the logistics industry and supply chain due to the development of artificial intelligence (AI), the growing role of Internet of Things (IoT) in the delivery industry, the autonomous vehicle management, the use of 3D printing for custom production and other current trends to accelerate delivery time and customer satisfaction.	Low digital skills and internet usage in Bulgaria. Lack of specialists in STEM fields in Bulgaria.	Artificial intelligence (AI). Internet of Things (IoT)	Changes in logistics industry due to digitalization. Trends to accelerate delivery time and customer satisfaction
9	Corporate Strategy and Tactics of SF Express in Domestic and International Courier Market	(S.M. Yuen and Yu 2019)	In this paper, an overview of mainland express market development and changes are discussed & a case analysis and in-depth interview are made to identify and evaluate the corporate strategy & business tactics of SF Express in local & international Courier	Analyzing corporate strategy and tactics of SF Express. Identifying challenges in local and international courier market	Literature review of documents, reports, journals, and interviews conducted. Analysis of SWOT, strategies, and tactics of SF Express.	SF Express should expand to international express delivery service. Diversification and total logistics solutions are key strategies for SF.

			Market.			
10	Can Sophisticated Dispatching Strategy Acquired by Reinforcement Learning? - A Case Study in Dynamic Courier Dispatching System.	(Y. Chen et al. 2019)	By utilizing historical data and considering long-term revenue gains, MARL achieves better performance than myopic online algorithms and is able to construct the mapping between complex scenarios to sophisticated decisions such as the dispatching rule. It also has the scalability to adopt in large-scale real-world scenarios.	Courier dispatching problem in online pickup-service platform. Objective: Maximize revenue with limited couriers over time.	Formulated as Markov decision process (MDP). Utilized multi-agent reinforcement learning (MARL) techniques	MARL outperforms myopic algorithms in revenue gains. MARL maps complex scenarios to sophisticated dispatching decisions.
11	Collaborative and Sustainable Network Design in Courier Services	(Moon et al. 2018)	A nucleolus-based profit allocation method is applied for fair allocation of the profits to each participating company based on a cooperative game theory and an illustrative example problem demonstrates the applicability and efficiency of the proposed model.	Applying sharing economy to courier services for competitiveness. Developing equitable profit allocation method based on cooperative game theory.	Collaboration model for competitiveness enhancement. Nucleolus-based profit allocation method for fair distribution.	Collaboration is a survival strategy for courier service companies. Proposed fair profit allocation model for collaboration sustainability.
12	Factors affecting the performance of courier service industry: a survey of courier companies in Kenya	(Jacinta Wahu Nyaga 2017)	In this paper, a descriptive survey study design was used to analyze the factors influencing the performance of courier companies in Kenya. The study discovered that employees in courier firms were highly motivated, as demonstrated by their attitude toward work and promotion factors.	Factors affecting courier service industry performance in Kenya. Impact of employee training, motivation, and customer service on performance.	Descriptive survey study design. Stratified random sampling technique.	Properly trained workforce contributes to the success of courier service sector. Employees are motivated by work and promotion factors, but not pay.

A summary results of these papers are firm size, liquidity, and leverage are significant for profitability, inflation is positive but not significant for profitability, and unemployment factor is

negative and significant for profitability, (Abdul Manaf, Mohd Said, and Adenan, 2022). Innovations in courier services result improve efficiency and cost savings, (Cywiński, 2022). Examined trends in courier services due to digitalization of commerce, focus on AI, IoT, autonomous vehicles, 3D printing for delivery, (Gramatikova, 2019). Pooling strategy optimal for large service areas with endogenized demand, dedicated strategy preferable for large service areas with exogenous demand (M. Chen and Hu, 2021). JNE has 97.82% negative sentiment and 2.18% positive sentiment, high priority issues: Personnel Contact Quality and Timeliness. (Hendayani & Dharmawan, 2020).

To achieve good performance, service companies' couriers must carry out value creation, which can be realized by the company because of the support of strategic orientation and absorptive apability. For increasing the company's strategic orientation, one must optimize adaptation to external environmental forces, while to optimize the company's absorptive capability, one must optimize resource development company power (Suryana, 2015). Criteria which are prioritized by respondents in choosing a logistics service provider are reliability with a weight of 0.4018, followed by the cost criterion, with weights 0.2275, then the convenience criterion with a weight of 0.1886, and the last is services criteria with weights 0.1820. Based on global priority, it is found that JNE has value the highest of 39.15% is superior compared to TIKI and POS (Astuti and Fatma, 2017).

The main contributor to the growth of couriers in Indonesia is the change in consumer behavior from conventional shopping like going to shops to online shopping activities. This can be seen in the following table diagram, where the increase in online shopping users followed by high and frequent transactions will increase the demand for delivery services. A huge number of logistics firms, especially the large-scale ones, have already offered various services, for example, penetrating freight, freight merger, reverse logistics, post-sales service, distribution, order fulfilment, and departing freight. Moreover, demands for logistics services have increased because of trends, such modernisation, online shopping, and globalization (Abdul Manaf et al., 2022).

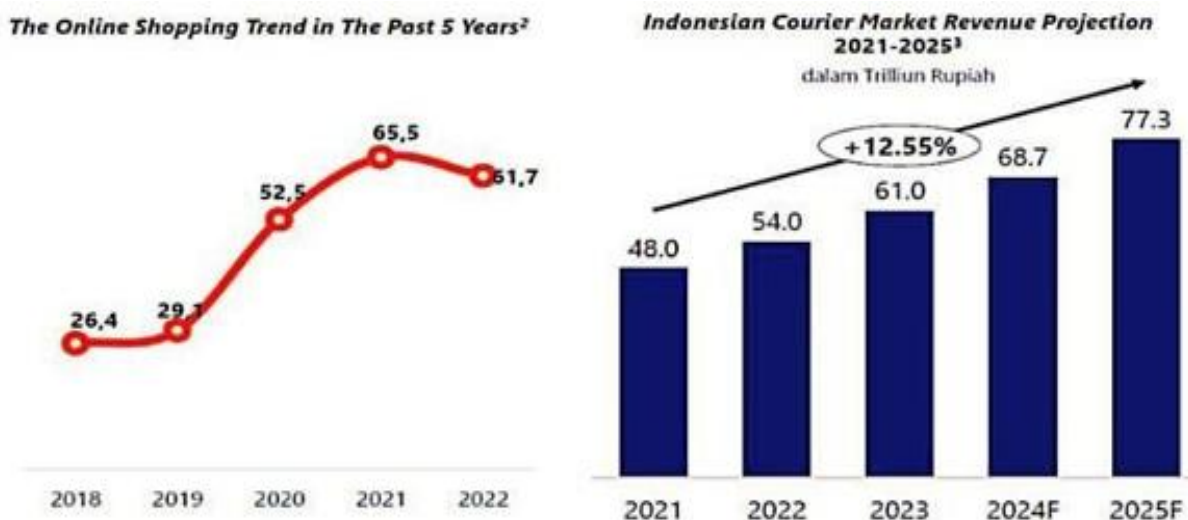


Figure 2: Online Shopping Trend Diagram and Courier Market Revenue Projections in Indonesia Source: Indonesian Ministry of Cooperatives and Small and Medium Enterprises: Indonesian MSMEs (2023); MarkPlus Analysis (2024).

With the large growth and contribution in the logistics sector, the prospect of the courier business or CEP (Courier Express Parcel) has huge market potential, especially in the retail segment. This can be seen in the following diagram.

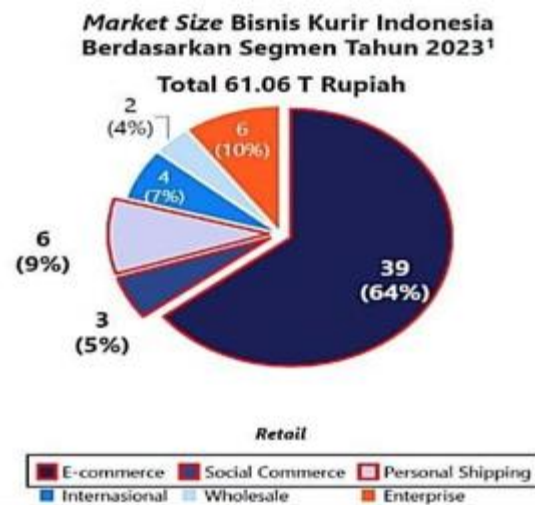


Figure 3: Courier Business Market Size Diagram in Indonesia Source: Markplus Analysis (2023).



Figure 4: CEP Market Growth Projection Diagram in Indonesia Source: Allied Market Research Report (2022)

From this diagram, it can be seen that the CEP market potential in 2029 will grow by 12.55% with a transaction value of 124 trillion depending on how courier business companies in Indonesia can capture these global opportunities and challenges for the future.

4. Implications and Direction for Future Research

Future research should focus on scale verification using the CFA method, analyzing factors from online shops and courier companies' perspectives. The study should also explore customer's patience impact on dispatch strategy. Naive Bayes Classifier and ABC analysis can be used to determine priority dimensions in problem-solving. The study should also analyze digitalization effects on businesses, implementation barriers, and expectations regarding new technologies. Further optimization techniques for courier dispatching systems and the application of MARL in dynamic service industries are also discussed. Collaboration models and the economy of sharing are also explored for efficiency. Future authors can utilise more structured methods such as SLR (Systematic Literature Review) method to get more extensive and more credible articles especially

for the development of courier business in Indonesia. The author's limitation in the English language is a challenge in understanding every article that is the source of the literature of study in the writing of this article.

Acknowledgment

The author thanked the family as well as the tutoring lecturer who gave instructions and input in writing this article so that it could be completed on time.

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