

Analysis of The Relationship Between Digital Agility, Supply Chain Quality Management, and Supply Chain Agility to Supply Chain Performance at PT Indomarco Prismatama

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ABSTRACT

This study aims to analyze the influence of Digital Dexterity on Supply Chain Performance through Supply Chain Quality Management (SCQM) and Supply Chain Agility (SCA) at PT Indomarco Prismatama. The research uses a quantitative approach with an explanatory design. The research sample consisted of 120 employees involved in supply chain activities and was selected using purposive sampling techniques. Data was collected through a questionnaire with a five-point Likert scale and analyzed using AMOS-based Structural Equation Modeling (SEM). The results of the study show that Digital Dexterity has a positive and significant effect on Supply Chain Quality Management and Supply Chain Agility. However, Digital Dexterity has no direct effect on Supply Chain Performance. These findings show that improving supply chain performance requires the integration of digital capabilities with the implementation of supply chain quality management and increased supply chain agility. This research provides the implication that companies need to optimize digital transformation to improve competitiveness and supply chain performance in a sustainable manner.

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1. INTRODUCTION

The development of digital technology has brought fundamental changes in the global industrial structure, including the retail sector [1]. Digital transformation is driving companies to adapt to more modern, technology-based, and integrated operational systems [2]. The supply chain is no longer seen as a simple operational activity, but rather as one of the main sources of a company's competitive advantage [3]. In this context, supply chain management skills are a strategic factor that determines business

success. Supply Chain Performance is an important indicator in assessing the effectiveness of a company's operations [4]. This performance includes distribution efficiency, delivery timeliness, and product availability in the market [5]. When the supply chain is not running optimally, companies face increased operational costs and decreased customer satisfaction [6]. Therefore, Supply Chain Performance measurement is crucial in evaluating the performance of retail companies [7].

Digitalization through technologies such as big data, Internet of Things (IoT), and

integrated information systems has increased supply chain visibility [8]. This technology allows real-time monitoring of the flow of goods and information and accelerates communication between organizational units [9]. However, the successful implementation of technology does not only depend on the available systems, but also on the organization's ability to use it effectively [10]. This ability is known as Digital Dexterity, which is the capacity of an organization to adapt, innovate, and collaborate digitally [11].

In addition to digitalization, Supply Chain Quality Management (SCQM) is also an important factor in the success of modern supply chains (ISO, 2015). SCQM focuses on quality control at every stage of the supply chain, from the procurement of raw materials to the distribution of products to the end consumer [12]. A good implementation of SCQM can improve operational process consistency, reduce distribution errors, and improve supply chain efficiency [13].

Another crucial factor is Supply Chain Agility, which is the company's ability to respond quickly and flexibly to changing market demands [14]. In the retail industry, changes in consumer behavior occur so quickly that it requires a responsive system [15]. Without agility, companies are at risk of experiencing stock outs or adverse stock overstock [16].

2. LITERATURE REVIEW

2.1. Supply Chain Performance

Supply Chain Performance Digital Dexterity is an indicator used to assess the effectiveness and efficiency of a company in managing supply chain activities (Lambert, 2020). Supply chain performance reflects the extent to which a company is able to meet customer demands in a timely, efficient, and quality manner [17]. Supply chain performance measurement involves the dimensions of delivery timeliness, operational cost efficiency, product availability levels, and customer service quality. [18] added that Supply Chain Performance is the result of integration between digital capabilities, process

quality, and operational flexibility [18]. Thus, supply chain performance not only serves as a means of evaluation, but also as a foundation for formulating strategies to increase the company's competitiveness.

2.2. Digital Dexterity

Digital Dexterity is an organization's ability to utilize digital technology effectively, adaptively, and innovatively to support business processes and improve operational performance [19]. This ability is not only related to mastery of technology, but also includes the ability to adapt to digital changes, utilize information systems, and build collaboration through technology. In the context of supply chain, Digital Dexterity plays a role in increasing the speed of information flow, decision-making accuracy, and integration between parts in the supply chain. Organizations with a high level of Digital Dexterity are able to optimize the use of digital technology to increase operational flexibility and efficiency [11].

2.3. Supply Chain Quality Management (SCQM)

Supply Chain Quality Management focuses on quality control at every stage of the supply chain in a comprehensive and sustainable manner. [20] state that a good implementation of SCQM can improve operational process consistency, reduce distribution errors, and improve supply chain efficiency. [21] found that SCQM had a significant effect on Supply Chain Performance, while [22] reported insignificant results. This inconsistency confirms the need for further research in the context of the modern retail industry.

2.4. Supply Chain Agility

Supply Chain Agility is a company's ability to respond to changes in market demand, fluctuations in the business environment, and operational disruptions quickly and flexibly. Agility includes response speed, flexibility, and adaptability to change [23], [24]. In the context of digitalization, [19] emphasized

that information technology integration plays an important role in increasing Agility. Digital technology allows companies to obtain information in real-time, thereby accelerating decision-making and increasing responsiveness to market changes. [16] add that Agility contributes to the increase of corporate competitiveness, despite other studies such as [25].

3. METHODS

This study uses a quantitative research approach with an explanatory research design [26]. The quantitative approach was chosen because this study aims to examine the causal relationships between variables through statistical measurement and hypothesis testing. This research model analyzes the influence of Digital Dexterity (DD) on Supply Chain Performance (SP), with Supply Chain Quality Management (SCQM) and Supply Chain Agility (SA) as mediating variables.

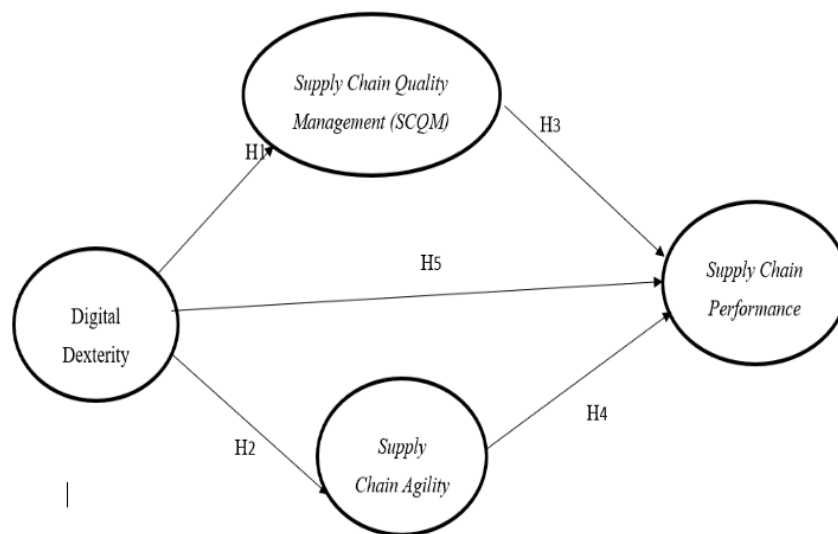


Figure 1. Research Model

This research model was developed based on previous research theories and results related to digital transformation, supply chain quality management, supply chain agility, and supply chain performance. The proposed model assumes that a higher level of Digital Dexterity will improve the implementation of Supply Chain Quality Management and Supply Chain Agility, which will ultimately be able to improve Supply Chain Performance. In addition, this study also examines the direct influence of Digital Dexterity on Supply Chain Performance to find out whether an organization's digital capabilities can improve supply chain performance directly or through the mediation role of Supply Chain Quality Management and Supply Chain Agility. The conceptual framework of this study is presented in Figure 1.

3.1 Data and Data Sources

The population in this study consists of all employees of PT Indomarco Prismatama who are involved in supply chain activities, especially in the logistics, warehousing, and distribution sections. Respondents were chosen because they are directly related to the use of digital technology and the implementation of supply chain activities in the company. The research sample consisted of 120 respondents who met the research criteria, namely employees who were directly involved in the supply chain operational process.

The data used in this study consisted of primary data and secondary data. Primary data was obtained directly from respondents through the distribution of questionnaires to PT

Indomarco Prismaatama employees who work in the supply chain. Secondary data is obtained from various sources, such as scientific journals, reference books, previous research, company reports, and literature related to Digital Dexterity, Supply Chain Quality Management, Supply Chain Agility, and Supply Chain Performance.

The research instrument used a questionnaire with a Likert scale of 1–5, in which respondents were asked to give a level of approval to each statement submitted. The questionnaire items were arranged based on indicators from each research variable. The Digital Dexterity variable consists of six indicators, namely the ability to use digital technology, mastery of operational systems/applications, speed of adaptation to new technology, ability to learn new systems, system integration between work units, and the ability to share information digitally. The Supply Chain Quality Management variable consists of six indicators, namely clarity of standard operating procedures (SOPs), compliance with SOPs, consistency of operational processes, stability of service quality, periodic quality monitoring, and continuous evaluation and improvement. The Supply Chain Agility variable consists of six indicators, namely the speed of responding to customer demand, the speed of the distribution process, flexibility in the distribution system, the ability to adjust distribution volumes, adapting to market changes, and the ability to deal with supply chain disruptions. Meanwhile, the Supply Chain Performance variable consists of six indicators, namely operational cost efficiency, minimal operational waste, delivery timeliness, accuracy of distribution schedules, product availability, and minimal occurrence of stock outages.

3.2 Data Collection Technique

Data collection was carried out by survey method through the

distribution of questionnaires to PT Indomarco Prismaatama employees involved in supply chain activities, especially in the logistics, warehousing, and distribution sections. This questionnaire is designed to obtain information about respondents' perceptions related to Digital Dexterity, Supply Chain Quality Management (SCQM), Supply Chain Agility (SCA), and Supply Chain Performance (SCP). The sampling technique used in this study is purposive sampling, which is a sample determination technique based on certain criteria that have been set by the researcher (Sekaran & Bougie, 2020). These criteria include employees who are directly involved in supply chain activities, have experience using the company's digital systems or technology to support operational processes, and are able to provide an assessment of the implementation of Digital Dexterity, Supply Chain Quality Management, Supply Chain Agility, and Supply Chain Performance in the company.

Before data analysis is carried out, the research instrument is first tested through validity tests and reliability tests (Nunnally & Bernstein, 1994). The validity test aims to ensure that each indicator on the questionnaire is able to measure the construct in question precisely, while the reliability test aims to test the level of consistency of the research instrument in producing stable and reliable data [27]. After the instrument is declared valid and reliable, the data is analyzed using AMOS-based Structural Equation Modeling (SEM) to test the causal relationship between variables, both direct and indirect influences in accordance with the research model that has been developed.

3.3 Data Analysis

The data analysis in this study was carried out using Structural Equation Modeling (SEM) with the help of AMOS software [28]. The SEM method was chosen because it is able to analyze complex relationships between latent

variables simultaneously, both in measurement models and structural models [29]. In addition, SEM allows testing of direct effects and indirect effects through mediation variables in accordance with the developed research model.

The initial stage of data analysis begins with Confirmatory Factor Analysis (CFA) to check the validity of the construct and ensure that each indicator can represent the latent variables measured, namely Digital Dexterity, Supply Chain Quality Management, Supply Chain Agility, and Supply Chain Performance [30]. After that, goodness-of-fit testing was carried out to assess whether the research model matched real data using several indices, such as Chi-square, CMIN/DF, Probability, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) [31].

After the model is declared to meet the eligibility criteria, the next stage is hypothesis testing through path coefficient analysis on the structural model. The significance of the relationship between variables is determined based on the values of Critical Ratio (C.R.) and Probability (P). The relationship between variables is stated to be significant if the C.R. value > 1.96 and the P value < 0.05 .

Furthermore, an analysis was carried out on direct effects, indirect effects, and total effects to determine the amount of contribution of each variable in the research model. This analysis also aims to test the role of Supply Chain Quality Management (SCQM) and Supply Chain Agility (SCA) as mediating variables in the relationship between Digital Dexterity and Supply Chain Performance, so that it can be known whether these two variables are able to strengthen the influence of organizational digital capabilities on

improving supply chain performance at PT Indomarco Prismatama.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristic

This study involved 120 respondents who were employees of PT Indomarco Prismatama and were directly involved in supply chain activities, especially in the logistics, warehousing, and distribution sections. Respondent characteristics were analyzed based on gender, age, working period, and job section/division to provide an overview of the respondent profile that was the object of the research. The respondents' profiles show that the data collected represents employees who have experience in utilizing digital technology as well as carrying out supply chain operational activities in the company.

Based on gender, the majority of respondents were men as many as 72 people (60%), while female respondents amounted to 48 people (40%). This condition shows that operational activities in the supply chain at PT Indomarco Prismatama are still dominated by male workers. Based on age, most of the respondents were in the age range of 26–35 years, namely 53 people (44.17%), followed by respondents aged 36–45 years as many as 42 people (35%), 17 people aged 17–25 years (14.17%), and 46–55 years old as many as 8 people (6.67%). This shows that the majority of respondents are of productive age who generally have work experience and the ability to adapt to the application of digital technology in the company's operational activities. Based on the working period, the majority of respondents have worked for 1 year as many as 53 people (44.17%), followed by 42 people (35%) for 2–3 years of service, and 23 people (19.17%) for 4–5 years of service.

This characteristic shows that most of the respondents have sufficient experience in understanding the

operational processes and implementation of digital technology in the management of the company's supply chain. Based on the work section/division, respondents came from various units related to supply chain activities, namely Logistics as many as 47 people (39.17%), Distribution as many as 37 people (30.83%), and Warehouse as many as 36 people (30%). The relatively even distribution of respondents in the

three divisions shows that this study is able to describe the perception of employees from various main functions in supply chain management at PT Indomarco Prismatama. Thus, the data obtained is expected to provide a comprehensive picture of the relationship between Digital Dexterity, Supply Chain Quality Management, Supply Chain Agility, and Supply Chain Performance.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage
Gender	Male	74	52.9%
	Female	66	47.1%
Age	17–25 years	79	56.4%
	26–35 years	32	22.9%
	36–45 years	22	15.7%
	46–55 years	7	5.0%
Education	Elementary School	3	2.1%
	Junior High School	9	6.4%
	Senior High School	121	86.4%
	Diploma/Bachelor/Postgraduate	7	5.0%
Working Period	1 Year	53	44.17%
	2–3 Years	42	35.00%
	4–5 Years	23	19.17%
	More than 5 Years	2	1.67%
Department	Logistics	47	39.17%
	Warehouse	36	30.00%
	Distribution	37	30.83%

Source: Data Processed using AMOS (2026)

4.2 Structural Equation Modeling (SEM) Results

The research model was analyzed using Structural Equation Modeling (SEM) with AMOS to see the relationship between Online Information Quality, Satisfaction, Digital

Communication, and Intention to Get Public Services. SEM analysis consists of evaluation of measurement models through Confirmatory Factor Analysis (CFA) and evaluation of structural models through hypothesis testing.

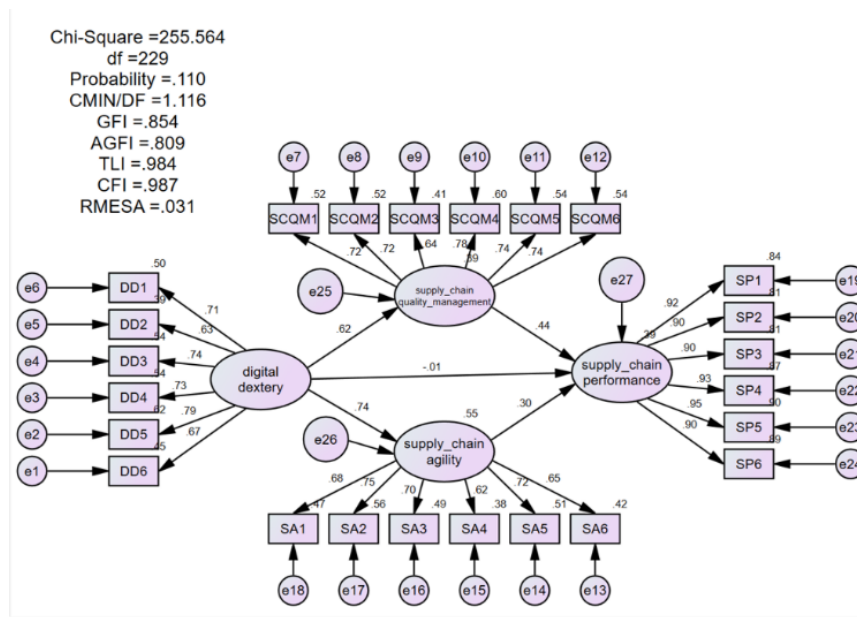


Figure 2. Structural Model of SEM
Source: Data Processed using AMOS (2026)

4.3 Model Fit Evaluation

The goodness-of-fit evaluation indicates that the proposed structural model meets the required criteria. The

model demonstrates acceptable fitness based on several indicators, including Chi-square, CMIN/DF, GFI, AGFI, TLI, CFI, and RMSEA.

Table 2. Goodnes Of Fit Model

Index	Result	Cut-Off Value	Interpretation
Chi-Square	255.564	The smaller, the better	Good
Probability	0.110	≥ 0.05	Good
CMIN/DF	1.116	≤ 2.00	Very Good
GFI	0.854	≥ 0.90	Marginal Fit
AGFI	0.809	≥ 0.90	Marginal Fit
TLI	0.984	≥ 0.90	Very Good
CFI	0.987	≥ 0.90	Very Good
RMSEA	0.031	≤ 0.08	Very Good

Source: Data Processed using AMOS (2026)

The results indicate that the SEM model is suitable for explaining the relationship among research variables. Therefore, the model can be used for further hypothesis testing.

4.4 Hypothesis Testing Results

Hypothesis testing was conducted by examining the regression weight output from AMOS. A hypothesis is accepted when the Critical Ratio (CR) value is greater than 1.96 and the probability value is below 0.05.

Table 3. Hypothesis Testing Results

Relationship	Estimate	C.R	P-value	Decision
Supply Chain Quality Management → Digital Dexterity	0.672	4.899	***	Accepted
Supply Chain Agility → Digital Dexterity	0.705	5.473	***	Accepted
Supply Chain Performance → Supply Chain Quality Management	0.660	4.197	***	Accepted
Supply Chain Performance → Supply Chain Agility	0.445	5.528	0.016	Accepted

Relationship	Estimate	C.R	P-value	Decision
Supply Chain Performance → Digital Dexterity	-0.010	- 0.047	0.963	Rejected

Source: Data Processed using AMOS (2026)

The results of hypothesis testing showed that all relationships proposed in the research model had a positive and significant influence. Digital Dexterity has a positive effect on Supply Chain Quality Management, Supply Chain Agility, and Supply Chain Performance. In addition, Supply Chain Quality Management and Supply Chain Agility have also been proven to have a positive effect on Supply Chain Performance. These findings show that an organization's ability to effectively utilize digital technology can improve the quality of supply chain management and supply chain agility, which ultimately contributes to improved supply chain performance. Among all the relationships tested, Supply Chain Agility had the greatest influence on Supply Chain Performance, indicating that a company's ability to respond quickly and flexibly to change is a critical factor in improving supply chain performance.

5. CONCLUSION

Based on the results of the analysis using Structural Equation Modeling (SEM) with the help of AMOS software, this study shows that Digital Dexterity has a positive and significant effect on Supply Chain Quality

Management (SCQM) and Supply Chain Agility (SCA). In addition, Supply Chain Quality Management and Supply Chain Agility have also been proven to have a positive and significant effect on Supply Chain Performance (SCP). These results indicate that the company's ability to utilize digital technology is able to improve the quality of supply chain management and operational agility, which ultimately has an impact on improving supply chain performance. However, this study found that Digital Dexterity does not have a direct effect on Supply Chain Performance, so the hypothesis about this direct relationship is not supported.

Overall, the findings of this study show that improving Supply Chain Performance does not only depend on the digital capabilities of the company, but also on the effectiveness of the implementation of Supply Chain Quality Management and Supply Chain Agility as a mechanism that connects digital capabilities with supply chain performance. Therefore, PT Indomarco Prismatama needs to continue to improve employee digital competence, optimize the implementation of supply chain quality management, and strengthen supply chain agility so that the use of digital technology can make a maximum contribution to improving supply chain performance and company competitiveness.

REFERENCES

- [1] G. Vial, "Understanding digital transformation: A review and a research agenda," *J. Strateg. Inf. Syst.*, vol. 28, no. 2, pp. 118–144, 2019.
- [2] T. Hess, C. Matt, A. Benlian, and F. Wiesböck, "Options for Formulating a Digital Transformation Strategy," *MIS Q. Exec.*, vol. 15, no. 2, pp. 123–139, 2016, doi: 10.7892/boris.105447.
- [3] M. Christopher, *Logistics & Supply Chain Management*, 6th ed. Pearson, 2023. [Online]. Available: <https://books.google.com/books?id=W1D60QEACAAJ>
- [4] S. Chopra, *Supply Chain Management: Strategy, Planning, and Operation*, 8th ed. Pearson, 2025. [Online]. Available: <https://www.pearson.com/en-us/subject-catalog/p/supply-chain-management-strategy-planning-and-operation/P200000012829/9780135350294>
- [5] A. Gunasekaran, C. Patel, and R. E. McGaughey, "A framework for supply chain performance measurement," *Int. J. Prod. Econ.*, vol. 87, no. 3, pp. 333–347, 2004, doi: 10.1016/j.ijpe.2003.08.003.
- [6] F. F. Reichheld and W. E. J. Sasser, "Zero Defections: Quality Comes to Services," *Harv. Bus. Rev.*, vol. 68, no. 5, pp. 105–111, 1990, [Online]. Available: <https://hbr.org/1990/09/zero-defections-quality-comes-to-services>

- [7] T. Schoenherr and M. Swink, "Revisiting the arcs of integration: Cross-validations and extensions," *J. Oper. Manag.*, vol. 30, no. 1–2, pp. 99–115, 2012, doi: 10.1016/j.jom.2011.09.001.
- [8] A. Bharadwaj, O. A. El Sawy, P. A. Pavlou, and N. v Venkatraman, "Digital business strategy: toward a next generation of insights," *MIS Q.*, pp. 471–482, 2013.
- [9] D. Ivanov, "Digital Supply Chain Management and Technology to Enhance Resilience by Building and Using End-to-End Visibility During the COVID-19 Pandemic," *IEEE Trans. Eng. Manag.*, vol. 71, pp. 10485–10495, 2021, doi: 10.1109/TEM.2021.3095193.
- [10] K. S. R. Warner and M. Wäger, "Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal," *Long Range Plann.*, vol. 52, no. 3, pp. 326–349, 2019.
- [11] D. Ivanov and A. Dolgui, "A digital supply chain twin for managing the disruption risks and resilience in the era of Industry 4.0," *Prod. Plan. Control*, vol. 32, no. 9, pp. 775–788, 2021, doi: 10.1080/09537287.2020.1768450.
- [12] B. B. Flynn, B. Huo, and X. Zhao, "The impact of supply chain integration on performance: A contingency and configuration approach," *J. Oper. Manag.*, vol. 28, no. 1, pp. 58–71, 2010, doi: 10.1016/j.jom.2009.06.001.
- [13] A. Gunasekaran *et al.*, "Big data and predictive analytics for supply chain and organizational performance," *J. Bus. Res.*, vol. 70, pp. 308–317, 2017, doi: 10.1016/j.jbusres.2016.08.004.
- [14] D. M. Gligor, M. C. Holcomb, and T. P. Stank, "A Multidisciplinary Approach to Supply Chain Agility: Conceptualization and Scale Development," *J. Bus. Logist.*, vol. 34, no. 2, pp. 94–108, 2013, doi: 10.1111/jbl.12012.
- [15] P. Kotler, K. L. Keller, and A. Chernev, *Marketing Management*. Pearson Education Limited, 2022.
- [16] R. Dubey *et al.*, "Big data analytics and artificial intelligence pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations," *Int. J. Prod. Econ.*, vol. 226, p. 107599, 2020, doi: 10.1016/j.ijpe.2019.107599.
- [17] M. Tarafdar and S. Qrunfleh, "Agile supply chain strategy and supply chain performance: complementary roles of supply chain practices and information systems capability for agility," *Int. J. Prod. Res.*, vol. 55, no. 4, pp. 925–938, 2017, doi: 10.1080/00207543.2016.1203079.
- [18] D. J. Teece, "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance," *Strateg. Manag. J.*, vol. 28, no. 13, pp. 1319–1350, 2007.
- [19] P. C. Verhoef *et al.*, "Digital transformation: A multidisciplinary reflection and research agenda," *J. Bus. Res.*, vol. 122, pp. 889–901, 2021.
- [20] S. S. Kamble, A. Gunasekaran, H. Parekh, V. Mani, A. Belhadi, and R. Sharma, "Digital twin for sustainable manufacturing supply chains: Current trends, future perspectives, and an implementation framework," *Technol. Forecast. Soc. Change*, vol. 176, p. 121448, 2022, doi: 10.1016/j.techfore.2021.121448.
- [21] K. P. Liu and W. Chiu, "Supply Chain 4.0: the impact of supply chain digitalization and integration on firm performance," *Asian J. Bus. Ethics*, vol. 10, no. 2, pp. 371–389, 2021, doi: 10.1007/s13520-021-00137-8.
- [22] Z. J. H. Tarigan, H. Siagian, and R. R. Bua, "The Impact of Information System Implementation to the Integrated System for Increasing the Supply Chain Performance of Manufacturing Companies," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 473, no. 1, p. 12050, 2019, doi: 10.1088/1757-899X/473/1/012050.
- [23] Y. Zhang, M. Gu, and B. Huo, "Antecedents and consequences of supply chain agility: a competence-capability-performance paradigm," *J. Bus. Ind. Mark.*, vol. 38, no. 5, pp. 1087–1100, 2023, doi: 10.1108/JBIM-05-2021-0262.
- [24] P. M. Swafford, S. Ghosh, and N. Murthy, "The antecedents of supply chain agility of a firm: Scale development and model testing," *J. Oper. Manag.*, vol. 24, no. 2, pp. 170–188, 2006, doi: 10.1016/j.jom.2005.05.002.
- [25] A. A. Atieh, A. Abu Hussein, S. Al-Jaghoub, A. F. Alheet, and M. Attiany, "The Impact of Digital Technology, Automation, and Data Integration on Supply Chain Performance: Exploring the Moderating Role of Digital Transformation," *Logistics*, vol. 9, no. 1, p. 11, 2025, doi: 10.3390/logistics9010011.
- [26] J. W. Creswell and J. D. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 6th ed. SAGE Publications, 2023. [Online]. Available: <https://books.google.com/books?id=b9tFzWEACAAJ>
- [27] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobservable variables and measurement error," *J. Mark. Res.*, vol. 18, no. 1, pp. 39–50, 1981.
- [28] B. M. Byrne, *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming*, 3th ed. Routledge, 2016. doi: 10.4324/9781315757421.
- [29] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd edition)*. Thousand Oaks: Sage, 2022.
- [30] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis*, 8th ed. Andover, UK: Cengage Learning, 2019. [Online]. Available: <https://www.cengage.uk/c/multivariate-data-analysis-8e-hair-babin-anderson-black/9781473756540/>
- [31] R. P. Bagozzi and Y. Yi, "On the Evaluation of Structural Equation Models," *J. Acad. Mark. Sci.*, vol. 16, no. 1, pp. 74–94, 1988, doi: 10.1177/009207038801600107.