Enhancing Supply Chain Agility through Digital Tools: A Quantitative Study in Pharmaceutical Distribution

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ABSTRACT

In the last decade, the complexity of global markets and increasing uncertainty have required companies to adopt more agile supply chain models. This study aims to explore the impact of digital tools on supply chain smoothness at PT Enseval Putera Megatrading Tbk, a pharmaceutical distribution company in Indonesia. This study aims to analyze the extent to which the adoption of digital tools, such as ERP and IoT, can improve responsiveness, flexibility, and speed in the distribution process. This study uses a quantitative approach with a field survey design. Data were collected through questionnaires distributed to 100 respondents involved in distribution operations. Linear regression analysis was used to test the relationship between the use of digital tools and supply chain agility. The findings show that the use of digital tools has a positive and significant impact on supply chain agility. These results indicate that increasing the use of digital tools can improve a company's responsiveness and flexibility. This study provides strategic implications for distribution management, emphasizing the importance of investing in digital technologies to enhance supply chain agility. These findings contribute to the development of dynamic capabilities theory in the context of supply chain digitalization.

***Keywords**: Digital Transformation, Enterprise Resource Planning, Pharmaceutical Distribution, Supply Chain Agility, Technology Adoption.*

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ABSTRAK

Dalam dekade terakhir, kompleksitas pasar global dan ketidakpastian yang meningkat telah menuntut perusahaan untuk mengadopsi model rantai pasok yang lebih gesit. Penelitian ini bertujuan untuk mengeksplorasi pengaruh penggunaan alat digital terhadap kelancaran rantai pasok di PT Enseval Putera Megatrading Tbk, sebuah perusahaan distribusi farmasi di Indonesia. Penelitian ini bertujuan untuk menganalisis sejauh mana adopsi alat digital, seperti ERP dan IoT, dapat meningkatkan kemampuan responsif, fleksibilitas, dan kecepatan dalam proses distribusi. Penelitian ini menggunakan pendekatan kuantitatif dengan desain survei lapangan. Data dikumpulkan melalui kuesioner yang disebarkan kepada 100 responden yang terlibat dalam operasional distribusi. Analisis regresi linier digunakan untuk menguji hubungan antara penggunaan alat digital dan kelincahan rantai pasok. Temuan menunjukkan bahwa penggunaan alat digital berpengaruh positif dan signifikan terhadap kelincahan rantai pasok. Hasil ini menunjukkan bahwa peningkatan penggunaan alat digital dapat meningkatkan responsivitas dan fleksibilitas perusahaan. Penelitian ini memberikan implikasi strategis bagi manajemen distribusi, menekankan pentingnya investasi dalam teknologi digital untuk meningkatkan kelincahan rantai pasok. Temuan ini berkontribusi pada pengembangan teori kapabilitas dinamis dalam konteks digitalisasi rantai pasok.

***Kata kunci**: Adopsi Teknologi, Distribusi Farmasi, Kelincahan Rantai Pasokan, Perencanaan Sumber Daya Perusahaan, Transformasi Digital.*

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INTRODUCTION

In the past decade, the global supply chain landscape has experienced substantial transformation, driven by factors such as heightened market complexity, shifting consumer demand, technological disruptions, and crises exemplified by the COVID-19 pandemic. These dynamics have compelled companies to revise their operating models, shifting toward more responsive and adaptive supply chains capable of withstanding volatile, uncertain, and rapidly changing external conditions (Ivanov et al., 2018; Pyun & Rha, 2021; Aliahmadi et al., 2022; Papanagnou et al., 2022). Among the most pressing challenges is the persistence of demand-supply uncertainties, which threaten operational continuity, especially for firms lacking flexible, digitally enabled supply chain infrastructures (Yuan et al., 2023; Rejeb et al., 2023).

Supply Chain Agility (SCA) has emerged as a crucial strategic asset in navigating these challenges. SCA encapsulates a company's capacity to swiftly detect, respond to, and adapt to changes in market conditions, transcending mere operational speed to include structural flexibility and the adeptness to manage demand fluctuations (Pyun & Rha, 2021; Ning & Yao, 2023). The imperative for agility renders it essential for firms to achieve sustainable competitiveness, especially in an increasingly digitalized operational landscape. Digital transformation, facilitated through advanced digital tools, stands as a cornerstone in bolstering SCA capabilities Wang & Jie, 2019). Technologies such as Enterprise Resource Planning (ERP), Internet of Things (IoT), Big Data Analytics, and Cloud Computing fundamentally enhance supply chain visibility and accelerate information flow, thereby promoting cross-functional and cross-organizational collaboration (Yuan et al., 2023; Zhang, 2023). ERP systems, for instance, enable real-time data integration across various operational divisions, while IoT technologies allow for precise tracking of goods throughout the distribution channels (Yin, 2022; Yuan et al., 2023).

PT Enseval Putera Megatrading Tbk serves as a pertinent case study within this context. As a prominent pharmaceutical and medical device distribution company in Indonesia with a vast logistics network, Enseval illustrates how supply chain agility plays a pivotal role in maintaining operational efficiency and customer service quality. The pressures to enhance efficiency amidst escalating market competition necessitate a strategic deployment of digital technologies to sustain a competitive edge (Wang & Jie, 2019; Ning & Yao, 2023). However, existing literature reveals that substantial gaps persist, particularly regarding field-based quantitative analyses on technology integration within the pharmaceutical distribution sector in Indonesia, especially for large enterprises like Enseval. This underscores the pressing question of to which digital tool adoption can improve agility and validate managerial decision-making in such contexts. Empirical studies investigating how digitalization improves agility in Indonesian pharmaceutical distributors are scarce (Ishfaq et al., 2021; Queiroz et al., 2022). In conclusion, the evolving landscape of global supply chains underscores the necessity for agility and digital transformation. As organizations like Enseval navigate these changes, understanding the role of technology in fostering agility not only enhances operational effectiveness but also strengthens competitive positioning in an increasingly volatile market environment (Wang & Jie, 2019; Pyun & Rha, 2021). This study investigates whether the use of digital tools has a significant impact on supply chain agility at PT Enseval Putera Megatrading Tbk.

This study aims to analyze the effect of digital tools usage on supply chain agility at PT Enseval Putera Megatrading Tbk. Theoretically, this study contributes to the development of scientific studies related to the application of dynamic capabilities theory in the context of the digital supply chain. By analyzing how digital tools function as enablers in improving sensing, seizing, and reconfiguring capabilities, this study enriches the literature that links digital transformation with competitive advantage based on dynamic capabilities. From a practical perspective, the results of this study are expected to be a strategic reference for logistics managers and operational decision makers at PT Enseval and other distribution companies in designing and implementing supply chain

digitalization initiatives. This study provides an empirical understanding of the most impactful digital technologies and how the application of digital tools can be optimized to increase the flexibility, speed, and effectiveness of the supply chain in facing market dynamics.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Digital Tools and Supply Chain Agility

Digital tools have transformed Supply Chain Management (SCM) by enhancing efficiency, visibility, and responsiveness through technologies such as Enterprise Resource Planning (ERP), Internet of Things (IoT), Big Data Analytics, and Artificial Intelligence (AI) (Rodriguez et al., 2020). ERP systems integrate core business processes to improve coordination in procurement and distribution. IoT enables real-time tracking and operational transparency, improving monitoring of goods and environmental conditions (Kian, 2022; Kumar & Aziz, 2023; Zafar, 2024). Big Data Analytics detects patterns to enhance forecasting and inventory control (Du, 2022). AI contributes to automation in decision-making and increases precision in inventory and operations (Long et al., 2023; Pandey et al., 2023; Mohsen, 2023). Furthermore, empirical studies have demonstrated the performance benefits of implementing digital tools. Nguyen et al. (2021) found that ERP implementation significantly improved order cycle time and inventory turnover. Similarly, Dubey et al. (2019) showed that digital tools positively impact operational flexibility and information flow in logistics networks.

The integration of these tools underpins Supply Chain Agility (SCA), which is defined as a firm's ability to respond swiftly and flexibly to demand fluctuations and disruptions (Gligor & Holcomb, 2012). Key dimensions include responsiveness, flexibility, and speed—manifested in indicators such as lead time, order cycle duration, and the ability to adjust production volumes (Yusuf et al., 2004; Braunscheidel & Suresh, 2008; Fayezi & Zomorrodi, 2015). SCA is strongly associated with improved performance in innovation, delivery, and customer satisfaction (Pandey & Garg, 2009; Whitten et al., 2012; Babazadeh et al., 2012), underscoring the strategic need for digital integration to maintain competitiveness (Li et al., 2008; Rahman, 2021). However, despite these advantages, challenges persist. Concerns over risks and uncertainties, especially surrounding blockchain and other emerging technologies, can hinder adoption in logistics (Kozhanov & Woebbeking, 2021; Febrianto et al., 2024). These barriers, coupled with limited empirical research in sectors such as pharmaceutical distribution in developing nations, highlight the need for deeper investigation. Addressing these gaps can provide vital insights into tailoring digital solutions for agile supply chains across diverse market environments.

H1: Digital tools have a significant effect on supply chain agility.

Theoretical Foundation: Dynamic Capabilities Theory

Digitalization has become a pivotal enabler of supply chain agility (SCA), particularly in the manufacturing and logistics sectors. Empirical evidence shows that technologies like big data analytics significantly enhance supply chain flexibility and performance. For instance, Hu and Liu (2022) found that big data capability strengthens organizational responsiveness and adaptability, while Dubey et al. (2019) emphasized the role of digital tools in increasing agility within logistics operations. Despite such advancements, limited empirical studies have explored these dynamics in the pharmaceutical distribution sector of developing countries, including Indonesia. Existing research tends to focus on multinational corporations, neglecting national-scale distributors such as PT Enseval (Setiabudi et al., 2021). This presents a notable research gap regarding how digital tools improve agility within localized supply chains.

Dynamic Capabilities Theory, introduced by Rahman (2021), provides a relevant theoretical framework to analyze this issue. The theory outlines three core components: sensing, seizing, and reconfiguring. Sensing relates to recognizing external shifts; this

capability is enhanced by internal-external knowledge flows by Zahra et al. (2006) and environmental scanning by Helfat and Peteraf (2014), contributing to supply chain performance by Yan et al. (2022). Seizing involves capitalizing on these opportunities, requiring continuous capability renewal by Rehman and Saeed (2015), with clear benefits for customer responsiveness and alignment. Reconfiguring enables resource adaptation in response to market change, vital for agility in digitalized environments (Aslam et al., 2018; Belhadi et al., 2021; Ng'ang'a et al., 2024). Digital tools such as ERP and IoT serve as enablers of these dynamic capabilities, supporting sensing, seizing, and reconfiguring through analytics, real-time decisions, and system integration (Miguel et al., 2022). This underscores digitalization's strategic importance for achieving resilient and agile supply chains, especially in underexplored sectors like pharmaceutical distribution.

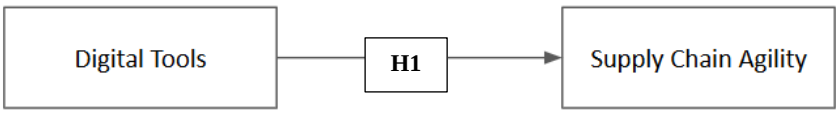

Figure 1. Research Framework

Figure 1 presents a conceptual model that illustrates the relationship between Digital Tools and Supply Chain Agility. In this model, it is shown that the use of digital tools has a direct influence on increasing agility in the supply chain. The direction of the arrow from Digital Tools to Supply Chain Agility indicates a causal relationship, where the adoption of digital technologies such as ERP, IoT, Big Data Analytics, and Artificial Intelligence is seen as being able to strengthen the responsiveness, flexibility, and speed of the supply chain system. This model emphasizes that digital transformation is a strategic factor in forming a logistics and distribution system that is adaptive to market changes and operational disruptions.

Effective use of digital tools is expected to accelerate the flow of information, increase operational flexibility, and strengthen the capacity to respond to dynamic market demands. By adopting technologies such as ERP and IoT, companies are expected to be able to increase the efficiency and responsiveness of the supply chain.

RESEARCH METHOD

This study adopts a quantitative explanatory approach to examine the causal relationship between the use of digital tools as the independent variable and supply chain agility as the dependent variable. The explanatory method is suitable for objectively analyzing how one variable affects another using empirical data. Primary data were collected through a field-based survey conducted in actual work settings, targeting operational and managerial staff involved in logistics and distribution at PT Enseval Putera Megatrading Tbk. These respondents were chosen because of their direct engagement with digital systems and supply chain activities. A purposive sampling technique was used, selecting individuals with at least one year of experience in logistics or distribution and direct involvement in using digital tools such as ERP systems, automation platforms, or operational dashboards. Power analysis was applied to determine the minimum sample size with a significance level of $\alpha = 0.05$ and a power of 0.80, resulting in a target of at least 100 respondents. Data were collected through a structured, closed-ended questionnaire using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The survey was distributed online via the company's internal platforms. To ensure data quality, the instrument underwent a construct validity test using Confirmatory Factor Analysis (CFA) and a reliability test using Cronbach's Alpha, with values ≥ 0.70 deemed acceptable. The use of digital tools refers to the application of digital technologies to enhance logistics and distribution processes and is measured using three indicators adapted from Dubey et al. (2019): ERP usage, data analytics, and automation level. Supply chain agility is defined as the organization's ability to respond quickly and flexibly to market dynamics, assessed

through responsiveness, flexibility, and delivery speed (Yusuf et al., 2004; Gligor et al., 2015). Before conducting regression analysis, classical assumptions were tested, including normality, multicollinearity, and homoscedasticity, and all conditions were met. Respondents provided electronic consent after being informed about the study's purpose and their rights, ensuring voluntary participation.

RESULTS

Based on Table 1, this study involved a total of 100 respondents from the distribution and logistics division of PT Enseval Putera Megatrading Tbk. Analysis of demographic and professional characteristics was conducted to ensure the contextual relevance and validity of the data obtained.

Table 1. Respondent Characteristics

Characteristics	Category	Number (Respondents)	Percentage (%)
Gender	Man	65	65%
	Woman	35	35%
Age Range	≤ 25 years	-	-
	26–35 years	55	55%
	> 35 years	45	45%
Length of work	≤ 5 years	52	52%
	> 5 years	48	48%
Job Position	Operational Staff	57	57%
	Managerial	43	43%

Based on gender distribution, the majority of respondents were male (65%), while females accounted for 35%. This composition reflects the general trend in the distribution and logistics sector, where male dominance is still high due to the characteristics of the work that requires physical mobility and handling of field operations. From the sideage range, most respondents (55%) are in the 26–35 age group, followed by the 18–25 age group (25%), and the rest consist of 36–45 years old (15%) and above 45 years old (5%). This shows that the workforce in this division is dominated by the young adult generation, who are in the optimal productivity phase, with high potential in technology adoption and work flexibility.

In terms of long working hours, as many as 48% of respondents have worked for more than 5 years, indicating a fairly high level of experience in handling logistics and distribution processes. Meanwhile, 32% have worked between 2 and 5 years, and 20% have worked for less than 2 years. This composition reflects a balance between experienced workers and new employees, which has the potential to drive learning and innovation dynamics within the organization.

Related job position, respondents are divided into two main categories: operational staff (60%) and managerial staff (40%). This distribution shows that the majority of respondents are directly involved in daily technical and operational activities, while the managerial proportion provides views from the policy, decision-making, and strategic planning sides. Overall, the respondent profile in this study provides a proportional representation of the organizational structure and allows for a comprehensive analysis of operational and managerial dynamics in the context of corporate distribution and logistics.

Table 2. Descriptive Statistics of Variables

Variables	N	Mean	Std. Deviation	Minimum	Maximum
Digital Tools	100	4.12	0.53	3	5
Supply Chain Agility	100	4.08	0.57	2.75	5

Based on the results of data processing using SPSS software in Table 2, the variable Digital Tools has an average value (mean) of 4.12 with a standard deviation of 0.53. This indicates that the majority of respondents gave a fairly high assessment of the use of digital tools at PT Enseval Putera Megatrading Tbk. The lowest score range is 3.00, and the highest is 5.00, which shows a consistently positive perception among respondents. Meanwhile, the variable Supply Chain Agility shows an average score of 4.08 with a standard deviation of 0.57. This value also indicates a positive perception of respondents towards the level of agility in the company's supply chain. The minimum score of 2.75 and the maximum of 5.00 reflect a variation in opinion, but in general, the responses lead to a good assessment. The average value exceeding 4.00 for both variables indicates that the use of digital tools and the level of supply chain agility at PT Enseval are considered quite good by the respondents. The relatively small standard deviation for both variables indicates that the perception is quite homogeneous among the respondents.

Table 3 shows the results of the validity test using Pearson Product-Moment correlation. All statement items in the research instrument are declared valid because each indicator has a significance value (Sig.) <0.05, which indicates that there is a significant correlation between each item and the total score of its construct. The correlation coefficient value ranges from 0.247 to 0.882, which means the strength of the relationship between items varies from sufficient to very strong. For example, indicator Q5 shows the highest correlation of 0.882, reflecting a very strong contribution to the construct it measures, while P2 and P17 have lower correlations, 0.250 and 0.247, respectively, but remain statistically significant. Double asterisks (**) and single asterisks (*) on the correlation value indicate a significance level of 0.01 and 0.05, where most items are significant at the 0.01 level, indicating a high level of confidence in their validity. Thus, all items are worthy of use in further analysis because they have met the construct validity criteria.

Table 3. Validity Test

Indicator	Product-Moment Pearson's	Sig.	a	Information
P1	0.779**	0.000	< 0.05	Valid
P2	0.250*	0.012	< 0.05	Valid
P3	0.722**	0.000	< 0.05	Valid
P4	0.710**	0.000	< 0.05	Valid
P5	0.844**	0.000	< 0.05	Valid
P6	0.713**	0.000	< 0.05	Valid
P7	0.667**	0.000	< 0.05	Valid
P8	0.751**	0.000	< 0.05	Valid
P9	0.829**	0.000	< 0.05	Valid
P10	0.342**	0.000	< 0.05	Valid
P11	0.346**	0.000	< 0.05	Valid
P12	0.319**	0.001	< 0.05	Valid
P13	0.829**	0.000	< 0.05	Valid
P14	0.342**	0.000	< 0.05	Valid
P15	0.346**	0.000	< 0.05	Valid
P16	0.319**	0.001	< 0.05	Valid
P17	0.247*	0.013	< 0.05	Valid
P18	0.775**	0.000	< 0.05	Valid
Q1	0.857**	0.000	< 0.05	Valid
Q2	0.305**	0.002	< 0.05	Valid
Q3	0.778**	0.000	< 0.05	Valid

Indicator	Product-Moment Pearson's	Sig.	a	Information
Q4	0.736**	0.000	< 0.05	Valid
Q5	0.882**	0.000	< 0.05	Valid
Q6	0.256*	0.010	< 0.05	Valid
Q7	0.727**	0.000	< 0.05	Valid
Q8	0.807**	0.000	< 0.05	Valid
Q9	0.837**	0.000	< 0.05	Valid
Q10	0.778**	0.000	< 0.05	Valid
Q11	0.305**	0.002	< 0.05	Valid
Q12	0.857**	0.000	< 0.05	Valid
Q13	0.305**	0.002	< 0.05	Valid
Q14	0.778**	0.000	< 0.05	Valid
Q15	0.736**	0.000	< 0.05	Valid

Before further analysis, a reliability test was conducted on the research instrument to ensure internal consistency between items in each variable. The instrument reliability test was conducted using Cronbach's Alpha to measure the internal consistency of each research variable. A high Cronbach's Alpha value indicates that the items in one variable measure are consistent.

Table 4. Reliability Test

Variables	Cronbach's Alpha	Cut Off	Information
Digital Tools (X)	0.84	> 0.60	Reliable
Supply Chain Agility (Y)	0.8	> 0.60	Reliable

Table 4 presents the results of data processing, the Digital Tools (X) variable obtained a Cronbach's Alpha value of 0.84, while the Supply Chain Agility (Y) variable obtained a value of 0.80. Both values are above the cut-off threshold of 0.60 which is commonly used in social research, so they can be categorized as reliable. This high Cronbach's Alpha value indicates that the measurement instruments on both variables have good consistency and are able to produce stable and reliable data. Thus, the data collected through the questionnaire on the Digital Tools and Supply Chain Agility variables are worthy of further analysis in this study.

Table 5. Results of Regression Analysis (Digitals Tools)

Statistic	Value
Unstandardized Coef. Beta	0.598
Unstandardized Coef. Std. Error	0.197
Standardized Coef. Beta	0.616
t	2.989
Say.	0.009

Table 5 shows the simple linear regression analysis was conducted to test the effect of Digital Tools variables on Supply Chain Agility at PT Enseval Putera Megatrading Tbk. The regression results show that Digital Tools has a regression coefficient of 0.598 with a significance value (Sig.) of 0.009, which is below the significance level of 0.05. This indicates that Digital Tools have a positive and significant effect on Supply Chain Agility. The standardized beta coefficient of 0.616 indicates that every one-unit increase in the use of Digital Tools will increase Supply Chain Agility by 0.616 units, assuming other variables are constant. The t-value for Digital Tools is 2.989 with a significance value that supports that this relationship does not occur by chance. The model constant of 14,385.774 describes the value of Supply Chain Agility when Digital Tools is zero.

Overall, this model shows a positive and significant relationship between the use of Digital Tools and agility capabilities in the company's supply chain.

Table 6. Results of the Determination Coefficient Test

Model	Value
R	0.799a
R Square	0.768
Adjusted R Square	0.752
Std. Error of the Estimate	1.97919

Based on Table 6, the results of the regression analysis show a correlation coefficient (R) value of 0.799, which indicates a strong relationship between the Digital Tools variable and Supply Chain Agility. Furthermore, the determination coefficient (R^2) value of 0.768 means that around 76.8% of the variation or change in Supply Chain Agility can be explained by the Digital Tools variable. The Adjusted R Square value of 0.752 indicates that after considering the number of variables in the model, 75.2% of the variation in Supply Chain Agility can still be explained by Digital Tools, while the remaining 23.2% is influenced by other factors outside the model that were not examined in this study.

The standard error of the estimate of 1.97919 shows the average prediction error of the regression model in the Supply Chain Agility measurement scale units. Thus, the regression model used is good enough to explain the relationship between the use of Digital Tools and the level of agility in the supply chain at PT Enseval Putera Megatrading Tbk.

DISCUSSION

Ivanov et al. (2018) and Pyun and Rha (2021) stated that the global supply chain landscape over the last decade has experienced significant transformation, driven by increasing market complexity, evolving consumer demands, and external disruptions such as the COVID-19 pandemic. These dynamics have compelled companies to revise their operational models to become more adaptive and responsive to environmental uncertainties. In line with this, Ning and Yao (2023) emphasized that Supply Chain Agility (SCA) serves as a strategic capability that enables organizations to detect and react swiftly and flexibly to market fluctuations. Zhang (2023) argues that digital transformation through technologies such as Enterprise Resource Planning (ERP), Internet of Things (IoT), Big Data Analytics, and Cloud Computing plays a pivotal role in enhancing SCA by accelerating the flow of information and promoting cross-functional collaboration. Supporting this view, Yuan et al. (2023) show that ERP systems facilitate real-time data integration across divisions, while Yin (2022) explains that IoT technologies support accurate and continuous tracking of goods throughout distribution processes.

These insights are particularly relevant in the case of PT Enseval Putera Megatrading Tbk, a major pharmaceutical and medical device distributor in Indonesia. Ning and Yao (2023) highlight Enseval as a prime example of how digital technology implementation can improve operational efficiency and responsiveness. However, Queiroz et al. (2022) point out that limited field-based, quantitative research exists on the impact of digitalization in pharmaceutical distribution sectors, especially in developing countries. Rahman (2021), through his Dynamic Capabilities Theory, emphasizes that digital tools enhance organizational capabilities in sensing, seizing, and reconfiguring, which are crucial for maintaining competitiveness in dynamic markets. Furthermore, Dubey et al. (2018) have consistently demonstrated that the adoption of digital technologies increases supply chain agility by improving visibility, decision-making speed, and responsiveness. This is supported by Singh (2024), who asserts that digital transformation helps firms respond more effectively to market dynamics, enhancing both performance and customer satisfaction. Similarly, Wang et al. (2025) argue that integrating IoT, AI, and data analytics enables supply chains to become more resilient and adaptive. These findings are

aligned with this study, which confirms that the use of digital tools supports agility, especially in responsiveness and flexibility dimensions.

Wang et al. (2025) further emphasize that digitalization encourages innovation through real-time monitoring and predictive analytics, vital for anticipating disruptions. Rana et al. (2025) add that digital tools streamline processes and support timely decision-making, while Nweze (2024) introduces the agility adaptability alignment (3A) framework to explain how digital integration strengthens resilience and recovery capabilities. Additionally, Rejeb et al. (2019) note that these tools enhance cross-functional alignment, and Dubey et al. (2018) underline that technology drives strategic agility by improving visibility and execution speed. In the specific context of Enseval, the use of ERP and automation has been shown to accelerate information processing and responsiveness to fluctuating market conditions. This operational agility enables the company to maintain service excellence across its widespread national logistics network despite persistent challenges.

CONCLUSION

Based on the analysis of responses from 100 operational and managerial staff at PT Enseval Putera Megatrading Tbk, this study concludes that the use of digital tools such as ERP systems, data analytics, and automation has a positive and significant effect on supply chain agility. The results show that higher adoption and utilization of digital technologies enhance responsiveness, flexibility, and speed in distribution processes. These findings validate the concept that digital transformation is a key driver of agility in navigating market dynamics and operational complexities. Practically, the findings emphasize the urgency for PT Enseval and other distribution companies to accelerate digital integration across their supply chains. This includes the development of end-to-end platforms combining ERP, IoT, and real-time analytics to improve visibility and responsiveness. It is also crucial to implement continuous monitoring and evaluation mechanisms by establishing performance indicators that measure the real impact of digitalization on agility and service levels.

Theoretically, this study contributes to the understanding of how digital tools function as enablers of dynamic capabilities in distribution contexts. It supports the view that agility is not only a product of infrastructure investment but also a strategic capability enabled by digital transformation. However, this research is limited in scope as it focuses solely on one company within the pharmaceutical distribution sector and relies on cross-sectional data, which restricts the ability to capture long-term or sector-wide implications. Future research is encouraged to include mediating or moderating variables such as organizational readiness or competitive pressure to uncover more complex relationships. Cross-industry or intra-group comparisons across different business units may also offer broader insights. Lastly, employing a longitudinal approach can help track the sustained impact of digital tools on supply chain agility and organizational resilience over time.

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