

The Moderating Role of Environmental Scanning in The Relationships Between Physical Assets, Digital Adoption, Service Innovation, and Business Resilience

Nina Triolita¹, Budiyanto², Djawoto³

¹Doctoral Student in Management, Indonesia School of Economics (STIESIA),
Surabaya, Indonesia

^{2,3}Lecturer of Management Science, Indonesia School of Economics (STIESIA),
Surabaya, Indonesia

Correspondent author: satunggalekurniawan@uwp.ac.id

Abstract: This study examines the effects of Physical Assets, Digital Adoption, and Service Innovation on Business Resilience and investigates the moderating role of Environmental Scanning among clothing businesses operating in shopping malls in North Surabaya, Indonesia. Drawing on the Resource-Based View and Dynamic Capability Theory, the study proposes that internal resources and capabilities contribute to business resilience, while Environmental Scanning strengthens their contribution under changing market conditions. A quantitative approach was employed using Structural Equation Modeling–Partial Least Squares (SEM-PLS). Data were collected through structured questionnaires from 240 owners or managers of clothing businesses selected using purposive sampling. The results indicate that Physical Assets have a positive and statistically significant relationship with Business Resilience, whereas Digital Adoption has a negative but statistically non-significant direct relationship with Business Resilience. Service Innovation has a positive and statistically significant relationship with Business Resilience. Furthermore, Environmental Scanning positively and significantly moderates the relationships between Physical Assets and Business Resilience, Digital Adoption and Business Resilience, and Service Innovation and Business Resilience. These findings suggest that resources and capabilities do not generate resilience independently; their contribution depends on businesses' ability to monitor and interpret environmental changes. The study contributes to RBV and Dynamic Capability Theory by positioning Environmental Scanning as a contextual capability that aligns resources and innovations with changing market conditions. Exact statistical coefficients should be reported after the original SmartPLS output is available.

Keywords: *Environmental Scanning; Business Resilience; Physical Assets; Digital Adoption; Service Innovation*

1. INTRODUCTION

Global retail developments demonstrate a shift from the concept of exclusive modern malls to a more inclusive and adaptive model. Most malls are dominated by the apparel industry due to its high demand, fast product cycle (fast fashion), and strong visual appeal. In Indonesia, malls have become a go-to destination for consumers seeking to meet their fashion trends. Up to date Especially in urban areas. Surabaya, as the second largest city in Indonesia, has a large number of malls, and their number continues to grow every year. According to kumparan.com [1], the number of malls in Surabaya will reach 22 in 2023, a figure that continues to grow compared to the previous year. This is indicated by the addition of two new malls at the end of 2022. This number will continue to grow in the following years, in line with the development of malls in the eastern part of Surabaya.

The continued growth of modern shopping centres in various cities indicates an expansion of the modern retail sector, but this condition is not always accompanied by improved business performance. The number of malls that continues to increase every year in the city of Surabaya is not in line with the increase in mall occupancy which continues to decline. Average monthly expenditure per capita by commodity group in the city of Surabaya from 2018 to 2020 remained at an average of IDR 43,682 per capita to IDR 28,923 per capita in 2023 (BPS Surabaya City, 2024) [2]. In 2018, approximately 78.5% of Surabaya's mall land was still occupied by outlets. However, in the following years, mall occupancy continued to decline, reaching 69% by the end of 2022. The decline in mall occupancy is a sign that the occupancy rate dominated by the clothing business is starting to be abandoned by many traders (Adi, 2024) [3]. Although several malls in Central Surabaya, South Surabaya, and East Surabaya began to see increased occupancy in the fourth quarter of 2023, malls in North Surabaya experienced the lowest occupancy rates among the other malls. Many clothing stores experienced a decline in visitors, and some businesses even opted to close due to high operating

costs that disproportionately offset their revenues. This situation indicates a decline. Business Resiliencies the clothing business, especially in malls in the North Surabaya area.

On the other hand, the national textile industry is also facing significant pressure. Several textile factories have experienced reduced production capacity and have resorted to large-scale layoffs. Another phenomenon that has put pressure on the domestic clothing business is the increasing import of used clothing. According to GoodStats.id (2024) [4], the volume of used clothing imports into Indonesia in 2022 increased by 227.75 percent compared to the previous year, reaching 8 tons. This figure is equivalent to Rp 4.21 billion. Japan is the country with the highest import of used clothing to Indonesia, with a total of 12 tons. Imported used clothing products are highly sought after by the public because they offer relatively low prices and brands considered to be of good quality. The location of clothing businesses in North Surabaya malls is close to used clothing markets, which has an impact on clothing sales.

The development of digital technology has also changed the competitive landscape in the clothing business. The emergence of various marketplace platforms and social media has driven the growth of online clothing businesses with highly competitive prices. Consumer online shopping increased by 14.9% in 2022. This is also evident in the latest data from the Central Statistics Agency (BPS) in mid-2022 [2], which states that fashion or clothing products are the top consumer choice for e-commerce. Despite the increase in online sales, other things were also found based on the 2022 E-Commerce survey in 4,252 survey blocks in 302 districts/cities. It was found that many business actors still had not implemented e-commerce in 2022. The main reasons (78.12%) were more comfortable selling directly (offline), 29.94% were not interested in selling online, and 27.83% of business actors lacked knowledge or expertise in the digital field. This attracted the attention of researchers to examine this phenomenon more deeply, which is linked to Business Resiliencies the clothing business.

The sheer number of sellers and variety of products means intense competition, forcing all clothing businesses to seek creative marketing strategies and offer unique products to attract customers. Clothing businesses must always stay up-to-date on the latest fashion trends and innovations in clothing design to stay relevant in the market. They need to monitor consumer behaviour trends and understand consumer tastes to supply products that are in demand and be able to increase business resilience to maintain and grow their businesses sustainably.

The initial field study conducted by researchers in 2023, researchers conducted interviews with several clothing businesses for 2 weeks from March 6, 2023, to March 25, 2023. Based on the results of the initial field study interviews, researchers concluded that there are several factors that can be used as determining factors for traders in their businesses to increase the business resilience of clothing businesses in the North Surabaya Mall area even though income is still not in good condition. Based on the initial field study, researchers found several variables that are predicted to influence business resilience in clothing businesses in North Surabaya Mall so that they can maintain the existence of their outlets in North Surabaya Mall. These variables include Physical Assets, Digital Adoption and Service Innovation and researchers also want to be able to analyse the role of environmental scanning variables as moderating variables in strengthening or weakening their influence on the resilience of clothing businesses in North Surabaya Mall to maintain their business.

The researcher in this dissertation aims to provide solutions to the problematic phenomena that occur using basic references through Resource Base View Theory (RBV), Dynamic Capability Theory, and Competitive Advantage. This theory is a theory of resource competition that involves physical and non-physical assets owned by a company. This theory supports the use of assets and expertise to become a competitive advantage for the sustainability of every business [5]. Research on the relationship between physical assets and business sustainability is still scarce [6]. Most researchers focus more on the ownership of physical assets on the financial and technical conditions of management in a company [7]. The researcher in this dissertation aims to be able to explore the role of Physical Assets in influencing Business Resilience in the clothing business in North Surabaya Mall which has not been found in previous research.

Conventional sales practices still practiced by clothing businesses in North Surabaya Malls are less able to utilize technological developments. Today's highly competitive business environment can inspire effective ideas for using technology adoption to sustain organizational survival [8]. Adoption in a business that is able to manage digital technology for business development is called Digital Adoption [9]. Furthermore, it was found that approximately 70% of companies that implement digital transformation programs fail to achieve their goals due to ingrained organizational habits. The inconsistency in the findings of Digital Adoption and Business Resilience requires further research on different subjects.

The Resource-Based View (RBV) theory originated from Penros's [10] thinking in his book, *The Theory of the Growth of the Firm*. Penrose viewed the firm as a collection of internally managed productive resources, not merely a

production unit influenced by industrial structure. This concept strengthened the legitimacy of the RBV as the primary theory in explaining long-term competitive advantage. In the next stage, the RBV was developed to be more operational and applicable through Barney and Hesterly's book entitled *Strategic Management and Competitive Advantage: Concepts and Cases* [11]. The resource advantage theory asserts that a firm's resource competition represents all tangible and intangible entities [12]. Dynamic Capability Theory is a theory often used in strategic management research to understand how organizations can adapt, change, and maintain competitive business advantage in a rapidly changing environment. Dynamic Capability Theory was first introduced by Teece et al. in 1997 [13]. The process of reviewing the company's external environment is necessary to be able to review a very dynamic environment. Researchers refer to Dynamic Capability Theory as the middle theory of this research in reviewing adaptive environmental changes by utilizing the role of Environmental scanning variables. Environmental scanning is the monitoring, evaluation, and dissemination of information from the external and internal environments to important people involved in the company [14].

The search results using VOS Viewer show that previous research has never analysed the relationship between Business Resilience, physical assets, digital adoption, service innovation and environmental scanning into a full network model. Therefore, this research needs to be conducted for further study in finding solutions to the problems that occur in the clothing business in the North Surabaya mall. The purpose of this study is to examine and explore further the role of exogenous variables Physical Assets, Digital Adoption, Service Innovation and endogenous variables Business Resilience as well as moderating variables Environmental scanning through the Resource Base View Theory approach, Dynamic Capability Theory and Competitive Advantage applied in the variables Business Relicence.

2. LITERATURE REVIEW

Business Resilience

The theory of business resilience is rooted in the concept of resilience in ecological science, introduced by Holling [15] in his book "Resilience and Stability of Ecological Systems." Holling defines resilience as a system's ability to absorb disturbances while maintaining its basic functions. Horstmeyer [16] defines business resilience in the face of uncertainty as well as VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) to create stability, explore, and experiment to find better solutions to business problems. Business resilience emphasizes a proactive rather than a reactive attitude, which is necessary for a business to operate in a dynamic external environment full of new challenges.

Business resilience is not only about surviving difficult situations, but also about taking advantage of new opportunities that arise from uncertainty [17]. Burnard and Bhamra [18] in their book *Organizational Resilience* emphasize that business resilience is crucial in facing rapid environmental changes, such as economic crises, technological disruptions, and changes in consumer behaviour. Several factors that influence business resilience according to Ducheck [19] include Anticipation Capability, Absorptive Capabilities, and Adaptation Capabilities. McManus [20] explains that the factors that influence business resilience are Response Capability and Operational Flexibility. Research by Teo et al. [21] proposes a model to explain how local leadership must be able to utilize tangible factors (i.e., financial resources and infrastructure) and intangible factors (i.e., trust, reflection, and learning) to foster business resilience after a crisis. Tibay et al. [22] stated that the Resilience measurement indicators in the hospitality service business consist of Leadership and Management, Situational Awareness, Network Robustness, Planning and Preparedness, Adaptive Ability, Market Sensitivity, Innovation and Diversification, Access to External Resources, Ability to Leverage Knowledge and Information, Compliance and Regulations, Reflective Business Model, and Core Competence of Staff.

Physical Asset

Physical assets are defined as tangible resources owned and used by an organization to support operational activities, such as buildings, machinery, equipment, infrastructure, and logistics facilities. In contemporary strategic management literature, physical assets are viewed as operational enablers that enable companies to run business processes efficiently, but not the sole determinant of competitive advantage Grant, [23]. Barney et al.'s [24] book explains that physical assets rarely meet the VRIN (valuable, rare, inimitable, non-substitutable) criteria independently. Teece [13] explains that physical assets are considered "static resources" whose value depends heavily on strategic management decisions in allocating and integrating them with technology and knowledge. Research by

Sharp et al. [25] explains that physical assets in retail stores have an important role because they can add more market value to the business. Sharp et al [25] shows that ownership of physical retail assets such as stores and sales facilities as supporting assets whose value is highly dependent on strategic integration. In addition, research by Adebayo [26] states that store locations are the most valuable physical assets, especially in high-traffic areas because consumers can easily reach the store location. business actors such as product inventory and sales service facilities.

Ownership of Physical Assets, which can be interpreted as tangible assets, is a determinant in generating profits and improving company performance, thus impacting Business Resilience. Jawed et al. [27]. Research by Aghabegloo et al. [28] states that Physical Assets are vital for providing key products so that they are easily identified in maintaining sustainability and Business Resilience, so that the sustainability of product/service provision through the sustainability of Physical Assets becomes a management concern in making strategic decisions. In Aghabegloo et al [28] research, one of the nine important points of Certification and Management of Physical Assets states that Companies that are able to manage assets appropriately can be a determinant of business success. Research on Physical Asset ownership in a company has been widely reviewed in previous studies, and several studies have found that Physical Asset ownership has positive results on consumer purchasing decisions, profit growth, increased sales, business performance, business growth, and business sustainability. However, researchers have not yet found research on the effect of Physical Asset ownership on Business Resilience directly for companies. Based on theoretical assumptions and previous research results, this study attempts to use the following hypothesis:

H1: Physical Assets have a significant effect on the Business Resilience

Digital Adoption

Digital adoption is seen as an organization's ability to absorb, utilize, and sustainably exploit digital technology. Kraus et al. [29] explain that successful digital adoption depends on alignment between digital strategy, organizational culture, and leadership. Verhoef et al. [30] emphasize that digital adoption is the next stage of digitalization, where technology is used strategically to create business value, increase efficiency, and strengthen long-term competitiveness. Nambisan et al. [8] emphasize that digital adoption is not simply a technology investment, but rather a transformation of business processes that enables organizations to create new business models.

In a study by Hokmabadi et al. [31], which investigated the relationship between Digital Adoption, Business Resilience, and Marketing Capability, it was found that micro, small, and medium enterprises (MSMEs) need to implement digital adoption in developing dynamic capabilities to utilize marketing capabilities in facing challenges and seizing opportunities in the digital era. Kim et al. [32] stated that adoption in digital management has a positive impact on the company's commercialization activities, thus providing a positive impact on the company's competitive advantage. However, this is not in line with Kraus et al [29] research, which considers digitalization as complicated, expensive, and unnecessary, except for a few entrepreneurs who have sufficient financial and digital resources and are willing to face the challenge. Another study by Correani et al. [33] stated that the adoption of digital technology is not always successful, many companies make large investments in digital transformation, but fail to deliver the expected business value.

According to Westerman et al. [34], the level of digital adoption can be measured by improvements in efficiency, service quality, and business flexibility. Research by Kraus et al. [29] also shows that effective digital adoption is reflected in improved operational performance and business resilience. Another study by Saputra et al. (2021) uses measurement indicators including adoption in utilizing digital technology, adoption in identifying new digital opportunities, adoption in responding to digital transformation, adoption in mastering the most advanced digital technology, and adoption in developing innovative products using digital technology.

Digital Adoption has become an interesting topic for many current studies along with the increasingly rapid development of technology, but until now there are still gaps in the results of the relationship between digital adoption and business resilience in previous studies, so in this study, digital adoption is used to formulate the following hypothesis:

H2: Digital Adoption has a significant impact on the Business Resilience

Service Innovation

Service innovation refers to the development or implementation of new ways of designing, delivering, and creating value for customers. Nambisan et al.'s [8] book, *The Handbook of Digital Innovation*, explains that service innovation encompasses more than just new services, but also encompasses changes in processes, interactions, and service ecosystems. Service innovation focuses on value co-creation between service providers and customers through the use

of resources and technology. Gronroos [35] explains that service innovation is not always radical, but often involves incremental improvements that enhance service quality and efficiency.

Other studies from various perspectives demonstrate a relationship between organizational resilience, innovation, and shared value creation as determining factors explaining company sustainability during a crisis. Garrido et al. [36] stated that company performance can be optimized as a result of service innovation, which contributes to business growth driven by the adoption of digital technology for company resilience and growth. Research by Dovbischuk [37] empirically confirms a positive relationship between innovation capability and higher levels of dynamic resilience among logistics service providers. Research by Blichfeldt and Faullant (2021) on manufacturing companies in Germany states that low-technology sectors in companies will impact high-technology to produce service innovation and exploratory performance to support a strategic role in the company's future sustainability. Based on previous research, service innovation significantly impacts business resilience, and research continues to develop various aspects to address various conditions. This study aims to review the impact of service innovation used by clothing businesses in North Surabaya Malls on improving business resilience, as stated in the following hypothesis:

H3: Service Innovation has a significant influence on the Business Resilience

Environmental scanning

The Environmental Scanning Theory was introduced by Aguilar [38] which is the first pioneering work in introducing the concept of environmental scanning systematically in the context of strategic management. Wheelen and Hunger (2018: 70) explain that environmental scanning helps management understand the dynamics of the macro and industrial environment that can affect organizational performance.

Environmental scanning plays a positive moderating role in the relationship between structural capital, relational capital, and environmental innovation. Considered an effective way to balance financial and environmental goals, environmental innovation has become a priority for companies. Environmental scanning has no direct effect on organizational resilience. However, through organizational learning, it fully mediates the relationship between environmental scanning and organizational resilience. Furthermore, environmental uncertainty does not moderate the indirect relationship between environmental scanning and resilience.

The increasingly rapid development of the digital era presents new opportunities for businesses to increase their digital adoption. Each company's digital adoption varies depending on the company's level of adoption, enabling it to implement appropriate marketing strategies to achieve business resilience and sustainable competitive advantage. Digital adoption has been shown to enhance the ability of SMEs to stream information, reduce operational costs, and improve quality, enabling them to achieve competitive advantage and corporate sustainability through environmental scanning.

Moderation Logic for H4–H6

The moderation logic in Hypotheses H4–H6 is based on the assumption that the value of organizational resources and capabilities does not operate independently of the external business environment. Environmental Scanning is therefore positioned as a moderating variable because its function is not merely to directly influence Business Resilience, but to determine how effectively internal resources and capabilities can be converted into resilience when businesses face environmental changes. In this study, Environmental Scanning refers to the systematic monitoring, evaluation, and dissemination of information concerning changes in the internal and external business environment. The underlying logic can be expressed as follows: when Environmental Scanning is low, business actors may possess physical assets, adopt digital technologies, or implement service innovations, but may not have sufficient information about market changes to deploy these resources appropriately. Conversely, when Environmental Scanning is high, businesses are more capable of identifying changes in customer preferences, competitors, technology, and market conditions and subsequently adjusting the use of their resources and capabilities. Therefore, Environmental Scanning is expected to increase the strength of the relationship between the independent variables and Business Resilience.

H4: Environmental Scanning Moderates the Relationship between Physical Assets and Business Resilience

The logic of H4 is that Physical Assets do not automatically generate Business Resilience merely because they are owned by a business. Physical assets become strategically valuable when business actors are able to determine how and when those resources should be utilized in response to environmental changes. For example, clothing businesses may possess retail space, product inventory, equipment, and other physical facilities. However, these assets may provide limited strategic value if business owners do not understand changes in consumer preferences, market demand,

competitor strategies, or the competitive environment surrounding the shopping mall. Environmental Scanning enables business actors to obtain information about such changes and subsequently adjust the allocation and utilization of their physical resources. Therefore, Environmental Scanning changes the strength of the relationship between Physical Assets and Business Resilience. At a low level of Environmental Scanning, the contribution of Physical Assets to resilience may be relatively limited because resources are utilized based primarily on existing routines. At a high level of Environmental Scanning, the same physical resources can be allocated more appropriately according to emerging market opportunities and threats. This explains why the study finds that Environmental Scanning positively and significantly strengthens the relationship between Physical Assets and Business Resilience. In theoretical terms, this finding connects the Resource-Based View with Dynamic Capability Theory. RBV explains the importance of resources as the foundation of competitive advantage, while Dynamic Capability Theory explains how firms adapt and reconfigure those resources according to environmental changes. Thus, Environmental Scanning serves as an information-based capability that enables physical resources to generate greater resilience.

H5: Environmental Scanning Moderates the Relationship between Digital Adoption and Business Resilience

The logic of H5 is particularly important because Digital Adoption does not demonstrate a significant direct effect on Business Resilience in this study. This means that adopting digital technology alone is insufficient to automatically increase resilience. The contribution of digital technology depends on how strategically the technology is used in relation to changes in the business environment. Digital technologies such as electronic cashier systems, social media, online sales platforms, and digital communication tools can provide businesses with additional opportunities to improve efficiency and market access. However, if business actors adopt these technologies without understanding customer behaviour, market trends, competitor movements, or technological developments, digital adoption may remain operational rather than strategic. The manuscript itself indicates that digital adoption in the research setting is still largely administrative and has not been fully integrated into strategic business processes. Environmental Scanning changes this condition. When business actors actively monitor their environment, they can identify which digital technologies are relevant to emerging customer needs and competitive pressures. Consequently, Environmental Scanning enables businesses to transform Digital Adoption from a routine operational activity into a more strategically relevant capability.

This explains the seemingly contrasting results between the direct and moderating effects. Digital Adoption has a negative and insignificant direct relationship with Business Resilience, but its relationship with Business Resilience becomes stronger when Environmental Scanning is present. In other words, Environmental Scanning provides the contextual information necessary for businesses to derive greater value from digital technologies. Therefore, H5 should not be interpreted as evidence that Digital Adoption is inherently ineffective. Rather, the finding suggests that the contribution of Digital Adoption is conditional upon the organization's ability to understand and respond to its external environment. This provides an important theoretical explanation for why digital adoption may produce inconsistent outcomes across businesses.

H6: Environmental Scanning Moderates the Relationship between Service Innovation and Business Resilience

The logic of H6 is based on the assumption that Service Innovation generates greater value when it is aligned with actual changes in customer expectations and market conditions. Service innovation may involve improvements in customer interaction, service personalization, flexibility, delivery processes, and other aspects of the customer experience. However, innovation that is developed without adequate information about the external environment may fail to address actual market needs. Environmental Scanning enables clothing businesses to identify changes in customer preferences, competitor offerings, market trends, and emerging threats. This information can subsequently be incorporated into the development and adjustment of service innovations. Thus, businesses that continuously scan their environment are better positioned to ensure that service innovations remain relevant and responsive to market requirements. The moderating effect therefore means that the positive relationship between Service Innovation and Business Resilience becomes stronger as the level of Environmental Scanning increases. When Environmental Scanning is low, service innovations may be implemented without sufficient market information, reducing their potential contribution to resilience. Conversely, when Environmental Scanning is high, service innovation can be continuously adjusted to changes in customer and market requirements, thereby strengthening the business's ability to survive and adapt. The study reports a positive and significant moderating effect for this relationship. This finding is consistent with the logic of Dynamic Capability Theory. Service innovation represents an organizational capability to modify and improve the way value is delivered to customers, while Environmental Scanning provides the information

necessary to identify when and how such modifications should be made. The interaction between these two capabilities enables businesses to respond more flexibly to environmental uncertainty.

Integrated Moderation Logic

The three moderation hypotheses can therefore be understood through one integrated mechanism. Physical Assets represent resources, Digital Adoption represents technological capability, and Service Innovation represents a capability for creating and delivering customer value. Environmental Scanning provides the environmental intelligence needed to determine how these resources and capabilities should be deployed.

The moderation mechanism can be summarized as:

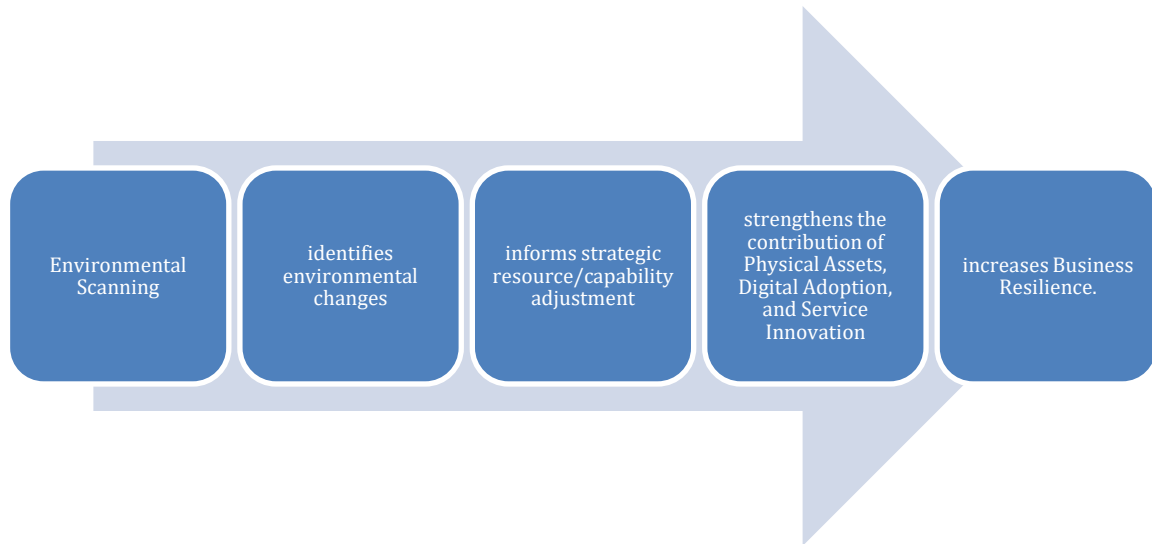


Chart 1. The moderation mechanism

Consequently, Environmental Scanning should not be interpreted merely as another organizational resource. Its strategic role lies in connecting internal resources and capabilities with external environmental information. This explains why the three interaction effects are positive: businesses that are better at scanning their environment are more capable of aligning their physical resources, digital technologies, and service innovations with changing market conditions. Overall, the findings provide a stronger explanation of the role of Environmental Scanning than a simple direct-effect interpretation. The evidence suggests that Business Resilience is not determined solely by what resources or capabilities a clothing business possesses, but also by how effectively those resources and capabilities are aligned with environmental changes. This interpretation strengthens the integration of Resource-Based View and Dynamic Capability Theory in explaining resilience among clothing businesses in North Surabaya malls.

H4: The influence of environmental scanning in moderating physical assets on business resilience

H5: The influence of environmental scanning in moderating digital adoption on business resilience

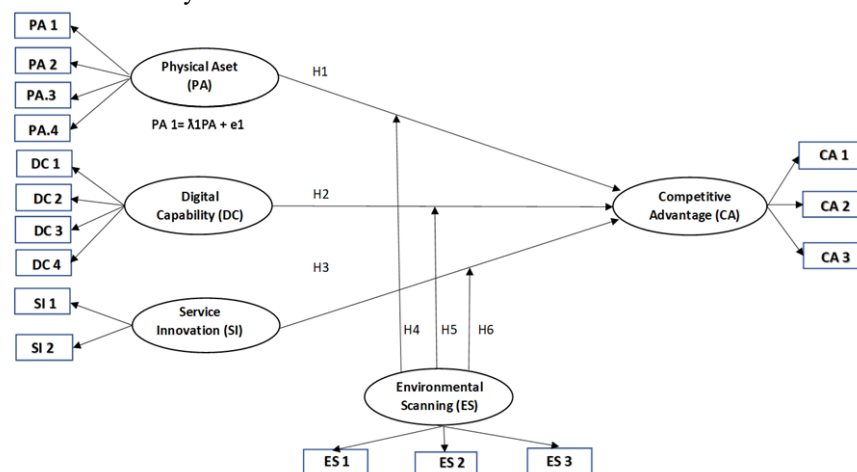
H6: The influence of environmental scanning in moderating service innovation on business resilience

3. METHODS

This study employed a quantitative approach with a structured research design from the initial to the final stages of the study. The data were analysed using Structural Equation Modelling-Partial Least Squares (SEM-PLS). According to Hair et al. [39], SEM-PLS is suitable for exploratory and predictive research, particularly when the research model involves multiple constructs and indicators. Therefore, SEM-PLS was considered appropriate for examining the effects of physical assets, digital adoption, service innovation, environmental scanning, and business resilience on clothing businesses located in shopping malls in North Surabaya. The population of this study consisted of all clothing businesses that were actively operating in January 2024 in shopping malls in North Surabaya. The population was

categorized as an unknown population because the exact number of active clothing businesses that met the characteristics of this study could not be determined. This was due to the unavailability of official and integrated data regarding the total number of active clothing businesses in each shopping mall included in the study.

The sampling technique used in this study was non-probability sampling, specifically purposive sampling. This technique was selected because not all members of the population possessed characteristics relevant to the objectives of the study. Respondents were therefore selected based on predetermined criteria to ensure that they had sufficient experience and knowledge regarding business operations, digital technology adoption, service innovation, environmental conditions, and business resilience. The criteria for selecting respondents were as follows: (1) the respondent was the owner or manager of a clothing store that had been actively operating for at least two years; (2) the store sold adult clothing products with various types and product variations; (3) the store was located in at least one of the following shopping malls in North Surabaya: ITC Mega Grosir, Pasar Atom Mall, or Jembatan Merah Plaza; and (4) the respondent was knowledgeable about and involved in business operational and managerial decision-making. Based on these criteria, the sample consisted of 240 respondents, representing active clothing businesses in shopping malls in North Surabaya. Data were collected directly from respondents who met the predetermined criteria through a structured questionnaire. Each respondent completed one questionnaire, and each completed questionnaire represented one unit of analysis. Thus, the final sample consisted of 240 units of analysis that met the inclusion criteria and were considered capable of providing relevant information regarding the constructs examined in this study. The conceptual framework in this study is as follows



Picture 1. Conceptual Framework

4. RESULTS AND DISCUSSIONS

1. Structural Model Analysis

This study employed Structural Equation Modelling–Partial Least Squares (SEM-PLS) to examine the relationships among Physical Assets, Digital Adoption, Service Innovation, Environmental Scanning, and Business Resilience. The analysis involved 240 respondents consisting of owners or managers of clothing businesses operating in shopping malls in North Surabaya. SEM-PLS was selected because the research model involves multiple constructs and is intended to examine predictive relationships as well as the moderating role of Environmental Scanning. The structural model results indicate different relationships between the exogenous variables and Business Resilience. Physical Assets have a positive and significant effect on Business Resilience. This finding indicates that better availability and management of physical assets are associated with stronger business resilience among clothing businesses. Physical resources, including business facilities, equipment, inventory, and supporting infrastructure, provide an operational foundation that enables businesses to maintain their activities when facing uncertainty and disruption.

In contrast, Digital Adoption has a negative and statistically insignificant direct effect on Business Resilience. Therefore, the second hypothesis is not supported. This finding suggests that the adoption of digital technologies by clothing businesses in North Surabaya malls has not yet generated a direct contribution to business resilience. The study indicates that digital technologies, including electronic cashier systems, social media, and online sales channels, are still primarily used for administrative and operational purposes and have not been fully integrated into strategic

business processes. Service Innovation has a positive and significant effect on Business Resilience. This result demonstrates that businesses with greater capacity to improve and develop their service processes tend to have stronger capabilities to respond to changing customer needs and market conditions. Service innovation therefore represents an important organizational capability for maintaining business continuity in a competitive and uncertain environment.

2. Moderating Effect of Environmental Scanning

The moderation analysis demonstrates that Environmental Scanning plays an important role in strengthening the relationships between the independent variables and Business Resilience. First, Environmental Scanning significantly and positively moderates the relationship between Physical Assets and Business Resilience. This finding indicates that the contribution of physical assets to business resilience becomes stronger when business actors actively monitor and evaluate changes in their external environment. Thus, physical resources provide greater strategic value when they are aligned with information concerning market developments, consumer preferences, and competitive conditions. Second, Environmental Scanning positively moderates the relationship between Digital Adoption and Business Resilience. Although Digital Adoption does not have a significant direct effect on Business Resilience, its contribution becomes stronger when accompanied by environmental scanning. This finding indicates that digital technology is more valuable when businesses use external environmental information to determine which technologies, digital channels, and strategies are most relevant to their market conditions. Third, Environmental Scanning significantly and positively moderates the relationship between Service Innovation and Business Resilience. This result indicates that the contribution of service innovation to business resilience increases when business actors continuously identify, interpret, and respond to changes in the external business environment. Environmental Scanning consequently functions as an adaptive mechanism that enables service innovations to remain relevant to changing customer and market requirements.

3. Hypothesis Testing Results

Hypothesis	Relationship	Direction	Significance	Decision
H1	Physical Assets → Business Resilience	Positive	Significant	Supported
H2	Digital Adoption → Business Resilience	Negative	Not significant	Not Supported
H3	Service Innovation → Business Resilience	Positive	Significant	Supported
H4	Physical Assets × Environmental Scanning → Business Resilience	Positive	Significant	Supported
H5	Digital Adoption × Environmental Scanning → Business Resilience	Positive	Significant	Supported
H6	Service Innovation × Environmental Scanning → Business Resilience	Positive	Significant	Supported

4. Statistical Interpretation

Overall, the SEM-PLS findings indicate that Business Resilience is influenced not only by internal resources and organizational capabilities but also by the ability of businesses to monitor and respond to changes in their external environment. Physical Assets and Service Innovation demonstrate positive direct relationships with Business Resilience, whereas Digital Adoption does not demonstrate a significant direct relationship. The findings further demonstrate the importance of Environmental Scanning as a moderating variable. Environmental Scanning strengthens the relationships of Physical Assets, Digital Adoption, and Service Innovation with Business Resilience. This suggests that internal resources and capabilities are more valuable when businesses possess the ability to identify and interpret changes in their external environment. From a theoretical perspective, these findings provide support for the Resource-Based View (RBV) and Dynamic Capability Theory. The RBV emphasizes the strategic value of internal resources, whereas Dynamic Capability Theory highlights an organization's ability to integrate, develop, and reconfigure resources in response to environmental changes.

5. Statistical Reporting Note

For publication in an international journal, the hypothesis-testing table should ideally report the numerical SEM-PLS output, including Original Sample/Path Coefficient (β), Sample Mean, Standard Deviation, T-Statistics, P-Values, and Confidence Intervals. The structural model should also report the R^2 value for Business Resilience, as well as Effect Size (f^2) and Predictive Relevance (Q^2) where available. These statistics are important for demonstrating not only whether the relationships are statistically supported but also the explanatory and predictive quality of the structural model. The current manuscript does not provide the numerical SmartPLS output for these statistics. Therefore, the numerical coefficients, t-statistics, and p-values should not be fabricated. The current results support conclusions regarding the direction and significance status of the relationships, but the exact statistical values require the original SmartPLS output.

6. Overall Statistical Findings

The statistical analysis provides six main findings. First, Physical Assets positively and significantly influence Business Resilience. Second, Digital Adoption has a negative but statistically insignificant direct relationship with Business Resilience. Third, Service Innovation positively and significantly influences Business Resilience. Fourth, Environmental Scanning strengthens the relationship between Physical Assets and Business Resilience. Fifth, Environmental Scanning strengthens the relationship between Digital Adoption and Business Resilience. Sixth, Environmental Scanning strengthens the relationship between Service Innovation and Business Resilience. These findings demonstrate that the ability to monitor the business environment is an important condition for converting organizational resources and capabilities into greater business resilience.

5. CONCLUSION

This study examined the effects of Physical Assets, Digital Adoption, and Service Innovation on Business Resilience and the moderating role of Environmental Scanning among clothing businesses operating in shopping malls in North Surabaya. The findings show that Physical Assets have a positive and statistically significant relationship with Business Resilience, indicating that adequate physical resources and their utilization contribute to the continuity and resilience of clothing businesses. In contrast, Digital Adoption has a negative but statistically non-significant direct relationship with Business Resilience, suggesting that the adoption of digital technologies alone does not necessarily strengthen business resilience in the research context. Service Innovation has a positive and statistically significant relationship with Business Resilience, indicating that improvements in service processes and customer-oriented activities can support businesses in responding to changing market conditions.

The moderation analysis provides further evidence that Environmental Scanning strengthens the relationships between Physical Assets and Business Resilience, Digital Adoption and Business Resilience, and Service Innovation and Business Resilience. These findings indicate that the contribution of internal resources and organizational capabilities to business resilience depends partly on the extent to which businesses monitor, evaluate, and respond to changes in their external environment. Overall, the findings support the relevance of the Resource-Based View and Dynamic Capability Theory in explaining business resilience through the interaction between internal resources, organizational capabilities, and environmental conditions. Importantly, this study does not establish Environmental Scanning as a direct predictor of Business Resilience because such a relationship was not included among the tested hypotheses. Similarly, Competitive Advantage and the integration of modern and traditional retail models were not empirically tested in the proposed model and therefore are not presented as conclusions of this study.

REFERENCES

- [1]. J. Dunia, "Kumparan," Kumparan.com, 22 Juli 2023. [Online]. Available: https://kumparan.com/jendela-dunia/5-mall-mewah-di-surabaya-paling-lengkap-20q3xamEx6r/full?utm_source=. [Accessed 11 5 2026].
- [2]. B. P. Statistik, "Badan Pusat Statistik Kota Surabaya," Badan Pusat Statistik Kota Surabaya, 11 5 2024. [Online]. Available: <https://surabayakota.bps.go.id/id/publication>. [Accessed 12 8 2025].
- [3]. A. Ahdiat, "Katadata Media," Katadata Media Network, 1 12 2023. [Online]. Available: https://databoks.katadata.co.id/en/property/statistics/7b9e4c83857d2fd/surabaya-mall-occupancy-rates-hit-lowest-point-since-2018?utm_source=. [Accessed 17 2 2026].

- [4]. A. A. Putri, "GoodStats," GoodStats Data, 23 3 2023. [Online]. Available: <https://data.goodstats.id/statistic/statistik-impor-pakaian-bekas-5-tahun-terakhir-RLqTo?utm>. [Accessed 15 7 2026].
- [5]. R. Varadarajan, "Customer information resources advantage, marketing strategy and business performance: A market resources-based view," *Industrial Marketing Management*, vol. 89, no. doi: 10.1016/j.indmarman.2020.03.003, pp. 89-97, 2020.
- [6]. I. Roda and M. Macchi, "Studying the funding principles for integrating asset management in operations: Empirical research in production companies," *IFAC-PapersOnLine*, vol. 49, no. 28, pp. 1–6, 2016, doi: 10.1016/j.ifacol.2016.11.001.
- [7]. D. Maletič, M. Maletič, B. Al-Najjar, K. Gotzamani, M. Gianni, T. B. Kalinowski, and B. Gomišček, "Contingency factors influencing implementation of physical asset management practices," *Organizacija*, vol. 50, no. 1, pp. 3–16, 2017, doi: 10.1515/orga-2017-0003.
- [8]. S. Nambisan, M. Wright, and M. Feldman, "The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes," *Research Policy*, vol. 48, no. 8, p. 103773, 2019, doi: 10.1016/j.respol.2019.03.018.
- [9]. S. Khin and T. C. F. Ho, "Digital technology, digital capability and organizational performance," *International Journal of Innovation Science*, vol. 11, no. 2, pp. 177–195, 2019, doi: 10.1108/IJIS-08-2018-0083.
- [10]. E. T. Penrose, *The theory of the growth of the firm*, Oxford: Oxford University Press, 1959.
- [11]. J. B. Barney and W. S. Hesterly, *Strategic Management and Competitive Advantage: Concepts and Cases*, 6th ed. Harlow, U.K.: Pearson, 2021.
- [12]. S. D. Hunt and R. M. Morgan, "The comparative advantage theory of competition," *Journal of Marketing*, vol. 59, no. 2, pp. 1–15, 1995, doi: 10.1177/002224299505900201.
- [13]. D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Strategic Management Journal*, vol. 18, no. 7, pp. 509–533, 1997, doi: 10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z.
- [14]. E. Auster and C. W. Choo, "Environmental scanning by CEOs in two Canadian industries," *Journal of the American Society for Information Science*, vol. 44, no. 4, pp. 194–203, 1993, doi: 10.1002/(SICI)1097-4571(199305)44:4<194::AID-ASIS2>3.0.CO;2-1.
- [15]. C. S. Holling, "Resilience and stability of ecological systems.," *Annual Review of Ecology and Systematic*, vol. 4, pp. 1-23 <https://doi.org/10.1146/annurev.es.04.110173.000245>, 1973.
- [16]. A. Horstmeier, "The generative role of curiosity in soft skills development for contemporary VUCA environments," *Journal of Organizational Change Management*, vol. 5, no. 33, pp. 737–751. <https://doi.org/10.1108/JOCM-08-2019-0250>, 2020.
- [17]. M. L. Frigo and R. J. Anderson, "Strategic risk management: A foundation for improving enterprise risk management and governance," *Journal of Corporate Accounting & Finance*, vol. 22, pp. 81–88, 2011, doi: 10.1002/jcaf.20677.
- [18]. K. Burnard and R. Bhamra, "Organisational resilience: Development of a conceptual framework for organisational responses," *International Journal of Production Research*, vol. 49, no. 18, pp. 5581–5599, 2011, doi: 10.1080/00207543.2011.563827.
- [19]. S. Duchek, "Organizational resilience: A capability-based conceptualization," *Business Research*, vol. 1, no. 13, pp. 215–246. <https://doi.org/10.1007/s40685-019-0085-7>, 2020.
- [20]. S. T. McManus, *Organisational resilience in New Zealand [Doctoral dissertation,], Ilam, New Zealand: University of Canterbury*, 2008.
- [21]. W. L. Teo, M. Lee, and W.-S. Lim, "The relational activation of resilience model: How leadership activates resilience in an organizational crisis," *Journal of Contingencies and Crisis Management*, vol. 25, no. 3, pp. 136–147, 2017, doi: 10.1111/1468-5973.12179.
- [22]. V. Tibay, J. Miller, A. (Y.) Chang-Richards, T. Egbelakin, E. Seville, and S. Wilkinson, "Business resilience: A study of Auckland hospitality sector," *Procedia Engineering*, vol. 212, pp. 1217–1224, 2018, doi: 10.1016/j.proeng.2018.01.157.
- [23]. R. M. Grant, *Contemporary strategy analysis* (10th ed.), Jakarta: Wiley, 2020.
- [24]. J. B. Barney and W. S. Hesterly, *Strategic Management and Competitive Advantage: Concepts*, Global Edition, 6th ed. Harlow, U.K.: Pearson, 2019.
- [25]. J. D. K. V. Byron Sharp, "The market-based assets theory of brand competition.," *Journal of Retailing and Consumer Services*, vol. 76, p. 103566. <https://doi.org/10.1016/j.jretconser.2023.103566>, 2024.

- [26]. Adebayo, A. A. G., P. M.-S., K., & O. T. (2022). Towards attaining sustainable retail property locations: The relationships between supply, demand, and accessibility of retail spaces. *Sustainability*, 7(14), 3846. <https://doi.org/10.3390/su14073846>.
- [27]. I. Jawed and D. A. Siddiqui, "What matters for firms' performance: Capabilities, tangible or intangible resources? Evidence from corporate sectors in Pakistan," SSRN, Dec. 28, 2019. [Online]. Available: <https://ssrn.com/abstract=3510562>. doi: 10.2139/ssrn.3510562
- [28]. M. Aghabegloo, K. Rezaie, S. A. Torabi, and S. M. Khalili, "A BIA-based quantitative framework for built physical asset criticality analysis under sustainability and resilience," *Buildings*, vol. 13, no. 1, p. 264, 2023, doi: 10.3390/buildings13010264.
- [29]. S. Kraus, P. Jones, N. Kailer, A. Weinmann, N. Chaparro-Banegas, and N. Roig-Tierno, "Digital transformation in business and management research: An overview of the current status quo," **International Journal of Information Management**, vol. 63, p. 102466, 2022, doi: 10.1016/j.ijinfomgt.2021.102466.
- [30]. P. C. Verhoef, T. Broekhuizen, Y. Bart, A. Bhattacharya, J. Q. Dong, N. Fabian, and M. Haenlein, "Digital transformation: A multidisciplinary reflection and research agenda," *Journal of Business Research*, vol. 122, pp. 889–901, 2021, doi: 10.1016/j.jbusres.2019.09.022.
- [31]. H. Hokmabadi, S. M. H. S. Rezvani, and C. A. de Matos, "Business resilience for small and medium enterprises and startups by digital transformation and the role of marketing capabilities—A systematic review," *Systems*, vol. 12, no. 6, p. 220, 2024, doi: 10.3390/systems12060220.
- [32]. J. H. Kim, B.-I. Seok, H.-J. Choi, S.-H. Jung, and J.-P. Yu, "Sustainable management activities: A study on the relations between technology commercialization capabilities, sustainable competitive advantage, and business performance," *Sustainability*, vol. 12, no. 19, p. 7913, 2020, doi: 10.3390/su12197913.
- [33]. A. Correani, A. De Massis, F. Frattini, A. M. Petruzzelli, and A. Natalicchio, "Implementing a digital strategy: Learning from the experience of three digital transformation projects," *California Management Review*, vol. 62, no. 4, pp. 37–56, 2020, doi: 10.1177/0008125620934864.
- [34]. G. Westerman, D. Bonnet, and A. McAfee. *Leading digital: Turning technology into business transformation*, Brighton, Massachusetts: Harvard Business Review Press, 2014.
- [35]. C. Grönroos, "On value and value creation in service: A management perspective.," *Journal of Creating Value*, vol. 2, no. 3, p. 125–141. <https://doi.org/10.1177/2394964317727196>., 2017.
- [36]. Garrido-Moreno, A., Martín-Rojas, R., & García-Morales, V. J. (2024). The key role of innovation and organizational resilience in improving business performance: A mixed-methods approach. *International Journal of Information Management*, 77, 102777. <https://doi.org/10.1016/j.ijinfomgt.2024.102777>.
- [37]. I. Dovbischuk, "Innovation-oriented dynamic capabilities of logistics service providers, dynamic resilience and firm performance during the COVID-19 pandemic," *The International Journal of Logistics Management*, vol. 33, no. 499–519. <https://doi.org/10.1108/IJLM-01-2021-0059>., p. 2, 2022.
- [38]. F. J. Aguilar, *Scanning the business environment.*, London, United Kingdom: Macmillan., 1967.
- [39]. Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modelling (PLS-SEM) using R: A workbook*. Springer. <https://doi.org/10.1007/978-3-030-80519-7>.