



## The Mediating Role of Digital Transformation in the Effect of Dynamic Capabilities on Business Resilience

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### Abstract

The purpose of this research is to investigate the interplay among dynamic capabilities, digital transformation, and business resilience, particularly focusing on micro, small, and medium enterprises (MSMEs) in Indonesia. This study used a survey method to collect the data and then analysed it using Structural Equation Modelling (SEM) to test the hypothesis. The results show that dynamic capabilities and digital transformational positively affect business resilience. Furthermore, digital transformational as a mediator between them. This research provides further suggestions on how dynamic capabilities can improve digital transformational in their business resilience. The conclusion drawn from this study is that dynamic capabilities directly influence digital transformation and contribute to its success. Furthermore, dynamic capabilities indirectly affect business resilience through digital transformation, with digital transformation acting as a mediator in the correlation between dynamic capabilities and business resilience. This finding underscores the significance of dynamic capabilities in driving digital transformation adoption and subsequently enhancing business resilience, particularly in the context of Indonesian MSMEs.

## Peran Mediasi Transformasi Digital terhadap Pengaruh Kemampuan Dinamis pada Ketahanan Bisnis

### Abstrak

Tujuan dari penelitian ini adalah untuk menyelidiki hubungan antara kemampuan dinamis, transformasi digital, dan ketangguhan bisnis, terutama berfokus pada usaha mikro, kecil, dan menengah (UMKM) di Indonesia. Penelitian ini menggunakan metode survei untuk mengumpulkan data dan kemudian menganalisisnya menggunakan Structural Equation Modelling (SEM) untuk menguji hipotesis. Hasil penelitian menunjukkan bahwa kemampuan dinamis dan transformasi digital secara positif memengaruhi ketangguhan bisnis. Selain itu, transformasi digital berperan sebagai mediator di antara keduanya. Penelitian ini memberikan penjelasan lebih lanjut bagaimana kemampuan dinamis dapat meningkatkan transformasi digital dalam meningkatkan ketangguhan bisnis mereka. Kesimpulan yang dapat diambil dari penelitian ini adalah bahwa kemampuan dinamis secara langsung memengaruhi transformasi digital dan berkontribusi pada keberhasilannya. Selain itu, kemampuan dinamis secara tidak langsung memengaruhi ketangguhan bisnis melalui transformasi digital, dengan transformasi digital berperan sebagai mediator dalam korelasi antara kemampuan dinamis dan ketangguhan bisnis. Temuan ini menekankan pentingnya kemampuan dinamis dalam mendorong adopsi transformasi digital dan kemudian meningkatkan ketangguhan bisnis, terutama dalam konteks UMKM di Indonesia.

JEL Classification: M21, H25, H32

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## INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) significantly impact the economies of many countries, especially those in developing nations, as stated by the World Bank (Asian Development Bank, 2020). Most firms globally are categorized as MSMEs, which substantially impact employment (International Labour Organization (ILO), 2019). MSMEs comprise around 90% of all enterprises and contribute to over 50% of total employment. Formal micro, small, and medium enterprises (MSMEs) have the potential to contribute up to forty per cent of the Gross Domestic Product (GDP) in developing nations. The figure might significantly increase if informal MSMEs are taken into account. Due to their substantial economic impact and extensive workforce, several governments have prioritized the examination of MSMEs (Nadaf & Kadakol, 2017; Dash, 2018; Kumar & Gajakosh, 2021). According to findings of Quaye & Mensah (2018), discovered that MSMEs may preserve their present goods' market advantage by effectively deploying specialized marketing resources and capabilities in tandem.

MSMEs play a significant role in Indonesia's national economy and have the potential to contribute significantly to the country's GDP. However, their growth is hindered by challenges in business management, financial management, human resource management, and entrepreneurship. The competencies, skills, and knowledge of human resources are deficient compared to those of significant firms (Muliadi et al., 2020; Prasetyo, 2020; Prasetyo & Kistanti, 2020), but in its development, it is still faced with various obstacles in terms of business management, financial management, human resource management and entrepreneurship (Hernita et al., 2021; Mayr et al., 2021; Salamzadeh

& Dana, 2021; Sarvari et al., 2021). Human resource competencies, skills, and knowledge are still weak compared to large enterprises (Hernita et al., 2021; Surya et al., 2021; Purnamawati et al., 2022). The human resource practices of numerous MSMEs frequently do not foster an environment that promotes the generation and sharing of knowledge. Typically, MSMEs participate in less management development activities compared to big organizations (Alhusen & Bennat, 2020; Madrid-Guijarro et al., 2021; Demirkan et al., 2022; Heenkenda et al., 2022).

A reliable supply chain system serves as an indicator of business continuity (Shafi et al., 2020) and challenges within the supply chain pose a significant threat to businesses, potentially leading to bankruptcy in the worst-case scenario (Paul et al., 2021). Consequently, businesses are actively striving to enhance their resilience (Li., 2021; Beninger & Francis, 2022; Amaral & Rocha, 2023). In essence, resilience is a dynamic developmental process closely tied to individual characteristics (Putritamara et al., 2023). According to Walker & Salt (2012) resilience is defined as the ability to effectively manage disruptions or retain essential elements for updating or reorganizing a system's functionality. A resilient business consistently seeks opportunities to take risks and capitalize on circumstances, while also being proactive in foreseeing and preventing unforeseen risks (Donnellan., 2007). Enterprises with high levels of business resilience can promptly respond to disruptions, safeguarding their people, assets, and overall brand equity (Simeone, 2015). Fiksel (2006) emphasized that business resilience represents the "ability of organizations to survive, adapt, and thrive amid tumultuous change". Dahles & Susilowati (2015) argued that the capacity of businesses to adjust to sudden shifts and shocks is crucial for economic growth. Resilient busi-

nesses not only recover from setbacks but also demonstrate adaptability, potentially leading to substantial modifications in the overall business model (Simeone, 2015). Smaller companies, due to their increased flexibility and adaptability compared to larger counterparts, prove to be more responsive to external shocks (Putritamara et al., 2023).

Researchers have primarily concentrated on resilience in the face of shocks, notably the repercussions of the COVID-19 pandemic. Mangalaraj et al. (2023) illustrate how the adverse impacts of the pandemic compelled retail businesses to enhance their technological and information (IT) capabilities, commonly referred to as digital transformation (DT), to better adapt to volatility. Elgazzar et al. (2022) contend that DT is pivotal in augmenting business resilience and long-term profitability. The ability to navigate swiftly through rapid changes, including shifts in consumer behavior, requires companies to be adaptable. In this context, DT emerges as a tool to promptly respond to external stimuli. Furthermore, DT stimulates and facilitates innovation, enabling businesses to alter their business models effectively and provide added value to customers. Essentially, DT empowers companies to develop dynamic capabilities (Putritamara et al., 2023).

Previous research such as Warner & Wager (2019) for instance, elucidate that dynamic capabilities (DC) is a prerequisite for businesses to cultivate resilience, while DT fosters collaboration through co-creation and competition. The supportive role of DC in influencing the maturation of DT is corroborated by Soluk & Kammerlander (2021). Ozanne et al. (2022) indicates that investing in DC is crucial for MSMEs to recover from the impacts of the COVID-19 pandemic, alongside other resources that enhance resilience. This

study have affirmed that DC contributes to resilience.

For instance, Zhou et al. (2022) found that DT acts as a mediator linking executives' confidence and environmental technology innovation, particularly in the face of intense competition and economic uncertainty. The study reveals that confident executives, optimistic about fostering an innovative environment, initiate DT and are prepared to confront the challenges associated with its establishment. This research has highlighted the necessity of DT as a mediator for achieving resilience.

The direct impacts of DC and DT have been extensively explored in prior international studies, such as those observed by Songkajorn et al. (2022) in the auto-parts industry and the proven impact of DT on resilience in the developed world's retail industry (Sobczak, 2022). Additionally, mixed-method approaches have been employed to investigate the indirect impact (Zhang et al., 2021). Specifically related to DC, its direct influence on resilience has been observed in MSMEs within the tourism sector in developed countries (Jiang et al., 2019; Ozanne et al., 2022).

Despite these contributions, certain gaps in the literature persist. First, there is a lack of evidence regarding the interplay among DC, DT, and the business resilience MSMEs, especially in developing nations like Indonesia. Second, this study aims to address a significant research gap by being the first to explore the mediating role of DT in the relationship between DC and business resilience.

Therefore, to fill these gaps, this research aims to examine the impact of DC on DT, DT on business resilience, DC on business resilience, and the role of DT in mediating the impact of DC on business resilience. This research contributes to the literature. This study provides the first empirical evidence of the influence of DC on

business resilience mediated by DT in the case of MSMEs. The findings of this research are to have implications for product MSMEs. This study have theoretical and practical implications. Theoretical implication, this study contributes to the existing literature for DC, DT, and business resilience. On a practical implication, this study has shown that DC can impact business resilience, mediated by DT.

### **Dynamic Capabilities (DC) and Digital Transformational (DT)**

Vial (2019) review characterizes DT as the ongoing alterations and disruptions that render the business environment hypercompetitive, compelling businesses to adjust continuously. In this context, DC empower companies to adapt to waves of technological innovation by employing environmental scanning, sensing, and integrative capabilities. DC facilitates businesses in achieving strategic change and optimizing their performance. Warner & Wager (2019) focused solely on companies in developed countries, potentially limiting its relevance to those in developing nations. Magistretti et al. (2021) introduced design thinking as an integral aspect of DC. Utilizing internet technology or can be interpreted as moving to digital is not an easy matter (Suwanto et al., 2022).

Songkajorn et al. (2022) in their examination of Thailand's auto parts industry revealed a positive impact of DC on DT. This study introduces the concept of knowledge-based DC, encompassing absorption, generation, storage, and adaptation. Absorption and generation capabilities encourage entrepreneurs to continually acquire new knowledge, while storage capability enables quick knowledge retention. Notably, the current research contributes novelty by establishing a connection between DC and DT in the context of food and livestock MSMEs in developing countries, bridging a gap in the existing

literature, which predominantly relies on qualitative approaches (Vial, 2019; Warner & Wäger, 2019; Magistretti et al., 2021; Soluk & Kammerlander, 2021). In light of the information presented above, the first hypothesis that will be tested in this study is as follows:

H1: DC has positive relations to DT.

### **Digital Transformation (DT) and Business Resilience (BR)**

He et al. (2023) research demonstrates that strategic technology is instrumental in sustaining business operations, with DT aiding employees in navigating business disruptions by actively sourcing resources and swiftly devising adaptive solutions. DT further contributes to realizing a vision, establishing governance, cultivating a resilient culture, and fostering leadership that encourages continuous innovation during crises.

Supporting this perspective, Zhang et al. (2021) empirical study and Elgazzar et al. (2022) literature review both affirm the positive impact of DT on resilience. Consequently, companies adopting DT practices are positioned to enhance long-term business profitability. The findings of Khurana et al. (2022) emphasize the essential role of DT in achieving resilience, particularly in improving resource management. Mangalaraj et al. (2023) study on retail companies highlights that a reliance on Information Technology (IT) fosters corporate strategies, making businesses more agile and responsive to changes. Kazemi et al. (2019) assert that companies must enhance their competitiveness and value by developing and refining their DT. In light of the empirical evidence and literature discussed above, it is evident that a relationship exists between DT and BR. The second hypothesis of this study is to address this gap by providing evidence will be tested in this study is as follows:

H2: DT has positive relations to BR.

### **Dynamic Capabilities (DC) and Business Resilience (BR)**

Khurana et al. (2022) findings indicate that achieving resilience requires three components of DC: seizing, reconfiguring, and changing the model. Seizing enables entrepreneurs to identify the technologies utilized by market segments, while reconfiguring aids in managing existing resources and outsourcing the rest. Aligning with the absolute and comparative advantage theory, firms must maintain profitability and comparative advantage, a goal achievable through enhanced DC.

According to Kurtz & Varvakis (2016) DC establishes a competitive advantage by facilitating resource management and adaptive capabilities, motivating MSMEs to attain resilience. Entrepreneurs equipped with sensing, seizing, and configuring skills can effectively explore and exploit resources for building resilience. Ozanne et al. (2022) show positive impact of DC on resilience, as it assists in balancing limited resources and adapting to unexpected business changes. A quantitative study by Wided (2022) further supports the notion that DC positively influences resilience.

In summary, existing research underscores the pivotal role of DC in diverse contexts. However, its impact on resilience within product-focused MSMEs remains unexplored. This study seeks to address this gap by investigating the impact of DC on products, employing a quantitative approach with multivariate analysis in the case of MSMEs, the third hypothesis that will be tested in this study is as follows:

H3: DC has positive relations to BR.

### **Dynamic Capabilities (DC), Digital Transformation (DT), and Business Resilience (BR)**

Songkajorn et al. (2022) reveals that DT serves as a mediator in the relationship between DC and Organizational

Strategic Intuition (OSI). Notably, the indirect effect value is smaller than the direct impact of DT on OSI, underscoring how DT can be a strategic adoption to navigate evolving markets amidst turbulence. DT enables companies to introduce new products, processes, and services in response to changing customer needs, all while managing structural changes within the organization.

Similarly, Li et al. (2022) findings indicate that DT acts as a mediator in the relationship between the digital economy and enterprise innovation. This aligns with Zhou et al. (2022) study, that DT serves as a mediator between executives' high confidence levels, suggesting that confidence drives DT. Despite challenges associated with DT adoption, addressing them becomes crucial to confront uncertain and hypercompetitive business environments, allowing entrepreneurs to sustain innovation.

The results from Sousa-Zomer et al. (2020) show that DT serves as a mediator in two relationships: (1) between digital intensity in business processes and business performance, and (2) between conditions for action and interaction and performance. Organizations with robust DT capabilities establish a foundation to navigate rapid changes, thereby sustaining competitiveness. Digital business models become pivotal in environments requiring digital intensity, such as establishing digital partnerships with external entities, sustaining and enhancing business performance.

In summary, existing research has highlighted the mediating role of DC in various contexts. However, there is a gap in the literature, as no studies have employed a quantitative approach with multivariate analysis to substantiate the mediating role of DT between DC and BR. On the other hand, DT has been proven to mediate variables that enable businesses to navigate uncertainty. Against this backdrop, this

study focuses on MSMEs in developing countries, aiming to address the literature gap regarding the role of DT in mediating the link between DC and BR. The fourth hypothesis that will be tested in this study is as follows:

H4: DT mediates the relationship between DC and BR.

## METHOD

This study develops a conceptual model to explore how the digital investment decision is influenced by two types of constructs, which are determined by DC and DT. A structured survey questionnaire was constructed around the conceptual model—265 responses from various respondents via Google Form from MSME's owners in Semarang City area. A convenience sample, which involves frequently effective at gathering data from MSME's owners in a commercial or market setting, was used for the research. An efficient research method is choosing a sample of participants or responses from a community. Accessible people are included in this group. The instrument aids users in comprehending their thoughts and emotions. The research was done between January to August 2023. Structural equation modelling was investigated using suitably cleansed and validated data (Sondhia et al., 2023).

The construct of DC has four indicators; the construct of DT has five indicators; and the construct of RB has three indicators. Each survey attribute was calculated using a five-point Likert scale (from 1, i.e., strongly disagree, to 5, i.e., strongly agree) as proposed. This study employed a 5-point Likert scale since it takes less time and effort and allows respondents to stay neutral by voting for the "neither agree nor disagree" option. In addition, a five-point Likert scale was used in this study since earlier research has de-

monstrated the benefits of employing this strategy (Dubey et al., 2019; Gupta et al., 2021; Chatterjee et al., 2022). The validity of the theoretical model offered is validated using cross-sectional data. The information was gathered by procedures based on a survey of the target population.

Research findings on DT as a mediator in DC and RB using Smart PLS software. Based on the conceptual framework of this study, we did data analysis utilizing Structural Equation Modelling (SEM) using Smart-PLS (Partial Least Square) software. After identifying the measurement parameters and structural model in the first step, the researcher constructed an appropriate bootstrap estimation. This study aimed to assess the total and direct impacts of the DC and DT constructs and the indirect effects via mediators to understand the relationship between the two variables.

## RESULT AND DISCUSSION

Table 1 displays the convergent validity. Indicator reliability, and construct reliability and validity. The reliability test results are presented in Table 1. The researcher found that the numbers ranged  $> 0.7$  which were the highest reported values. Cronbach's Alpha was used to analyse the data collected, and this is the conclusion it yields according to the suggestions given by some researchers (Taber, 2018; Bjekić et al., 2021). The construct composite dependency values vary  $> 0.7$  which is the highest value recorded for composite dependency. Researchers argue that an adequate Critical Composite (CR) threshold should be set at no less than 0.7, and this should be considered acceptable. As result of the results shown in the Table found below, researchers can conclude that the CR criterion has been met. This allows us to draw the conclusion that the CR criterion is met. Composite reliability

**Table 1.** Correlations, Measures of Reliability, and Validity

Constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
Dynamic Capabilities (DC)	DC1	.629	.790	.864	.616
	DC2	.816			
	DC3	.832			
	DC4	.843			
Digital Transformation (DT)	DT1	.880	.893	.921	.702
	DT2	.851			
	DT3	.732			
	DT4	.877			
	DT5	.840			
Business Resilience (BR)	BR1	.857	.820	.893	.736
	BR2	.887			
	BR3	.828			

Source: Data Processed (2023)

can be used as an alternative to Cronbach Alpha because the CR value is somewhat higher than the Cronbach Alpha value, but the difference between the two is not very significant (Peterson & Kim, 2013).

Evaluation of validity convergence is done by testing the average variance obtained (AVE) and the value is shown in Table 1. The results are  $> 0.5$  which are the highest numbers ever recorded. The absolute minimum value of AVE that may be considered satisfactory is 0.5 (Rouf & Akhtaruddin, 2018). It has been determined that the acceptability threshold has been reached and consequently that convergent validity has been met across all four dimensions (Ab Hamid et al., 2017). The information presented in the Table 1

that can be seen above serves as the basis of these findings.

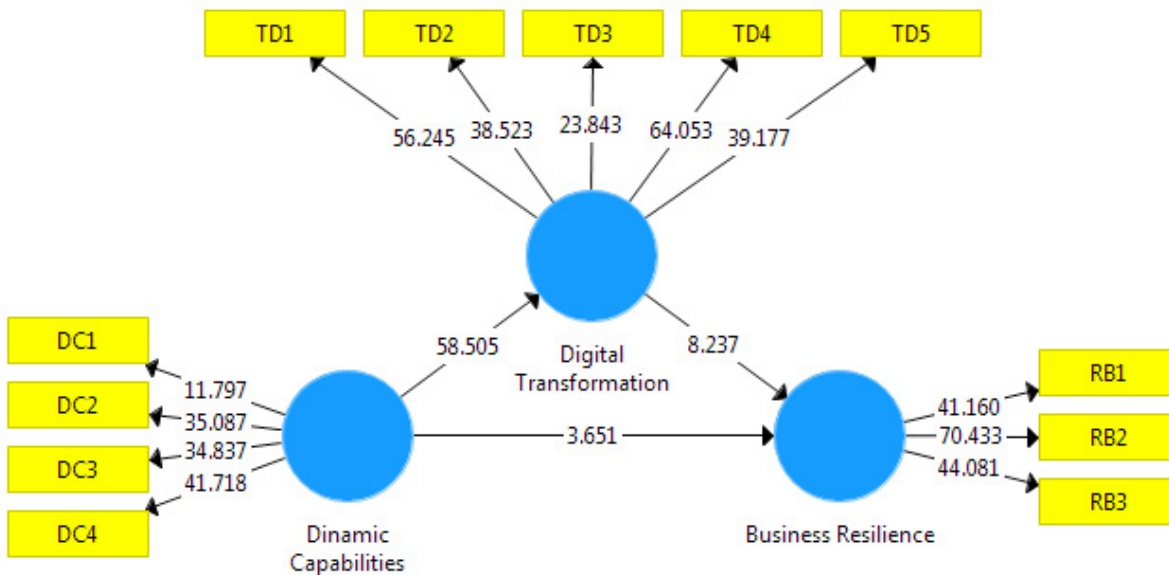
Information about model variables can be found in Table 2. This table includes the structural relationships variable such as means, standard deviations, T-statistics, and p-values. Based on the information presented in Table 2, the researcher can draw the following conclusions: There is a positive and significant influence between DC and DT ( $\beta = 0.892$ ;  $T = 58.505$ ;  $p < 0.01$ ); there is a positive and significant influence between DT and BR ( $\beta = 0.655$ ;  $T = 8.237$ ;  $p < 0.01$ ); and there is a positive and significant influence between DC and BR ( $\beta = 0.302$ ;  $T = 3.651$ ;  $p < 0.01$ ).

The structural relationships are shown in table 2 and figure 1. As per the

**Table 2.** Mean, Standard Deviation, T-statistic, and P-value

Hypothesis		Path Coefficients	t-value	Results
Dynamic Capabilities -> Digital Transformation	H1	.892	58.505	Support
Digital Transformation -> Business Resilience	H2	.655	8.237	Support
Dynamic Capabilities -> Business Resilience	H3	.302	3.651	Support
Dynamic Capabilities -> Digital Transformation -> Business Resilience	H4	.584	8.711	Support

Source: Data Processed (2023)



**Figure 1.** Empirical Research Method  
Source: Data Processed (2023)

Sobel tests conducted, there are positive mediation effects found between DC and BR. The statistical significance using Smart PLS were found to be similar to Sobel test for mediation. DT is found to be positively mediating the relationship between DC and BR: DC → DT → BR [H4:  $\beta = 0.584$ ;  $T = 8.711$ ;  $p < 0.01$ ].

This study evaluates the relationship between Dynamic capabilities and digital transformation, and their effect on business resilience. The study seeks to understand more about how caring about business resilience, the need to make a positive impact, and having a positive Dynamic capabilities and digital transformation on business resilience can help encourage MSME’s owners to business resilience.

The research is motivated by Dynamic capabilities. Digital transformation must be influenced by Dynamic capabilities. The results indicate that the hypotheses’ relationships are supported. The model supports the direct association between dynamic capabilities and digital transformation, as owners, particularly those

who live in Semarang City areas, have become more receptive to MSME’s business resilience in Semarang City because of their increased concern people to digital transformation using internet. This is consistent with H1. Notably, the current research contributes novelty by establishing a connection between DC and DT in the context of food and livestock MSMEs in developing countries, bridging a gap in the existing literature, which predominantly relies on qualitative approaches (Vial, 2019; Warner & Wäger, 2019; Magistretti et al., 2021; Soluk & Kammerlander, 2021)

The structural model demonstrates a considerable association between digital transformation and business resilience. Understanding the business resilience and the variables that have a positive impact on it has a beneficial effect on business resilience. Digital transformation options in the business resilience. As a result, H2 is supported. Supporting this study, Zhang et al. (2021) empirical study and Elgazzar et al. (2022) literature review both affirm



the positive impact of DT on resilience. Khurana et al. (2022) emphasize the essential role of DT in achieving resilience, particularly in improving resource management. Mangalaraj et al. (2023) study on retail companies highlights that a reliance on IT fosters corporate strategies, making businesses more agile and responsive to changes. Kazemi et al. (2019) assert that companies must enhance their competitiveness and value by developing and refining their DT.

The structural model demonstrates a significant association between Dynamic capabilities and business resilience. The desire to transition to a more sustainable Dynamic capabilities has a beneficial effect on business resilience. As a result, MSME's owners who previously Dynamic capabilities are now adjusting their routines and strategy to business resilience. MSME's owners frequently associate a business resilience with conscious Dynamic capabilities. As a result, the findings support H3. Study of Ozanne et al. (2022) show positive impact of DC on resilience, as it assists in balancing limited resources and adapting to unexpected business changes. A quantitative study by Wided (2022) further supports the notion that DC positively influences resilience.

The construct digital transformation partially mediates the relationships between Dynamic capabilities and business resilience, supporting H4. Songkajorn et al. (2022) reveals that DT serves as a mediator in the relationship between DC and Organizational Strategic Intuition (OSI). Similarly, Li et al. (2022) findings indicate that DT acts as a mediator in the relationship between the digital economy and enterprise innovation. This aligns with Zhou et al. (2022) study, that DT serves as a mediator between executives' high confidence levels, suggesting that confidence drives DT. The results from Sousa-Zomer et al. (2020) show that DT serves as a mediator.

Organizations with solid DT capabilities have the foundation to deal with rapid changes, hence maintaining competitiveness. This is because digital business models can sustain and enhance business performance in an environment where digital intensity is needed, such as establishing digital partnerships with external parties. In brief, research has shown how DC can function as a mediating variable. However, no studies have used a quantitative approach with multivariate analysis to prove the role of DC in mediating the link between DC and business resilience. Meanwhile, DT has been proven to mediate variables that allow businesses to navigate uncertainty. Considering this background, this study examined MSMEs in developing countries to fill the gap in the literature on the role of DT in mediating the link between DC and business resilience.

The structural model demonstrates that the existing relationships are strengthened further by inclusion of digital transformation. The mediator further attitudes digital transformation and urges the MSME's owners to incorporate it in their business resilience. The results of this study are in line with these studies on digital investment decision.

## CONCLUSION AND RECOMMENDATION

Based on the study's results, the Dynamic capabilities variable directly influences digital transformation and contributes to its success. In addition, Dynamic capabilities indirectly affects business resilience through digital transformation. Digital transformation as a Mediator in the correlation of Dynamic capabilities to business resilience.

Therefore, this study offers a novelty by connecting DC and DT in the case of MSMEs in developing countries. This study adds novelty to the existing theory related to DT (IT-readiness and strategic

alignment) in the business resilience case MSME in Indonesia.

This research contains practical implications for implementing digital transformation to improve business resilience. These implications can be found in the potential to develop business resilience. This is important because almost every MSME's owners, not much has been done in the business resilience has recognized the most significant challenges. Using this research approach and data analysis, this study is one of the first in Indonesia to address the issues of dynamic capabilities, digital transformation, and business resilience. Therefore, the findings of this study have the potential to be a starting point for the development of business resilience and flexible work program actions, as well as their proper implementation.

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