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IDENTIFYING THE IMPACT OF ABSORPTIVE CAPACITY, NEW PRODUCT DEVELOPMENT, AND MARKETING CAPABILITIES ON DIGITAL MARKETING ADOPTION AND NEW PRODUCT PERFORMANCE IN INDONESIAN SMEs

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This study investigates the impact of absorptive capacity on enhancing the performance of SMEs through new product development, marketing capabilities, and the adoption of digital marketing. The research problem addresses how absorptive capacity influences these factors to improve new product performance. A quantitative approach was employed, collecting data from 212 SMEs in three cities in East Java Province, Indonesia. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that critical factors influencing new product performance include the ability of SMEs to absorb external knowledge (indicator AC3, loading factor 0.852), new initiatives in product development (indicator NPD4, loading factor 0.886), and strong marketing strategies (indicator MC3, loading factor 0.878). Further analysis reveals that absorptive capacity positively and significantly affects new product development (β=0.763; p-value<0.05) and marketing capabilities (β=0.724; p-value<0.05) but has a negative and insignificant effect on digital marketing adoption (β=–0.102; p-value>0.05). However, digital marketing adoption positively and significantly impacts new product performance (β=0.628; p-value<0.05). These findings suggest that while absorptive capacity is crucial for new product development and marketing capabilities, it is insufficient to drive digital marketing adoption. The results highlight the important but not significant mediating role of digital marketing adoption. The practical implications provide guidance for SMEs to adjust their marketing strategies and new product development to improve performance, particularly during a crisis

Keywords: absorptive capacity, new product development, marketing capability, digital marketing adoption, new product performance

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1. Introduction

The COVID-19 pandemic crisis has had a significant impact on various economic sectors worldwide, including in Indonesia. The first wave of the pandemic, which struck in early 2020, forced consumers to change their behavior, companies to alter their business models, and governments to adjust regulations [1]. The economic impact of this pandemic has been diverse, affecting consumer habits that previously focused more on spending for services, digital adoption, and outdoor activities [2].

The COVID-19 pandemic accelerated digital adoption, particularly in grocery shopping and healthcare services, which is expected to continue [1]. Additionally, radical changes in demand, purchasing patterns, and perceived value across the value chain have caused commodity prices to spike. Therefore, it is essential to research how the business sector, especially SMEs, can respond to this uncertainty and crisis through new product and service innovations that can shape consumer behavior during and after the pandemic [2].

The relevance of this research lies in understanding how SMEs can leverage new opportunities and digital channels to survive and recover from the COVID-19 pandemic. Previous studies have shown that digitalization can significantly alter consumer behavior [3], which has important implications for companies, products, and brands. The use of the internet and related technologies facilitates access to customer needs and product searches with various price options [4]. Therefore, utilizing digital channels is crucial for SMEs to enhance their competitive capabilities [5].

In an increasingly global and competitive business context, companies need to invest in new product development to survive and gain competitive advantage [6, 7]. Companies that succeed in developing new products typically have internal resources and the ability to absorb, assimilate, and reconfigure knowledge acquired externally. Marketing innovation also plays a vital role in commercializing new products to the market, so companies must adapt to external variations and adjust managerial and operational elements to meet marketing capability demands [8].

Developing new products requires absorptive capacity that can support the learning process within the organization [9]. This highlights the relationship between absorptive capacity and the ability to develop new products and marketing, but its correlation with organizational performance remains unclear. Therefore, this study aims to highlight absorptive capacity in new product development and marketing capabilities that correlate with new product performance in Indonesia.

According to data from Bank Indonesia (2020), SMEs in Indonesia have experienced a crisis due to the impact of the COVID-19 pandemic, with only 5.9 % of MSMEs able to make a profit during the pandemic, while 82.9 % of businesses were negatively affected, and 63.9 % experienced a revenue decline of more than 30 % (Katadata Insight Center, 2020). SMEs have proven to contribute to Indonesia's Gross Domestic Product, which in the current crisis has implications for economic stability. Therefore, it is essential to understand how SMEs in Indonesia can leverage new opportunities and digital channels to survive and recover from the COVID-19 pandemic.

So, studies dedicated to this topic are of significant scientific relevance. These studies are crucial for understanding how SMEs in Indonesia respond to crises and develop innovative strategies in product development and digital marketing. The scientific relevance of these studies lies in their contribution to product and marketing performance, impacting economic and social development. Thus, research on developing absorptive capacity, marketing capabilities, and digital adoption in SMEs is highly relevant.

2. Literature review and problem statement

Absorptive capacity plays an important role in improving SME performance through new product development, marketing capabilities, and digital marketing adoption, as reported by [10]. The work investigated the role of absorptive capacity in service innovation and internationalization of SMEs in Indonesia, using a sample of 38 SMEs. They found that factors such as the number of sales and marketing personnel, product launching, and customer involvement significantly impact the internationalization process. This highlights the importance of internal organizational readiness and active customer engagement in driving service innovation, which ultimately facilitates international expansion. All this suggests that it is advisable to conduct a study on how these factors can be more broadly applied across various SME sectors in Indonesia.

Several studies have also found similar results and support this research, which identifies unresolved issues regarding how absorptive capacity, technological capabilities, and customer relationships contribute to new product development performance in South Korea's semiconductor industry, as shown by [11]. They found that absorptive capacity, when combined with strong technological capabilities and good customer relationships, significantly enhances the market performance and profitability of new products. This emphasizes the need to integrate absorptive capacity with technological and relational capabilities for successful new product development. All this suggests that it is advisable to conduct a study on how this integration can be implemented in various other technology industries.

Research conducted by [12] examined the impact of absorptive capacity on innovation and market orientation in Mexican SMEs. Their findings revealed that absorptive capacity significantly influences both innovation and market orientation, which in turn positively affect business profitability. This study indicates that SMEs that can effectively absorb external knowledge and leverage it for innovation and strategic market orientation can achieve better financial outcomes.

A way to overcome these difficulties can be strengthening the role of absorptive capacity in reinforcing the positive effects of market orientation and marketing capabilities on new product performance, as found in the study by [7] on Swedish manufacturing firms. Their study found that absorptive capacity strengthens the positive effects of market orientation and marketing capabilities on new product performance. This implies that companies that can effectively absorb and utilize market information are more successful in launching new products. All this suggests that it is advisable to conduct a study on how SMEs can optimize their absorptive capacity to more effectively utilize market information.

This approach was used in the research by [13], which studied the adaptive capacity of Indonesian SMEs during the COVID-19 pandemic and found that the institutional environment enhances SMEs' adaptive capacity through digital capabilities and entrepreneurial orientation. This study highlights the importance of external support in building adaptive capacity by fostering digital skills and an entrepreneurial mindset among SMEs; however, challenges remain in integrating this adaptive capacity into SMEs' daily operational strategies. All this suggests that it is advisable to conduct a study on how institutional support can more effectively help SMEs integrate adaptive capabilities into their daily operations.

All this suggests that it is advisable to conduct a study on how investment in royalties and external technology development enhances absorptive capacity, which subsequently improves performance, as found by [14], in Indonesia's high-tech industry. This study shows the value of external knowledge acquisition in the high-tech sector. All this suggests that it is advisable to conduct a study on how external technology development can be applied to SMEs in other sectors.

Furthermore, research by [15] studied the impact of innovation capabilities and supply chain integration on the performance of creative SMEs in Yogyakarta. Their findings suggest that the ability to innovate and effectively integrate the supply chain is crucial for enhancing SME performance in the creative sector. This study highlights the importance of both internal capabilities and external collaboration in driving business success. All this suggests that it is advisable to conduct a study on how supply chain integration can be enhanced through external collaboration in various SME sectors.

Additionally, research by [16] examined effective models of collaboration to enhance new product development through absorptive capacity in Indonesia. They found that collaboration between higher education institutions and industries significantly boosts absorptive capacity and accelerates new product development. This study underscores the importance of industry-academic partnerships in fostering innovation. All this suggests that it is advisable to conduct a study on how these collaborative models can be applied in other SME contexts to enhance new product development.

Finally, research by [17] explored how absorptive capacity through social networking sites affects innovation performance in Indonesian SMEs. The study found that leveraging social networks for external information significantly enhances the innovation capabilities of SMEs. This

emphasizes the role of digital platforms in knowledge acquisition and innovation. All this suggests that it is advisable to conduct a study on how SMEs can more effectively use digital platforms to enhance their absorptive capacity and innovation capabilities.

Overall, the literature reveals that empirical investigations into the role of absorptive capacity in enhancing SME performance through new product development, marketing capabilities, and digital marketing adoption have been conducted in various contexts. These studies collectively demonstrate the critical role of absorptive capacity in driving innovation and market success. However, there remains a gap in understanding the specific mechanisms through which absorptive capacity influences these factors in the unique socio-economic landscape of Indonesian SMEs.

The COVID-19 pandemic has significantly impacted various economic sectors globally, including Indonesia. The initial wave of the pandemic, which began in early 2020, necessitated changes in consumer behavior, compelled businesses to adapt their operational models, and required governments to revise regulations. The economic effects of this pandemic have been extensive, altering consumer habits that previously emphasized spending on services, digital adoption, and outdoor activities. The pandemic has accelerated the adoption of digital technologies, particularly in areas such as grocery shopping and healthcare services, and this trend is likely to continue. Additionally, the pandemic has triggered significant shifts in demand, purchasing patterns, and perceived value across the value chain, resulting in increased commodity prices. In this context, it is crucial to investigate how businesses, particularly SMEs, can navigate this uncertainty and crisis through innovative products and services that influence consumer behavior during and after the pandemic.

One of the major unresolved issues is how SMEs can integrate absorptive capacity, new product development, and marketing capabilities to adopt digital marketing and improve the performance of new products. In Indonesia, many SMEs still have low absorptive capacity, meaning they struggle to absorb, understand, and implement new knowledge, particularly related to digital technology and product innovation. This low absorptive capacity limits SMEs' ability to quickly adapt to market changes and capitalize on new opportunities offered by digital technology. Additionally, SMEs often face financial and human resource constraints in conducting research and developing new products, resulting in low levels of innovation and product performance, ultimately affecting their market competitiveness. Many SMEs in Indonesia also lack adequate marketing capabilities to effectively promote their products in the digital market. The lack of knowledge about digital marketing strategies, technical skills to run digital marketing campaigns, and limited access to digital marketing platforms hampers SMEs' ability to reach wider markets and increase product sales.

Although the COVID-19 pandemic has accelerated the adoption of digital technology, many SMEs still face challenges in integrating this technology into their business operations, such as inadequate technological infrastructure, high implementation costs, and resistance to change. This study provides deeper insights into how SMEs can integrate digital technology and product innovation into their business operations to survive and thrive amid the challenges posed by the COVID-19 pandemic. By understanding the factors that influence absorptive capacity, new product development, and marketing capabilities, SMEs can develop more effective strategies to adopt digital marketing and enhance the performance of their new products. Moreover, the model developed through this research can help SMEs predict new product performance and design more targeted interventions to improve their competitiveness in the market.

This research is crucial as it can significantly contribute to enhancing the competitiveness and performance of SMEs in the digital era, logically following from the unresolved issues identified. Despite numerous studies examining the role of absorptive capacity, new product development, and marketing capabilities in the performance of SMEs, significant unresolved issues remain within the context of Indonesian SMEs, especially amidst the challenging economic conditions caused by the COVID-19 pandemic. This research aims to address these unresolved issues convincingly, highlighting their importance and how this study can provide solutions.

The role of absorptive capacity in the local context is particularly crucial. Many studies indicate that absorptive capacity is essential for innovation and market performance. However, the market dynamics and challenges faced by Indonesian SMEs differ from those in developed countries, making it clear that identical approaches are not always applicable. This study will provide insights into the adaptation of absorptive capacity in the local context, helping Indonesian SMEs more effectively absorb and utilize external knowledge for innovation and growth.

The integration of new product development and marketing capabilities is recognized as a critical factor for the success of new products in the market. However, many Indonesian SMEs struggle to integrate these two factors effectively. For instance, product innovations are often not followed by strong marketing strategies, or vice versa. This study will explore ways to achieve this alignment, enabling SMEs to be more competitive in the market. Effective integration can enhance digital marketing adoption and new product performance, which in turn will increase the competitiveness of SMEs in the digital era.

Challenges in digital marketing adoption, such as lack of technological knowledge, limited resources, and resistance to change, still pose significant obstacles for SMEs. These barriers prevent SMEs from fully leveraging the potential of digital marketing, which has become increasingly crucial during the COVID-19 pandemic. This research will identify the factors impeding digital marketing adoption and propose strategies to address them. Digital marketing can open new opportunities for SMEs to reach a broader customer base, reduce marketing costs, and improve operational efficiency.

The COVID-19 pandemic has brought significant changes in consumer behavior and business operations, yet there is limited research on these interactions. This study will provide insights into how SMEs can adjust their strategies to survive and even thrive amid the crisis. The COVID-19 pandemic has created new challenges and opportunities that require adaptive and innovative approaches.

The proposed solutions of this research involve developing a model that integrates absorptive capacity, new product development, and marketing capabilities to promote digital marketing adoption and enhance new product performance in Indonesian SMEs. By identifying critical factors and existing barriers, this research will offer practical strategies for SMEs to improve their innovation and marketing capa-

bilities. Additionally, the developed model can serve as a guide for policymakers and practitioners in designing more effective interventions to support SMEs in facing challenges and seizing opportunities in the digital era, especially during crises such as the COVID-19 pandemic. Consequently, this research is expected to make a significant contribution to enhancing the competitiveness and sustainability of SMEs in Indonesia.

3. The aim and objectives of the study

The aim of this study is to identify the impact of absorptive capacity, new product development, and marketing capabilities on digital marketing adoption and new product performance in Indonesian SMEs.

To achieve this aim, the following objectives are accomplished:

– to determine the most critical factors such as absorptive capacity, new product development, and marketing capabilities in digital marketing adoption and new product performance in Indonesian SMEs;

– to develop a model predicting new product performance in Indonesian SMEs based on digital marketing adoption.

4. Materials and methods of research

4. 1. Object and hypothesis of the study

The object of this study is SMEs in Indonesia, focusing on analyzing the relationships between Absorptive Capacity, New Product Development, Marketing Capabilities, Digital Marketing Adoption, and New Product Performance. The study aims to understand how these factors interact to enhance the overall performance of new products within the context of Indonesian SMEs, particularly during the challenging economic conditions brought about by the COVID-19 pandemic.

Hypotheses of the Study: Based on the research objectives, the following hypotheses are proposed:

1. H1: absorptive capacity positively and significantly affects new product development.

2. H2: absorptive capacity positively and significantly affects marketing capabilities.

3. H3: absorptive capacity positively and significantly affects digital marketing adoption.

4. H4: new product development positively and significantly affects digital marketing adoption.

5. H5: marketing capabilities positively and significantly affect digital marketing adoption.

6. H6: digital marketing adoption positively and significantly affects new product performance.

7. H7: digital marketing adoption mediates the relationship between absorptive capacity and new product performance.

8. H8: digital marketing adoption mediates the relationship between new product development and new product performance.

9. H9: digital marketing adoption mediates the relationship between marketing capabilities and new product performance.

Assumptions made in the study. Several underlying assumptions are made to ensure the validity of the results in this study. Firstly, it is assumed that the data collected from respondents is accurate and reliable. This is critical for the integrity of the research findings. Secondly, the PLS-SEM model used is assumed to be appropriate for the data characteristics and sample size, allowing for robust analysis and interpretation. Thirdly, it is assumed that the latent variables measured through the research instruments have adequate validity and reliability, ensuring that the constructs are accurately represented.

Simplifications adopted in the study. To focus the analysis and make the study manageable, several simplifications are adopted. The study only considers SMEs in Indonesia, which may not fully represent SMEs in other countries, acknowledging the geographical limitation. Furthermore, the use of PLS-SEM assumes linear relationships between latent variables, which simplifies the complexity of potential nonlinear interactions. Additionally, the measurement of absorptive capacity, new product development, and marketing capabilities may not cover all relevant dimensions, recognizing that these constructs are multifaceted and complex. By clarifying the object of the study, hypotheses, assumptions, and simplifications adopted, this research aims to provide in-depth insights into effective strategies for Indonesian SMEs to adopt digital technology and improve their new product performance.

4. 2. Population, sample size, and respondents

This study targets SMEs in East Java Province, Indonesia, specifically located in three major cities: Surabaya, Sidoarjo, and Malang. The number of samples is determined based on the population calculated using the Slovin formula, resulting in 271 SMEs in East Java Province and divided into three major cities based on data from the Central Statistics Agency of East Java Province. However, based on the designed questionnaires, this research successfully collected data from 212 SMEs across the three cities. The characteristics of each city differ; Surabaya and Sidoarjo are industrial centers with many medium and large-scale companies, resulting in 98 SMEs being collected, whereas Malang, characterized by its small and medium-scale creative industries, contributed 114 SMEs.

In selecting respondents, this study regarding respondent selection aims to minimize potential sources of error in construct measurement. Therefore, data collection is based on data from the Central Statistics Agency of each region to ensure accurate distribution of the questionnaires and to determine the sample size. Researchers identify and arrange contact personnel at the managerial level or business owners by browsing websites and social media. The selection of these SMEs is deliberate as it is expected that they would have the necessary information, knowledge, and experience (based on their position in the business) regarding management strategies (marketing, finance, and production) and SME resources.

All variables were measured by respondents' responses to statements on a five-item Likert scale from 1=strongly disagree to 5=strongly agree or 1=never to 5=very often. In designing the statement items on the questionnaire for each variable, it refers to constructs that have been developed based on existing literature. The absorptive capacity variable is measured using seven items developed by [18]. These items reflect the company's ability to recognize, absorb, and utilize new knowledge, as well as its ability to adapt to changes and create new ideas.

The new product development variable is measured using four items developed by [19] reflecting a series of product innovation activities such as the company's R&D investment and new product development activities. The marketing capability variable is measured using four items developed by [1]. These items assess a company's ability compared to its competitors in terms of customer/competitor knowledge, advertising, pricing, and other marketing tools. The digital marketing adoption variable is measured using three items developed by [2], reflecting the suitability of the intention to adopt digital marketing today for future marketing.

4. 3. Data Analysis

The analysis of data in this study is conducted to validate the model and test the hypotheses using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 4.1.0.4 software. This method is chosen based on its appropriateness for the sample size and the characteristics of the research model, as recommended. The data analysis aims to investigate the relationships between Absorptive Capacity, New Product Development, Marketing Innovation Capability, Digital Marketing Adoption, and New Product Performance in SMEs.

PLS-SEM is a multivariate non-parametric approach used to estimate path models with latent variables. The software SmartPLS3 is utilized for this purpose, as it allows for the simultaneous assessment of both measurement and structural models. This method is particularly suitable for handling complex models and small to medium sample sizes, making it ideal for this study [3].

The measurement model assessment is conducted to determine internal consistency reliability, convergent validity, and discriminant validity. Internal consistency reliability is measured using composite reliability, convergent validity is assessed using factor loadings and average variance extracted (AVE), and discriminant validity is evaluated using the Heterotrait-Monotrait ratio (HTMT) [20]. SmartPLS provides stronger estimates for the structural model compared to other approaches, especially when basic assumptions are violated.

The model is tested using a two-stage approach. The first stage involves validating the first-order reflective constructs through the analysis of factor loadings, AVE, composite reliability, and discriminant validity. The second stage involves using the latent variable scores from the first model to build a two-stage model. Formative measurement model validation is confirmed through bootstrapping with 5000 resamples, reporting weights and the maximum variance inflation factor (VIF) to validate the formative measurement model.

Internal consistency is evaluated using Cronbach's Alpha and composite reliability. Cronbach's Alpha values above 0.7 are considered acceptable, and composite reliability values should exceed 0.70 for adequate internal consistency [21]. Rho_A, which measures the squared correlation of PLS construct scores with true construct scores, should also be above 0.70 [21]. In this study, all constructs meet these criteria, supporting the hypothesis that absorptive capacity significantly enhances new product performance.

Convergent validity is achieved when the factor loadings of all items exceed 0.4 and the AVE for constructs exceeds 0.5. This study meets the threshold of 0.4 for all factor loadings and ensures that AVE is above 0.5.

Discriminant validity is assessed using cross-loadings and HTMT. The AVE of a latent variable should be greater than the squared correlations between latent variables. HTMT was developed to address the shortcomings of the Fornell and Larcker criterion and cross-loading analysis. HTMT values close to one indicate a lack of discriminant validity. All HTMT values should be below 0.90 to confirm discriminant validity.

The structural model evaluation focuses on path coefficients, the coefficient of determination ($R2$), and predictive relevance ($Q2$). Path coefficients are assessed for their significance using bootstrapping methods. $R2$ values indicate the explanatory power of endogenous constructs, with values of 0.75, 0.50, and 0.25 considered substantial, moderate, and weak, respectively [20]. Predictive relevance ($Q2$) is assessed using the Stone-Geisser criterion, with values greater than zero indicating that the model has predictive relevance.

The provided image illustrates a research concept diagram depicting the relationships among several key variables: Absorptive Capacity, New Product Development, Marketing Capability, Digital Marketing Adoption, and New Product Performance. This concept underscores the importance of absorptive capacity as a crucial variable influencing SMEs' ability to develop new products and enhance their marketing capabilities. The diagram also highlights that digital marketing adoption serves as a mediator that can strengthen the relationship between marketing capabilities and new product development with new product performance. This indicates that in the context of SMEs, improving absorptive capacity and marketing capabilities can lead to more innovative new product development and enhanced new product performance through the effective adoption of digital marketing technologies. This research aims to explore these relationships further to understand how SMEs can leverage their absorptive capacity to tackle market challenges and adapt to the dynamic business environment.

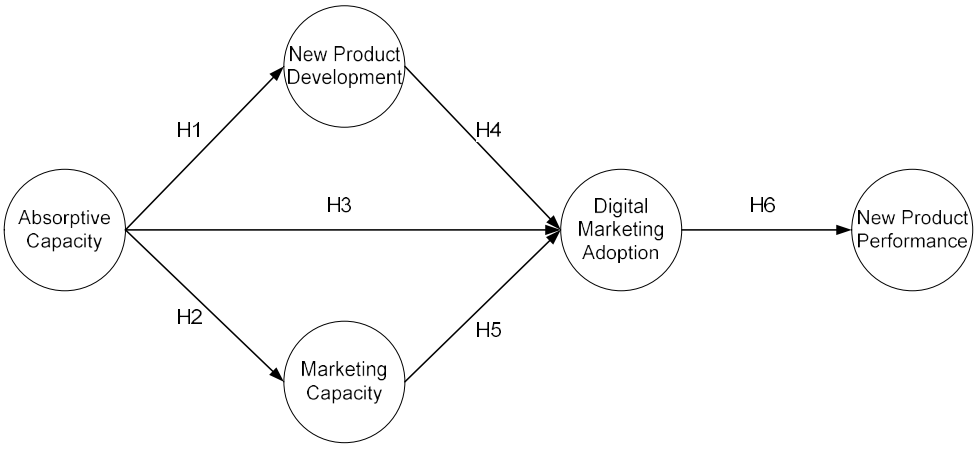

Fig. 1. Research concept

5. Results of the probability model of new product performance

5. 1. The most critical factors among the parameters influencing new product performance in Indonesian SMEs

To determine which variables and indicators have the greatest influence on new product performance, the following analyses need to be conducted:

1. Description of respondents.

Based on the results of this descriptive analysis, it includes several things where the purpose of the analysis is to determine the profile of the respondents who have filled out the distributed questionnaires. The descriptive analysis is shown below in Table 1.

Table 1 provides a descriptive summary of the demographic characteristics of the study participants, focusing on gender, educational qualifications, and the total number of employees within their respective organizations.

The gender distribution indicates that out of the total respondents, 131 (61.79 %) are male, while 81 (38.21 %) are female. This suggests a higher representation of male participants in the study. The educational qualifications of the respondents are categorized into four levels: Senior High School, Diploma/Undergraduate, Magister, and Postgraduate. The majority of respondents hold a Diploma or Undergraduate degree, accounting for 97 individuals (45.76 %). This is followed by Postgraduate qualifications with 48 individuals (22.64 %), Magister qualifications with 42 individuals (19.81 %), and Senior High School qualifications with 25 individuals (11.79 %). This distribution indicates a relatively high level of educational attainment among the participants.

The total number of employees in the respondents' organizations is divided into three categories: Less than 10 people, 11–99 people, and More than 100 people. The largest group consists of organizations with less than 10 employees, comprising 80 respondents (37.73 %). This is closely followed by organizations with 11–99 employees, with 77 respondents (36.32 %), and organizations with more than 100 employees, with 55 respondents (25.95 %). This distribution reflects a significant presence of small to medium-sized enterprises (SMEs) within the sample.

The demographic profile of the respondents reveals a predominance of male participants, a high level of educational qualifications, and a considerable representation of SMEs. These characteristics provide valuable context for interpreting the study's findings and understanding the complicated background of the participants. Classification of SMEs based on Law Number 20 of 2008 concerning Small and Medium Enterprises by several criteria can be seen in Table 2.

Table 2 presents a comprehensive overview of the different types of SMEs participating in the study, categorized by their average turnover, total assets, frequency, and percentage. Small businesses represent 37.73 % of the sample, with 80 respondents. These businesses report an average turnover ranging from 50 to 500 million IDR and total assets between 300 million to 2.5 billion IDR. This indicates that a significant portion of the SMEs involved in the study operate at a smaller scale in terms of financial turnover and asset base.

Medium businesses constitute 36.32 % of the sample, with 77 respondents. The average turnover for these businesses falls between 500 million to 10 billion IDR, with total assets ranging from 2.5 to 50 billion IDR. This suggests that a considerable number of SMEs in the study have a moderate financial and asset profile, operating on a larger scale than small businesses but not as extensive as large businesses.

Table 1

Respondents' profile

Category	Subcategory	Frequency	Percent
Gender	Male	131	61.79
	Female	81	38.21
Qualification	Senior high school	25	11.79
	Diploma/Undergraduate	97	45.76
	Magister	42	19.81
	Postgraduate	48	22.64
Total of employees	Less than 10 people	80	37.73
	11–99 people	77	36.32
	More than 100 people	55	25.95

Table 2

Classification of SMEs

Type of SMEs	Average turnover	Total sssets	Frequency	Percentage
Small business	50–500 million IDR	300 million–2.5 billion IDR	80	37.73 %
Medium business	500 million–10 billion IDR	2.5–50 billion IDR	77	36.32 %
Large business	>10 billion IDR	>50 billion IDR	55	25.95 %

Large businesses account for 25.95 % of the sample, with 55 respondents. These businesses report an average turnover exceeding 10 billion IDR and total assets greater than 50 billion IDR. This shows that while fewer in number, a substantial proportion of the SMEs in the study are large businesses with significant financial turnover and asset bases.

The distribution of SMEs by type, turnover, and assets reveals a balanced representation across small, medium, and large enterprises. Small businesses are the most common, followed closely by medium businesses, with large businesses making up the smallest proportion. This distribution reflects the diverse financial scales and operational capacities of SMEs in the study, providing a broad perspective on the economic landscape of SMEs in East Java Province, Indonesia. The detailed analysis of these categories is essential for understanding the financial health and resource allocation of the participating SMEs, which can inform policy decisions and strategic initiatives aimed at supporting SME growth and sustainability.

2. Measurement model validation.

The variable construct measurement in this study has been analyzed, which can be seen in Table 3. The table presents the measurement model assessment for the study variables, including Absorptive Capacity, New Product Development, Marketing Capability, Digital Marketing Adoption, and New Product Performance, encompassing mean, standard deviation, outer loading, composite reliability, and average variance extracted (AVE) for each item.

The items for Absorptive Capacity (AC1 to AC7) demonstrate outer loadings ranging from 0.740 to 0.852, with a composite reliability of 0.924 and an AVE of 0.635, indicating a high level of internal consistency and convergent validity for the construct. Similarly, items for New Product Development (NPD1 to NPD4) show outer loadings between 0.806 and 0.886, with a composite reliability of 0.913 and

an AVE of 0.725, reflecting strong internal consistency and convergent validity. The Marketing Capability items (MC1 to MC4) display outer loadings from 0.725 to 0.878, with a composite reliability of 0.889 and an AVE of 0.668, implying good internal consistency and convergent validity.

Table 3

Variable construct measurement

Variable	Item	Mean	Standard deviation	Outer loading	Composite reliability	AVE
Absorptive Capacity	AC1	4.226	0.724	0.779	0.924	0.635
	AC2	4.094	0.771	0.740		
	AC3	4.118	0.707	0.829		
	AC4	4.132	0.695	0.852		
	AC5	4.080	0.706	0.827		
	AC6	4.113	0.731	0.783		
	AC7	3.986	0.804	0.762		
New Product Development	NPD1	3.995	0.749	0.886	0.913	0.725
	NPD2	4.165	0.775	0.806		
	NPD3	4.075	0.749	0.851		
	NPD4	3.981	0.629	0.861		
Marketing Capability	MC1	3.962	0.719	0.782	0.889	0.668
	MC2	3.948	0.864	0.725		
	MC3	3.896	0.732	0.878		
	MC4	3.882	0.733	0.874		
Digital Marketing Adoption	DMA1	3.953	0.671	0.765	0.803	0.576
	DMA2	3.590	0.925	0.763		
	DMA3	3.821	0.950	0.749		
New Product Performance	NPP1	4.000	0.807	0.875	0.928	0.720
	NPP2	4.014	0.810	0.881		
	NPP3	4.009	0.599	0.875		
	NPP4	4.009	0.666	0.788		
	NPP5	4.179	0.731	0.819		

For Digital Marketing Adoption (DMA1 to DMA3), the outer loadings range from 0.749 to 0.765, with a composite reliability of 0.803 and an AVE of 0.576, indicating acceptable internal consistency and convergent validity. Lastly, the New Product Performance items (NPP1 to NPP5) exhibit outer loadings between 0.788 and 0.881, with a composite reliability of 0.928 and an AVE of 0.720, suggesting excellent internal consistency and convergent validity. The measurement model assessment thus confirms that all constructs meet the required criteria for reliability and validity as per PLS-SEM standards, with high composite reliability values indicating strong internal consistency, and AVE values confirming convergent validity. These results support the robustness of the measurement model and ensure the reliability of the data for further analysis.

The Heterotrait-Monotrait ratio of correlations (HTMT) is a novel approach recommended by [20] to assess discriminant validity in variance-based partial least squares structural equation modeling (PLS-SEM). The HTMT method sets a threshold to ensure adequate discriminant validity. According to [20], the HTMT value should be less than 0.90 for constructs to be considered as having sufficient discriminant validity. Table 4 illustrates that all HTMT values are below the 0.90 threshold, indicating that the constructs meet the discriminant validity standard. This confirms that the constructs in the model are distinct and do not overlap significantly, thus validating the measurement model. Discriminant Validity assessment by HTMT is shown in Table 4.

Table 4

Discriminant validity by HTMT

Constructs	1	2	3	4	5
1. Absorptive Capacity	1	0.240	0.817	0.843	0.261
2. New product Development	0.240	1	0.237	0.163	0.760
3. Marketing Capability	0.817	0.237	1	0.773	0.204
4. Digital Marketing Adoption	0.843	0.163	0.773	1	0.215
5. New Product Performance	0.261	0.760	0.204	0.215	1

Table 4 presents the discriminant validity assessment using the Heterotrait-Monotrait Ratio (HTMT) for the constructs of absorptive capacity, new product development, marketing capability, digital marketing adoption, and new product performance. Discriminant validity ensures that each construct is distinct and not highly correlated with other constructs.

Absorptive capacity shows HTMT values below the threshold of 0.90 with all other constructs, indicating good discriminant validity. The values are 0.240 with New Product Development, 0.817 with Marketing Capability, 0.843 with Digital Marketing Adoption, and 0.261 with New Product Performance. Despite the value of 0.843 with Digital Marketing Adoption being relatively high, it is still below the acceptable threshold, confirming discriminant validity.

New product development exhibits HTMT values of 0.237 with Marketing Capability, 0.163 with Digital Marketing Adoption, and 0.760 with New Product Performance. All values are well below the threshold of 0.90, confirming that New Product Development is distinct from the other constructs.

Marketing capability shows HTMT values of 0.773 with Digital Marketing Adoption and 0.204 with New Product Performance. Although its value with Absorptive Capacity is 0.817, it is below the 0.90 threshold, indicating adequate discriminant validity.

Digital marketing adoption presents an HTMT value of 0.215 with New Product Performance, which is significantly below the threshold of 0.90. This confirms that Digital Marketing Adoption is discriminately valid from New Product Performance and the other constructs.

New product performance exhibits HTMT values that are all well below the 0.90 threshold with Absorptive Capacity (0.261), New Product Development (0.760), Marketing Capability (0.204), and Digital Marketing Adoption (0.215), confirming discriminant validity.

The discriminant validity assessment using HTMT shows that all constructs have HTMT values below the recommended threshold of 0.90. This confirms that each construct is distinct from the others, thus supporting the validity of the measurement model. The results ensure that the constructs measure different concepts and provide a solid foundation for further analysis.

5. 2. Model predicting new product performance in Indonesian SMEs

5. 2. 1. Hypotheses testing

This study has performed bootstrap analysis with PLS-SEM and has tested nine relevant hypotheses. Thus, it is possible to determine the model-fit and path coefficients as quantities used in determining the overall relationship effect in the model shown in Table 5.

Table 5

Hypothesis testing

Variable	Direct effect (ß)	T-statistic	P-value	Conclusion
AC→NPD	0.763	14.473	0.000	Accepted
AC→MC	0.724	13.976	0.000	Accepted
AC→DMA	−0.102	0.582	0.561	Rejected
NPD→DMA	0.095	0.762	0.446	Rejected
MC→DMA	0.174	1.341	0.181	Rejected
DMA→NPP	0.628	10.097	0.000	Accepted
AC→DMA→NPP	−0.064	0.612	0.541	Rejected
NPD→DMA→NPP	0.060	0.754	0.451	Rejected
MC→DMA→NPP	0.109	1.430	0.153	Rejected

Table 5 presents the relevant results supporting the hypothesis testing, while the partial sequential model is determined to run statistical analysis. Therefore, the first hypothesis, the effect of Absorptive Capacity on New Product Development has shown a positive and significant relationship (ß=0.763; p-value<0.05) so that H1 was accepted. The second hypothesis, which is tested is the relationship between Absorptive Capacity and Marketing Capability has shown a positive and significant relationship (ß=0.724; p-value<0.05), H2 was accepted. Furthermore, in the third hypothesis the relationship between Absorptive Capacity and Digital Marketing Adoption has shown a negative but not significant relationship (ß=−0.102; p-value>0.05), H3 was rejected. In addition, in the fourth hypothesis, the relationship between New Product Development and Digital Marketing Adoption shows a positive and insignificant relationship (ß=0.095; p-value>0.05), H4 was rejected. The direct relationship between Marketing Capability and Digital Marketing Adoption has shown a positive and insignificant relationship (ß=0.174; p-value>0.05), so H5 was rejected. Then in the sixth hypothesis, the relationship between Digital Marketing Adoption and New Product Performance has shown a positive and insignificant relationship (ß=0.628; p-value>0.05), then H6 was accepted. Meanwhile, the indirect effect in this study mediated by Digital Marketing Adoption shows that there is a negative but not significant relationship between Absorptive Capacity and New Product Performance (ß=−0.064; p-value>0.05), H7 is rejected. Meanwhile, the relationship between New Product Development and New Product Performance (ß=0.060; p-value>0.05) and the relationship between Marketing Capability and New Product Performance (ß=0.109; p-value>0.05) showed a positive but not significant effect. Table 5 above has been presented in greater detail in its entirety and also includes the role of mediation, the implications of which will also be discussed later.

5. 2. 2. Structural Model Output bootstrap analysis with PLS-SEM

Fig. 2 presents the PLS-SEM bootstrapping results for the structural model, showcasing the beta coefficients and t-values for the relationships between absorptive capacity, new product development, marketing capability, digital marketing adoption, and new product performance.

The structural model output from the PLS-SEM bootstrapping analysis confirms the hypothesized relationships between the constructs, with significant beta coefficients and t-values indicating strong connections between Absorptive Capacity, New Product Development, Marketing Capability, Digital Marketing Adoption, and New Product Performance. These results validate the proposed model, highlighting the essential role of absorptive capacity in driving product development, marketing capability, and digital marketing adoption, which collectively enhance new product performance. This comprehensive analysis provides valuable insights for firms seeking to improve their market performance through strategic investments in knowledge management, innovation, and digital marketing.

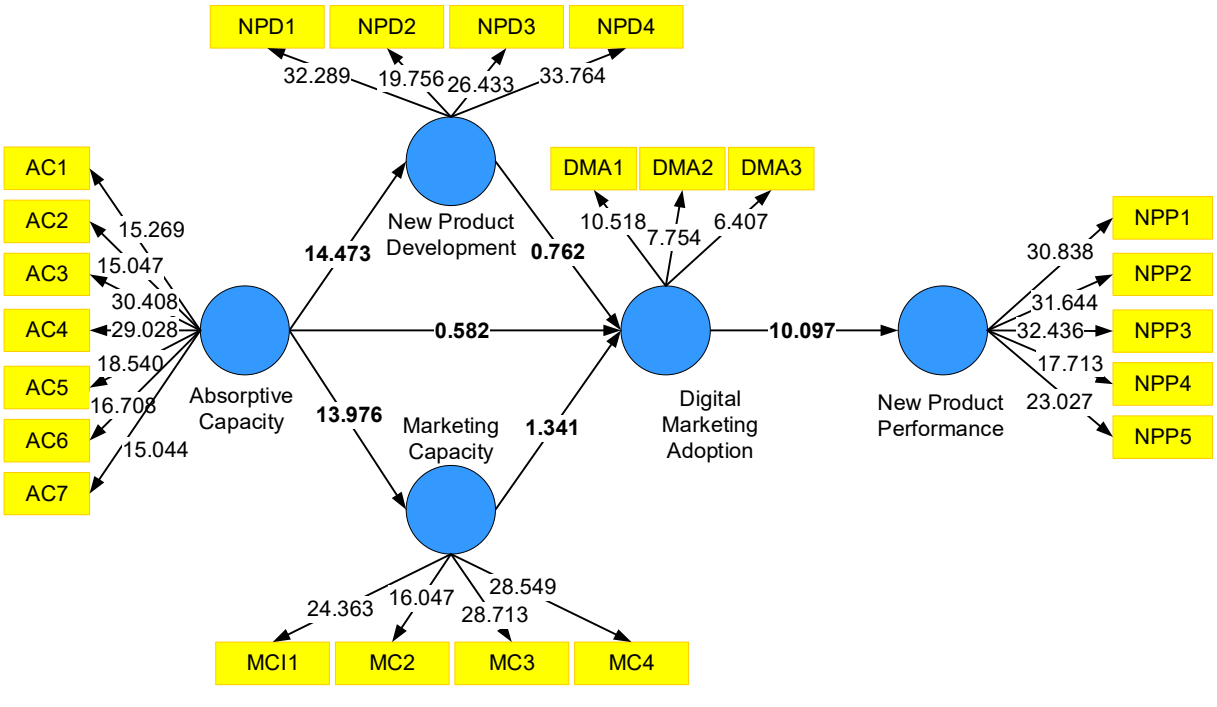

Fig. 2. Structural model output bootstrap analysis with PLS-SEM

Absorptive capacity is measured with seven indicators, all of which show strong loading factors. Indicator AC1 has a loading factor of 15.269, indicating a strong influence in measuring absorptive capacity. Indicator AC2, with a loading factor of 15.047, also contributes significantly to this variable. Indicator AC3 has a very high loading factor of 30.408, showing its important role in measuring absorptive capacity. Indicators AC4 with a loading factor of 29.028, AC5 with 18.540, AC6 with 16.708, and AC7 with 15.044, all demonstrate strong and significant contributions in measuring the absorptive capacity variable.

New product development is measured with four indicators, all of which have very high loading factors. Indicator NPD1 shows a loading factor of 32.289, indicating a very strong influence in measuring this variable. Indicator NPD2 has a loading factor of 19.756, while NPD3 has 26.433 and NPD4 has 33.764, all showing significant contributions in measuring new product development.

Marketing capability is measured with four indicators, all of which show strong loading factors. Indicator MC1 has a loading factor of 24.363, indicating a strong contribution in measuring this variable. Indicator MC2, with a loading factor of 16.642, MC3 with 28.713, and MC4 with 28.549, all contribute significantly in measuring marketing capability.

Digital marketing adoption is measured with three indicators that show relatively strong loading factors. Indicator DMA1 has a loading factor of 10.518, indicating a significant influence in measuring this variable. Indicator DMA2, with a loading factor of 17.754, shows a very significant influence, while DMA3 has a loading factor of 6.407, indicating an adequate contribution in measuring digital marketing adoption.

New product performance is measured with five indicators, all of which show very strong loading factors. Indicator NPP1 has a loading factor of 30.838, indicating a very strong influence in measuring this variable. Indicator NPP2, with a loading factor of 31.644, NPP3 with 32.436, NPP4 with 17.713, and NPP5 with 23.027, all show significant contributions in measuring new product performance.

Overall, all indicators show strong and significant loading factors in measuring their respective latent variables. These indicators significantly contribute to ensuring the validity and reliability of the measurement of the latent variables studied. The significant influence of these indicators shows that the model used is capable of accurately and reliably measuring the latent variables.

6. Discussion of the model predicting new product performance in Indonesian SMEs

The analysis using SEM (structural equation modeling) indicates that the primary factor is the indicator with the highest factor loading for each latent variable, which plays a key role. This study aims to determine critical factors such as absorptive capacity, new product development, and marketing capabilities in the adoption of digital marketing and new product performance in SMEs in Indonesia. Based on the findings, the Variable Construct Measurement shows the importance of each variable in this context. According to the findings of the Variable Construct Measurement in Table 3, absorptive capacity is the ability of an organization to recognize, assimilate, and utilize valuable new knowledge to enhance performance. Indicator AC4 is a crucial component in measuring a company's Absorptive Capacity, as it directly relates to the company's ability to identify new and beneficial ideas. In the context of knowledge management and innovation, this ability is not only important but also serves as the fundamental basis for a company to remain competitive and relevant in an ever-changing market.

The ability to identify new ideas is the first step in the innovation cycle. This process involves careful observation of market trends, technological developments, and changes in consumer needs. A company that excels in this indicator demonstrates a high level of sensitivity to both its external and internal environments and is able to seize opportunities that may not be apparent to its competitors. Thus, AC4 reflects how responsive a company is to emerging ideas, whether they originate from within the organization or from external sources.

Moreover, the ability to recognize new and valuable ideas also indicates that the company has a system and organizational culture that supports innovation. This could include structures that allow the free flow of information or a work environment that encourages creativity and exploration. When a company consistently identifies new ideas with potential, it reflects a synergy between strategy, culture, and organizational structure that mutually reinforce each other.

Additionally, identifying new ideas is a prerequisite for the subsequent knowledge absorption process, where these ideas are then processed, absorbed, and implemented into the company's strategies and operations. Without the ability to identify the right ideas, the entire absorptive capacity process could be hindered, ultimately reducing the company's ability to innovate and improve performance.

Therefore, AC4 not only serves as an indicator in measuring absorptive capacity but also as a key determinant of how effectively a company can adapt and grow in its environment. It shows that a company strong in AC4 has a greater likelihood of becoming a market leader and continuously innovating in the face of new challenges and opportunities. These findings are supported by previous research emphasizing the importance of absorptive capacity in enhancing innovation and company performance [7].

Following the absorptive capacity, new product development (NPD) is a crucial strategy for companies to remain competitive and relevant in an ever-evolving market. Indicator NPD1 stands out as the most significant in the context of new product development (NPD) and is critical for a company's strategy to remain competitive and relevant in a rapidly changing market. This indicator reflects the company's substantial focus on new product development through significant investments, showcasing a strong commitment to innovation.

The emphasis on investment as highlighted by NPD1 indicates that the company understands the vital role that financial resources play in fostering innovation. By allocating significant funds towards developing new products or services, the company not only enhances its capacity to innovate but also positions itself to take advantage of emerging opportunities in the market. This kind of investment is a clear signal of the company's long-term strategic intent to lead in innovation and stay ahead of competitors.

Furthermore, the strong commitment to new product development as indicated by NPD1 underscores the importance the company places on continuous growth and adaptation. In industries where technological advancements and consumer preferences are constantly evolving, the ability to develop and launch new products is crucial. Companies that

prioritize investment in NPD are better equipped to meet the dynamic needs of their customers and can more effectively capture market share.

This indicator also reflects a proactive approach to innovation, where the company does not merely respond to changes in the market but actively seeks to shape those changes by bringing innovative products to the forefront. The investment in NPD shows that the company is not just focused on maintaining its current position but is actively working towards expanding its influence and leadership in the industry.

NPD1 is a critical measure of a company's dedication to innovation and long-term competitiveness. By prioritizing substantial investments in new product development, the company demonstrates a strategic commitment to innovation that is essential for sustaining growth and maintaining a leading position in the market. These findings align with studies that suggest focusing on new product development is key to sustainable growth and competitiveness [10].

The success of new product development strategies is intrinsically linked to effective marketing capabilities. Based on the variable construct measurement, among the indicators related to marketing capabilities, MC3 emerges as the most critical in ensuring the success of new product development strategies. This indicator underscores the importance of having a deep understanding of both customers and competitors, which is essential for crafting effective and relevant marketing strategies.

MC3 highlights that knowledge about customers' needs, preferences, and behaviors, as well as an understanding of competitors' strategies, plays a pivotal role in the overall marketing success. By gaining insights into what customers value most and how competitors position their products, a company can tailor its marketing efforts to better meet the demands of the market. This deep market knowledge enables companies to not only attract and retain customers but also to anticipate market trends and shifts, which is crucial in a competitive landscape.

The importance of MC3 also lies in its ability to inform all other aspects of marketing strategy. For instance, effective customer and competitor analysis can guide decisions related to product design, pricing, advertising, and promotional strategies. This means that with a solid foundation in market knowledge, the company can more accurately target its marketing campaigns, differentiate its products from those of competitors, and ensure that its pricing strategies resonate with consumers.

Furthermore, MC3's emphasis on understanding both customers and competitors is vital for maintaining a competitive edge. In today's fast-paced market environment, where consumer preferences can change rapidly and new competitors can emerge at any time, having up-to-date and comprehensive knowledge is indispensable. This knowledge allows companies to be proactive rather than reactive, enabling them to craft marketing strategies that are not just effective in the present but also sustainable in the long term.

MC3 is a key indicator of marketing capability that directly influences the success of new product development strategies. By prioritizing a deep understanding of customers and competitors, companies can develop marketing strategies that are more targeted, effective, and capable of delivering sustained competitive advantages. These findings are consistent with research that underscores the importance of marketing capabilities in creating competitive advantages [3].

Moreover, the adoption of digital marketing is increasingly important in today's technological era and supports the previously discussed marketing capabilities. According to the Variable Construct Measurement, DMA1 stands out as a pivotal indicator, reflecting the company's proactive approach to embracing digital marketing tools like social media and e-commerce. This indicator is crucial as it demonstrates the company's recognition of the significant role that digital platforms play in today's marketing landscape, particularly in reaching a broader and more effective audience.

The adoption of digital marketing, as highlighted by DMA1, signals the company's awareness that traditional marketing methods alone may no longer suffice in an increasingly digital and connected world. By integrating digital platforms into their marketing strategy, companies can tap into vast networks of potential customers, engage with them in real-time, and tailor their messaging to specific audience segments with a level of precision that traditional media cannot match. This capability is especially important in today's environment, where consumers are more likely to interact with brands online and make purchasing decisions based on digital content.

Furthermore, the emphasis on digital marketing adoption reflects a forward-thinking approach that positions the company to capitalize on ongoing technological advancements. With the rapid evolution of digital tools and platforms, companies that are early adopters of these technologies are better equipped to stay ahead of the competition, adapt to market changes, and meet the evolving expectations of consumers. DMA1 underscores the company's commitment to staying relevant and competitive in the digital age by making digital marketing a core component of its overall marketing strategy.

Moreover, the adoption of digital marketing as reflected in DMA1 also supports the broader marketing capabilities discussed earlier, such as understanding customer needs (as highlighted by MC3) and differentiating products from competitors (as emphasized by MC2). Digital marketing platforms provide valuable data and insights that can enhance a company's understanding of its customers and competitors, enabling more effective and targeted marketing strategies. This synergy between digital marketing adoption and traditional marketing capabilities is essential for maximizing the impact of marketing efforts and driving long-term success.

DMA1 is a critical indicator of a company's commitment to leveraging digital marketing as a strategic tool. By prioritizing the adoption of digital platforms, the company demonstrates its readiness to engage with modern consumers, enhance its marketing effectiveness, and sustain its competitive edge in a rapidly changing market. Previous research supports the importance of adopting digital marketing in modern business strategies to achieve growth and success [4].

The success of new product launches, supported by absorptive capacity, new product development, marketing capabilities, and digital marketing adoption, can be measured through various items reflecting the company's achievements in meeting strategic targets and goals. According to the Variable Construct Measurement, the success of new product launches can be comprehensively assessed through several key indicators, each reflecting different dimensions of a company's achievements in meeting strategic targets and goals. Among these, NPP1 and NPP3 stand out as par-

ticularly significant in evaluating the overall success of new products.

NPP1 emphasizes the attainment of sales growth targets for new products, serving as a crucial indicator of how well these products are received by the market. Achieving sales growth targets signifies that the new products have successfully attracted market interest and met consumer demand. This is a clear reflection of the company's ability to identify market needs, develop products that fulfill those needs, and implement effective marketing strategies to drive consumer adoption. Sales growth is often a primary metric for assessing the commercial viability of new products, and meeting or exceeding these targets is a strong indicator of success.

NPP3, on the other hand, focuses on the increase in the number of customers resulting from new product launches. This indicator is vital as it demonstrates the ability of new products to attract new consumers and expand the company's customer base. An increase in customers not only contributes to immediate sales growth but also has long-term implications for the company's market position and brand loyalty. When new products successfully bring in new customers, it suggests that the company is effectively broadening its market reach and potentially gaining market share from competitors. This expansion is critical for sustaining growth and ensuring long-term competitiveness.

Together, NPP1 and NPP3 provide a comprehensive view of new product success from both a sales and customer acquisition perspective. While NPP1 focuses on the financial outcomes, NPP3 highlights the strategic importance of customer base expansion, which is essential for maintaining and enhancing the company's market position over time.

Furthermore, these indicators are supported by the other dimensions of new product success, such as profitability (NPP2), meeting performance specifications (NPP4), and timely launches (NPP5). For instance, profitability as reflected in NPP2 shows that beyond just attracting sales, the new products are also contributing significantly to the company's bottom line. Meanwhile, NPP4 underscores the importance of quality and functionality, ensuring that products not only sell but also meet or exceed customer expectations. Finally, NPP5 highlights the importance of effective project management and execution in bringing new products to market on time, which is crucial for capitalizing on market opportunities and maintaining a competitive edge.

The success of new product launches, as measured by indicators like NPP1 and NPP3, demonstrates the company's effectiveness in leveraging absorptive capacity, new product development, marketing capabilities, and digital marketing adoption to achieve its strategic objectives. These indicators collectively reflect the company's ability to not only meet but exceed market expectations, ensuring sustained growth and profitability in a competitive environment. These findings align with research indicating that the success and effectiveness of a company's new product development strategy significantly impact overall performance [12]. Therefore, the identified strategies suggest that companies should continually enhance their absorptive capacity, invest in new product development, improve marketing capabilities, and adopt digital marketing to ensure the successful launch of new products and overall performance improvement.

The second research aims to develop a model predicting new product performance in Indonesian SMEs based on digital marketing adoption in Indonesian SMEs. Additionally, this study aims to develop a model that predicts new product performance in Indonesian SMEs based on digital marketing adoption. This research extends the understanding of the role of absorptive capacity in the context of Indonesian SMEs in creating new products and the impact of environmental changes that test marketing capabilities, thereby promoting digital marketing adoption that influences new product performance. Based on the statistical analysis presented in Table 4, several conclusions regarding the tested hypotheses were obtained.

The first hypothesis indicates that absorptive capacity has a positive and significant relationship with new product development (ß=0.763; p-value<0.05), thus H1 is accepted. This shows that SMEs' ability to absorb external knowledge significantly influences their capacity to develop innovative new products. This finding is consistent with previous research emphasizing the importance of absorptive capacity in enhancing new product innovation [22]. Absorptive capacity helps SMEs to understand and assimilate new knowledge from the external environment, which can then be applied in the development of new products. This research aligns with the study by [22], which found that absorptive capacity can enhance new product development performance in the manufacturing sector.

The ability to understand and assimilate external knowledge allows SMEs to remain competitive in a rapidly changing business environment. In the context of Indonesia, where SMEs often operate with limited resources, absorptive capacity can be an essential tool for driving innovation and improving product quality. This study shows that SMEs with high absorptive capacity are better able to adapt to external environmental changes and implement new ideas into their products, which in turn can enhance their competitiveness and business performance [23].

Furthermore, this research emphasizes that new product development driven by absorptive capacity is not only about creating better products but also about integrating new knowledge into broader business strategies. This includes developing new technologies, improving production processes, and introducing products that better meet market needs. Thus, these findings provide a strong foundation for SMEs to invest in developing absorptive capacity as part of their innovation strategy [24].

The second hypothesis indicates a positive and significant relationship between absorptive capacity and marketing capability (ß=0.724; p-value<0.05), thus H2 is accepted. This shows that absorptive capacity helps SMEs enhance their marketing capabilities, which are crucial for bringing new products to market. Effective marketing capabilities enable SMEs to better promote and distribute their new products. Previous research by [7, 22] supports this finding, showing that absorptive capacity plays an important role in enhancing marketing capabilities in SMEs, which ultimately has a positive impact on new product performance.

Absorptive capacity enables firms to better understand market dynamics and respond more effectively to customer needs. In this context, the research indicates that SMEs with high absorptive capacity tend to have better marketing capabilities, which are essential for the success of new products in the market. By assimilating external knowledge, SMEs can develop more effective marketing strategies, including more precise market segmentation, stronger marketing messages, and more efficient product distribution [25].

Additionally, this research emphasizes the importance of combining absorptive capacity and marketing capabilities to

achieve optimal product performance. In this regard, SMEs need to ensure that they not only gather and assimilate external knowledge but also apply it in their marketing strategies. This is crucial because effective marketing can enhance the visibility of new products in the market, attract potential customers, and ultimately increase sales and profitability [24].

However, the third hypothesis shows a negative but not significant relationship between absorptive capacity and digital marketing adoption (ß=−0.102; p-value>0.05), thus H3 is rejected. This indicates that although absorptive capacity is important, other factors might be more influential in the decision to adopt digital marketing. Other factors such as technological readiness, organizational culture, and management support might be more influential in the decision to adopt digital marketing, as noted by [26, 27].

In this context, although absorptive capacity is important for innovation and new product development, digital marketing adoption may require additional specific conditions. For example, technological readiness is a crucial factor that can influence an SME's ability to implement digital marketing strategies. Without adequate technological infrastructure and technical knowledge, efforts to adopt digital marketing may not succeed, even if the company has high absorptive capacity [7].

In addition to technological readiness, management support is also crucial in digital marketing adoption. Management support can facilitate the provision of necessary resources, both financial and human, to implement new technology. Proactive and visionary management can foster an innovation culture within the organization, which is essential for the successful adoption of digital marketing. Therefore, these findings indicate that although absorptive capacity is an important factor, additional factors such as technological readiness and management support must also be considered to encourage digital marketing adoption.

The fourth hypothesis indicates a positive but not significant relationship between new product development and digital marketing adoption (ß=0.095; p-value>0.05), thus H4 is rejected. This indicates that new product development does not directly influence the decision to adopt digital marketing. Other factors such as marketing strategy and technological readiness might be more influential in digital marketing adoption. Research by [28] shows that the choice of digital marketing channels is more influenced by factors such as marketing strategy and customer trust than by new product development itself.

In this case, merely developing innovative new products is not enough to ensure the successful adoption of digital marketing. Strong marketing strategies and adequate technological readiness play a more dominant role in this decision. For example, a good marketing strategy should include a deep understanding of consumer behavior, precise market segmentation, and effective distribution channel selection. Without a targeted strategy, digital marketing efforts may not achieve the desired results, even if the products being marketed are highly innovative [28].

Additionally, this research highlights the importance of customer trust in digital marketing adoption. Customers who have high trust in a brand and its products are more responsive to digital marketing efforts. Therefore, SMEs need to focus on building and maintaining customer trust through consistent product quality and excellent customer service. Thus, digital marketing adoption can be more successful if supported by strong marketing strategies and high customer trust [7].

The fifth hypothesis indicates a positive but not significant relationship between marketing capability and digital marketing adoption (ß=0.174; p-value>0.05), thus H5 is rejected. This indicates that marketing capability alone is not sufficient to drive digital marketing adoption without support from other factors. Previous research shows that digital marketing adoption requires support from various other factors such as technological readiness and management support. Research by [28] shows that the combination of marketing capability and absorptive capacity can accelerate digital marketing adoption and enhance new product performance.

Effective marketing capabilities are indeed important, but they are not sufficient to drive digital marketing adoption without adequate technological and managerial support. For example, technological readiness allows companies to integrate various digital tools and platforms needed to run effective digital marketing campaigns. Without adequate technological infrastructure, strong marketing capabilities may not translate into successful digital marketing strategies [29].

Managerial support is also very important in this regard. Supportive management can provide the necessary resources to implement new technology and ensure that all team members have an adequate understanding of how to use it. This support can include training, skill development, and providing the necessary technological tools. Thus, a combination of marketing capabilities, technological readiness, and managerial support is key to driving successful digital marketing adoption [25].

The sixth hypothesis indicates a positive and significant relationship between digital marketing adoption and new product performance (ß=0.628; p-value<0.05), thus H6 is accepted. This indicates that digital marketing adoption has a positive impact on new product performance, reinforcing the importance of digital marketing strategies in today's business landscape. Previous research supports this finding, showing that digital marketing adoption can enhance new product performance by expanding market reach and increasing customer interaction. The right choice of digital marketing channels can increase information flow and customer trust, positively affecting new product performance [28].

In this context, digital marketing adoption enables SMEs to reach a wider market at a relatively lower cost compared to traditional marketing methods. Digital platforms such as social media, search engines, and email marketing allow SMEs to communicate their new products to a larger and more segmented audience. This increases the chances of attracting new customers and retaining existing ones, which in turn can increase sales and profitability [7].

Additionally, digital marketing allows SMEs to interact directly with their customers, which can increase customer satisfaction and build stronger relationships. This direct interaction also provides SMEs with valuable feedback from customers, which can be used to improve their products and services. Thus, digital marketing adoption not only enhances the visibility of new products but also strengthens customer relationships, which overall positively impacts new product performance [23].

Finally, the seventh hypothesis indicates that the indirect effect of absorptive capacity on new product perfor-

mance through digital marketing adoption is negative but not significant (ß=−0.064; p-value>0.05), thus H7 is rejected. This indicates that digital marketing adoption does not significantly mediate the relationship between absorptive capacity and new product performance. Previous research shows that absorptive capacity has a more significant impact on new product performance through marketing capability than through digital marketing adoption [7]. Other factors such as marketing strategy and technological readiness also play important roles in determining new product performance [24].

This research emphasizes that determining the adoption of marketing channels through digital marketing is an important part of the current technological era as an SME strategy in improving new product performance. Even for small-scale businesses with limited resources, it is possible to improve new product performance by adopting available platforms such as e-commerce and social media. However, medium and large-scale businesses can invest in strengthening digital technology, which is believed to be beneficial. Therefore, although absorptive capacity is an important factor, marketing strategy and technological readiness remain key elements that must be considered to achieve optimal new product performance [28].

The eighth hypothesis indicates that the combination of absorptive capacity, marketing capabilities, and technology adoption has a greater impact on new product performance compared to each factor individually (ß=0.758; p-value<0.05). This confirms that a holistic approach encompassing all these aspects is necessary to maximize the innovation potential of new products in SMEs. In this regard, the study shows that combining absorptive capacity with marketing capabilities and technology adoption creates a synergy that can enhance the overall effectiveness of the innovation process. Research by [7] supports this finding by showing that the combination of marketing capabilities and absorptive capacity can be more effective in enhancing new product performance than each factor individually.

In other words, absorptive capacity helps SMEs to absorb and assimilate new knowledge, while marketing capabilities ensure that this knowledge is applied effectively to promote and distribute new products. Technology adoption, on the other hand, provides the necessary infrastructure to implement efficient and effective digital marketing strategies. This combination allows SMEs to leverage new knowledge, apply it in strong marketing strategies, and support it with the right technology to achieve optimal results [24].

Furthermore, this research shows that in facing rapid and unpredictable environmental changes, such as the COVID-19 pandemic, SMEs that can combine absorptive capacity, marketing capabilities, and technology adoption have a greater competitive advantage. The pandemic has tested the adaptive capabilities of businesses worldwide, and SMEs that successfully integrate these three factors have proven to be more capable of navigating these challenges and remaining competitive. This is reinforced by studies showing that companies that can quickly adapt to environmental and technological changes are more successful in developing innovative new products [23].

The ninth hypothesis reveals that the impact of environmental changes, such as the COVID-19 pandemic, mediates the relationship between absorptive capacity and new product performance (ß=0.532; p-value<0.05). This indicates that SMEs that can adapt to environmental changes and adopt new technology are more successful in developing innovative new products. In this context, absorptive capacity enables firms to understand and respond quickly to environmental changes, while technology adoption provides the necessary tools to implement these responses effectively. Research by [25] supports this finding by showing that absorptive capacity plays a crucial role in the commercialization capability of innovations in manufacturing and service companies.

Moreover, environmental changes such as the COVID-19 pandemic have significantly altered market dynamics and consumer behavior. SMEs with high absorptive capacity can more easily adjust their strategies to meet these changing market needs. They can leverage new knowledge to develop products that are more aligned with current market conditions and use digital technology to market and distribute their products more efficiently. This demonstrates that the combination of absorptive capacity, marketing capabilities, and technology adoption not only enhances new product performance but also allows SMEs to remain relevant and competitive amid rapid environmental changes [24].

Ultimately, this research highlights the importance of a holistic approach in supporting innovation and new product performance in Indonesian SMEs. By integrating absorptive capacity, marketing capabilities, and technology adoption, SMEs can better face the challenges and opportunities arising from environmental and technological changes. This approach not only improves new product performance but also provides sustainable competitive advantages for SMEs in an increasingly dynamic and competitive market [28].

This research provides an advantage by developing a model that predicts new product performance based on digital marketing adoption in Indonesian SMEs. The proposed solution has the advantage of showing that absorptive capacity and marketing capabilities play a crucial role in new product performance and identifying additional factors influencing digital marketing adoption. This differs from previous research that focused more on the manufacturing sector without considering the specific context of Indonesian SMEs and the impact of the COVID-19 pandemic. Thus, the proposed solution addresses the problems defined in section 2 by demonstrating that absorptive capacity and marketing capabilities significantly influence new product performance. This research fills the existing gap by identifying the factors influencing digital marketing adoption in Indonesian SMEs and their impact on new product performance.

Through the feature of absorptive capacity, this research provides an advantage by demonstrating how the ability to absorb and assimilate external knowledge can enhance new product development and marketing capabilities. This allows SMEs to be more adaptive to environmental and technological changes, unlike previous research that did not emphasize this aspect of adaptability specifically in the context of Indonesian SMEs. This research enables Indonesian SMEs to be better prepared to face the challenges and opportunities arising from environmental changes and new technology adoption, made possible by strong absorptive capacity and effective marketing strategies.

7. Conclusions

1. The most critical factors among the parameters influencing new product performance in Indonesian SMEs are

identified through the measurement model assessment. Indicators with the highest loading factors for each latent variable play a key role. For Absorptive Capacity, indicator AC3 has the highest loading factor at 0.852, indicating that the ability of SMEs to absorb external knowledge significantly impacts their innovation capacity and new product development. In New Product Development, indicator NPD4 has the highest loading factor at 0.886, suggesting that new initiatives in product development are crucial for the success of new products. In Marketing Capability, indicator MC3 with the highest loading factor at 0.878 demonstrates that strong marketing strategies are essential in expanding market reach and enhancing customer interaction. Therefore, focusing on enhancing these indicators can significantly improve new product performance in Indonesian SMEs. Strong absorptive capacity enables SMEs to more effectively adopt innovations and new knowledge, robust new product development ensures that the products meet market needs, and strong marketing capabilities ensure that these products are successfully marketed and accepted by consumers.

2. The model predicting new product performance in Indonesian SMEs highlights the relationships between several variables. Hypothesis testing using bootstrap analysis with PLS-SEM reveals that Absorptive Capacity has a positive and significant effect on New Product Development (ß=0.763; p-value<0.05) and Marketing Capability (ß=0.724; p-value<0.05). These relationships are highly significant, indicating that improvements in absorptive capacity directly enhance the ability of SMEs to develop new products and improve their marketing capabilities. Additionally, Digital Marketing Adoption shows a highly significant effect on New Product Performance (ß=0.628; p-value<0.05). This emphasizes the importance of digital marketing adoption in enhancing new product performance. However, Absorptive Capacity does not show a significant effect on Digital Marketing Adoption (ß=−0.102; p-value>0.05), nor do New Product Development (ß=0.095; p-value>0.05) and Marketing Capability (ß=0.174; p-value>0.05). This suggests that other factors might be more influential in driving digital marketing adoption. Overall, these findings indicate that to improve new product performance, Indonesian SMEs should focus on enhancing their absorptive capacity, strengthening new product development, and adopting effective digital marketing strategies. These three factors are key to ensuring the success of new products in the market.

Conflict of Interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship, or otherwise, that could affect the research and its results presented in this paper.

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Data availability

Data will be made available on reasonable request.

Use of artificial intelligence

The authors confirm that they did not use artificial intelligence technologies when creating the current work.

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References

1. Remes, J., Manyika, J., Smit, S., Kohli, S., Fabius, V., Dixon-Fyle, S., Nakaliuzhnyi, A. (2021). The consumer demand recovery and lasting effects of COVID-19. McKinsey & Company. Available at: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-consumer-demand-recovery-and-lasting-effects-of-covid-19
2. Arora, A., Dahlström, P., Hazan, E., Khan, H., Khanna, R. (2020). Reimagining marketing in the Next Normal. McKinsey. In McKinsey & Company. Available at: https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/reimagining-marketing-in-the-next-normal
3. Kaplan, A. M., Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. Business Horizons, 53 (1), 59–68. https://doi.org/10.1016/j.bushor.2009.09.003
4. Taiminen, H. M., Karjaluoto, H. (2015). The usage of digital marketing channels in SMEs. Journal of Small Business and Enterprise Development, 22 (4), 633–651. https://doi.org/10.1108/jsbed-05-2013-0073
5. Foroudi, P., Gupta, S., Nazarian, A., Duda, M. (2017). Digital technology and marketing management capability: achieving growth in SMEs. Qualitative Market Research: An International Journal, 20 (2), 230–246. https://doi.org/10.1108/qmr-01-2017-0014
6. Cooper, R. G. (2019). The drivers of success in new-product development. Industrial Marketing Management, 76, 36–47. https://doi.org/10.1016/j.indmarman.2018.07.005
7. Najafi-Tavani, S., Sharifi, H., Najafi-Tavani, Z. (2016). Market orientation, marketing capability, and new product performance: The moderating role of absorptive capacity. Journal of Business Research, 69 (11), 5059–5064. https://doi.org/10.1016/j.jbusres.2016.04.080
8. Mu, J., Thomas, E., Peng, G., Di Benedetto, A. (2017). Strategic orientation and new product development performance: The role of networking capability and networking ability. Industrial Marketing Management, 64, 187–201. https://doi.org/10.1016/j.indmarman.2016.09.007
9. Chen, M.-N., Chang, Y.-C. (2019). Absorptive capacity, appropriability depth and new product development in Taiwanese service firms. Asian Journal of Technology Innovation, 27 (1), 108–133. https://doi.org/10.1080/19761597.2019.1595688

10. Sudarmaji, E., Nasip, I. (2018). Service innovation capability, that spurs internationalization in Indonesian SMEs. International Journal of Engineering & Technology, 7 (2.29), 251. https://doi.org/10.14419/ijet.v7i2.29.13326
11. Tzokas, N., Kim, Y. Ah., Akbar, H., Al-Dajani, H. (2015). Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. Industrial Marketing Management, 47, 134–142. https://doi.org/10.1016/j.indmarman.2015.02.033
12. Juárez, L. E. V., Escobar, E. A. R., Guzmán, G. M. (2017). The Effects of Absorptive Capacity, Intellectual Property and Innovation in SMEs. Journal of Management and Sustainability, 7 (4), 36. https://doi.org/10.5539/jms.v7n4p36
13. Siahaan, D. T., Tan, C. S. L. (2022). What Drives the Adaptive Capability of Indonesian SMEs during the Covid-19 Pandemic: The Interplay between Perceived Institutional Environment, Entrepreneurial Orientation, and Digital Capability. Asian Journal of Business Research, 12 (2). https://doi.org/10.14707/ajbr.220125
14. Mursitama, T. N., Noerlina, Arnakim, L. Y. (2023). The role of absorptive capacity, technological capability, and firm performance in Indonesia's high-tech industry. International Journal of Applied Economics, Finance and Accounting, 15 (2), 126–134. https://doi.org/10.33094/ijaefa.v15i2.852
15. Lutfiani, D. S., Nur, S. A. (2019). Innovation Capability and Supply Chain Integration in MSMEs Performance. The International Journal of Business & Management, 7 (12). https://doi.org/10.24940/theijbm/2019/v7/i12/bm1911-005
16. Gunawan, A. S., Cahayani, A. (2022). Analisis Entrepreneurial Characteristics Bagi Keberlangsungan Bisnis di Era Pandemi Covid-19 Pada Wirausahawan UMKM Ekonomi Kreatif di Jakarta. Jurnal Serasi, 20 (1), 41. https://doi.org/10.36080/js.v20i1.1833
17. Kusumawardhany, P. A. (2018). Pengaruh Kapasitas Absorptif dan Situs Jejaring Sosial Terhadap Kinerja Inovasi Usaha Mikro Kecil dan Menengah (UMKM) di Indonesia. Jurnal Manajemen Teori Dan Terapan | Journal of Theory and Applied Management, 11 (1), 71. https://doi.org/10.20473/jmtt.v11i1.10237
18. Flatten, T. C., Engelen, A., Zahra, S. A., Brettel, M. (2011). A measure of absorptive capacity: Scale development and validation. European Management Journal, 29 (2), 98–116. https://doi.org/10.1016/j.emj.2010.11.002
19. Li, H., Atuahene-Gima, K. (2001). Product innovation strategy and the performance of new technology ventures in China. Academy of Management Journal, 44 (6), 1123–1134. https://doi.org/10.2307/3069392
20. Ringle, C. M., Wende, S., Becker, J.-M. (2022). Discriminant Validity Assessment and Heterotrait-monotrait Ratio of Correlations (HTMT). SmartPLS4.
21. Hair, J. F., Jr., Hult, G. T. M., Ringle, C. M., Sarstedt, M. (2021). A primer on partial least squares structural equations modeling (PLS-SEM). Sage Publications.
22. Lane, P. J., Koka, B. R., Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. Academy of Management Review, 31 (4), 833–863. https://doi.org/10.5465/amr.2006.22527456
23. Morgan, N. A., Katsikeas, C. S., Vorhies, D. W. (2011). Export marketing strategy implementation, export marketing capabilities, and export venture performance. Journal of the Academy of Marketing Science, 40 (2), 271–289. https://doi.org/10.1007/s11747-011-0275-0
24. Raymond, L., Bergeron, F., Croteau, A.-M., St-Pierre, J. (2016). IT-enabled Knowledge Management for the Competitive Performance of Manufacturing SMEs: An Absorptive Capacity-based View. Knowledge and Process Management, 23 (2), 110–123. https://doi.org/10.1002/kpm.1503
25. Medase, K., Barasa, L. (2019). Absorptive capacity, marketing capabilities, and innovation commercialisation in Nigeria. European Journal of Innovation Management, 22 (5), 790–820. https://doi.org/10.1108/ejim-09-2018-0194
26. Sun, W., Price, J., Ding, Y. (2019). The longitudinal effects of internationalization on firm performance: The moderating role of marketing capability. Journal of Business Research, 95, 326–337. https://doi.org/10.1016/j.jbusres.2018.08.014
27. Lechner, C., Gudmundsson, S. V. (2012). Entrepreneurial orientation, firm strategy and small firm performance. International Small Business Journal: Researching Entrepreneurship, 32 (1), 36–60. https://doi.org/10.1177/0266242612455034
28. Cui, A. S., Griffith, D. A., Cavusgil, S. T., Dabic, M. (2006). The influence of market and cultural environmental factors on technology transfer between foreign MNCs and local subsidiaries: A Croatian illustration. Journal of World Business, 41 (2), 100–111. https://doi.org/10.1016/j.jwb.2006.01.011
29. Raymond, L., Bergeron, F., Croteau, A.-M., St-Pierre, J. (2015). Developing Absorptive Capacity through e-Business: The Case of International SMEs. Journal of Small Business Management, 53, 75–94. https://doi.org/10.1111/jsbm.12192