Jurnal Siasat Bisnis Vol.28 No. 1, 2024, 1-18

Jurnal SIASAT BISNIS

Journal homepage: https://www.journal.uii.ac.id/jsb

Revealing the power play: Unraveling the dynamic environment's influence on intangible resources and sustainable competitive advantage

Muhammad Wadud Rahmat
Faculty of Economic Universitas Indo Global Mandiri, Palembang, Indonesia
Correspondents e-mail: wadud@uigm.ac.id

Article Info

Article history:
Received : 2023-06-12
Accepted : 2024-01-23
Published: 2024-01-26

JEL Classification Code:
L25, L52, L60

Author's email:
wadud@uigm.ac.id

DOI: 10.20885/jsb.vol28.iss1.art1

Abstract

Purpose –The objective of this study is to examine the impact of the dynamic environment on the relationship between intangible resources and sustainable competitive advantage in large and medium-sized manufacturing firms operating across various sectors.

Design/methodology/approach – The research sample was selected using cluster random sampling, which is based on company size, namely large and medium-sized companies only, totalling 257 companies as the unit of analysis. A questionnaire was utilized to collect data. While the study employed residual technique and the Hayes (2012) method for variable assessment, the primary method used was a causal analysis.

Findings – The findings indicate that the dynamic environment does not act as a moderating variable, implying that the sustainability of the organization is unaffected by the firm's dynamic environment.

Research limitations/implications – Research findings can play a pivotal role in corporate strategy, enabling companies to reach a sustainable competitive advantage by closely monitoring environmental changes.

Practical implications – This research can assist companies in developing business strategies that are more adaptive to environmental changes, enabling them to actively monitor and identify emerging opportunities and threats. By doing so, companies can take appropriate steps to maintain their competitive advantage.

Originality/value – Previous researchers have rarely conducted this research, primarily due to a lack of understanding on how to effectively connect dynamic environments with intangible resources in order to achieve sustainable competitive advantage.

Keywords: Intangible resources, sustainable competitive advantage, dynamic environment, residual method, Hayes method

Introduction

To enhance corporate performance and competitiveness, companies require a combination of tangible and intangible resources (Jawed & Siddiqui, 2020). In a rapidly evolving corporate environment, resources are crucial for establishing a long-term sustainable competitive advantage (Ndegwa et al., 2019; Tajeddini et al., 2020). By analyzing the external environment, a market-based strategy can be employed to generate sustained competitive advantage (Pulka et al., 2019; Veselinova et al., 2016), Alternatively, a resource-based strategy can be utilized to leverage the available resources and generate sustained competitive advantage (Worthington et al., 2018).

P ISSN 0853-7666 | E ISSN 2528-7001

However, in the era of the Fourth Industrial Revolution where competition is increasingly complex and the business environment is highly dynamic, it is crucial to determine a company's advantages based on its resource base rather than solely relying on the market base. This is because effective management of the resource base is a strategic approach for companies to achieve sustainable competitive advantage (SCA). Therefore, it is important to study the impact of dynamic environmental conditions on the relationship between intangible resources and SCA.

Several studies have been conducted to demonstrate the impact of environmental conditions on businesses. Research findings on American manufacturing businesses reveal that the dynamic environment, complexity, and resource abundance play a role in moderating the relationship between performance and strategy. Specifically, the dynamic environment exerts a stronger influence on corporate performance compared to other factors (McArthur & Nystrom, 1991). Furthermore, study by Wadud (2021) conducted on the industrial sector in South Sumatra examines the impact of the environment on businesses' competitiveness. The findings of this research suggest that a company's ability to compete is influenced by its environmental conditions. Therefore, businesses aiming to develop competitive strategies that can sustain a lasting competitive edge must take environmental factors into consideration. Moreover, research by (Schilke, 2014) has shown results there are relationships between dynamic skills and the competitive advantage of organizations, which are influenced by the external environment. The findings of this study reveal that in moderately dynamic environments, a company's dynamic skills have a positive impact on its competitive advantage. Other research e.g. (Hosseini et al., 2018; Ilinova et al., 2021; Ma et al., 2019) has also asserted that to maintain a competitive edge, businesses need to continually update themselves, collaborate with various stakeholders, and innovate their processes, products, and system. Businesses need to continually upgrade themselves to stay competitive. As a result, environmental influences can significantly affect the sustainability of competitive advantage. Hence, it is essential for all businesses to enhance their adaptability to changing circumstances and condition (Stacey & Mowles, 2016).

The aim of this research is to tackle two primary facets associated with the research gap and the occurrence of such gaps. First, it aims to examine the influence of the dynamic environment as a moderating variable in the relationship between intangible resources (such as intellectual capital, knowledge management, and digital transformation) and sustainable competitive advantage. Second, the study focuses on the phenomenon of manufacturing organizations experiencing negative growth, which has a detrimental impact on business performance and, ultimately, the long-term sustainability of a firm's competitive edge.

The challenge in this research arises from the lack of clear definitions by earlier academics regarding the sources of long-term competitive advantage. The identification of sustained competitive advantage requires meeting the VRIO requirements. The research problem formulated for this study focuses on manufacturing firms in South Sumatra that have experienced negative growth and aims to investigate whether this circumstance affects their sustainable competitive advantage. The research question is as follows: How does the dynamic business environment impact the delicate balance between dynamic sustainable competitive advantage and the utilization of intellectual capital, knowledge management, and digital transformation by industrial firms in South Sumatra.

The objectives of this research are to develop a new conceptual model that describes and empirically demonstrates the role of knowledge management, digital transformation, and intellectual capital as intangible resources in achieving sustainable competitive advantage in a fast-paced business environment. South Sumatra's manufacturing enterprises should consider these factors to attain a lasting competitive edge. The choice of a manufacturing firm was influenced by several factors, including the importance of human ingenuity and creativity, the significant role of manufacturing enterprises as economic engines in the country, among others. Additionally, based on the information on the output growth of medium and large manufacturing enterprises in 2019, the manufacturing sector in South Sumatra is experiencing a downturn. Specifically, the province of South Sumatra, located on the island of Sumatra, has an index of -8.37 (Ardanari & Aprilina, 2019).

Literature Review

Resource Base View (RBV)

The RBV theory was developed by Barney (1991), this theory focuses on managing the company's resources and capabilities. According to RBV, companies that have valuable, rare, difficult-to-imitate, and non subtititutable (VRIN) can create a competitive advantage. In the context of sustainability, companies can utilise sustainable resources, such as environmentally friendly technologies, sustainable supply chains, or brands that focus on social responsibility, to create a competitive advantage. RBV theory presents a robust view of how companies can achieve and sustain competitive advantage. It focuses on internal resources and capabilities as the primary source of advantage, and emphasises that not all resources are equal. Some resources have higher value if they fulfil the VRIN criteria. Thus, companies should endeavour to identify and manage resources that fulfil these criteria well. RBV theory also recognises the importance of competitive limitations. Not all firms have access to the same resources, and firms that can capitalise on their unique resources can build a strong market position. The importance of the "difficult to imitate" and "irreplaceable" elements is key in this theory. It reminds companies that having valuable resources is not enough; they must also be difficult for competitors to copy or replace. In a changing business context, RBV theory remains relevant as it focuses on internal resources and capabilities that can help a company adapt to environmental changes and maintain its competitive advantage (Barney, 1991).

Dynamic Capabilities Theory (DCT)

This theory was developed by Teece et al. (1997), the theory emphasises a company's ability to adapt and change over time. In the context of sustainability, companies that have the dynamic ability to innovate in terms of sustainability, respond to environmental changes, and collaborate with stakeholders can create a competitive advantage (Teece et al., 1997). Dynamic capabilities theory presents a highly relevant view in a fast-changing business environment. It recognises that companies need to be more than just having static resources and capabilities; they need to have the ability to adapt and change as the environment changes. DCT links the concepts of learning and innovation with dynamic capabilities. Companies must constantly learn from their experiences and generate innovations to maintain a competitive advantage. In addition, distinguishing between routine capabilities and dynamic capabilities helps companies understand that adaptability and change are key in the long run. The dynamic capability processes identified in the DCT (sensing, seizing, and reconfiguring) help detail how companies can develop and manage these capabilities. This assists companies in planning concrete actions to maintain and expand their competitive advantage. As such, DCT provides an important insight into how firms can create and sustain competitive advantage in a constantly changing business environment by developing dynamic capabilities. The theory of dynamic capabilities can be employed to explain the discourse on a company's environmental adaptability. The theory of dynamic capabilities can provide insights into how companies can effectively respond and adapt to their changing business environments (Teece, 2019). A corporation can consistently maintain its dynamism and effectively respond to changes in its business environment by leveraging the concept of dynamic capabilities as its foundation (Mikalef & Gupta, 2021). This notion serves as a reminder to businesses that dynamic environmental changes possess the potential to either erode or enhance their competitive edge.

Porter's Generic Strategies

Porter (1980) identified three generic strategies that companies can use to achieve competitive advantage: low cost, differentiation and focus. In the context of sustainability, companies can use a differentiation strategy with a focus on sustainable products or services to achieve competitive advantage. Generic strategies theory is an important framework for understanding how firms can achieve competitive advantage in a competitive business environment. It emphasises that not all firms should adopt the same approach; instead, they should choose strategies that best suit their internal characteristics and the external demands of the industry. The choice of generic strategies is the way companies can direct their resources and efforts. Low cost aims to be the lowest-cost

producer, differentiation aims to create a unique product or service, and focus aims to serve a particular market segment well. Choosing one of these strategies helps companies concentrate their efforts and create a strong identity in the market. It is important to remember that implementing a generic strategy requires consistency and alignment across the organisation. The success of a generic strategy depends on the company's ability to make trade-offs between various factors such as cost, differentiation, and focus. With judicious selection and implementation, companies can achieve a competitive advantage in their industry (Porter, 1980).

Hypotheses

The unpredictable business climate is influenced by various factors, such as changing business opportunities, evolving technology, shifting product and service offerings, and fluctuating research and development priorities within firms (Behram & Özdemirci, 2014). The complexity of the business environment can be attributed to factors such as market unpredictability, economic variables, technological considerations, product life cycles, customer demands, and shifting consumer preferences (Pulka et al., 2019). It is argued that the dynamism and complexity of the environment ultimately determine a company's performance (Kumar et al., 2011). According to Cheng & Shiu (2015), organizations need to adopt open innovation (OI) practices to leverage the knowledge and technology of external partners and remain competitive in a rapidly changing economy (Martinez-Conesa et al., 2017). To enhance competitiveness in a dynamic market, businesses require both open innovation and effective knowledge management (KM) practices (Lichtenthaler, 2017).

Environmental forces, often characterized as turbulence, have significant short and long-term impacts on the performance of market-oriented organizations, in addition to the complex elements of the business environment (Kumar et al., 2011). Based on the research findings, market instability strengthens the relationship between market orientation and profitability and sales. However, this moderating influence does not diminish over time, which contrasts with the findings of Kirca et al. (2005) who found that market environmental factors do not significantly affect the relationship between market orientation and performance. However, they did find that technological factors weaken the relationship between market orientation and sales and between market orientation and profit in the short and long terms, although this moderating effect diminishes over time.

Recent research conducted on several private banks in Kenya indicates that the relationship between resource isolating techniques and sustained competitive advantage remains unaffected by the business environment (Ndegwa et al., 2019). Furthermore, a study conducted on 117 SMEs in Finland and 104 SMEs in Russia revealed contrasting results. While the market environment in Finland negatively moderates the relationship between entrepreneurial orientation and firm performance, it has a positive influence in Russia (Wales et al., 2019). The formulation of the research hypothesis is as follows, which is based on the findings of the conducted study:

H_o: The dynamic environment does not moderate the relationship between intangible resources and sustained competitive advantage (SCA).

Extensive research has been conducted on how the environment impacts organizations. Numerous studies have explored the influence of various environmental factors, such as market dynamics, technological advancements, regulatory changes, and shifting consumer preferences, on organizational performance. These research efforts have yielded valuable insights into the complex interplay between the external environment and organizational outcomes. By understanding and addressing these environmental influences, organizations can adapt, innovate, and enhance their competitive position in an ever-changing business landscape (McArthur & Nystrom, 1991). Research conducted on the manufacturing business in Nairobi has highlighted the favorable impact of the external environment, including the political, technological, economic, and social factors, on a company's sustained competitive advantage. These findings emphasize the significance of considering the broader external context in which businesses operate. The political environment

can shape regulations and policies that affect market conditions, while the technological environment introduces opportunities for innovation and efficiency.

Additionally, the economic environment influences market dynamics, and the social environment reflects evolving consumer preferences and societal trends. Understanding and effectively navigating these environmental factors can contribute to a company's ability to maintain a competitive edge in the manufacturing sector in Nairobi (Kimani & Ogutu, 2017). According to studies Hou et al. (2019) conducted on 190 company leaders and subordinates in China, it has been found that the dynamic environment positively influences the link between leadership and creativity. In a dynamic environment, characterized by rapid changes and uncertainties, effective leadership plays a crucial role in fostering creativity within organizations. The dynamic environment provides opportunities for leaders to encourage innovative thinking, adaptability, and risk-taking among their team members. This research suggests that leaders who can effectively navigate and respond to the challenges and opportunities presented by a dynamic environment are more likely to promote a creative work environment and enhance the creative capabilities of their subordinates. The findings highlight the importance of considering the interaction between leadership, environmental dynamics, and creativity in organizational settings (Hou et al., 2019).

Meanwhile, research Abbas & Ul Hassan (2017) suggests that the link between customer relationship management (CRM), innovation, and corporate performance is strengthened in the presence of market volatility. In a volatile market environment characterized by rapid changes, uncertainties, and shifting customer preferences, effective CRM practices can serve as a catalyst for innovation within organizations. By understanding and responding to customer needs and preferences, companies can generate innovative ideas, develop new products or services, and enhance their overall performance. The dynamic nature of the market creates opportunities for companies to leverage their CRM strategies to adapt to changing customer demands, identify emerging trends, and seize competitive advantages. Therefore, the research indicates that market volatility acts as a moderating factor that enhances the relationship between CRM, innovation, and corporate performance, emphasizing the importance of aligning CRM practices with market dynamics for sustained success (Abbas & Ul Hassan, 2017). Based on the results of earlier research, the following is the formulation of the study'ss hypothesis:

H_a: The dynamic environment serves as a critical factor that influences how intangible resources contribute to sustained competitive advantage.

Research Methods

Population and Sample

This type of research is explanatory, the population of this study is manufacturing companies located in South Sumatra that produce a variety of goods, including SIR 20, CPO, pulp, rubber, crumb rubber, food, and beverages (Ardanari & Aprilina, 2019). The research sample was selected using cluster random sampling, which is based on company size, namely large and medium-sized companies only, totalling 257 companies as the unit of analysis.

Data Collection Techniques

The research data collection method uses questionnaires, both offline and online, which are distributed to the selected companies. To ensure that the data obtained from the questionnaire is in accordance with the research objectives, the data needs to go through a transformation process known as the method of successive intervals (MSI). This transformation is necessary because the data is initially measured on an ordinal scale, and by applying the MSI method, the data can be converted into an interval scale. This conversion allows for more precise and meaningful statistical analyses of the data. In summary, the research focuses on manufacturing businesses in South Sumatra, specifically those producing various goods. The sample selection used cluster random sampling, and the collected data from the questionnaire will undergo the MSI method to transform it from an ordinal scale to an interval scale for further analysis.

Operational Definition of Variable

Regarding the definition of research variables as follows. The operational definitions of research variables are presented in the following table:

Table 1. Operational Definition of Variables

Variabels/sub variables	Operational variables	Indicators	Measurment scale
Intangible company Resources 1. Intellectual capital 2. Knowledge Management 3. Digital Transformation	Intellectual capital is an intangible corporate resource consisting of human capital, structural capital, and relational capital (Bontis et al., 2000; Youndt et al., 2004).	**Human capital**: 1. Experienced company director 2. Skilled employees 3. Coordination of work between employees **Structural capital**: 1. Management information system 2. Work procedures 3. Company reputation **Relational capital**: 1. Relationship with competitors 2. Relationship with customers 3. Relationship with suppliers	**Ordinal**
	Knowledge Management Knowledge management is the management of intellectual assets to improve company performance through knowledge sharing from individuals to companies or vice versa. The process of knowledge management, namely knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection (Gold et al., 2001).	**Knowledge acquisition**: 1. Knowledge of competitors 2. Knowledge from customers 3. Knowledge from suppliers **Knowledge conversion**: 1. Knowledge transfer 2. Knowledge distribution 3. Knowledge renewal **Knowledge application**: 1. Strategic knowledge 2. Knowledge to overcome competition 3. Product/service development knowledge **Knowledge protection:** Protection of knowledge from irresponsible parties	**Ordinal**
	Digital Transformation is the process of shifting the use of technology to support business activities through digital skills and digital platforms (Westerman et al., 2014).	**Digital Skills**: 1. Training in IT 2. Certification in IT 3. Internship in IT **Digital Platform**: 1. Company website 2. Modern IT equipment	**Ordinal**
Dynamic environment	Dynamic environment is the external environment that can affect the company (Hou et al., 2019; Schilke, 2014).	1. Changes in consumer preferences 2. Changes in information technology 3. Level of product innovation 4. Changes in consumer needs 5. Government regulations	**Ordinal**
Sustainable competitive advantage 1. Core competency 2. Distinctive competency	Sustainable competitive advantage is the advantage of a company that is not owned by its competitors, the source of excellence can come from the company's core competence dan distinctive competence (Prahalad, 1993; Snow & Hrebiniak, 1980).	**Core competencies:** 1. Access to raw materials 2. Efficient process and technology 3. Access to efficient product distribution and sales **Distinctive competency**: 1. Efficient company operations 2. Extensive business network 3. High profit rate	**Ordinal**

Research Model

The study incorporates several statistical tests, including the validity test, reliability test, normality test, moderation test, and hypothesis testing. The purpose of the validity test is to assess the extent to which the research instrument measures what it intends to measure. It examines whether the instrument accurately captures the intended constructs or variables of the study (Sekaran & Bougie, 2016). The validity test evaluates whether the research instrument effectively captures the concepts and variables it intends to measure. It ensures that the instrument provides valid and reliable data for analysis. The validity test examines different aspects of validity, such as content validity, construct validity, and criterion validity (Hair Jr. et al., 2019).

The reliability of the research instrument is indeed assessed using a reliability test. The reliability test is conducted to determine the consistency and stability of the research instrument's measurements over time and across different conditions (Sekaran & Bougie, 2016). The reliability thresholds range from 0.60 to 0.70. Only the residual value (disturbance term) is subject to the normality test; the independent variable is not (Hair Jr. et al., 2019). The independent variable is not eligible for the normality test; only the residual value (disturbance term) is (Field, 2017; Keller, 2018; Schmidt & Finan, 2018).

In statistical hypothesis testing, the p-value represents the probability of obtaining a test statistic as extreme as the one observed, assuming that the null hypothesis is true. It is used to assess the strength of evidence against the null hypothesis. Typically, a significance level (commonly set at 0.05) is chosen, and if the p-value is smaller than the significance level, the null hypothesis is rejected. When testing the moderating variable using interaction tests and the absolute difference value test, high multicollinearity between independent variables can indeed be a concern. Multicollinearity refers to the strong correlation or interdependency between independent variables in a regression model:

$$SCA = \alpha + \beta_1 IC + \beta_2 KM + \beta_3 DT + \beta_4 ICxDE + \beta_5 KMxDE + \beta_6 DTxDE \quad (1)$$

Note:
SCA : Sustainable competitive advantage
IC : Intellectual capital
KM : Knowledge Management
DT : Digital Transformation
DE : Dynamic Environment
a : constanta
$\beta_{1...}\beta_6$ *: coefficient*
e : Error term

Equation of moderating residual analysis I

$$DE = \alpha + \beta_1 IC + |\mathcal{E}1| \quad (2)$$

$$e\ abs1 = \alpha - \beta_1 SCA \quad (3)$$

Equation of moderating residual analysis II

$$DE = \alpha + \beta_2 KM + |\mathcal{E}2| \quad (4)$$

$$e\ abs2 = \alpha - \beta_2 SCA \quad (5)$$

Equation of moderating residual analysis III

$$DE = \alpha + \beta_3 DT + |\mathcal{E}3| \quad (6)$$

$$e\ abs3 = \alpha - \beta_3 SCA \quad (7)$$

Hayes Moderation Test

In addition to the residual approach, Hayes (2012) process analysis is utilized in this study to examine the moderating variable. This technique uses the p-value in the Int 1 column to determine whether a variable is considered a moderating variable. If the p-value is significant (0.05 or lower), then the variable is classified as a moderating variable (Hayes, 2012).

To determine the acceptance or rejection of the research hypothesis and alternative hypotheses, hypothesis testing is conducted. The computed t value and calculated F value are examined to make this determination. The following guidelines are used: (1) T-test results: If the t test results lead to the rejection of H0 and the acceptance of H1, it indicates that the factors IC, KM, and DT (intangible resources) have a significant impact on SCA; (2) P/Sig. threshold: If the p/Sig. value exceeds the threshold of 0.05, H0 is accepted, H1 is rejected, and it suggests that the IC, KM, and DT (intangible resources) factors have no significant impact on SCA; (3) F-test application: The p/Sig value is used to apply the F test. If the p/Sig value is higher than 0.05, H0 is rejected, H1 is accepted, and it suggests that the combined effects of the IC, KM, and DT (intangible resources) factors on SCA are significant.

Results and Discussion

Validity Test

Based on the results of the validity test, all indicators of the study variables are found to be valid. The detailed information regarding the validity test can be found in the accompanying table:

Table 2. Validity Test Results

Variabel	Indicator	Pearson Correlation	Sig. (1-tailed)
Intellectual capital	HCI	0.496**	0.000
	HC2	0.547**	0.000
	HC3	0.436**	0.000
	SC1	0.548**	0.000
	SC2	0.588**	0.000
	SC3	0.588**	0.000
	RC1	0.476**	0.000
	RC2	0.542**	0.000
	RC3	0.559**	0.000
Knowledge Management	KAC1	0.611**	0.000
	KAC2	0.640**	0.000
	KAC3	0.607**	0.000
	KC1	0.678**	0.000
	KC2	0.620**	0.000
	KC3	0.584**	0.000
	KAP1	0.512**	0.000
	KAP2	0.542**	0.000
	KAP3	0.615**	0.000
	KP	0.563**	0.000
Digital Transformation	DS1	0.838**	0.000
	DS2	0.798**	0.000
	DS3	0.483**	0.000
	DP1	0.689**	0.000
Dynamic Environment	DE1	0.806**	0.000
	DE2	0.837**	0.000
	DE3	0.770**	0.000
	DE4	0.439**	0.000
Sustainable competitive advantage	CC1	0.714**	0.000
	CC2	0.767**	0.000
	CC3	0.698**	0.000
	DC1	0.614**	0.000
	DC2	0.680**	0.000
	DC3	0.666**	0.000

** Correlation is significant at the 0.01level (1-tailed)
Source: Primary data processed (2023)

Reliability Test

Reliability tests are often measured using cronbach's alpha, which ideally ranges from 0.60 to 0.70 to ensure data dependability. after data processing, all variable indicators are declared reliable. the results of the reliability test are presented in the following table:

Table 3. Reliability test results

Variable	Reliability test value	Cut off value	Information
Intellectual Capital	0.682		Reliable
Knowledge Management	0.800		Reliable
Digital Transformation	0.687	0.60-0.70	Reliable
Dynamic Environment	0.735		Reliable
Sustainable competitive advantage	0.789		Reliable

Source: Primary data processed (2023)

Normality Test

The normality test is very important to ensure the quality of the data before proceeding to the next analysis step. Based on the results of data processing below table 4, the model is normally distributed.

Table 4. Normality Test Results

		Unstandardized Residual
N		248
Normal Parameters[a, b]	Mean	0.0006460
	Std. Deviation	0.95107844
Most extreme differences	Absolute	0.056
	Positive	0.056
	Negative	-0.046
Test statistic		0.56
Asymp. Sig. (2-tailed)		0.55[c]

a. Test distribution normal
b. Calculated from data
c. Lilliefors significance correction
Source: Primary data processed (2023)

Moderation Test (Residual Method and Hayes Method)

If the asymp value is true, it indicates that the data follows a normal distribution according to the normality test criteria. When the Sig or p-value is greater than 0.05, it can be concluded that the study data is normally distributed, allowing for further analysis. The moderation test, conducted using the residual technique and the Hayes (2012) method, aims to determine whether the dynamic environment variable acts as a moderating variable between intellectual capital and sustainable competitive advantage. Output on the table 5 presents the findings of the data analysis, specifically focusing on the testing of the dynamic environment variable as a theorized moderating variable that influences the relationship between intellectual capital factors and sustainable competitive advantage:

Table 5. The results of the DE, IC and SCA moderation test data using the residual method

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	0.0625	0.031		19.865	0.000
	Var_SCA	-0.040	0.033	-0.077	-1.219	0.224

a. Dependent Variable: ABS_Res1_IC
Source: Primary data processed (2023)

Based on the coefficients value of -0.40 and sig. value of 0.224 for the intellectual capital variable in the table above, it can be concluded that the dynamic environment (DE) does not moderate the

influence of this variable on the sustainable competitive advantage of the company. To further strengthen the findings, it is necessary to test the DE variable again using the Hayes (2012) method for each dimension of the intellectual capital variable. The test results are presented as follows:

Table 6. Results of the DE, IC and SCA moderation test data using the Hayes method

	Model					
	coeff	se	t	p	LLCI	ULCI
Constant	-0.0139	0.0679	-0.2044	0.8382	-0.1471	0.1198
Var_IC	-0.0179	0.0448	-0.4000	0.6895	-0.1063	0.0704
Var_DE	0.0975	0.0775	1.2579	0.2096	-0.0552	0.2501
Int_1	0.0139	0.0274	0.5078	0.6120	-0.0400	0.0678

Source: Primary data processed (2023)

The data processing findings in the table above indicate that the p-value in the Int 1 column is 0.6120, which is higher than the threshold of 0.05. Additionally, the coefficient value is 0.0139. These results suggest that the dynamic environment (DE) is not a moderating varia-ble and does not have a significant impact on the relationship between intellectual capital (IC) and sustainable competitive advantage (SCA). To gain a visual understanding of the impact of DE on the link between IC and SCA, please refer to the accompanying figure:

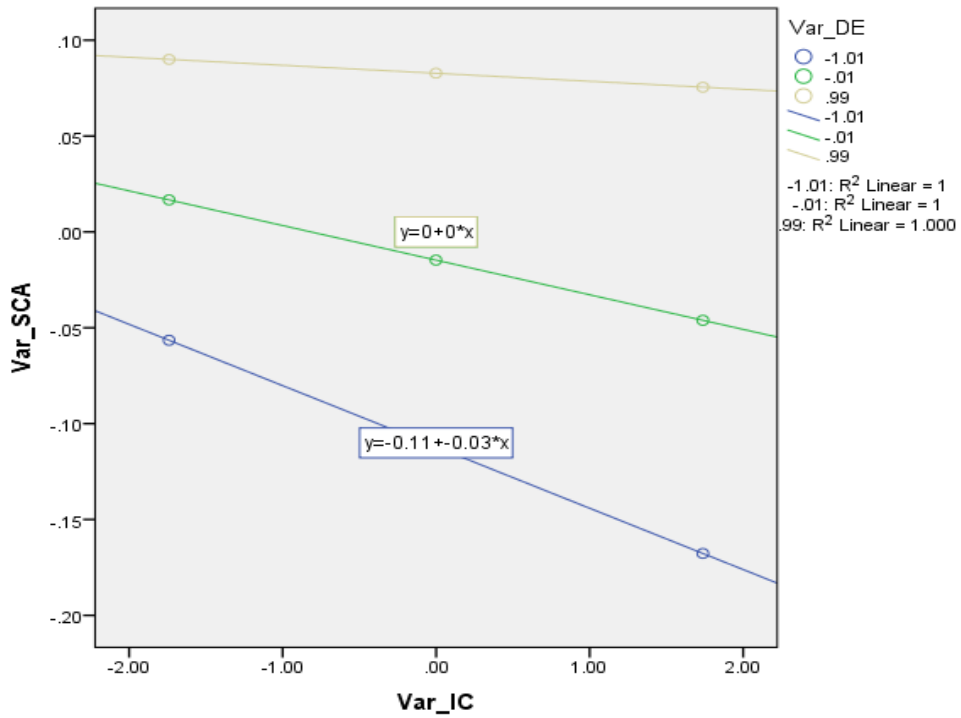

Figure 1. DE moderation graph between IC and SCA

After the moderation test of the influence of the dynamic environment between the IC and SCA relationships, we will then look at the effect of the dynamic environment on the relationship between KM and SCA, the test results are presented in the following table:

Table 7. The results of the DE, KM and SCA moderation test data using the residual method

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	0.783	0.039		19.950	0.000
	Var_SCA	-0.017	0.041	-0.027	-0.422	0.673

a. Dependent Variable: AB_Res2_KM

Source: Primary data processed (2023)

Based on the information provided in the table, the coefficient value for the dynamic environment (DE) variable is -0.017, and the sig. value is 0.673. These results indicate that DE is not a moderating variable for knowledge management factors that could potentially affect a company's sustainable competitive advantage (SCA). The coefficient value of -0.017 suggests that there is a weak negative relationship between DE and the impact of knowledge management on SCA. However, since the sig. value is higher than the significance level of 0.05, it is not statistically significant. Therefore, it can be concluded that DE does not have a significant moderating effect on the relationship between knowledge management factors and SCA. Additionally, the link between the knowledge management variable and the sustainable competitive advantage variable was re-examined using the Hayes (2012) approach to see whether the dynamic environment variable affected this relationship. The test outcomes are shown in table 8 below:

Table 8. The results of the DE, KM and SCA moderation test data using the Hayes method

	Model					
	coeff	se	t	p	LLCI	ULCI
Constant	0.0038	0.0621	0.0621	0.9505	-0.1174	0.1251
Var_KM	-0.0095	0.0356	-0.2665	0.7901	-0.0795	0.0606
Var_DE	0.0661	0.0625	1.0585	0.2909	-0.0569	0.1892
Int_1	0.0411	0.0346	1.1868	0.2365	-0.0271	0.1094

Source: Primary data processed (2023)

In the table above indicates that the dynamic environment (DE) is not a moderating variable and does not affect the relationship between knowledge management (KM) and sustainable competitive advantage (SCA), the interpretation is as follows. The p-value in the Int 1 column is 0.2365, which is higher than the threshold of 0.05. This indicates that DE is not a significant moderating variable. Additionally, the coefficient value of 0.0411 suggests a weak positive relationship between DE and the KM-SCA connection. As for the accompanying graphic that illustrates the impact of DE on the relationship between KM and SCA is bellow:

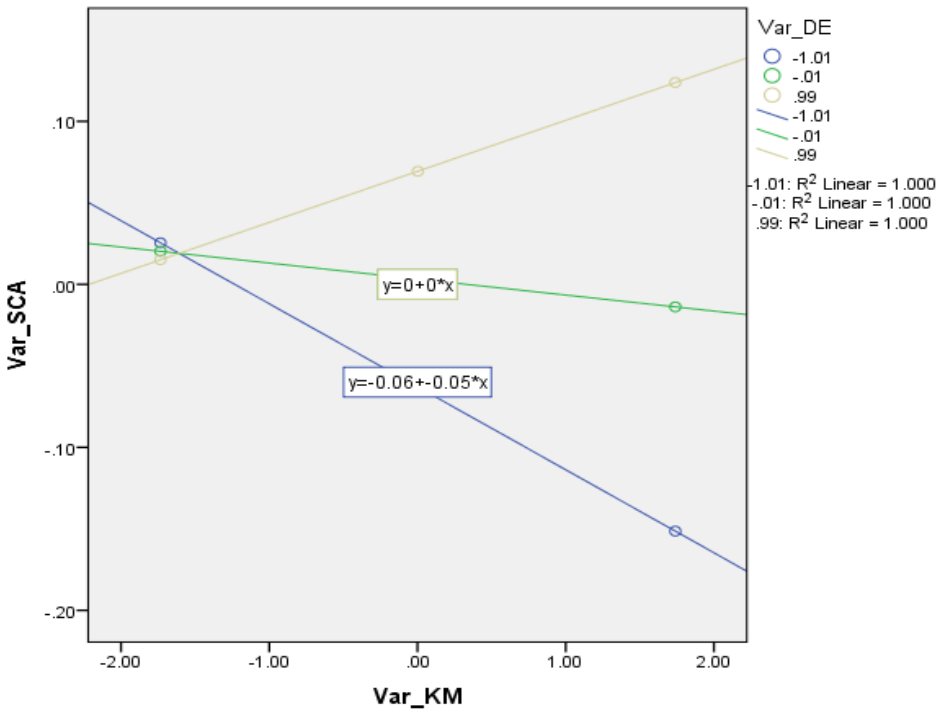

Figure 2. DE moderation graph between KM and SCA

In the last stage of testing, the moderating effect between DT and SCA relationship is presented in the following table:

Table 9. The results of the DE, DT and SCA moderation test data using the residual method

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (constant)	0.782	0.039		19.867	0.000
Var_SCA	-0.017	0.041	-0.027	-0.417	0.677

a. Dependent Variable: ABS_Res3_DT
Source: Primary data processed (2023)

The coefficient value and sig. value for the dynamic environment variable (DE) is -0.017 and the sig. value is 0.677, this indicates that DE is not a moderating variable between the relationship between digital transformation (DT) and sustainable competitive advantage (SCA) of the company. From these results will be tested again using the Hayes (2012) approach, the moderation test results are presented in the following table:

Table 10. Results of the DE, DT and SCA moderation test data using the Hayes method

	Model					
	coeff	se	t	p	LLCI	ULCI
Constant	0.0038	0.0615	0.0621	0.9506	-0.1174	0.1250
Var_DT	-0.0299	0.0435	-0.6860	0.4933	-0.1156	0.0559
Var_DE	0.0794	0.0617	1.2863	0.1996	-0.0422	0.2009
Int_1	0.0534	0.0469	1.1387	0.2559	-0.0390	0.1458

Source: Primary data processed (2023)

Based on the analysis of the data in the table above, the results indicate that the dynamic environment (DE) is not a moderating variable and has no significant impact on the relationship between digital transformation (DT) and sustainable competitive advantage (SCA). This conclusion is based on the following findings. The P-value in the Int 1 column is 0.2559, which is higher than the threshold of 0.05. This suggests that DE is not a statistically significant moderating variable for the DT-SCA relationship. The coefficient value of 0.0534 indicates a weak positive relationship between DE and the connection between DT and SCA. However, since it is not statistically significant, it does not support the presence of a significant moderating effect.

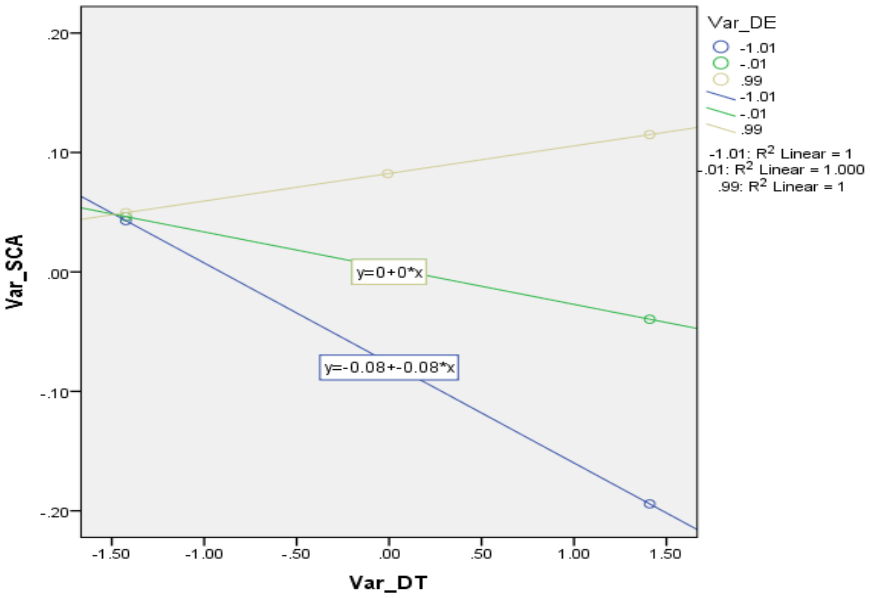

Figure 3. DE Moderation Graph between DT and SCA

All of the results that were displayed in the table above are summarized and represented in the following table 11, which is offered in connection with the analysis:

Table 11. Recapitulation of the moderation test using the residual and hayes method

Method		Sig	α	conclusion
Residual	DE,IC,SCA	0.224	0.05	Dynamic environtment is not a moderating variable
	DE,KM,SCA	0.673		
	DE,DT,SCA	0.677		
Hayes	DE,IC,SCA	0.6120		
	DE,KM,SCA	0.2365		
	DE,DT,SCA	0.2559		

Source: Primary data processed (2023)

Based on the recapitulation of the moderation test results using both the residual method and the hayes method, it is concluded that the dynamic environment cannot moderate the relationship between intangible resources and sustainable competitive advantage. based on these results, it can be used to answer the research hypothesis.

Hypothesis Test Result

Based on the recapitulation of the test results of the moderating variables presented in table 11 above, it can be decided that Ho is accepted and Ha is rejected. Ha Rejected is due to several factors such as the corporate environment that does not affect the relationship between intangible resources and sustainability competitive advantage, different industry characteristics and covid 19 effects.

Discussion

Based on the results of the moderation test using the residual method and the Hayes (2012) method presented in Table 10, the proposed hypothesis H1 stating that the dynamic environment moderates the relationship between intangible resources and sustainable competitive advantage (SCA) is rejected. The analysis indicates that the dynamic environment is not a moderating variable in this context. However, it is acknowledged that hypothesis H0, which suggests that the dynamic environment does not regulate the link between intangible resources and SCA, is supported by the findings. The rejection of the dynamic environment variable as a moderating factor implies that the company believes the dynamic environment does not significantly affect its ability to achieve sustainable competitive advantage.

This conclusion is supported by the average values (means) obtained from the respondents' answers on the dynamic environmental indicators. The low average value, specifically in relation to the question about changes in consumer preferences (DE1) with a value of 7.78, suggests that the respondents perceive the influence of the dynamic environment to be relatively minimal in this regard. It is interesting to note that in the context of manufacturing firms in South Sumatra, the items produced are diverse and diversified, which may contribute to the firm's sustained competitive edge. This suggests that any shifts in consumer tastes or changes in consumer preferences might not have a significant impact on the firm's sustainable competitive advantage (SCA). It is crucial to consider the specific characteristics and dynamics of the manufacturing industry in South Sumatra when interpreting these findings. These unique circumstances may contribute to the understanding of how factors such as consumer preferences interact with SCA in this specific region (Forrest & Tallapally, 2018).

The findings of the study suggest that manufacturing companies studied in South Sumatra may not fully leverage technology due to limited capital for technology development, particularly in medium-sized industries. As a result, technological development (DE2) with an average score of 5.21 does not significantly affect sustainable competitive advantage (SCA) in these companies. This finding aligns with prior research that has also indicated a limited influence of technological development on SCA. It suggests that the constraints faced by the manufacturing firms, such as limited capital for technology investments, hinder the potential benefits that could be derived from technological advancements (Tilabi et al., 2019).

It is important to recognize that the specific circumstances and characteristics of the manufacturing companies in South Sumatra contribute to this observation. The findings highlight the need for further attention and support in enhancing technology utilization and development in these companies, especially in medium-sized industries. The findings of the research indicate that the innovation factor (DE3) with an average score of 5.24 does not have a significant impact on sustainable competitive advantage (SCA) in the studied manufacturing companies. This is likely because the diverse items created by these companies are already aligned with the requirements of customer needs (AL-Mubaraki & Busler, 2017). It is notable that the majority of industrial firms recognize the value of innovation. However, in the specific context of the studied manufacturing companies in South Sumatra, where items are already meeting customer needs, the impact of innovation on SCA may be limited. These findings highlight that while innovation is generally acknowledged as valuable in the industrial sector, its direct impact on SCA may vary depending on the specific circumstances and dynamics of each company or industry.

In this particular context, where customer needs are already being met, the study suggests that innovation alone may not significantly contribute to enhancing SCA. According to the investigations conducted, the average score of customer needs (DE4) is 6.0 in the case of manufacturing businesses. The findings suggest that consumer needs do not entirely influence sustainable competitive advantage (SCA) in these manufacturing firms (Jiang et al., 2016). This observation can be attributed to the relative demands of consumers, which often vary and often shift towards new items or products offered at lower costs. These changing consumer preferences make it challenging for manufacturing businesses to solely rely on meeting customer needs as a source of sustainable competitive advantage.

The findings of this study align with earlier research that also indicates the limited impact of customer needs on SCA. This further supports the notion that satisfying customer needs alone may not be sufficient to achieve a sustainable competitive advantage in the manufacturing industry. The regulation factor (DE5) with an average score of 7.11, which is influenced by the government, is an important aspect to consider. It is worth noting that in some cases, governmental laws and regulations may be less stringent than usual, providing an opportunity for compromise that is advantageous to both businesses and the government (Zhao & Sun, 2016). This finding is consistent with research conducted in other countries, which suggests that the level of government regulation can vary and may affect sustainable competitive advantage (SCA). When regulations are less stringent, it can create an environment where businesses have more flexibility and opportunities for growth. However, it is important to recognize that the specific context and dynamics of governmental regulations can vary between different countries and regions. Therefore, it is crucial to consider the local conditions and regulations that are applicable to the manufacturing firms under study. The findings of Ndegwa et al. (2019) research, which support this research, suggest that the relationship between resource isolating mechanisms and sustainable competitive advantage (SCA) is not moderated by the dynamic environment. Instead, the external environment, including technological factors and government regulations, may act as predictor variables influencing SCA.

Theoritical Implication and Managerial Implication

The results of this study were astonishingly surprising, and it is almost inconceivable to imagine that a dynamic environment could not affect the relationship between intangible resources and sustained competitiveness. All scholars unanimously agree that the firm is influenced by the dynamic environment. In order to ensure that the environment does not impact the connection between variables, it is crucial to meticulously assess and reconsider these findings in different contexts. Additionally, these outcomes can serve as a basis for leaders to exercise constant caution when making judgments, given the highly volatile nature of the environment due to its dynamic character.

Conclusion and Future Direction

The findings indicate that the dynamic environment does not moderate the relationship between intangible assets and long-term competitive advantage. This is to ensure that they do not significantly affect the firm's operations. Large and medium-sized industrial enterprises in South Sumatra hold the belief that local environmental variables are highly favorable. It cannot be concluded that customer preferences, technological advancements, innovation factors, consumer requirements, and governmental restrictions have any discernible influence, as all indicators of the dynamic environment fail to generate a reaction that can strengthen or weaken the relationship. This research was conducted during the COVID period, with remote work patterns and a distinct area compared to other regions. Hence, it is natural that environmental factors do not serve as a moderating variable. However, if the research were to be conducted after COVID, by revising the indicators for environmental variables, the results would likely differ.

Acknowledgment

The author would like to extend heartfelt appreciation to all the reviewers who have provided valuable feedback and made corrections to this paper. The author is also grateful to the management of the company for their cooperation and willingness to complete the study questionnaire.

References

Abbas, M. W., & Ul Hassan, M. (2017). Moderating Impact of Environmental Turbulence on Relationship between Business Innovation and Business Performance. *Pakistan Journal of Commerce and Social Sciences*, *11*(2), 576–596. https://www.econstor.eu/handle/10419/188306

AL-Mubaraki, H. M., & Busler, M. (2017). The Impact of Innovation Best Practices in Economic Development. *International Journal of Economics and Management Engineering*, *11*(4), 993–999. https://doi.org/10.5281/zenodo.1130601

Ardanari, S. D., & Aprilina, T. (2019). *Kumpulan Berita Resmi Statistik Provinsi Sumatera Selatan 2019* (T. W. Dharma (ed.)). CV.ALDEA. https://sumsel.bps.go.id/publication/2019/12/13/9aa738442d0470dbbbe986ed/kumpulan-berita-resmi-statistik-provinsi-sumatera-selatan-2019.html

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Behram, N. K., & Özdemirci, A. (2014). The Empirical Link between Environmental Conditions, Organizational Culture, Corporate Entrepreneurship and Performance: The Mediating Role of Corporate Entrepreneurship. *International Journal of Business and Social Science*, *5*(2), 264–276. https://ijbssnet.com/journals/Vol_5_No_2_February_2014/30.pdf

Bontis, N., Keow, W. C. C., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*, *1*(1), 85–100. https://doi.org/10.1108/14691930010324188

Cheng, C. C. J., & Shiu, E. C. (2015). The inconvenient truth of the relationship between open innovation activities and innovation performance. *Management Decision*, *53*(3), 625–647. https://doi.org/10.1108/MD-03-2014-0163

Field, A. (2017). *Discovering Statistics Using SPSS* (5th ed.). Sage Publications.

Forrest, J. Y.-L., & Tallapally, P. (2018). Customers Are Less Patient: Sustainable Advantage Becomes Transient and The Key for Firms to Succeed in Fast Changing Markets. *Journal of Business, Economics and Technology*, *21*(1), 1–14. https://www.nabet.us/j_archives/JBET18sp.pdf#page=5

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge Management: An Organizational Capabilities Perspective. *Journal of Management Information Systems*, *18*(1), 185–214.

https://doi.org/10.1080/07421222.2001.11045669

Hair Jr., J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.

Hayes, A. F. (2012). *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling*. https://is.muni.cz/el/1423/podzim2014/PSY704/50497615/hayes_2012_navod_process.pdf

Hosseini, A. S., Soltani, S., & Mehdizadeh, M. (2018). Competitive Advantage and Its Impact on New Product Development Strategy (Case Study: Toos Nirro Technical Firm). *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(2), 17. https://doi.org/10.3390/joitmc4020017

Hou, B., Hong, J., Zhu, K., & Zhou, Y. (2019). Paternalistic leadership and innovation: the moderating effect of environmental dynamism. *European Journal of Innovation Management*, *22*(3), 562–582. https://doi.org/10.1108/EJIM-07-2018-0141

Ilinova, A., Dmitrieva, D., & Kraslawski, A. (2021). Influence of COVID-19 pandemic on fertilizer companies: The role of competitive advantages. *Resources Policy*, *71*, 102019. https://doi.org/10.1016/j.resourpol.2021.102019

Jawed, I., & Siddiqui, D. A. (2020). What Matters for Firms' Performance: Capabilities, Tangible or Intangible Resources? Evidence From Corporate Sectors on Pakistan. In *SSRN Paper* (SSRN Paper). https://doi.org/10.2139/ssrn.3510562

Jiang, X., Yang, Y., Pei, Y.-L., & Wang, G. (2016). Entrepreneurial Orientation, Strategic Alliances, and Firm Performance: Inside the Black Box. *Long Range Planning*, *49*(1), 103–116. https://doi.org/10.1016/j.lrp.2014.09.003

Keller, G. (2018). *Statistics for Management and Economics* (11th ed.). Cengage Learning.

Kimani, G. K., & Ogutu, M. (2017). The Effect of External Environment and Firm Size on The Relationship Between Knowledge Management and Competitive Advantage. *European Journal of Business and Strategic Management*, *2*(9), 71–84. https://iprjb.org/journals/index.php/EJBSM/article/view/569

Kirca, A. H., Jayachandran, S., & Bearden, W. O. (2005). Market Orientation: A Meta-Analytic Review and Assessment of its Antecedents and Impact on Performance. *Journal of Marketing*, *69*(2), 24–41. https://doi.org/10.1509/jmkg.69.2.24.60761

Kumar, V., Jones, E., Venkatesan, R., & Leone, R. P. (2011). Is Market Orientation a Source of Sustainable Competitive Advantage or Simply the Cost of Competing? *Journal of Marketing*, *75*(1), 16–30. https://doi.org/10.1509/jm.75.1.16

Lichtenthaler, U. (2017). Absorptive Capacity, Environmental Turbulence, and the Complementarity of Organizational Learning Processes. *Academy of Management Journal*, *56*(6), 1830. https://doi.org/10.5465/amj.2013.3001

Ma, H., Sun, Q., Gao, Y., & Gao, Y. (2019). Resource Integration, Reconfiguration, and Sustainable Competitive Advantages: The Differences between Traditional and Emerging Industries. *Sustainability*, *11*(2), 551. https://doi.org/10.3390/su11020551

Martinez-Conesa, I., Soto-Acosta, P., & Carayannis, E. G. (2017). On the path towards open innovation: assessing the role of knowledge management capability and environmental dynamism in SMEs. *Journal of Knowledge Management*, *21*(3), 553–570. https://doi.org/10.1108/JKM-09-2016-0403

McArthur, A. W., & Nystrom, P. C. (1991). Environmental dynamism, complexity, and munificence as moderators of strategy-performance relationships. *Journal of Business Research*, *23*(4), 349–361. https://doi.org/10.1016/0148-2963(91)90020-X

Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. *Information and Management*, *58*(3), 103434. https://doi.org/10.1016/j.im.2021.103434

Ndegwa, P. W., Kilika, J. M., & Muathe, S. M. A. (2019). The Moderating Role of External Environment on The Relationship Between Resource Isolating Mechanism and Sustainable Competitive Advantage. *International Journal of Management*, *10*(3), 50–59. https://doi.org/10.34218/IJM.10.3.2019.006

Porter, M. E. (1980). *Extracts from Competitive Strategy: techniques for analyzing industries and competitors: with a new introduction*. The Free Press USA.

Prahalad, C. K. (1993). The Role of Core Competencies in the Corporation. *Research-Technology Management*, *36*(6), 40–47. https://doi.org/10.1080/08956308.1993.11670940

Pulka, B. M., Ramli, A., & Mohamad, A. (2019). The Moderating Effect of External Environmental Characteristics on the Relationship between Entrepreneurial Orientation and SMEs Performance. *International Journal of Business and Technopreneurship*, *9*(2), 165–184.

Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, *35*(2), 179–203. https://doi.org/10.1002/smj.2099

Schmidt, A. F., & Finan, C. (2018). Linear regression and the normality assumption. *Journal of Clinical Epidemiology*, *98*, 146–151. https://doi.org/10.1016/j.jclinepi.2017.12.006

Sekaran, U., & Bougie, R. (2016). *Research Methods For Business: A Skill Building Approach* (7th ed.). John Wiley and Sons, Inc.

Snow, C. C., & Hrebiniak, L. G. (1980). Strategy, Distinctive Competence, and Organizational Performance. *Administrative Science Quarterly*, *25*(2), 317–336. https://doi.org/10.2307/2392457

Stacey, R., & Mowles, C. (2016). *Strategic Management and Organisational Dynamics : The challenge of complexity to ways of thinking about organisations* (7th ed.). Pearson Education Limited.

Tajeddini, K., Martin, E., & Ali, A. (2020). Enhancing hospitality business performance: The role of entrepreneurial orientation and networking ties in a dynamic environment. *International Journal of Hospitality Management*, *90*, 102605. https://doi.org/10.1016/j.ijhm.2020.102605

Teece, D. J. (2019). A capability theory of the firm: an economics and (Strategic) management perspective. *New Zealand Economic Papers*, *53*(1), 1–43. https://doi.org/10.1080/00779954.2017.1371208

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, *18*(7), 509–533. https://www.jstor.org/stable/3088148

Tilabi, S., Tasmin, R., Takala, J., Palaniappan, R., Hamid, N. A. A., & Ngadiman, Y. (2019). Technology Development Process and Managing Uncertainties with Sustainable Competitive Advantage Approach. *Acta Logistica*, *6*(4), 131–140. https://doi.org/10.22306/al.v6i4.140

Veselinova, E., Miceski, T., & Samonikov, M. G. (2016). The Corporate Brand: An Intangible Resource as a Basis for Sustainable Competitive Advantage. *Journal of Economics*, *1*(1). https://js.ugd.edu.mk/index.php/JE/article/view/1384

Wadud, M. (2021). *Sumber Daya Perusahaan Tidak Berwujud dan Keunggulan Kompetitif Berkelanjutan dalam Lingkungan Dinamis pada Perusahaan Manufaktur di Sumatera Selatan* [Universitas Sriwijaya]. https://repository.unsri.ac.id/57793/55/RAMA_61001_01023621722006.pdf

Wales, W., Gupta, V. K., Marino, L., & Shirokova, G. (2019). Entrepreneurial orientation:

International, global and cross-cultural research. *International Small Business Journal: Researching Entrepreneurship*, *37*(2), 95–104. https://doi.org/10.1177/0266242618813423

Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading Digital: Turning Technology into Business Transformation*. Harvard Business Review Press.

Worthington, I., Britton, C., & Thompson, E. (2018). *The Business Environment* (8th ed.). Pearson.

Youndt, M. A., Subramaniam, M., & Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns. *Journal of Management Studies*, *41*(2), 335–361. https://doi.org/10.1111/j.1467-6486.2004.00435.x

Zhao, X., & Sun, B. (2016). The influence of Chinese environmental regulation on corporation innovation and competitiveness. *Journal of Cleaner Production*, *112*, 1528–1536. https://doi.org/10.1016/j.jclepro.2015.05.029