

Journal of Energy & Environmental Policy Options



Green Competitive Advantage in Indonesia's Chemical Manufacturing

Badawi Saluy^a
Wildan Nuryanto^b

Abstract

This study seeks to investigate the impact of integrating green competitive advantage as a mediating factor between core competencies and organizational performance, focusing on the chemical manufacturing sector in Indonesia. The sector has experienced a notable decline in productivity over the past five years, attributed to various factors including diminished competitive advantage, environmental concerns, social issues, and challenges related to human capital development due to skills gaps. Employing a structural equation model framework, this research examines the relationship between core competencies, measured through a comprehensive set of 24 indicators, and organizational performance, assessed by six key performance indicators. Additionally, the study evaluates the role of green competitive advantage, represented by four distinct indicators, as an intermediary mechanism influencing the association between core competencies and organizational performance. The findings of this investigation demonstrate a favorable model fit, indicating the suitability of the structural equation model for analyzing the relationships under consideration. Importantly, the results highlight the significant contribution of green competitive advantage as an intervening variable, enhancing the linkage between core competencies and organizational performance within the context of the chemical manufacturing sector in Indonesia.

Keywords: Green Competitive Advantage, Core Competencies, Chemical Manufacturing Sector

JEL Codes: L25, Q56, M11, O13

1. INTRODUCTION

Indonesia's chemical manufacturing industry holds significant importance, standing as the second largest contributor to the national GDP within the manufacturing sector and employing over 280,000 individuals (Kusumayuda, 2021; Valenci, 2013; ESCAP, 2014; Ben-Iwo et al., 2016; Del Rio et al., 2022; Nungula et al., 2023; Audi and Ali, 2023; Frederick and Worden, 1993). However, over the past five years, the landscape has shifted with the advent of free trade in Asia, resulting in an influx of imported chemical products saturating the domestic market. This surge has intensified competition within the chemical manufacturing sector for market share. This trend aligns with findings from Rybakovas (2015), indicating that the manufacturing sector is particularly active and competitive in international realms. Moreover, this surge in industrial activity has brought to the fore environmental and social concerns. The country's substantial population and rapid growth rate serve as pivotal factors driving these issues. Efforts to address challenges stemming from both population density and growth have been made through developmental and industrial initiatives (UNEP, 2011; Lafferty and Meadowcroft, 2000; Teketay, 2001; Güneralp et al., 2017; Cobbinah and Amoaki, 2012; Ho and Ran, 2016; Ahmad, 2016). The primary objective of industrialization is to expedite the fulfillment of human needs, yet it comes with negative repercussions, chiefly environmental degradation that jeopardizes human well-being. Development and environmental concerns are inseparable, akin to two sides of a coin, as highlighted by BPS Statistics Indonesia (2016). Environmental and social challenges are not solely the government's responsibility but also incumbent upon every entity, including the manufacturing sector. In the Indonesian business landscape, large enterprises are mandated to regulate and mitigate the environmental footprint resulting from their operations, as noted by Yanto et al., (2019). The Government of Indonesia, through the Ministry of Environment and Forestry, has established commendable practices such as PROPER to enforce environmental controls on companies' operations (Kemenlhk, 2015; Sumaira, 2018).

Nevertheless, the implementation of the program encounters numerous obstacles, including challenges related to awareness and competence regarding environmental sustainability, internal management deficiencies, and constraints in accessing environmentally friendly financing (Caiado et al., 2018; Leonidou et al., 2017; Sajjad et al., 2015; Steinemann, 2003; Seidel et al., 2009; Baki, 2018; Aragón-Correa, and Rabio-Lopes, 2007; Gorus and Groeneveld, 2017; Audi et al., 2020). In recent times, there has been a notable surge in firms prioritizing environmental protection, with an increasing number opting to label their products or services as environmentally friendly, as highlighted by Chen et al., (2009). The significance of socially responsible or "green" goods and services is on the rise, with their prevalence experiencing a dramatic uptick, according to Tully and Winer (2014). Backed by appropriate regulations, trade can facilitate the shift towards a green economy by promoting the exchange of environmentally friendly goods and services. Moreover, Tully and Winer (2014) found that over 60.1% of participants are willing to pay a premium for such products. The production

^a Faculty of Economics and Business University Mercu Buana Jakarta, Indonesia

^b Faculty of Economics and Business University Mercu Buana Jakarta, Indonesia

process entails the conversion of various inputs into market-demanded outputs. Environmental ethics encompasses human ethical considerations and encompasses the values associated with products and services. The process of adding value entails enhancing a product's appeal to customers, encouraging them to pay a premium for it, as outlined by Lin and Chen (2017). Elevating an organization's performance goes beyond mere manufacturing; it also involves leveraging human resources such as core competencies and green competitive advantages. Firms recognize that associating a product or service with environmental benefits heightens its appeal. Pujari et al., (2003) emphasize that achieving higher environmental benchmarks enhances organizational performance.

In today's competitive landscape, firms are in a constant pursuit of achieving a sustainable competitive advantage, relying increasingly on their internal strengths to deliver added customer value, robust differentiation, and scalability. This reliance on internal strengths often revolves around their "core competence," as emphasized by Hamel and Prahalad (1994). Core competence must be a central consideration in strategy formulation, given its significance as a key driver of profitability. Scholars have underscored the importance of core competence concepts, proposing various models aimed at sustaining competitive advantage, as highlighted by Hafeez and Essmail (2007).

Core competency entails understanding the successes and failures associated with leveraging knowledge resources, as articulated by Banerjee (2003). Some researchers define core competence succinctly as "the ability to operate efficiently within the business environment and to respond to challenges," directly tying its definition to performance, as noted by Y. F. Chen and Wu (2007). Core competencies are valuable capabilities that are both collective and unique in their nature, strategically flexible, and contribute significantly to the potential success of a business, as highlighted by Hafeez and Essmail (2007). Additionally, Chen and Wu (2007) underscore that the significance of core competence is greater in the traditional manufacturing (T-M) sector compared to the high-tech sector, as noted by Agha, et al., (2011). Hence, this research holds significant importance for the chemical manufacturing sector, particularly considering its classification as a high-tech industry. Given that core competencies are pivotal determinants of organizational success, the principal aim of this study is to explore the relationship between core competence, green competitive advantage, and organizational performance within the chemical manufacturing sector. The study was conducted in the chemical manufacturing sector in Banten Province, Indonesia, which encompasses four districts serving as industrial hubs with chemical plants (Lestari et al., 2009; Rothenberg et al., 2017; Sjöberg and Sjöholm, 2004; Hariyanti and Utha, 2016; Kumar, 2016; Widodo et al., 2014; Ilhami and Holifah, 2022; Farradia et al., 2019). Serang District, Tangerang District, Cilegon, and Tangerang City. Banten Province boasts 291 chemical plants, employing up to 54,000 workers, positioning it as the third-largest province in the chemical industry after East and West Java.

The study is focused on delineating specific core competencies, which encompass shared vision, cooperation, and empowerment, in conjunction with four essential dimensions of green competitive advantage: value, rarity, inimitability, and non-substitutability (Tahat, 2020; Nayak et al., 2022; Parveen and Sarikwal, 2014; Okurut and Mbulawa, 2015; Kitrangsikul, 2017; Vinayan, 2012; Tian et al., 2023). Furthermore, it examines two critical aspects of organizational performance: growth and profitability. In light of the prevailing challenges discussed earlier, the study aims to achieve several distinct objectives. Firstly, it seeks to scrutinize the impact of core competence on the green competitive advantage variable within the chemical manufacturing sector situated in Banten Province, Indonesia (Ramli et al., 2023; ROHAINI et al., 2020; Tan et al., 2015). By dissecting the relationship between core competencies and green competitive advantage, the study endeavors to shed light on how the strategic strengths inherent within organizations contribute to their ability to attain a competitive edge in environmentally conscious markets. Additionally, the research aims to assess the influence of green competitive advantage on the organizational performance of the chemical manufacturing sector in Banten Province, Indonesia (Nuryanto et al., 2020; Yuany, 2020; Farradia et al., 2019; Lestari et al., 2009; Pradana and Safitri, 2022). This involves understanding how the possession of a strong green competitive advantage translates into tangible organizational outcomes such as growth and profitability, amidst the complexities of the competitive landscape and environmental considerations. Furthermore, the study delves into investigating the effect of core competence on the organizational performance of the chemical manufacturing sector in Banten Province, Indonesia (Purwaningrum, 2014; Hafman, 2023). By analyzing the nexus between core competencies and organizational performance, it endeavors to uncover the extent to which the internal capabilities and strategic strengths of firms impact their overall performance in terms of growth and profitability within the specific context of the chemical manufacturing industry in the region (Salim et al., 2019; Menguc and Ozanne 2005; Yeung et al., 2007; Vanhaverbeke and Peeters, 2005; Freixanet and Rialp, 2022; Jayaram et al., 2014).

2. LITERATURE REVIEW

Amidst the era of free markets and globalization, enhancing competitiveness stands as a paramount agenda for bolstering economic growth. A crucial component in this endeavor is the effective management of human capital, aimed at nurturing and augmenting human resource competencies, as underscored by (Ismail et al., 2014). Competence plays a pivotal role in driving improvements in quality and excellence within organizations, exerting a significant influence on their ability to remain competitive in the market landscape. When competencies are managed adeptly, they can yield a positive and substantial impact on competitive advantage, consequently enhancing overall company performance, as emphasized by Putu et al., (2017).

In the industry, core competence is epitomized by the ability to continuously enhance and sustain a competitive advantage, serving as the linchpin amidst the fiercely competitive market landscape, as highlighted by Hastjarjo et al. (2016). The essence of core competence lies in its elusive nature, rendering it challenging for competitors to replicate, thereby fortifying sustainable competitive advantage. It follows that core competence embodies a reservoir of knowledge that sets

a company apart and furnishes it with a competitive edge (Hastjarjo et al., 2016). This concept of core competence resonates with the foundational tenets of the Resource-Based View (RBV) theory, positing that competitive advantage stems from a conglomerate of resources inherent within internal organizational structures.

Core competencies wield a significant influence on organizational competitive advantage, fostering a heightened sense of dynamism among employees and teams as they collaborate towards achieving the organization's vision, as noted by Agha et al. (2011). This insight serves as a valuable reference point for managers aiming to bolster competence within their organizations, thereby sustaining and enhancing competitive advantage while improving overall organizational performance (Agha et al., 2011). In addition to core competencies, there exist special or distinguishing competencies, first conceptualized by Selzink (1957), as mentioned in Mooney (2007). These competencies denote unique attributes of companies that engender distinct perspectives, diverging from merely aligning with the initial vision goals. In essence, these specialized abilities enable companies to differentiate themselves in their respective markets, thus augmenting their competitive advantage.

Ko (2015) delves deeper into the examination of competence by elucidating professional competencies, which encompass a spectrum of knowledge, skills, standards, capabilities, and the acumen to discern beneficial factors conducive to enhancing competitive advantage. This comprehensive understanding underscores the multifaceted nature of competence and its pivotal role in fortifying organizational competitiveness. The findings from research conducted by Cantele & Zardini (2018) on 348 manufacturing companies in Italy, predominantly small and medium-sized enterprises, underscore the pivotal role of competitive advantage as a supporting variable in company performance, particularly evident in financial performance metrics. Moreover, the study highlights that competitive advantage is influenced by four dimensions crucial for the company's long-term sustainability: social, political, economic, and environmental factors. This research significantly contributes to advancing the understanding of the long-term sustainability model for companies operating within the small and medium business sectors, particularly in elucidating the intricate interplay between competitive advantage and financial performance amidst the multifaceted landscape of contemporary business environments.

The beverage industry sector in Spain predominantly comprises small and medium-sized enterprises. Research involving 339 beverage companies in Spain, conducted by Lorenzo et al., (2018), revealed significant correlations between competitive advantage and company performance. Competitive advantage was found to be strongly influenced by a company's capabilities and other internal resources, as well as external organizational factors. This underscores the critical role of internal and external factors in shaping competitive advantage within the beverage industry sector in Spain. Similarly, research focusing on 39 cooperatives in Malaysia, as documented in the annual report and discussed by Othman et al. (2015), aligns with the Resource-Based View (RBV) theory. The findings indicate that competitive advantage derived from both tangible and intangible assets, financial conditions, and total assets owned significantly impact the overall performance of cooperatives. This underscores the importance of various organizational resources and capabilities in driving competitive advantage and subsequent performance outcomes within the cooperative sector in Malaysia.

The findings of research conducted by Kusuma & Devie (2013) shed light on the pivotal role of knowledge management in shaping competitive advantage. Their study, which involved 100 company managers located in Surabaya, Indonesia, revealed a strong influence of knowledge management on competitive advantage. Moreover, the research elucidated that competitive advantage exerts a positive and significant impact on company performance across two dimensions: operational and financial performance. Utilizing the Structural Equation Modeling (SEM) Partial Least Squares (PLS) analysis method, the study provides valuable insights into the intricate interplay between knowledge management, competitive advantage, and company performance. By highlighting the importance of effectively managing knowledge resources to gain a competitive edge and subsequently enhance organizational performance, this research contributes to advancing our understanding of the dynamics within contemporary business environments.

The research conducted by Amoako-Gyampah & Acquah (2008) sheds light on the multifaceted nature of competitive advantage, which encompasses four dimensions: quality, cost, flexibility, and delivery. Their study, focused on manufacturing companies in Ghana, reveals that competitive advantage across these dimensions exerts a positive and significant impact on company performance, as measured by two key indicators: sales growth and stock prices. The findings underscore the critical importance of each dimension of competitive advantage in driving organizational success. Quality, cost, flexibility, and delivery all play integral roles in shaping company performance, highlighting the complex interplay between different facets of competitive advantage and organizational outcomes.

Moreover, the results of the study lend support to Porter's (1985) propositions regarding cost leadership and differentiation. They affirm that strategies aimed at achieving cost leadership or differentiation can indeed have a tangible and positive influence on a company's sustainability, further emphasizing the strategic significance of competitive advantage in the contemporary business landscape. The findings from Otoo & Mishra's (2018) analysis, which involved 700 hotel employees and employed the Structural Equation Modeling (SEM) analysis method, illuminate the significant impact of human resource management practices on organizational performance via employee competence. Conducted within the hospitality industry, this research underscores the crucial link between human resource practices and organizational outcomes. It's important to note that this study utilized a cross-sectional analysis, which may limit the generalizability of the findings across different sectors and international contexts. However, within the specific context of the hospitality industry, these findings hold valuable insights for stakeholders and hotel management. By recognizing the pivotal role of effective human resource practices in nurturing employee competencies and, consequently, enhancing organizational performance, stakeholders and management can make informed decisions to optimize their human capital strategies. The research conducted by Hastjarjo et al. (2016) delves into the imperative for companies to not only adapt

to existing environmental risks but also enhance their competitive advantage and organizational performance through the cultivation of dynamic capabilities and the augmentation of core competencies. This study has yielded a comprehensive array of phenomena, research problems, theoretical foundations, literature maps, models, and hypotheses aimed at elucidating the process of building core competencies within the real estate sector.

By uncovering insights and offering theoretical frameworks, this research provides invaluable guidance for companies seeking to develop strategic and highly competitive processes for the development of the real estate industry. Through a deeper understanding of the dynamics at play, organizations can leverage their core competencies to navigate environmental risks, foster innovation, and ultimately enhance their competitive positioning and performance within the real estate sector. The essence of core competence lies in the fusion of accumulated knowledge and technical capabilities, empowering businesses to effectively compete in their respective markets. The research conducted by Nimsith et al. (2016) underscores the profound impact of core competencies on both competitive advantage and organizational performance. Focused within the banking industry in Sri Lanka, this study unveils significant correlations between core competencies, competitive advantage, and enhancements in organizational performance.

The results of additional studies conducted in the UAE, focusing on 77 paint company managers through electronic questionnaires, underscore the substantial impact of core competencies on both company competitive advantage and organizational performance. A noteworthy finding from these studies is the heightened significance of flexibility in enabling companies to effectively respond to dynamic changes in their environment. In light of these findings, Agha et al. (2011) advocate for an increased emphasis on enhancing core competencies, highlighting the imperative for companies to manage them effectively. This research offers valuable insights that can serve as a guiding reference for managers within the painting industry. By leveraging these findings, managers can prioritize efforts to enhance their company's core competencies. This strategic focus not only fosters competitive advantage but also enhances organizational performance, positioning painting companies for success in the dynamic and competitive business landscape of the UAE. Aligned with the findings of the preceding research, Jamhour (2010) corroborated the significant impact of core competencies on organizational performance, accentuating the amplifying effect achieved through the utilization of competitive advantage variables. In Jamhour (2010), core competencies were categorized into three dimensions: shared vision, collaboration, and involvement. Among these dimensions, shared vision emerged as the most influential factor driving organizational performance. The assessment of organizational performance was predominantly based on financial metrics.

Managers operating within a paint factory setting can draw upon these insights to formulate strategic initiatives aimed at fortifying competitive advantage and enhancing organizational performance. By focusing on cultivating shared vision, fostering collaboration, and encouraging employee involvement, managers can effectively leverage core competencies to propel their organization towards sustained success. Additionally, aligning these efforts with the pursuit of competitive advantage can yield even more pronounced improvements in organizational performance, thereby positioning the paint factory for heightened competitiveness and prosperity.

3. METHODOLOGY RESEARCH

The research design employed in this study, as outlined by Kerlinger (2000), is structured to address the formulated problems through hypothesis testing. Drawing upon an inquiry structure, this design facilitates the attainment of definitive answers to research questions. It adopts a deductive approach, characterized by both exploratory and explanatory research phases. Exploratory research endeavors to uncover new relationships, while explanatory research delves into elucidating the implications arising from the research object. Through this deductive approach, the researcher systematically examines empirical data and compares it with existing theories. Aligned with the objectives, the study employs a causal research approach, aimed at elucidating causal relationships. Specifically, it seeks to explore the influence of core competence and green competitive advantage on organizational performance within the chemical manufacturing sector in Banten Province, Indonesia. By rigorously investigating these causal relationships, the study contributes to advancing our understanding of the dynamics within this industry and informs strategic decision-making processes.

This research employs the statistical methodology of Partial Least Squares Structural Equation Modeling (SEM-PLS) to analyze the relationships between constructs and assess the impact of exogenous variables on endogenous variables. Given the complexity of these relationships, involving both independent and dependent variables, which are latent constructs comprised of multiple indicators, Variance-Based Structural Equation Modeling (VB-SEM) analysis techniques are utilized. The analysis is conducted using the Smart PLS 3 (Partial Least Squares) program. The analysis proceeds in several stages. Initially, the research instrument and descriptive statistical tests are performed using SPSS Version 22. Subsequently, the SEM-PLS test commences with a model fit assessment, also known as the Goodness of Fit (GoF) test. This test measures the extent to which the observed data align with the expected values in the research model. The first GoF test evaluates the Outer analysis model or measurement model, while the second GoF test assesses the Inner analysis model or structural model. Following this, significance testing or hypothesis testing is conducted to ascertain the statistical significance of the relationships posited in the model. The researcher employs the SEM PLS (VB-SEM) method with the aim of mitigating weaknesses that may undermine the comprehensiveness of the analysis. It is crucial for researchers to verify certain assumptions to ensure the validity of the regression equation formed by Best Linear Unbiased Estimation (BLUE). One such assumption is normality. However, Hair et al. (2014) assert that in business and management research, particularly when measuring perceptions, obtaining normally distributed data can be challenging, thereby making it difficult to achieve a BLUE regression equation.

In contrast, Partial Least Squares (PLS) methodology circumvents this issue by utilizing the Bootstrapping method, which involves random iteration and duplication. This approach ensures that the assumption of normality is not a critical concern for PLS analysis. Consequently, PLS methodology offers a robust alternative for analyzing data in situations where achieving normality may be problematic, particularly in research involving subjective measures such as perceptions.

The study population comprises chemical companies situated across the four districts and cities of Banten province. The unit of analysis is managerial positions held for a minimum of two years, ensuring respondents possess a comprehensive understanding of their roles and responsibilities. A purposive sampling technique was employed to select 177 managers as participants for the study. The research instrument encompasses a combination of interview, observation, and questionnaire techniques. Data collected from the questionnaire were evaluated using the Likert scale, where respondents assigned values ranging from 1 to 5. A value of 5 indicated strong agreement with the prevailing conditions in the field, while a value of 1 signified strong disagreement or opposition to the conditions presented. This scale allowed for a nuanced assessment of respondents' perceptions and opinions regarding various aspects relevant to the study objectives. The study is structured around three key groups of variables: core competence, green competitive advantage, and organizational performance. Core competence is categorized as the exogenous variable, green competitive advantage serves as the intervening variable, and organizational performance is designated as the endogenous variable. Within the core competence group, three dimensions are identified: shared vision, cooperation, and empowerment. Shared vision is gauged through seven indicators, cooperation through seven indicators, and empowerment through ten indicators. These dimensions draw from the research of Agha et al. (2011) and Ghani & Farisya (2019), aiming to capture the organizational capabilities related to alignment, collaboration, and empowerment among employees. The green competitive advantage variable encompasses four dimensions, each highlighting the company's superiority in environmentally conscious practices compared to competitors. These dimensions include low-cost environmental management or green innovation, superior quality of green products or services, proficiency in environmental R&D and green innovation, and capability in environmental management. Each dimension is represented by a single indicator, informed by the research of Lin and Chen (2016), providing a comprehensive overview of the company's competitive edge in sustainability.

This structured framework allows for the exploration of the relationships between core competence, green competitive advantage, and organizational performance within the chemical manufacturing sector. By examining how these variables interact and influence each other, the study aims to offer insights into strategies for enhancing organizational effectiveness and competitiveness in an environmentally conscious market landscape. In addition to core competence and green competitive advantage, the study evaluates organizational performance using two dimensions: growth and profitability. Growth is assessed through three indicators (OP1 - OP3), while profitability is measured using three indicators (OP4 - OP6). These dimensions are derived from the research conducted by Agha et al. (2011), providing a comprehensive understanding of organizational performance within the context of the chemical manufacturing sector. Overall, the research incorporates a total of 34 indicators across the various variables under investigation. This comprehensive approach ensures a thorough assessment of the factors influencing core competence, green competitive advantage, and organizational performance, offering valuable insights into strategies for enhancing competitiveness and sustainability within the industry.

4. RESULT AND DISCUSSION

The bootstrapping analysis of the second conceptual model yielded significant path coefficients. Specifically, the path coefficient of core competence on green competitive advantage was found to be 0.860. Additionally, the path coefficient of green competitive advantage on organizational performance was determined to be 0.359, while the path coefficient of core competence on organizational performance was 0.588. These results indicate that both core competence and green competitive advantage variables positively influence organizational performance. The substantial path coefficients highlight the importance of core competencies and green initiatives in driving organizational success within the context of the study. By enhancing core competencies and leveraging green competitive advantages, organizations can effectively improve their performance outcomes, thereby fostering sustainability and competitiveness in the chemical manufacturing sector. The R-square value for the green competitive advantage variable is 0.740, indicating that the core competence variable accounts for 74.0% of the variance in green competitive advantage. Similarly, the R-square value for organizational performance is 0.838, demonstrating that core competence and green competitive advantage variables collectively explain 83.8% of the variance in organizational performance.

The effect sizes, as indicated by the f^2 values, provide further insights into the magnitude of the relationships. The f^2 value of 2.842 for the core competence variable to the green competitive advantage variable falls into the medium category, suggesting a moderate impact. Likewise, the f^2 value of 0.207 for the green competitive advantage variable to organizational performance also falls into the medium category. However, the effect size of the core competence variable on organizational performance, with a value of 0.554, falls into the strong category, highlighting a significant influence. The goodness-of-fit (GoF) test yielded a value of 0.718, indicating a high fitness model category, with the model demonstrating a good fit to the observed data. Additionally, the Stone-Geisser Value (Q2) test results showed values of 0.493 for the green competitive advantage variable and 0.533 for organizational performance variables. These values suggest a strong structural model relevance, indicating a robust match between the proposed model and the observed data. The results of testing the first hypothesis reveal a significant relationship, with a T-value of 42.732, surpassing the critical threshold of 1.96, leading to the rejection of the null hypothesis (H_0). This finding underscores the substantial influence of the core competence variable on green competitive advantage, aligning with prior research outcomes (Hastjarjo et al., 2016). Core competencies, when effectively leveraged, can serve as distinctive knowledge assets that

confer a competitive edge upon a company, making it challenging for competitors to replicate. This assertion echoes the foundational tenets of the Resource-Based View (RBV) theory, emphasizing the pivotal role of internal resources in shaping competitive advantage. Moreover, the study's findings corroborate the insights of Jamhour (2010), demonstrating that core competencies exert a significant impact on organizational competitive advantage by fostering an environment of collaboration and shared vision among employees. Interviews conducted with 177 managerial respondents further validate this relationship, highlighting the instrumental role of core competencies in enhancing green competitive advantage. Particularly in contexts where local regulations emphasize environmental management, employee competencies play a crucial role in fostering understanding and awareness, thereby driving the creation of a differentiated value proposition vis-à-vis competitors. This underscores the importance of investing in and harnessing core competencies as a strategic imperative for achieving sustainable competitive advantage in the realm of environmental management.

Table 1: Original Sample, STDEV, T-Values and P-Values

Significance Test	Original Sample (O)	STDEV	T Statistics	P Values
Core Competence Green Competitive Advantage	0.860	0.020	42.732	0.000
Core Competence Organisational Performance	0.588	0.069	8.496	0.000
Green Competitive Advantage Organisational Performance	0.359	0.072	4.971	0.000

The results of testing the second hypothesis reveal a statistically significant relationship, with a T-value of 8.496 and a corresponding P-value of 0.000. Given that the T statistic value exceeds the critical threshold of 1.96, the null hypothesis (H₀) is rejected. This finding underscores the substantial influence of the green competitive advantage variable on organizational performance, aligning with prior research findings. Notably, this outcome resonates with previous studies examining the relationship between competitive advantage and organizational performance, such as the research conducted by Kusuma & Devie (2013).

The study by Kusuma & Devie (2013) highlights the strong influence of competitive advantage on organizational performance, particularly in the context of knowledge management. Their research, involving 100 company managers in Surabaya, demonstrated that competitive advantage positively and significantly impacts company performance across operational and financial dimensions. The congruence between these findings and the present study underscores the robustness of the relationship between competitive advantage and organizational performance, emphasizing the importance of leveraging green competitive advantages to enhance overall organizational effectiveness and success. The findings of this study resonate with those of Othman et al. (2015), which examined 39 cooperatives in Malaysia. Their research, grounded in the Resource-Based View (RBV) theory, underscored the significant impact of competitive advantage derived from various assets—both tangible and intangible—on the overall performance of cooperatives. These results highlight the importance of leveraging strategic assets to enhance organizational performance, a notion that aligns closely with the findings of the present study.

Moreover, the study underscores the potential for leveraging information and communication technology (ICT) facilities as a means of enhancing core competencies. Insights from research conducted by Zaid et al. (2019) suggest that the strategic use of ICT tools can facilitate the absorption of relevant information, thereby augmenting organizational capabilities. By harnessing ICT resources effectively, organizations can strengthen their core competencies, fostering innovation and adaptability in the face of evolving market dynamics. This underscores the importance of embracing technological advancements as a means of enhancing organizational competitiveness and performance in today's dynamic business landscape. The insights gleaned from interviews with 177 respondents underscore the nuanced dynamics within the chemical manufacturing sector regarding organizational performance improvement. While there are common indicators proposed in this study, there exists variation among companies in their commitment to environmental management. It becomes evident that companies prioritizing green competitive advantage tend to exhibit enhanced organizational performance. Conversely, those neglecting environmental considerations may encounter obstacles from the social environment and regulatory authorities, impeding their development prospects.

An application of green competitive advantage lies in the diversification of products, drawing from nature and innovation. This diversification not only addresses evolving societal needs but also reflects a recognition of the changing natural conditions and the need for sustainable resource management. As highlighted by Kulik & Kulik (2019), this diversity fosters the multiplication of needs, abilities, and methods of work and communication, contributing to organizational resilience and adaptability. In light of these insights, the alignment of study results with the initial hypothesis underscores the significance of green competitive advantage in driving organizational performance within the chemical manufacturing sector. The findings underscore the imperative for companies to embrace environmental sustainability as a strategic

imperative, recognizing its pivotal role in fostering competitiveness and long-term success in today's dynamic business landscape. The results of testing the second hypothesis reveal a statistically significant relationship, with a T-value of 4.971 and a corresponding P-value of 0.000. Given that the T statistic value exceeds the critical threshold of 1.96, the null hypothesis (H₀) is rejected. This finding underscores the substantial effect of core competence on organizational performance, aligning with previous research outcomes.

These results are consistent with prior studies examining the relationship between core competence and organizational performance, such as the research conducted by Nimsith et al. (2016). Their findings demonstrated a significant relationship between core competencies, competitive advantage, and improvements in organizational performance. This highlights the pivotal role of core competencies in driving organizational success and underscores the importance of investing in human resource practices that foster competency development.

The insights generated from this study hold significant implications for stakeholders and management, particularly in the hotel industry. By adopting effective human resource practices and nurturing core competencies among employees, organizations can enhance their organizational performance and gain a competitive edge in the market. This underscores the importance of strategic human resource management in driving organizational success and creating value for stakeholders. The findings of Jamhour (2010) echo the significance of core competencies in driving organizational performance, a sentiment reiterated by respondents in this study. Core competence emerges as an internal asset that confers a competitive advantage, difficult for competitors to replicate, thus enhancing organizational performance. These insights provide valuable guidance for managers in the chemical manufacturing sector, emphasizing the importance of elevating core competencies to foster competitive advantages and bolster organizational performance.

Moreover, this study underscores the pivotal role of human capital in driving economic productivity and efficiency, aligning with the findings of Al-shammari & Al (2019). Effective management of human capital entails differentiating knowledge management levels, recognizing the diverse contributions of knowledge workers across various organizational functions. Strategists, engineers, technicians, and researchers each offer unique perspectives and experiences, which can inform decision-making processes and drive innovation. At a higher level, these knowledge workers can spearhead initiatives to infuse inherent values into the company's offerings, thereby shaping customer preferences and enhancing market competitiveness (Jusoh & Abdul, 2019). By leveraging human capital effectively and nurturing core competencies, organizations can unlock untapped potential, driving sustainable growth and competitiveness in today's dynamic business landscape. This underscores the imperative for managers to prioritize investments in human capital development and knowledge management strategies to position their organizations for long-term success.

The second conceptual model reveals a direct relationship between core competence and organizational performance, with a coefficient value of 0.588 and a significant P-value of 0.000. Additionally, the specific indirect effect analysis indicates a mediation effect of green competitive advantage on the relationship between core competence and organizational performance, with a coefficient value of 0.309 and a significant P-value of 0.000. These findings suggest a partial mediation effect, wherein green competitive advantage mediates, at least partially, the relationship between core competence and organizational performance. This mediation model aligns with previous research by Zhao et al. (2010), as depicted in the figure below. Furthermore, the adoption of Partial Least Squares Structural Equation Modeling (PLS-SEM), as proposed by Hair et al. (2017), provides a robust analytical framework for assessing complex relationships and mediating effects within the conceptual model.

5. CONCLUSION

The results of the confirmatory factor analysis conducted on the second research's conceptual model demonstrate robust validation and reliability outcomes. Among the 34 indicators tested, 28 were deemed valid and reliable for measuring latent variables, while six indicators were found to be invalid. Structural testing of the research model reveals a substantial positive influence, with core competence and green competitive advantage variables collectively explaining 83.8% of the variance in organizational performance. The remaining 16.2% of the variance is attributed to other variables not included in this study. Furthermore, all three proposed hypotheses are accepted, indicating significant relationships between the exogenous and endogenous variables. These findings underscore the validity and efficacy of the proposed conceptual model in elucidating the complex interplay between core competence, green competitive advantage, and organizational performance within the context of the study. The findings of this study hold significant theoretical implications, particularly in the context of the Resource-Based View (RBV) theory, initially proposed by Penrose (1959) and further developed by Porter's (1985). According to RBV, a company's sustained growth hinges on its internal characteristics and resources. Porter's (1985) extension of this theory posits that organizations gain a competitive edge when they possess resources that are valuable, unique, inimitable, and non-substitutable, thereby fostering competitive advantage. This research contributes to the evolution of RBV by focusing on green competitive advantage, a relatively contemporary concept that emphasizes environmental sustainability and responsibility. The study's results underscore the significance of green competitive advantage in driving company growth and profitability. By demonstrating the tangible impact of green initiatives on organizational performance, the research reinforces the notion that sustainability practices can translate into competitive advantages in today's business landscape. The managerial implications of this study are profound, particularly in guiding strategic decision-making within the chemical manufacturing industry. The findings underscore the pivotal role of core competence in enhancing the four dimensions of green competitive advantage, thereby facilitating company growth and profitability. This insight can serve as a focal point for managerial attention, encouraging concerted efforts to continually bolster core competencies and green competitive advantage. Given the evolving landscape shaped by the Fourth Industrial Revolution and globalization, organizations in the chemical manufacturing sector must

navigate multifaceted challenges while aligning with societal and regulatory expectations. The imperative to integrate economic performance with environmental and social dimensions is paramount. As social demands for sustainability escalate, coupled with stringent regulatory frameworks, companies are compelled to adopt greener practices and enhance their environmental performance. Furthermore, the close proximity between industrial operations and local communities underscores the importance of mitigating adverse environmental impacts. The imperative for resource efficiency, coupled with the need for heightened social responsibility, necessitates proactive measures to address environmental concerns and minimize negative externalities such as pollution. In essence, the study's findings advocate for a holistic approach to organizational performance—one that not only prioritizes economic prosperity but also embraces environmental stewardship and social responsibility. By leveraging core competencies to enhance green competitive advantage, chemical manufacturing companies can navigate complexities, foster sustainable growth, and contribute positively to both the economy and the environment.

REFERENCES

- Agha, S., Alrubaiee, L., & Jamhour, M. (2011). Effect of Core Competence on Competitive Advantage and Organizational Performance. *International Journal of Business and Management*, 7(1).
- Ahmed, F. A. (2016). Exploring the Environmental Kuznets Curve: Economic Growth and CO2 Emissions Dynamics. *Journal of Business and Economic Options*, 3(3), 67-76.
- Al-shammari, N., & Al, M. (2019). The Determinants of Total Factor Productivity Across MENA Region. *International Journal of Innovation, Creativity and Chang*, 8(4), 339–354.
- Amoako-Gyampah, K., & Acquah, M. (2008). Manufacturing strategy, competitive strategy and firm performance: An empirical study in a developing economy environment. *International Journal of Production Economics*, 111(2), 575–592.
- Aragón-Correa, J. A., & Rubio-Lopez, E. A. (2007). Proactive corporate environmental strategies: myths and misunderstandings. *Long range planning*, 40(3), 357-381.
- Audi, M. & Ali, A. (2023). Unveiling the Role of Business Freedom to Determine Environmental Degradation in Developing countries. *International Journal of Energy Economics and Policy*, 13(5), 157-164.
- Audi, M., Ali, A., & Kassem, M. (2020). Greenhouse Gases: A Review of Losses and Benefits. *International Journal of Energy Economics and Policy*, 10(1), 403.
- Baki, R. (2018). Literature review on green supply chain management concept and problems during its implementation. *The Journal of International Scientific Researches*, 3(2), 114-122.
- Banerjee, P. (2003). Resource dependence and core competence: Insights from Indian software firms. *Technovation*, 23(3), 251–263.
- Ben-Iwo, J., Manovic, V., & Longhurst, P. (2016). Biomass resources and biofuels potential for the production of transportation fuels in Nigeria. *Renewable and sustainable energy reviews*, 63, 172-192.
- BPS Statistics Indonesia. (2016). *Statistik Lingkungan Hidup Indonesia* (Sub-directorate of Environment Statistics, ed.). Jakarta.
- Caiado, R. G. G., Leal Filho, W., Quelhas, O. L. G., de Mattos Nascimento, D. L., & Ávila, L. V. (2018). A literature-based review on potentials and constraints in the implementation of the sustainable development goals. *Journal of cleaner production*, 198, 1276-1288.
- Cantele, S., & Zardini, A. (2018). Is sustainability a competitive advantage for small businesses? An empirical analysis of possible mediators in the sustainability–financial performance relationship. *Journal of Cleaner Production*, 182, 166–176.
- Chen, Y. F., & Wu, T. C. (2007). An empirical analysis of core competence for high-tech firms and traditional manufacturers. *Journal of Management Development*, 26(2), 159–168.
- Chen, Y. S., Lin, M. J. J., & Chang, C. H. (2009). The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management*, 38(2), 152–158.
- Cobbinah, P. B., & Amoako, C. (2012). Urban sprawl and the loss of peri-urban land in Kumasi, Ghana. *International Journal of Social and Human Sciences*, 6(388), e397.
- Del Rio, D. D. F., Sovacool, B. K., Griffiths, S., Bazilian, M., Kim, J., Foley, A. M., & Rooney, D. (2022). Decarbonizing the pulp and paper industry: A critical and systematic review of sociotechnical developments and policy options. *Renewable and Sustainable Energy Reviews*, 167, 112706.
- ESCAP, U. (2014). 2nd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific: enabling environment for custom hiring of agricultural machinery, 9-11 September 2014, Serpong, Indonesia.
- Farradia, Y., Bon, A. T. B., & Muharam, H. (2019, March). Internal vs external green supply chain management at petrochemical industry economic performance in Indonesia. In *International conference on industrial engineering and operations management, Bangkok, Thailand* (pp. 3610-3619). Southfield, MI: IEOM Society International.
- Farradia, Y., Bon, A. T., & Rully, T. (2019). Green marketing mix role toward sustainability performance petrochemical industry in Indonesia. *Industrial Engineering and Operations Management Proceeding*, 3640-3650.
- Frederick, W. H., & Worden, R. L. (Eds.). (1993). *Indonesia: A country study* (Vol. 39). Government Printing Office.
- Freixanet, J., & Rialp, J. (2022). Disentangling the relationship between internationalization, incremental and radical innovation, and firm performance. *Global Strategy Journal*, 12(1), 57-81.

- Ghani, E. K., & Farisya, S. (2019). Effect of Employees' Competency, Risk Culture and Organizational Innovativeness on Enterprise Risk Management Implementation. *International Journal of Innovation, Creativity and Change*, 8(3), 173-186.
- Gorus, S., & Groeneveld, R. (2015). Vietnam's Development Trajectory: Threshold Cointegration and Causality Analysis of Energy Consumption and Economic Growth. *Journal of Energy and Environmental Policy Options*, 2(1), 8-15.
- Güneralp, B., Lwasa, S., Masundire, H., Parnell, S., & Seto, K. C. (2017). Urbanization in Africa: challenges and opportunities for conservation. *Environmental research letters*, 13(1), 015002.
- Hafeez, K., & Essmail, E. A. (2007). Evaluating organisation core competences and associated personal competencies using analytical hierarchy process. *Management Research News*, 30(8), 530-547.
- Hafman, U. N. (2023). Exploring the Mainstreaming of Education for Sustainable Development and Indigenous Knowledge in Initial Teacher Education in Indonesia: A Comparative Study of Teacher Educators' Beliefs and Attitudes.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM). In 2nd Ed., Sage: Thousand Oaks.
- Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modelling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106-121.
- Hamel, G. & Prahalad, C. (1994). The Concept of Core Competence, in *Competence-based Competition*. Harvard Business Review, 68(3), 79-92.
- Hariyanti, D., & Utha, M. (2016). Analysis of determinants sectors regional development at 33 provinces in Indonesia. *OIDA International Journal of Sustainable Development*, 9(03), 11-32.
- Hastjarjo, K., Yahya, D. K., Afiff, F., & Rufaidah, P. (2016). Core Competence on Real Estate Industry in Globalization Phenomenon: A Contemporary Approach. *International Journal of Economics and Financial Issues*, 6(6S), 14-19.
- Ho, Y. J., & Ran, H. (2016). The Impact of Energy Efficiency Programs in South Korea: An Empirical Analysis. *Journal of Energy and Environmental Policy Options*, 3(3), 27-31.
- Ilhami, M. A., & Holifah, H. (2022, April). Marine Bioremediation Using *Alcanivorax Borkumensis* SK2 as A Waste Prevention Oil Industry on the Tunda Island to the Impact of Flood in Banten Region. In *GMPI Conference Series* (Vol. 1, pp. 92-103).
- Ismail, M. D., Domil, A. K. A., & Isa, A. M. (2014). Managerial Competence, Relationship Quality and Competitive Advantage among SME Exporters. *Procedia - Social and Behavioural Sciences*, 115(Icicies 2013), 138-146.
- Jamhour, M. S. (2010). The Impact of Core Competence on Organizational Performance. Middle East University. 1-134
- Jayaram, J., Dixit, M., & Motwani, J. (2014). Supply chain management capability of small and medium sized family businesses in India: A multiple case study approach. *International Journal of Production Economics*, 147, 472-485.
- Jusoh, N., & Abdul, Z. (2019). Sustainable Competitive Advantage of Logistics Service Providers in Malaysia : A Systematic Review. *International Journal of Innovation, Creativity and Change*, 8(3), 104-119.
- Kemenlhk. (2015). Indonesia's program for pollution control, evaluation, and rating (PROPER) (M. of and Forestry of Indonesia Environment, ed.). Jakarta.
- Kerlinger, F. . (2000). Azas-azas penelitian behavioural. Yogyakarta: Gajah Mada University Press.
- Kitrangsikul, N. (2017). A resource-based view approach on mediating effect of logistics integration capabilities on firm performance: an empirical study on the food processing industry in Thailand.
- Ko, W. H. (2015). Constructing a professional competence scale for foodservice research & development employees from an industry viewpoint. *International Journal of Hospitality Management*, 49, 66-72.
- Kulik, V. I., & Kulik, I. V. (2019). Ultimate Product of Society. *International Journal of Innovation, Creativity and Change*, 7(12), 292-311.
- Kumar, J. (2016). Examining the Causality of Energy Between Growth in Asian Countries: Panel Data Analysis. *Journal of Energy and Environmental Policy Options*, 3(4), 49-55.
- Kusuma & Devie. (2013). Analisa Pengaruh Knowledge Management Terhadap Keunggulan Bersaing dan Kinerja Perusahaan. *Business Accounting Review*, 1(2), 161-171.
- Kusumayuda, G. (2021). Analysis Of The Transition To Palm-Based Biofuel On The Indonesian Military's Energy Security (Doctoral dissertation, Monterey, CA; Naval Postgraduate School).
- Lafferty, W. M., & Meadowcroft, J. (2000). *Implementing sustainable development: Strategies and initiatives in high consumption societies*. OUP Oxford.
- Leonidou, L. C., Christodoulides, P., Kyrgidou, L. P., & Palihawadana, D. (2017). Internal drivers and performance consequences of small firm green business strategy: The moderating role of external forces. *Journal of business ethics*, 140, 585-606.
- Lestari, M., Rahutami, A. I., & Wijaya, A. S. (2009). A Case Study of the Chemical Industry in Indonesia.
- Lin, Y. H., & Chen, Y. S. (2017). Determinants of green competitive advantage: the roles of green knowledge sharing, green dynamic capabilities, and green service innovation. *Quality and Quantity*, 51(4), 1663-1685.
- Lorenzo, J. R. F., Rubio, M. T. M., & Garcés, S. A. (2018). The competitive advantage in business, capabilities and strategy. What general performance factors are found in the Spanish wine industry?. *Wine Economics and Policy*, 7(2), 94-108.
- Menguc, B., & Ozanne, L. K. (2005). Challenges of the "green imperative": A natural resource-based approach to the environmental orientation-business performance relationship. *Journal of Business research*, 58(4), 430-438.

- Mooney, A. (2007). Core Competence, Distinctive Competence, and Competitive Advantage: What Is the Difference?. *Journal of Education for Business*, 83(2), 110–115.
- Nayak, B., Bhattacharyya, S. S., & Krishnamoorthy, B. (2022). Exploring the black box of competitive advantage—An integrated bibliometric and chronological literature review approach. *Journal of Business Research*, 139, 964–982.
- Nimsith, S.I., Rifas, A.H., Cader, M.J.A. (2016). Impact of Core Competency on Competitive Advantage of Banking Firms in Sri Lanka. *International Journal of Scientific Research and Innovative Technology*, 3(7), 64–72.
- Nungula, E. Z., Mugwe, J., Nasar, J., Massawe, B. H., Karuma, A. N., Maitra, S., ... & Gitari, H. I. (2023). Land degradation unmasked as the key constraint in sunflower (*Helianthus annuus*) production: Role of GIS in Revitalizing this vital sector. *Cogent Food & Agriculture*, 9(2), 2267863.
- Nuryanto, U. W., Djamil, M., Sutawidjaya, A. H., & Saluy, A. B. (2020). The roles of green competitive advantage as intervention between core competence and organisational performance. *International Journal of Innovation, Creativity and Change*, 11(6), 394-414.
- Okurut, F. N., & Mbulawa, S. (2015). The Nexus of Electricity, Economy and Capital: A Case Study of Botswana. *Journal of Energy and Environmental Policy Options*, 2(1), 1-7.
- Othman, R., Arshad, R., Aris, N. A., & Arif, S. M. M. (2015). Organizational Resources and Sustained Competitive Advantage of Cooperative Organizations in Malaysia. *Procedia Social and Behavioural Sciences*, 170, 120–127.
- Otoo, F. N. K., & Mishra, M. (2018). Impact of Human Resource Management (HRM) Practices on Hotel Industry's Performance: The Mediating role of Employee Competencies. *Indian Journal of Commerce & Management Studies*, 9(2), 17-29.
- Parveen, S., & Sarikwal, L. (2014). Managing organizational competence through transfer of training: A study of small and medium enterprises in India. *International Journal of Business Management & Research*, 4(6), 5-20.
- Penrose. (1959). *The Theory of the Growth of the Firm*. Oxford: Oxford University Press.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance: with a new introduction*. The Free Press. New York, USA.
- Pradana, B. I., & Safitri, R. (2022). Considering the organizational effectiveness of maritime sector SMEs in Indonesia from the perspective of knowledge management, entrepreneurship orientation, and organizational learning.
- Pujari, D., Wright, G., & Peattie, K. (2003). Green and competitive influences on environmental new product development performance. *Journal of Business Research*, 56(8), 657–671.
- Purwaningrum, F. (2014). *Knowledge governance in an industrial cluster: The collaboration between academia-industry-government in Indonesia* (Vol. 27). LIT Verlag Münster.
- Putu, I., Adiputra, P., & Mandala, K. (2017). Pengaruh Kompetensi Dan Kapabilitas Terhadap Keunggulan Kompetitif Dan Kinerja Perusahaan. *E-Jurnal Manajemen Unud*. 6(11): 6090-6119.
- Ramli, Y., Kurniawan, D., Imaningsih, E. S., Yuliantini, T., Anah, S., & Ali, A. J. (2023). Imposing green management to enhance the organizational awareness against the environmental sustainability. *International Journal of Energy Economics and Policy*, 13(1), 518-528.
- ROHAINI, R., Wiranata, G. A., & Sasongko, W. (2020). Protecting Traditional Knowledge: Measures And Efforts To Develop The Defensive Protection For Traditional Knowledge Of Lampung.
- Rothenberg, A. D., Bazzi, S., Nataraj, S., & Chari, A. V. (2017). *Assessing the Spatial Concentration of Indonesia's Manufacturing Sector: Evidence from Three Decades*. RAND.
- Rybakovas, E. (2015). Country-Specific Competitive Advantages of Manufacturing Sector Firms in Eastern EU Member States. *Procedia - Social and Behavioural Sciences*, 213, 217–222.
- Sajjad, A., Eweje, G., & Tappin, D. (2015). Sustainable supply chain management: motivators and barriers. *Business Strategy and the Environment*, 24(7), 643-655.
- Salim, N., Ab Rahman, M. N., & Abd Wahab, D. (2019). A systematic literature review of internal capabilities for enhancing eco-innovation performance of manufacturing firms. *Journal of cleaner production*, 209, 1445-1460.
- Seidel, M., Seidel, R., Tedford, D., Cross, R., Wait, L., & Hämmerle, E. (2009). Overcoming barriers to implementing environmentally benign manufacturing practices: Strategic tools for SMEs. *Environmental Quality Management*, 18(3).
- Selznick, P. (1957). *Law and the Structures of Social Action*.
- Sjöberg, Ö., & Sjöholm, F. (2004). Trade liberalization and the geography of production: Agglomeration, concentration, and dispersal in Indonesia's manufacturing industry. *Economic Geography*, 80(3), 287-310.
- Steinemann, A. (2003). Implementing sustainable development through problem-based learning: Pedagogy and practice. *Journal of Professional Issues in Engineering Education and Practice*, 129(4), 216-224.
- Sumaira. (2018). The Dual Impact of Remittances and Financial Development on Environmental Pollution: Evidence from South Asian Countries. *Journal of Policy Options*, 5(2), 32-38.
- Tahat, G. (2020). *Knowledge Sharing, Organizational Capabilities, and Innovation Management to Sustain Competitive Advantage* (Doctoral dissertation, Capella University).
- Tan, K. G., Merdikawati, N., Amri, M., & Tan, K. Y. (2015). *2014 Provincial and Inaugural Regional Competitiveness Analysis: Safeguarding Indonesia's Growth Momentum*. World Scientific.
- Teketay, D. (2001). Deforestation, wood famine, and environmental degradation in Ethiopia's highland ecosystems: urgent need for action. *Northeast African Studies*, 53-76.
- Tian, Q., Shen, W., Wang, Y., & Liu, L. (2023). Mechanism and evolution trend of digital green fusion in China's regional advanced manufacturing industry. *Journal of Cleaner Production*, 427, 139264.

- Tully, S. M., & Winer, R. S. (2014). The Role of the Beneficiary in Willingness to Pay for Socially Responsible Products: A Meta-Analysis. SSRN Electronic Journal, 0540.
- United Nations Environment Programme. International Resource Panel, United Nations Environment Programme. Sustainable Consumption, & Production Branch. (2011). *Decoupling natural resource use and environmental impacts from economic growth*. UNEP/Earthprint.
- Valencia, R. C. (2013). *The future of the chemical industry by 2050*. John Wiley & Sons.
- Vanhaverbeke, W., & Peeters, N. (2005). Embracing innovation as strategy: Corporate venturing, competence building and corporate strategy making. *Creativity and Innovation Management*, 14(3), 246-257.
- Vinayan, G. (2012). *Impact of Total Quality Management (TQM) and Sun Tzu Art of War strategies on Sustainable Competitive Advantage (SCA): A study of Malaysian manufacturing industries* (Doctoral dissertation, Multimedia University (Malaysia)).
- Widodo, W., Salim, R., & Bloch, H. (2014). Agglomeration economies and productivity growth in manufacturing industry: Empirical evidence from Indonesia. *Economic Record*, 90, 41-58.
- Yanto, H., Susanti, A., & Baroroh, N. (2019). Strategies for Implementing Green Business in Indonesian Small and Medium-sized Enterprises. *International Journal of Innovation, Creativity and Change*, 7(11), 215–233.
- Yeung, A. C., Lai, K. H., & Yee, R. W. (2007). Organizational learning, innovativeness, and organizational performance: a qualitative investigation. *International journal of production research*, 45(11), 2459-2477.
- Yuany, F. (2020). *Sustainable firm performance of green supply chain management practice at petrochemical industry* (Doctoral dissertation, Universiti Tun Hussein Onn Malaysia).
- Zaid, M., Norhaini, A., Iksan, Z., & Sains, S. M. (2019). Influence of Instructional Supervisory Qualities on Science Teachers ' Teaching Competency. *International Journal of Innovation, Creativity and Change*, 47–63.
- Zhao, X., Lynch, J. G., Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths About Mediation Analysis. *Journal of Consumer Research*, 37(2), 197–206.