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The Relationship Between Innovative Behavior and Business Intelligence System Adoption as Mediated by Competitive Intelligence and Moderated by Innovative Dynamism

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Abstract

This conceptual paper delves into the intricate relationship between Innovation Behavior (IB) and Business Intelligence System (BIS) adoption among Small and Medium Entrepreneurs (SMEs) in Malaysia. Guided by the Resource-Based View (RBV) theory, the study explores the mediating influence of Competitive Intelligence (CI) and the moderating effect of Innovative Dynamism (ID).

Drawing upon the RBV theory, which emphasizes the strategic significance of unique and valuable resources, we propose a quantitative research design employing a survey approach to gather data from SMEs through email questionnaires. By leveraging the RBV lens, we aim to identify the critical role played by IB as a strategic resource for driving innovation within SMEs, further shaping their sustainable competitive advantage. Additionally, the study aims to unveil how CI serves as a pivotal mediator, influencing the relationship between IB and BIS adoption. At the same time, ID acts as a dynamic moderator, impacting the strength of this relationship. This study's conceptualization advances the understanding of the factors that influence SMEs' performance in Malaysia and highlights the role of innovation and technology in driving growth and productivity. The potential insights gained from conducting this research offer valuable implications for policymakers, industry practitioners, and entrepreneurs seeking to leverage innovation and business intelligence to unlock SMEs' full potential. By shedding light on the intricate relationships between IB, CI, BIS adoption, and the moderating effect of ID, this conceptual paper contributes to the existing literature and stimulates further research to foster a conducive environment for SME growth and sustainability in Malaysia.

Introduction

In recent years, Small and Medium Entrepreneurs (SMEs) have emerged as significant drivers of economic growth and job creation in many developed countries (Ndubisi, Ndiaye). In Malaysia, SMEs play a pivotal role in the nation's economic landscape, contributing to the diversification of industries and overall economic prosperity. However, despite their potential, SMEs in Malaysia have faced challenges in achieving their full potential, particularly in terms of innovation and business intelligence adoption (AL-Shboul, 2023; Mohsin et al., 2015; Salisu et al., 2021).

The importance of innovation Behavior (IB) and business intelligence system (BIS) adoption cannot be underestimated for the growth and competitiveness of SMEs (Salisu et al., 2021).

IB represents the proactive and creative actions undertaken by entrepreneurs to introduce novel ideas, products, and processes to the market (e.g., Idea Generation, Idea Championing, and Idea Implementation) (Brem, 2011; Tian et al., 2021). On the other hand, BIS offers valuable data-driven insights to support informed decision-making and strategic planning (Boldosova & Luoto, 2020; Salisu et al., 2021).

The Resource-Based View (RBV) theory provides a theoretical lens to understand how organizations can gain and sustain a competitive advantage through their unique and valuable resources (Lockett et al., 2009; Paradza & Daramola, 2021). In this study, RBV serves as the guiding framework to explore the relationships between IB, BIS adoption, competitive intelligence (CI), and innovative dynamism (ID). CI acts as a mediator, while ID plays a moderating role, influencing the strength of the relationship between IB and BIS adoption among SMEs in Malaysia.

While previous research has acknowledged the importance of innovation and business intelligence for SMEs, there is still limited understanding of the underlying mechanisms that drive successful innovation and effective BIS adoption within this context (Love & Roper, 2015). To be specific, the current studies have yet to address the complex interactions between IB, BIS, CI, and ID among SMEs in Malaysia. Thus, this paper suggests the following research questions

1. Does Innovative Behavior relate positively to Business Intelligence System (BIS) adoption among SMEs in Malaysia?
2. Do the dimensions of Innovative Behavior (Idea Generation, Idea Championing, and Idea Implementation) relate positively to Business Intelligence System (BIS) adoption among SMEs in Malaysia?
3. Does Competitive Intelligence provide a positive effect on Business Intelligence System (BIS) adoption among SMEs in Malaysia?
4. Does Competitive Intelligence mediate the relationship between the dimensions of Innovative Behavior (Idea Generation, Idea Championing, and Idea Implementation) and Business Intelligence System (BIS) adoption among SMEs in Malaysia?
5. Does Innovative Dynamism moderate the relationship between Competitive Intelligence and Business Intelligence System (BIS) adoption among SMEs in Malaysia?

The findings from this conceptual paper hold potential significant implications for policymakers, industry practitioners, and entrepreneurs. By identifying the crucial role of innovation Behavior and the impact of business intelligence system adoption, the study aims to provide actionable insights to enhance SMEs' competitive advantage and overall performance in the Malaysian business landscape.

Through a thorough examination of the mediating effect of CI and the moderating effect of ID, this research intends to offer a comprehensive understanding of the factors that shape successful innovation and technology adoption within SMEs. The conceptual paper seeks to contribute to the existing literature on innovation and business intelligence while paving the way for further empirical investigations into the specific strategies and policies that can foster a supportive environment for SME growth and sustainability in Malaysia.

This conceptual paper follows a systematic structure, starting with considering different theories to guide the framework. Then, it reviews the literature on BIS and introduces the dimensions of IB – Idea Generation, Idea Championing, and Idea Implementation. Next, the paper discusses the potential mediating role of CI and the moderating effect of ID on the relationship between IB and BIS adoption. A conceptual framework is then presented to

visually represent the proposed relationships. The paper concludes with a suggested methodology, emphasizing data collection and analysis using Smart PLS.

Literature Review

To gain a comprehensive understanding of the intricate relationship between BIS, IB, CI, and ID, this section commences with a thorough review of diverse underlying theories to determine the most suitable framework. Subsequently, each variable is discussed in detail, drawing upon relevant studies from the past, and a conceptual framework is proposed to depict the interconnections. Furthermore, the hypotheses are proposed, reinforcing the expected relationships between the variables. Through this systematic approach, the paper aims to shed light on the complex dynamics among BIS, IB, CI, and ID, contributing to the existing body of knowledge in the field.

Theoretical Underpinnings

This study is anchored on robust theoretical underpinnings to provide a comprehensive understanding of the complex relationships between BIS, IB, CI, and ID in Malaysian SMEs. Three prominent theories have been selected for consideration: the Resource-Based View (RBV), the Theory of Planned Behavior (TPB), and the Innovation Diffusion Theory (IDT).

General Discussion on Theoretical Perspectives

The RBV emphasizes that organizations can achieve and sustain competitive advantage through their unique and valuable resources (Lockett et al., 2009; Paradza & Daramola, 2021). In the context of this study, RBV can shed light on how IB serves as a strategic resource for SMEs, contributing to the creation of innovative products, processes, and services. Additionally, RBV can help elucidate the role of BIS as a critical resource that enables SMEs to capitalize on data-driven insights for strategic decision-making and enhanced performance. The TPB focuses on understanding human behavior and decision-making. It posits that an individual's intention to perform a specific Behavior is influenced by attitudes, subjective norms, and perceived Behavioral control (Bosnjak et al., 2020; Mohammad et al., 2022). In the context of this study, TPB can offer insights into the factors influencing the intention to adopt BIS and engage in IB among SME entrepreneurs. Moreover, it can provide a basis for understanding the influence of external stakeholders and social norms on the decision-making processes of SMEs in adopting BIS and embracing innovation.

The IDT explores the process by which new innovations and technologies are adopted and diffused within organizations (Bryan & Zuva, 2021; Matayong & Kamil Mahmood, 2013). It can contribute to the study by providing insights into the factors that facilitate or hinder the adoption of BIS within SMEs, such as relative advantage, compatibility, complexity, trialability, and observability.

Conclusion: RBV as the Best Theoretical Lens

While all three theoretical perspectives offer valuable insights into the relationships among BIS, IB, CI, and ID, the RBV stands out as the most appropriate theoretical lens for this study. RBV aligns well with the research focus on understanding how strategic resources, represented by IB and BIS, contribute to SMEs' competitive advantage (Pattanasak et al., 2022). RBV's emphasis on the uniqueness and value of resources resonates with the study's exploration of the distinct characteristics of IB and BIS that empower SMEs to innovate and gain a competitive edge.

Moreover, RBV's capability to accommodate multiple variables and their interplay aligns with the complex nature of the relationships under investigation. By adopting RBV as the primary theoretical framework, this study will gain a robust foundation to explore the nuanced relationships among BIS, IB, CI, and ID, providing valuable insights to enrich the understanding of SMEs' innovation processes and strategic decision-making.

Business Intelligence System (BIS) Adoption

BIS has garnered significant attention in the academic literature due to its pivotal role in enhancing organizational decision-making and strategic planning (Ain et al., 2019; Popovič et al., 2018). BIS is an integrated framework of software, applications, and technologies that enables organizations to collect, analyze, and transform vast amounts of raw data into meaningful and actionable insights. The adoption of BIS empowers enterprises to make well-informed decisions, identify market trends, and gain a competitive advantage in dynamic and highly competitive business environments (Maguire, 2007).

Numerous studies have examined the impact of BIS adoption across various industries and organizational contexts (Mohammad et al., 2022; Trieu, 2017). Research findings consistently highlight the positive influence of BIS on organizations' performance and competitive positioning (Mohammad et al., 2022; Salisu et al., 2021). For instance, studies have demonstrated that firms leveraging BIS demonstrate improved financial performance, greater market share, and higher levels of customer satisfaction compared to their non-BIS-adopting counterparts (Salisu et al., 2021).

The benefits of BIS extend beyond mere data analysis. BIS facilitates real-time monitoring and reporting, empowering managers to promptly detect anomalies, identify emerging trends, and respond proactively to changing market conditions (Nejad, 2022; Srivastava et al., 2022). Moreover, BIS provides valuable insights into consumer behavior, enabling organizations to tailor their products and services to meet customer preferences, thus enhancing customer loyalty and retention.

However, the successful adoption and implementation of BIS are not without challenges. Studies have identified factors such as organizational culture, leadership support, data quality, and information security as critical determinants of BIS success (Salisu et al., 2021). Organizations need to establish a data-driven culture that fosters an appetite for leveraging data-driven insights for decision-making. Additionally, strong leadership support is essential in guiding and driving the BIS implementation process.

Furthermore, ensuring data quality and integrity is vital for generating accurate and reliable insights (Ahmad et al., 2020). Accordingly, poor data quality may lead to erroneous conclusions and hinder organizations' ability to make informed decisions. Addressing issues related to data quality requires investments in data governance and data management practices.

Nevertheless, the past literature emphasizes the substantial benefits of BIS adoption for organizations seeking to gain a competitive edge. BIS serves as a transformative tool that empowers organizations to leverage their data assets effectively, facilitating timely and informed decision-making. To fully capitalize on the potential of BIS, organizations must address challenges related to data quality, information security, and organizational culture, while fostering an environment that embraces data-driven insights as a strategic asset. Ultimately, organizations may consider having more innovative Behavior.

Innovative Behavior (IB)

Innovation Behavior (IB) has been a subject of significant interest and research in the academic literature, given its critical role in driving organizational success and competitiveness (Brem, 2011; Janssen, 2000; Tian et al., 2021). IB refers to the proactive and creative actions undertaken by individuals within an organization to introduce novel ideas, products, and processes to the market. The concept of IB is multi-dimensional, encompassing three key dimensions: Idea Generation, Idea Championing, and Idea Implementation (Asurakkody & Shin, 2018; Lukes & Stephan, 2017).

Idea Generation: This dimension of IB focuses on the process of generating new and innovative ideas to address existing challenges or capitalize on emerging opportunities. Studies have emphasized the importance of a conducive organizational culture that encourages and supports Idea Generation. Research suggests that organizations fostering an environment of creativity, open communication, and idea sharing tend to exhibit higher levels of IB and innovation success.

Idea Championing: The dimension of Idea Championing pertains to the active advocacy and promotion of innovative ideas within an organization. Individuals who act as Idea Champions are instrumental in garnering support for novel concepts, securing necessary resources, and overcoming resistance to change. The role of entrepreneurial leaders and influential stakeholders as Idea Champions has been highlighted in the literature. Such champions play a crucial role in facilitating the acceptance and implementation of innovative ideas within the organization.

Idea Implementation: Idea Implementation involves translating innovative concepts into tangible products, services, or processes that create value for the organization and its stakeholders. Successful Idea Implementation requires effective planning, resource allocation, and effective execution. Research has shown that organizations with strong implementation capabilities tend to achieve greater innovation success and competitive advantage.

The literature underscores the significance of IB in fostering organizational growth and adaptability in dynamic business environments (Ogiemwonyi et al., 2023; Vaz & Nijkamp, 2009). Organizations with a strong focus on IB tend to exhibit higher levels of innovation performance, increased market responsiveness, and enhanced overall competitiveness. Moreover, IB has been linked to higher levels of employee engagement and job satisfaction, as individuals feel empowered to contribute their creative ideas and witness the realization of their innovations (Parzefall et al., 2008).

However, the effective cultivation of IB is not without challenges. Organizational factors such as risk aversion, bureaucratic processes, and lack of resources can hinder IB efforts (Loader, 2013; Mohammadali & Abdulkhaliq, 2019). Studies suggest that organizations need to foster a culture that encourages experimentation and embraces failure as a stepping stone to innovation (Loader, 2013; Mohammadali & Abdulkhaliq, 2019). Additionally, providing sufficient support and recognition for IB initiatives can incentivize individuals to actively participate in the innovation process.

In summary, the past literature has highlighted the importance of Innovation Behavior and its multi-dimensional nature encompassing Idea Generation, Idea Championing, and Idea Implementation. Organizations that prioritize and cultivate IB are better positioned to drive innovation, achieve competitive advantage, and adapt to ever-changing market conditions. By understanding the dimensions of IB and the factors influencing its effectiveness,

organizations can develop strategies to nurture a culture of innovation and unlock their full innovative potential.

Competitive Intelligence (CI)

CI has emerged as a critical strategic tool for organizations seeking to gain a competitive edge in the marketplace (Agnihotri & Rapp, 2011; Mohsin et al., 2015). CI involves the systematic gathering, analysis, and interpretation of information about competitors, customers, industry trends, and other external factors that can impact the organization's performance. The concept of CI has garnered significant attention in the past literature due to its potential to enhance decision-making, identify opportunities, and mitigate risks.

CI practices have evolved in response to the dynamic and highly competitive business environment. Studies in the academic literature have emphasized the importance of CI in supporting organizations' strategic planning and market positioning (Maritz & Du Toit, 2018). By proactively monitoring and assessing market dynamics, CI enables organizations to anticipate competitor moves, identify emerging trends, and capitalize on untapped opportunities. Moreover, CI empowers organizations to make data-driven decisions, reducing uncertainty and enhancing their ability to respond effectively to changing market conditions (Shujahat et al., 2017).

The literature highlights various methods and techniques employed for CI, including competitor profiling, market research, customer feedback analysis, and trend monitoring (Gaspareniene et al., 2013). Utilizing a combination of primary and secondary data sources, CI professionals gather information from diverse channels, such as industry reports, social media, customer surveys, and competitor websites. Through data triangulation and analysis, organizations gain valuable insights into the competitive landscape, enabling them to make informed and strategic choices.

Additionally, studies have emphasized the significance of CI as a driver of organizational learning and continuous improvement (Maritz & Du Toit, 2018; Shujahat et al., 2017). By continuously updating and sharing CI insights, organizations can facilitate knowledge dissemination across departments and foster a culture of learning and adaptability. CI also facilitates the identification of best practices and benchmarking against industry leaders, enabling organizations to identify areas for improvement and innovation.

However, the successful implementation of CI is not without challenges (Iwu-James et al., 2020). Studies have pointed to issues related to data quality, information overload, and the need for skilled professionals to analyze and interpret CI data effectively. Ensuring the accuracy and reliability of CI data is crucial for making well-informed decisions, and organizations need to invest in data validation and verification processes.

With that being said, the past literature has recognized Competitive Intelligence as a valuable strategic asset for organizations seeking to thrive in the competitive marketplace. CI facilitates data-driven decision-making, enhances strategic planning, and supports organizational learning. By addressing challenges related to data quality, information overload, and skill development, organizations can leverage CI effectively to gain a competitive advantage, respond to market changes, and drive sustained success.

Innovative Dynamism (ID)

ID has been a prominent concept in the academic literature, particularly in the context of understanding the dynamics of innovation and its impact on organizational performance (Magistretti et al., 2021; Mohsin et al., 2015; Piening, 2013). ID refers to the degree of

dynamism or agility within an organization in response to changes in the external business environment. It reflects an organization's ability to adapt, innovate, and seize opportunities amid uncertainty and market turbulence (Amui).

Studies in the past literature have emphasized the significance of ID as a key determinant of organizational success and survival (Taneja et al., 2016). Organizations characterized by high levels of ID tend to be more flexible, responsive, and innovative, enabling them to capitalize on emerging opportunities and navigate challenges effectively.

According to Taneja et al (2016), high levels of ID are associated with several positive outcomes. Firstly, organizations with high ID are more likely to be proactive in seeking out innovative opportunities rather than merely reacting to market forces. This proactive stance allows them to gain a first-mover advantage, explore new markets, and create new business models. Secondly, ID fosters a culture of continuous learning and experimentation. Organizations with a high ID encourage employees to take risks, learn from failures, and embrace change. This culture of learning enables them to build a reservoir of knowledge and experience, which becomes a valuable resource for driving innovation. Thirdly, ID enhances an organization's ability to adapt to changing market conditions and technological advancements. By being responsive and adaptable, organizations with high ID can quickly adjust their strategies and operations to align with evolving customer needs and preferences. While the literature extols the benefits of high ID, it also acknowledges the challenges associated with maintaining and cultivating such dynamism (Malerba, 2007). Organizations may face resistance to change, internal inertia, and bureaucratic processes that impede agility and innovation. Therefore, promoting ID requires a concerted effort to overcome these barriers and create an environment that nurtures creativity, collaboration, and entrepreneurial spirit.

In conclusion, the past literature recognizes Innovative Dynamism as a critical factor that drives organizational success and competitive advantage. Organizations with high ID are better positioned to embrace innovation, respond to market changes, and thrive in dynamic and uncertain business environments. By understanding the determinants and implications of ID, organizations can implement strategies to foster a culture of agility, adaptability, and innovation, positioning themselves for sustained growth and success in today's rapidly evolving business landscape.

Conceptual Framework

Based on the discussion above regarding BIS, IB, CI, and ID, this paper proposed a conceptual framework as illustrated in Figure 1. The relationship of each of the variables were discussed in the following section.

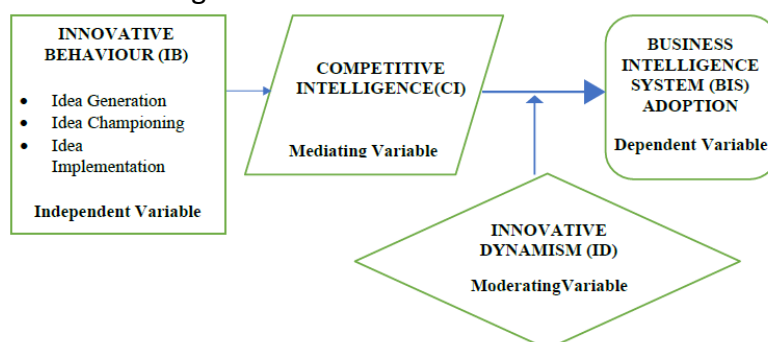


Figure 1: Conceptual Framework

Hypotheses Developments

The complex relationship between all the variables (IB, CI, BIS and ID) were rooted in the RBV theory (Bosnjak et al., 2020; Mohammad et al., 2022) as discussed earlier in this paper. The following part discussed the hypotheses development.

Innovation Behavior (IB) and Business Intelligence System (BIS)

The relationship between IB and BIS has been a subject of considerable interest in the academic literature, as both concepts play crucial roles in enhancing organizational performance and competitiveness.

Studies in the past literature have consistently shown a positive and symbiotic link between IB and BIS. IB serves as a catalyst for generating novel ideas and fostering a culture of innovation within organizations (Ain et al., 2019; Lim et al., 2013; Mohsin et al., 2015). As entrepreneurs and employees engage in Idea Generation, Idea Championing, and Idea Implementation, they contribute to the creation of a rich pool of innovative concepts that can drive organizational growth and success.

Furthermore, the integration of IB and BIS contributes to organizational learning and knowledge management (Ain et al., 2019). The collaboration between innovation teams and BIS professionals fosters knowledge sharing and the dissemination of best practices. This continuous exchange of insights leads to improved innovation capabilities and a higher likelihood of successful innovation outcomes.

Therefore, the past literature demonstrates a strong and complementary relationship between Innovation Behavior and Business Intelligence System. IB generates innovative ideas, while BIS provides the analytical tools and data-driven insights to support the successful implementation and management of innovation projects. By leveraging this synergistic relationship, organizations can enhance their innovation capabilities, achieve a competitive advantage, and position themselves for sustained success in today's rapidly evolving business landscape.

Thus, hypothesis 1 is proposed to study the research question 1 (e.g., testing the latent variable) and hypothesis 1a, 1b, and 1c is proposed to study the research question 2 (e.g., testing the dimension of the IB latent variable).

H1: There is a positive relationship between IB and BIS Adoption

H1a: There is a positive relationship between IG and BIS Adoption

H1b: There is a positive relationship between IC and BIS Adoption

H1c: There is a positive relationship between II and BIS Adoption

While the literature largely supports the positive link between IB and BIS, it also acknowledges the importance of organizational factors in fostering a synergistic relationship. For example, the competitive intelligence and innovative dynamic as discussed in this section below.

The mediating effect of Competitive Intelligence (CI) on the IB and BIS

The academic literature has little exploration with the link between IB and BIS, with the mediating effect of CI. This link is possible due to its relevance in understanding the complex dynamics of innovation and decision-making processes within organizations.

Past literature has shown a glimpse of connection between IB and CI (Nte et al., 2020) and, CI and BIS (Maghrabi et al., 2011; Mohsin et al., 2015). CI plays a crucial mediating role in the relationship between IB and BIS adoption. CI involves the systematic gathering and analysis of information about competitors, market trends, and external factors that impact an organization's performance. Studies have shown that organizations with a strong focus on IB

also tend to invest in CI practices to gain insights into market opportunities, monitor competitor activities, and assess industry trends.

CI acts as a bridge between IB and BIS adoption by providing data-driven insights that inform decision-making related to innovation projects. As innovative ideas emerge through IB, CI comes into play by evaluating the potential impact of these ideas, identifying market opportunities, and assessing the feasibility and viability of their implementation. The valuable insights provided by CI help organizations make informed decisions about which innovative projects to pursue and allocate resources effectively.

Moreover, CI can contribute to the successful implementation of BIS by facilitating real-time monitoring and reporting. As IB-led innovation projects progress into the implementation phase, BIS enables organizations to track their performance, measure key metrics, and adjust strategies accordingly. The continuous flow of information from CI to BIS ensures that decision-makers have access to up-to-date data, supporting the effective management of innovation initiatives.

Having discussed the above link between IB and BIS adoption can possibly be reinforced by the mediating effect of CI. Organizations that actively engage in IB are more likely to adopt BIS, and CI plays a pivotal role in facilitating the flow of data-driven insights that inform decision-making related to innovative projects. By understanding the mediating role of CI, organizations can leverage the link between IB and BIS adoption to drive innovation, enhance their competitive advantage, and achieve sustained success in today's dynamic and competitive business landscape.

Thus, hypothesis 2 is proposed to study the research question 3 (e.g., testing the latent variable) and hypothesis 2a, 2b, and 2c is proposed to study the research question 4 (e.g., testing the dimension of the IB latent variable).

H2: Competitive Intelligence Mediates the Relationship Between Innovation Behavior and BIS Adoption among SMEs in Malaysia.

H2a: Competitive Intelligence Mediates the Relationship Between Idea Generation (Dimension of Innovation Behavior) and BIS Adoption among SMEs in Malaysia.

H2b: Competitive Intelligence Mediates the Relationship Between Idea Championing (Dimension of Innovation Behavior) and BIS Adoption among SMEs in Malaysia.

H2c: Competitive Intelligence Mediates the Relationship Between Idea Implementation (Dimension of Innovation Behavior) and BIS Adoption among SMEs in Malaysia.

The moderating effect of Innovative Dynamism (ID)

The complex link between IB, CI, and BIS, with the moderating effect of ID can further extend the literature in entrepreneur and management studies. Understanding how these factors interact is crucial for comprehending the complexities of innovation processes and their impact on organizational performance.

In the context of this relationship (IB>CI>BIS), ID plays a significant moderating role. ID refers to the degree of dynamism and adaptability within an organization in response to changing market conditions. Studies have shown that organizations with high ID are more responsive to innovation and are better equipped to capitalize on the insights provided by CI (De las Heras-Rosas & Herrera, 2021). The dynamic and agile nature of ID enables organizations to adapt their strategies and operations in real-time, aligning them with market trends and customer demands.

In contrast, organizations with low ID may face challenges in effectively utilizing the insights from CI and implementing BIS. The lack of dynamism and adaptability may hinder the organization's ability to respond to CI's recommendations, resulting in missed opportunities or delayed decision-making.

Thus, the past literature provides a hint on a complex and interrelated link between IB>CI>BIS with the moderating effect of ID. IB fosters the demand for CI, which mediates the relationship between IB and BIS. Additionally, ID acts as a moderator, influencing the strength of the relationships. Eventually, organizations that effectively navigate and leverage these relationships are more likely to achieve sustained success and competitive advantage through innovation and data-driven decision-making.

Thus, hypothesis 3 is proposed to study the research question 5.

H3: Innovation Dynamism Moderates the Relationship Between Innovative Behavior and BIS Adoption among SMEs in Malaysia.

Methodology

This conceptual paper adopts a quantitative research design to investigate the intricate relationship between IB, BIS adoption, and the mediating effect of CI, with the moderating effect of ID among SMEs in Malaysia. The proposed study is designed to contribute valuable insights to the existing literature by employing robust research methodologies in line with the rigor expected in top academic writing journals.

Research Design and Sample Selection

A cross-sectional survey approach will be employed to collect data from SMEs operating in diverse industries and geographical locations in Malaysia. To ensure a comprehensive representation of SMEs with varying degrees of IB and BIS adoption practices, purposive sampling will be utilized. The number of sample selected should be following the G*Power by (Faul). This method allows for the deliberate selection of SMEs that possess relevant attributes to the research objectives.

Data Collection and Measurement of Variables

Primary data will be collected through self-administered questionnaires tailored to measure the constructs of interest. A multidimensional scale encompassing Idea Generation, Idea Championing, and Idea Implementation will be used to assess IB. BIS adoption will be gauged through items evaluating the extent of BIS implementation within the organization. Similarly, CI will be assessed using a comprehensive set of items designed to evaluate the utilization of CI practices and data sources. The construct of ID, capturing an organization's agility and adaptability, will be measured using a validated scale.

Proposed Questionnaire development

The questionnaire development for this conceptual study on the relationship between IB, BIS adoption, CI, and ID among SMEs in Malaysia adheres to rigorous academic standards. The measurement of variables employs established scales from the literature to ensure reliability and validity.

From the literature review, established measures have been incorporated into the proposed questionnaire to measure the key variables adopted in the theoretical framework of this study. These key variables are Innovative Behavior (Section A), Competitive Intelligence (Section B), Innovative dynamism (Section C), and Business Intelligence System adoption

(Section D). The questionnaire is adapted from Lambriex-Schmitz et al (2020), which is based on Janssen (2000) (Section A), Mohsin et al (2015) (Section B and Section C) and Popovic et al. (2018) (Section D) who formulated, tested the measurements in line with this study. SME definition is according to the revised definition endorsed at the 14th NSDC Meeting in July 2013 and revised by Bank Negara. According to Bachman et al (2015), a structured set of questions adapted from various scholars can gather relevant data to answer the research questions and address the research problems.

Thus, the study proposed to use a structured questionnaire comprising six sections comprising information on company background, innovative Behavior, competitive intelligence, innovative dynamism and BIS Adoption. The questionnaire comprises 6 sections (A, B, C, D, E, F). Section A covers Innovation Behavior (idea generation, idea promotion and implementation) (Lambriex-Schmitz et al., 2020). Section B covers Competitive Intelligence based on (Mohsin et al., 2015). Section C presents statements on Innovative dynamism (Mohsin et al., 2015). Section D investigates BIS Adoption (Popovič et al., 2018). Section E and Section F cover the company background and respondents' background. Table 1 represent the information included in the questionnaire development. The proposed sample of the questionnaire is in the Appendix.

Table 1

Questionnaire Development Section A – F

Section	No of Items	Variable
A	15	Innovation Behavior
B	17	Competitive Intelligence
C	6	Innovative Dynamism
D	6	BIS Adoption
E	9	Company Background
F	4	Respondents Background

Ethical Considerations

This study adheres strictly to ethical guidelines governing research involving human participants. Informed consent will be obtained from all participating SMEs, ensuring their voluntary participation and confidentiality of their responses. The anonymity of respondents will be maintained throughout data collection and analysis.

Hypotheses Testing and Data Analysis

The study will test several hypotheses derived from the proposed conceptual model. SEM a widely accepted and robust statistical technique will be employed to analyze the data. SEM allows for the examination of both direct and indirect effects between variables, making it particularly well-suited for assessing the mediation effect of CI on the relationship between IB and BIS adoption. Furthermore, SEM facilitates the examination of the moderating effect of ID on the relationship between CI and BIS adoption, providing a comprehensive analysis of the proposed conceptual model.

Finally, the proposed paper attempts to provide a rigorous research design and analysis techniques to explore the complex relationships between IB, BIS adoption, CI, and ID among SMEs in Malaysia. The study aspires to provide valuable contributions to the academic literature, shedding light on the determinants and dynamics of innovation Behavior and BIS adoption, while elucidating the mediating and moderating roles of CI and ID, respectively.

Theoretical Contributions

This paper integrates the Resource-Based View (RBV) theory with the concepts of innovation behavior (IB) and business intelligence system (BIS) adoption. This synthesis provides a new lens through which to understand how SMEs can leverage their unique resources, including innovative behavior and data-driven decision-making, to gain competitive advantage. This theoretical fusion contributes to a more holistic understanding of the mechanisms that drive SME growth and success.

Furthermore, the conceptual framework delves into the complex interplay between IB, BIS adoption, competitive intelligence (CI), and innovative dynamism (ID). By examining how these elements interact, it extends the theoretical landscape by highlighting nuanced relationships that have not been extensively explored before. This exploration opens up avenues for scholars to delve into the dynamics of these relationships in various contexts beyond Malaysia.

Meanwhile, the paper also introduces the concept of competitive intelligence (CI) as a potential mediator and innovative dynamism (ID) as a moderator in the relationship between IB and BIS adoption. This expansion of the understanding of the mediating and moderating effects in the context of SMEs' innovation and technology adoption adds depth to existing theories and contributes to the broader discussions on how external factors and internal dynamics influence these relationships.

Conceptual Contributions

By introducing the dimensions of IB (Idea Generation, Idea Championing, and Idea Implementation) this paper provides a more intricate perspective on how innovative behavior operates within SMEs. This breakdown helps researchers and practitioners recognize distinct components of IB and design strategies to foster each aspect, potentially leading to more effective innovation processes.

The conceptual framework suggests that competitive intelligence (CI) may mediate the relationship between the dimensions of IB and BIS adoption. This proposition highlights the potential role of informed decision-making and strategic planning in connecting innovative actions to technology adoption. This insight contributes to the understanding of the mediating mechanisms that underlie the transformation of innovative ideas into tangible business outcomes.

The conceptual framework also proposes that innovative dynamism (ID) moderates the relationship between competitive intelligence and BIS adoption. This insight advances the conceptualization of how the external environment's innovative orientation can influence the effectiveness of intelligence-driven decision-making, emphasizing the importance of aligning internal and external innovation dynamics.

Finally, this paper focuses on SMEs in Malaysia and brings a localized perspective to the broader discussions on innovation, business intelligence, and competitiveness. By considering the unique economic, cultural, and regulatory context of Malaysia, this conceptual work paves the way for more targeted research and policy recommendations specific to the country's SME ecosystem.

Conclusion

In conclusion, the conceptual paper has the potential to contribute both theoretically and conceptually by integrating RBV with innovation and business intelligence concepts, exploring complex relationships, proposing mediating and moderating effects, identifying specific

dimensions of innovative behavior, and contextualizing within the Malaysian SME landscape. These contributions collectively advance the scholarly understanding of SME growth, innovation, and technology adoption, offering valuable insights for researchers, practitioners, and policymakers.

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