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Harnessing intellectual capital for Islamic value-based innovation: evidence from Indonesian halal industry SMEs

Abstract

Research background and purpose: The halal industry is expanding rapidly, with small and medium-sized enterprises (SMEs) playing a central role in supporting Shariah-compliant economic development. As halal SMEs grow and compete in dynamic markets, innovation that reflects Islamic values becomes increasingly important. Intellectual capital is expected to shape how these firms develop innovation while remaining aligned with Shariah principles. This study examines how four components of intellectual capital (human, structural, relational, and spiritual capital) influence Islamic value-based innovation among halal industry SMEs in Indonesia.

Design/methodology/approach: Data were collected from 207 SMEs operating within halal industry value chains in Indonesia. Partial least squares structural equation modelling (PLS-SEM) was employed to test the relationships between intellectual capital components and Islamic innovation. In addition, a measurement instrument for Shariah-aligned innovation was developed and validated. To strengthen the credibility of the findings, robustness checks were conducted by re-estimating the model without the dominant construct, and additional multi-group analyses were performed to assess the stability of relationships across different stages of business age.

Findings: The findings show that structural, relational, and spiritual capital positively and significantly influence Islamic value-based innovation, while human capital, although positive, is not statistically significant in the full model. Spiritual capital emerges as the strongest driver, emphasizing the importance of ethical awareness and religious commitment. Robustness analyses indicate that these relationships remain stable across alternative model specifications and business age groups.

Value added and limitations: This study provides several contributions to the literature on Islamic innovation by focusing on Indonesia, the world's largest Muslim-majority country and an emerging hub for halal industry development. Intellectual capital, especially spiritual capital, supports Shariah-compliant innovation and strengthens the foundations of a resilient halal economy. The study also contributes a validated measurement tool for Islamic innovation that can be used in future research. However, the sample was limited to halal SMEs within selected regency, which may not fully represent the diversity of the broader halal SME population across Indonesia. Future studies could extend this research across different national contexts or adopt longitudinal designs to capture the dynamic evolution of Islamic value-based innovation.

Keywords: *intellectual capital, Islamic innovation, halal industry*

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1. Introduction

Intellectual capital has long been recognized as a critical driver of organizational competitiveness and innovation, particularly in knowledge-intensive and dynamic business environments (Aljuboori et al., 2022; Khan & Wan Yusoff, 2023; Muda et al., 2020; Wahyuni et al., 2023). According to Xu and Li (2022), intellectual capital consists of all useful knowledge that can help create value. In the current globalized and dynamic world, where innovation is the primary driver, and knowledge products are in critical demand, intellectual capital serves as a foundation for creativity and a strategic enabler for business to maintain sustainability (Beltramino et al., 2022). It also allows managers to focus more on managing intangible resources, in order to reinforce the strategy of their company (Vaz et al., 2019).

The literature commonly conceptualizes intellectual capital as comprising three core components: human capital, structural capital, and relational capital (Aljuboori et al., 2022; Bontis, 1998; S. Cohen & Kaimenakis, 2007; Teoh et al., 2023). More recently, spiritual capital has gained scholarly attention as an additional dimension, particularly in contexts where ethical, religious, and value-based considerations shape business behaviour (Khalique et al., 2020; Khalique & Shaari, 2022; Tjahjadi et al., 2024). Spiritual capital emphasizes values-based decision-making, moral awareness, and purpose-driven organizational practices, offering an important lens for understanding innovation in faith-oriented business environments (Zohar & Marshall, 2004). Despite its relevance, empirical research on spiritual capital remains limited, especially in Muslim-majority countries such as Indonesia, where Islamic values play a significant role in shaping entrepreneurial behaviour (Tjahjadi et al., 2024). This gap highlights the need for further empirical investigation.

Previous studies have consistently documented a positive relationship between intellectual capital and innovation (Al-Khatib, 2022; J. Huang et al., 2023; Onofrei et al., 2020; Teoh et al., 2023). Intellectual capital has been accepted for a long time as a business value driver (Grant, 1996; Pratama et al., 2022; Pratama & Innayah, 2021). However, much of the existing empirical evidence is derived from large firms, with relatively limited attention devoted to small and medium-sized enterprises (SMEs), particularly in emerging economies. Given the structural constraints faced by SMEs, further quantitative research is required to clarify how different components of intellectual capital support innovation in this context (Beltramino et al., 2022).

The growing interest in value-based and religion-oriented innovation has further extended the intellectual capital discourse. In Muslim-majority contexts such as Indonesia, firms are increasingly expected to balance innovation with adherence to Islamic ethical and moral principles (Khalique & Shaari, 2022; Wook et al., 2021). This expectation gives rise to a form of innovation that integrates commercial objectives with social, spiritual, and moral considerations. Islamic innovation reflects

this blended orientation by emphasizing values such as taqwa (God-consciousness), ikhlas (sincerity), and accountability, guiding firms to pursue innovation in a manner consistent with Sharia principles (Azmi & Hashim, 2022). Innovation, in this sense, is not rejected but reframed to ensure that products and processes are halal, ethical, and socially beneficial.

While this study is grounded in the Islamic and halal industry context, the underlying relationship between intellectual capital and innovation is theoretically universal. Previous studies across diverse cultural and institutional settings have consistently shown that human, structural, and relational capital are key drivers of innovation in SMEs (Agostini et al., 2017; Beltramino et al., 2022; Rehman et al., 2022). From this perspective, Islamic value-based innovation can be understood as a context-specific manifestation of broader innovation processes, where ethical, spiritual, and social values play a more explicit role. This positioning allows the present study to contribute not only to Islamic business research but also to the wider intellectual capital and innovation literature.

This study aims to see the influence of intellectual capital (human capital, structural capital, relational capital, spiritual capital) on Islamic innovation activities among small and medium-sized enterprises (SMEs). The empirical analysis uses data from SMEs in the Banyumas Regency, Central Java, Indonesia, collected from 207 SMEs with 5–99 workers. As part of strategic and decision making there is little research done through surveys for business owners or managers (Molthar & Indarti, 2021). The ownership and management role played by these owners/managers of SMEs are vital for economic development in new economies as a driver of innovation (Molthar & Indarti, 2021; Deichmann & Stam, 2015).

To enhance the rigour of the empirical investigation, this study goes beyond testing the main structural model by incorporating robustness and supplementary analyses to assess the stability of the findings across alternative model specifications and business characteristics. This approach strengthens confidence in the reported relationships and mitigates concerns related to model dependency and sample composition. The research questions to be answered are as follows:

- Q1. Does human capital have a positive effect on Islamic innovation ?*
- Q2. Does structural capital have a positive effect on Islamic innovation?*
- Q3. Does relational capital have a positive effect on Islamic innovation?*
- Q4. Does spiritual capital have a positive effect on Islamic innovation?*

Answers to these questions are highly beneficial to both SME professionals and academic scholars as intellectual capital represents a manifestation of innovative work activities (Al-Khatib, 2022; J. Huang et al., 2023; Onofrei et al., 2020; Teoh et al., 2023). With the presence of some further strategic moves such as Indonesian Halal Industry Master

Plan 2023–2029 (Komite Nasional Ekonomi dan Keuangan Syariah & Kementerian PPN/Bappenas, 2023), Indonesia aims to position itself as a global halal industry leader. A key component of this strategy is a government-supported halal certification program, notably the Sehati Program, as a program that provides assistance to SMEs in ensuring their business processes in accordance with Sharia. These programs are implemented within Indonesia's regional autonomy framework, where each province develops specific and diverse localized economic policies that align with national development aims (Indonesian Law Number 23 Regarding Regional Autonomy, 2014).

Based on this background, Banyumas Regency in Central Java is a good case example because it has a high growth of the economy also has the most number of SMEs in Central Java Province (Badan Pusat Statistik Provinsi Jawa Tengah, 2023; Department of Communication and Informatics of Banyumas Regency, 2023). However, the majority of SMEs in Banyumas are micro and small enterprises which face challenges in terms of scaling up. High innovation capacity, which relates to their deficient procedures of adopting halal standards and certification as well as their incapacity to compete in the halal industry, is one of the obstacles to growth (Komite Nasional Ekonomi dan Keuangan Syariah & Kementerian PPN/Bappenas, 2023). It is important to overcome these innovation constraints in order to ensure that SMEs can be maximally empowered and contribute, in line with Indonesia's larger vision of becoming a global halal economic player.

There are several important ways in which this study adds to the literature. This study is based in Indonesia, an emerging market with a majority Muslim population, which has been trying to firmly place itself as a key player in the global halal market, as reflected in the Indonesian Halal Industry Master Plan 2023–2029 (Komite Nasional Ekonomi dan Keuangan Syariah & Kementerian PPN/Bappenas, 2023). In this context also supports the development of the Sharia economy on a larger scale with the increasing need for innovation based on Islamic values. This study contributes to the development literature on intellectual capital and innovation in an emerging Muslim majority economy. Beltramino et al. (2022) emphasize that the analysis of intellectual capital in developing economies is important since institutional settings and innovation ecosystems are less developed there. In these scenarios, the strategic managerial approach of intellectual capital carries key importance in increasing the SME competitiveness. Conversely, even though some research had been conducted in another emerging country (Khalique & Shaari, 2022; Wook et al., 2021), only a few appeared to study this phenomenon specifically in Indonesia. Indonesia has its distinct socio-economic and cultural background that shows an interesting context to understand the role of intellectual capital (Tjahjadi et al., 2022). Second, this study builds a new method of Islamic Innovation construct and validates it in Sharia compliant way. Moreover, through the assessment of its reliability and validity, the research demonstrates a rigorously grounded basis for its subsequent

empirical investigation along with a sound measurement tool for measuring Islamic value-based innovation (Malik et al., 2019).

The rest of this research is organised as follows. The next section presents the theoretical framework and hypothesis development. This is followed by the methodology section, which describes the sample, data collection, and measurement procedures. The subsequent section reports the empirical results, including robustness analyses. Finally, the paper concludes with a discussion of the findings, implications, limitations, and directions for future research.

2. Literature review

2.1. Diffusion of Innovation Theory and the emergence of Islamic-value based innovation

Innovation is commonly defined as the successful implementation of new ideas in products, processes, or a combination of both (Bulut et al., 2022; OECD Eurostat, 2018). From a diffusion perspective, innovation is not only about novelty itself, but about how new ideas are adopted, implemented, and routinized within organizations and social systems (Rogers, 2003). Business continuously innovates to improve their offerings, enhance operational efficiency, and respond to changing market demands (Xu et al., 2019). Consistent with the Oslo Manual, contemporary innovation research largely focuses on product and process innovation as the two core forms through which firms operationalize new ideas (Bulut et al., 2022; Hwang & Hsu, 2019). These two forms are closely interconnected, as product innovation often requires changes in internal processes, while process improvements may enable the development of new or improved products.

Diffusion of Innovation Theory emphasizes that innovation adoption is shaped not only by technological characteristics, but also by social norms, values, and belief systems that influence decision-making within organizations (Rogers, 2003). In other words, innovation is inherently value-laden rather than culturally neutral. Organizational actors evaluate innovations based on their compatibility with existing values, ethical standards, and institutional expectations. This theoretical insight provides an important foundation for understanding the emergence of Islamic-value based innovation, particularly in Muslim-majority contexts where religious norms play a central role in shaping economic behaviour.

In businesses guided by Islamic values, innovation extends beyond profit maximization and technological advancement, arguing that innovation in Islamic contexts must align with Sharia principles, aiming to generate *maslahah* (public benefit) while avoiding activities deemed *haram* (prohibited). This includes the use of *halal* inputs, the avoidance of *riba* (interest), gambling, and unethical practices, as well

as the promotion of transparency, sustainability, and fair labour conditions. From this perspective, innovation outcomes are evaluated not only by market success but also by their ethical and social consequences, in line with the teachings of the Al-Qur'an and Sunnah.

The foundation of conceptual framework on Islamic innovation was introduced by Abdullah and Sofian (2012) and Jalil (2006), who helped define the theoretical framework for understanding innovation based on Islamic principle. Moreover, Azmi and Hashim (2022) further developed this concept by connecting innovation to the objectives of Islamic law, known as Maqasid al-Shariah. In this study, Islamic innovation is not conceptualized as a distinct technological category separate from conventional innovation. Rather, it represents a value-based orientation embedded within mainstream forms of product and process innovation. Consistent with the Oslo Manual (OECD Eurostat, 2018), innovation outcomes are captured through improvements in products and business processes. What differentiates Islamic innovation is the ethical, spiritual, and societal framework that guides how innovation decisions are made, which innovations are pursued, and how outcomes are evaluated.

Innovation activities are therefore shaped by Sharia principles, halal compliance, and Maqasid al-Sharia objectives, ensuring that innovation serves not only economic goals but also broader social and moral purposes (Azmi & Hashim, 2022). This concept provides a structured way to understand how innovation can align with Islamic values. Islamic innovation has categorized into three levels:

1. Necessities (Ḍaruriyyāt): this level of innovation focuses on fulfilling fundamental needs, while ensuring compliance with Islamic principles, and upholding basic ethical standards. For example, halal certification ensures business compliance with religious guidelines while considering market needs.
2. Supporting needs (Ḥājiyyāt): at this level, innovation aims to improve the convenience and efficiency while promoting fair and ethical business practices. For example, the implementation of transparent supply chain or sharia-compliant financial practices support both business practitioner and consumer without compromising ethical trust.
3. Luxuries (Taḥsiniyyāt): the highest level of innovation goes beyond necessity, which aims to enhance the quality of life, increase excellence, and contribute positively to the society. This might involve developing product that contribute to social and environmental well-being.

Applying Islamic innovation for SMEs in Muslim-majority country helps align innovation with religious value and increase the responsible business growth. By integrating Maqasid al-Sharia into innovation strategies, it not only supports community well-being but also promotes long-term sustainability and economic development in line with Islamic ethics. Table 1 presents the development of Islamic innovation measurement, linking conventional innovation practices with Islamic ethical objectives.

Table 1. The development of Islamic innovation measurement

Innovation concept	Islamic concept	Measurement item	Adapted literature	
Product innovation	Essentials (Ḍaruriyyāt)	Commitment to ethical standards in products and services	Azmi & Hashim (2022) Wang & Ahmed (2004)	
		Introduction of products and services aligned with Islamic values of excellence	Azmi & Hashim (2022) Wang & Ahmed (2004)	
		Leadership in halal product or service offerings	Azmi & Hashim (2022) Wang & Ahmed (2004)	
	Supporting needs (Ḥājiyyāt)	Ethical continuous improvement in products	Azmi & Hashim (2022) Huang et al. (2012)	
		Product innovation aligned with Islamic principles for fair competition	Azmi & Hashim (2022) Wang & Ahmed (2004)	
	Luxury (Taḥsiniyyāt)	Social contribution through innovative products	Azmi & Hashim (2022) Wang & Ahmed (2004)	
		Trust-based image enhancement	Azmi & Hashim (2022) Huang et al. (2012)	
	Process innovation	Essentials (Ḍaruriyyāt)	Ethical excellence in business processes	Azmi & Hashim (2022) Wang & Ahmed (2004)
			Efficient and ethical manufacturing processes	Azmi & Hashim (2022) Huang et al. (2012)
High-quality assurance in production processes			Azmi & Hashim (2022) Huang et al. (2012)	
Proactive ethical standards in process improvement			Azmi & Hashim (2022) Huang et al. (2012)	
Supporting needs (Ḥājiyyāt)		Ethical flexibility in production adaptation	Azmi & Hashim (2022) Wang & Ahmed (2004)	
		Responsible and efficient resource utilization	Azmi & Hashim (2022) Huang et al. (2012)	
		Ethical adoption of new production technologies	Azmi & Hashim (2022) Wang & Ahmed (2004)	
Luxuries (Taḥsiniyyāt)		Commitment to excellence and perfection in processes	Azmi & Hashim (2022) Huang et al. (2012)	

Source: own study

2.2. Knowledge-based view: intellectual capital as a strategic enabler for Islamic innovation

Intellectual Capital (IC) is a key resource for achieving competitive advantage, especially for Small and Medium Enterprises (SMEs) facing financial and resource limitations (Rehman et al., 2022; Xu & Li, 2022). IC plays a vital role in generating knowledge, fostering innovation and driving business growth (Vaz et al., 2019). The concept of IC evolved from the Resource-Based View (RBV), which focused on firm-specific resources (Barney, 1986; Wernerfelt, 1984). Then it evolved to the Knowledge-Based View (KBV), which highlights knowledge as the core driver of innovation and value (Grant, 1996). According to Mariano et al. (2023), knowledge serves as strategic asset for organizations, especially SMEs, by enhancing professionalization. This, in turn, empowers organization to make better decisions, drive innovation, and respond more effectively to market demands.

In today's globalized and innovation-driven economy, relying solely on physical assets is no longer sufficient. Beltramino et al. (2022) emphasize that intangible assets, especially IC, are crucial for enhancing SME competitiveness and sustainability. This is especially true in emerging markets where SMEs must find low-risk, high-impact strategies to survive and grow (Li et al., 2020). Under the KBV perspective, IC is no longer just a passive asset but an active enabler of innovation. According to Islamic perspective, knowledge is an amanah (trust) from Allah, and its utilization must reflect *ihsan* (excellence) and *taqwa* (God-consciousness) (Azmi & Hashim, 2022).

Human capital, which includes the skills, knowledge, and ethical awareness of employees, contributes to the creation of innovative solutions that align with ethical values. When individuals are trained in both technical and moral dimensions, they are more capable of generating ideas that benefit both the organization and the wider community. Structural capital, referring to an organization's systems and processes, supports innovation by providing the infrastructure needed to develop and apply new ideas efficiently. When internal frameworks (databases, accounting practices, and knowledge-sharing platforms) are aligned with Islamic value, they not only promote operational excellence but also encourage ethical innovation. Relational capital, which captures the relationships with customers, suppliers, and stakeholders, fuels innovation through trust-based collaboration and ethical engagement.

In addition to these conventional components, spiritual capital represents a distinctive dimension within Islamic-oriented organizations. Rooted in religious values and moral integrity, spiritual capital fosters a culture of purpose-driven innovation by encouraging sincerity (*ikhlas*), accountability, and God-consciousness (*taqwa*) (Azmi & Hashim, 2022; Khaliq et al., 2018; Zohar & Marshall, 2004). These values shape organizational behaviour and motivate innovation that serves not only commercial objectives but also broader social and spiritual goals. Collectively, the components of intellectual

capital enable SMEs – particularly in emerging and value-driven contexts – to develop innovations that are competitive, ethically grounded, and socially meaningful. In this sense, intellectual capital functions as a strategic enabler of Islamic value-based innovation, supporting firms' capacity for adaptation, renewal, and long-term sustainable growth (Li et al., 2020).

2.3. Human capital

Human capital refers to the knowledge, skills, and abilities that employees bring to an organization. It includes things like education, technical skills, attitudes, motivation, and both practical and theoretical knowledge (Kim & Tran, 2023). These qualities are unique to individuals and cannot be copied by others. According to Bontis (1998), human capital is the organization's ability to make the most of its employees' expertise to find effective solutions.

Human capital plays a key role in driving innovation. When employees at all levels continue learning and sharing knowledge, organizations are more likely to create new ideas and improve their products and processes (Fonseca et al., 2019; Lukovszki et al., 2020). Studies show that developing employees' competencies, soft skills, and creative thinking helps small and medium enterprises (SMEs) become more innovative (Al-Khatib, 2022; Beltramino et al., 2022; Lo et al., 2020). In Islamic contexts, this innovation must also align with ethical values, creating products that are useful and do not involve prohibited (haram) elements (Azmi & Hashim, 2022). Based on the above, the following hypothesis is formulated:

H1. Human capital has a positive and significant effect on Islamic innovation.

2.4. Structural capital

Structural capital is essential for supporting innovation because it includes the systems, processes, and technology that help organizations manage knowledge and run efficiently. Companies with strong structures – such as clear workflows, effective knowledge-sharing systems, and a positive organizational culture – can develop new products and improve processes more easily (Arabiyat & Hasoneh, 2019; Beltramino et al., 2020). These systems help store and reuse valuable knowledge, reduce repeated efforts, and encourage creativity and risk-taking.

In the context of Islamic innovation, structural capital also plays a key role by ensuring that innovation is aligned with Islamic values. A strong infrastructure allows employees to use advanced tools and work in a supportive environment that encourages ethical creativity. This includes promoting fairness, transparency, and sustainability in innovation processes. By using well-organized systems, businesses can turn their

structural capital into a foundation for ethical and socially responsible innovation (Aljuboori et al., 2022). Based on the above, the following hypothesis is formulated:

H2. Structural capital has a positive and significant effect on Islamic innovation.

2.5. Relational capital

Relational capital refers to the valuable knowledge and resources that come from a company's relationships with both internal and external stakeholders (Aljuboori et al., 2022; Engelman et al., 2017). These relationships, such as between employees or with customers, suppliers, and partners, create a network that helps businesses access new information and make better strategic decisions, especially in innovation (Mention, 2012; Onofrei et al., 2020). Strong networks promote collaboration, knowledge sharing, and the generation of fresh ideas, giving organizations a competitive advantage (Ibidunni et al., 2020).

In Islamic innovation, relational capital helps small and medium enterprises (SMEs) connect with diverse stakeholders while ensuring that their innovations reflect ethical, social, and religious values. By building trust and maintaining close ties with communities, consumers, and suppliers, SMEs can create halal and socially responsible products or services tailored to local needs. These relationships not only foster innovation but also ensure that business activities remain culturally sensitive and aligned with Islamic principles. Based on the above, the following hypothesis is formulated:

H3. Relational capital has a positive and significant effect on Islamic innovation.

2.6. Spiritual capital

Spiritual capital refers to intangible, transcendent resources that stem from individuals' religious beliefs or spiritual experiences (Khalique et al., 2018, 2020; Khalique & Pablos, 2015). It plays a crucial role in building shared visions, trust, and ethical communication within organizations, thereby enhancing employee creativity (Kolade et al., 2020; Usmanova et al., 2023). When spiritual values are embedded into the organizational culture, they reinforce components of intellectual capital (human, structural, and relational capital) supporting innovation that aligns with both ethical standards and social responsibility (Juliana et al., 2023). This integration ensures that innovative efforts create meaningful value for both businesses and the broader society.

Entrepreneurs who embody values such as honesty and humility often develop trustworthy relationships and collaborative networks, facilitating knowledge sharing

and innovation. Additionally, spiritual practices like prayer and meditation help cultivate creativity, reduce stress, and reinforce a higher sense of purpose (Neubert et al., 2017). As a result, spiritual capital becomes a key driver of value-based innovation, particularly in businesses that prioritize faith-oriented principles. Based on the above, the following hypothesis is formulated:

H4. Spiritual capital has a positive and significant effect on Islamic innovation.

3. Methods

3.1. Sampling design

This study employed a criterion-based convenience sampling method, targeting SMEs within the halal industry in Banyumas Regency. Due to the absence of an official registry of halal-oriented SMEs at the regional level, this study employed a purposive sampling strategy to ensure alignment between the selected sample and the research objectives. Enterprise identification was conducted using a combination of local government SME records, followed by direct screening by the research team. The screening process focused on confirming that firms met clearly defined inclusion criteria relevant to the halal industry context. Specifically, SMEs were included if they (1) employed at least five workers, in accordance with the SME classification stipulated in Indonesian Law No. 20/2008 on MSMEs, and (2) operated within one of the halal industry value chains, including halal food and beverages, halal pharmaceuticals and cosmetics, halal tourism, Muslim fashion, or the halal-oriented creative economy (Komite Nasional Ekonomi dan Keuangan Syariah & Kementerian PPN/Bappenas, 2023).

The adequacy of the sample size was assessed in relation to Partial Least Squares Structural Equation Modeling (PLS-SEM) requirements, which emphasize model complexity and statistical power rather than population-based formulas. Following the 10-times rule, the minimum required sample size should be at least ten times the maximum number of structural paths directed at any endogenous construct (Hair et al., 2022). In the present model, Islamic innovation receives four incoming paths, indicating a minimum requirement of 40 observations. To provide a more rigorous evaluation, an a priori statistical power analysis was conducted based on Cohen (1998). Assuming a medium effect size ($f^2 = 0.15$), a significance level of 0.05, statistical power of 0.80, and four predictors, the minimum required sample size is approximately 85 observations. The final analytical sample of 207 valid responses substantially exceeds both thresholds, confirming that the study is adequately powered to estimate the proposed structural model.

The majority of respondents were owners or managers directly involved in strategic and operational decision-making, which is consistent with established practices in SME and innovation research (Molthar & Indarti, 2021). Data collection was conducted through a combination of face-to-face and online surveys, with respondents contacted directly by the research team to enhance response relevance and data quality. Given the exploratory nature of the study, a cross-sectional research design was adopted to capture variation in intellectual capital and innovation practices across business.

The questionnaire was adapted from established international measurement scales. To ensure linguistic accuracy and contextual suitability, the instrument underwent a structured translation and adaptation process. The translated version was reviewed through expert judgment involving two academic researchers with expertise in intellectual capital and Islamic business, as well as one practitioner affiliated with a local SME association in Banyumas Regency. This process helped ensure conceptual equivalence with the original instruments while maintaining clarity and relevance for SME respondents in the local context (Sekaran & Bougie, 2016).

3.2. Pilot test

To ensure the instrument's clarity, validity, and reliability following translation, a pilot study was conducted involving 40 entrepreneurs from Banyumas who matched the target population. This step was essential to confirm that respondents could clearly understand and complete the questionnaire, in line with the recommendations by Malhotra et al. (2017) and Sekaran and Bougie (2016). The absence of missing responses indicated the instrument's acceptability. Reliability was assessed using Cronbach's alpha, which measures internal consistency. As suggested by (Hair et al., 2019, 2020), values above 0.7 are considered acceptable. The pilot results demonstrated high reliability, with alpha values ranging from 0.908 to 0.939.

3.3. Non-response bias and common method bias

To ensure the accuracy and validity of the research findings, this study addressed both non-response bias and common method bias (CMB). Non-response bias was assessed by comparing responses from offline and online data collection methods using a t-test, which revealed no significant differences at the 5% level, suggesting non-response bias was not a concern (Chen & Paulraj, 2004). To address CMB, the study employed both procedural and statistical remedies (Kock et al., 2021; Podsakoff et al., 2003). Procedural controls included clear variable separation, precise descriptions, and simplified question design to reduce ambiguity, social desirability, and consistency biases (Dolnicar, 2020; MacKenzie et al., 2011; Viswanathan & Kayande, 2012). A pilot test further enhanced the

instrument's clarity and minimized CMB risk (Kock et al., 2021). Statistical techniques, including reliability, convergent, and discriminant validity assessments, were also applied to detect potential biases. This combined approach strengthened the methodological rigor and reinforced the credibility of the study's findings.

3.4. Variable measurement

The variables in this study were measured using multiple dimensions adapted and adopted from established sources (see Appendix). Human capital was measured through four dimensions: competencies, attitude, intellectual alertness, and soft skills, based on Bontis (1998) and Muda et al. (2020). Structural capital included culture, processes and procedures, and information systems, using the same references. Relational capital was measured across five dimensions (relationships with customers, suppliers, the community, government, and financial institutions) adopted from Bontis (1998) and Khalique et al. (2020). Spiritual capital comprised knowledge and religious-ethical values, based on Khalique et al. (2018) and Khalique et al. (2020). Lastly, Islamic innovation was measured using two dimensions: Islamic product innovation and Islamic process innovation, adapted from the conceptual framework of Islamic innovation (Azmi & Hashim, 2022), and conventional innovation (Huang et al., 2012; Wang & Ahmed, 2004). For the survey data collection, managers or owners of the SMEs were requested to respond to the questionnaire items using a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree").

3.5. The justification of using SEM-PLS method

PLS-SEM is used to explain the relationships between latent variables in complex models. SEM was used to evaluate the proposed research model. The PLS-SEM model built consists of two sub models: a measurement model (outer) and a structural model (inner). These models are built based on the theories used to ensure content validity. The first step of the SEM method uses confirmatory factor analysis (CFA) to evaluate the measurement model for reliability, convergent validity, and discriminant validity. The second step tests the hypothesis by testing the structural model. Structural model evaluation is used to test the significance of the path coefficient. This significance test is also a hypothesis testing test.

Structural Equation Modelling (SEM), particularly using Partial Least Squares (PLS), is used in this study due to its ability to estimate measurement errors, assess relationships between constructs, and evaluate theoretical models effectively (Hair et al., 2022; Hair et al., 2019). SEM follows a two-phase process: assessing the model's validity and reliability, followed by hypothesis testing (Sarstedt et al., 2014). This includes examining internal consistency, convergent validity, and discriminant validity (Hair et al., 2014; Henseler et

al., 2015). Additionally, PLS is ideal for our study because (1) it helps explain and predict variable relationships (Nitzl et al., 2016), (2) it is increasingly applied in social sciences and business management (Chin & Saunders, 2009) and (3) it offers flexibility regarding data normality and measurement scales (Vinzi et al., 2010).

4. Results

4.1. Business profile

The demographic profile section aims to describe the characteristics of the study's respondents, with demographic questions placed at the start of the questionnaire to engage participants and encourage completion. The business profile includes categories such as years in operation, number of full-time employees, and annual sales. Most respondents (29%) had been operating for less than two years, while 95% qualified as small enterprises with 5–19 full-time employees. Additionally, 81% of the businesses reported annual revenues ranging from Rp 300 million to Rp 500 million.

Table 2. **Business profile**

Respondent's business profile	Frequency	%
Length of business		
• less than 2 years	11	5%
• 2-4 years	60	29%
• 5-7 years	57	28%
• 8-10 years	21	10%
• more than 10 years	58	28%
Number of full-time employees		
• small (between 5-19 employees)	196	95%
• medium (between 20-99 employees)	11	5%
Annual sales		
• small (between >Rp 300 million – 2.5 billion)	168	81%
• small (between >Rp 500 million – 1 billion)	15	7%
• small (between >Rp 1 billion – 2.5 billion)	14	7%
• medium (between >Rp 2.5 billion – 50 billion)	5	2%

Source: own study

4.2. Measurement model

PLS analysis involves two main stages. The first stage assesses the measurement model, focusing on the relationships between indicators and their respective constructs. The second stage evaluates the structural model by analysing how well the independent variables explain the outcomes and by examining the strength and significance of the path coefficients. The study employed a measurement model with reflective variables, analysing (1) the individual item reliability through outer loadings, (2) the reliability and internal consistency of the scale using Cronbach's alpha and composite reliability, (3) convergent validity, and (4) discriminant validity.

To assess the relationships and individual reliability of each item, we referred to the standard recommended by Hair et al. (2019), which suggests that a standardized factor loading should exceed 0.6 to be considered acceptable. In our study, the results ranged from 0.609 to 0.924, indicating that all items met the reliability threshold (see Appendix). In this study, the outer loading values ranged from 0.609 to 0.924, indicating that all indicators surpassed the minimum threshold. These results affirm that each item is reliable in capturing the underlying construct, as the loadings reflect a strong association between the indicators and their respective latent variables (see Appendix).

Instrument reliability refers to the extent to which a measurement tool yields consistent and stable results. In this study, reliability testing was conducted to determine whether the set of items consistently represented the underlying constructs (Hair et al., 2019; 2022). As an initial step, Cronbach's alpha was employed to assess internal consistency. According to Sekaran & Bougie (2016), values above 0.60 or 0.70 are considered acceptable, with values approaching 0.90 indicating a high level of reliability. The results in this study ranged from 0.905 to 0.964, demonstrating strong internal consistency across constructs.

Subsequently, composite reliability (CR) was calculated to further confirm the reliability of each construct in measuring its intended concept. The CR values ranged from 0.918 to 0.968, exceeding the recommended threshold of 0.70 as suggested by Hair et al. (2014) and Henseler et al. (2015), thus confirming the robustness of the measurement model (see Appendix).

To assess the discriminant validity of the reflective constructs in the model, two established approaches were employed. First, the Fornell–Larcker criterion was applied by examining the square root of the Average Variance Extracted (AVE) for each construct. In accordance with the threshold recommended by Hair et al. (2011), an AVE value of 0.50 or higher indicates acceptable convergent validity. In this study, AVE values ranged from 0.508 to 0.769, thereby meeting the minimum criterion (see Appendix).

However, recent studies have highlighted limitations associated with the Fornell–Larcker approach. Henseler et al. (2015) and Franke and Sarstedt (2019) argue that

while the method remains commonly used, it lacks the sensitivity required to detect discriminant validity issues, particularly in models with heterogeneous loading patterns or complex structures. As such, it may not always provide a comprehensive assessment of discriminant validity.

To address this concern, a second test was conducted using the Heterotrait–Monotrait Ratio of Correlations (HTMT), which is considered a more robust and reliable method for evaluating discriminant validity (Henseler et al., 2015). In well-specified models, HTMT values should not exceed 0.90, as higher values suggest a lack of discriminant validity between constructs (Henseler et al., 2015; Nitzl et al., 2016). The results of our HTMT analysis revealed that all values were ≤ 0.900 , indicating no issues with discriminant validity (see Table 3).

Table 3. Heterotrait-monotrait ratio of correlations (HTMT) result

	HC	INV	RC	SC	SPC
HC					
INV	0.743				
RC	0.825	0.778			
SC	0.900	0.781	0.875		
SPC	0.771	0.789	0.875	0.814	

Source: own study

4.3. Structural model

The variance-based structural equation modelling technique was employed to test the research hypotheses using SmartPLS Professional software (version 3.2.6) (Henseler et al., 2015). The structural model was evaluated by examining the path coefficients and their statistical significance. Table 3 presents the PLS estimation results. All hypothesized relationships display positive path coefficients, indicating directional consistency with the proposed theoretical framework. However, when applying the a priori significance threshold of 5% ($\alpha = 0.05$), only H2, H3, and H4 are statistically significant. The relationship between human capital and Islamic innovation (H1), although positive, is not statistically significant at the 5% level.

These findings indicate that structural capital, relational capital, and spiritual capital have significant positive effects on Islamic innovation, whereas human capital does not

demonstrate a statistically significant effect within the proposed model. In addition, confidence interval analysis was conducted to further assess the stability and reliability of the path estimates (see Table 4).

Table 4. Evaluation of path coefficients and significance

Hypothesis	Path coefficient	T Statistics	Significance	95% CI lower	95% CI upper	Remarks
HC → INV	0.117	1.524	0.064	-0.021	0.239	Not supported
SC → INV	0.213	1.949	0.026	0.040	0.378	Supported
RC → INV	0.202	2.399	0.008	0.066	0.362	Supported
SPC → INV	0.358	4.118	0.000	0.209	0.494	Supported

Source: own study

To evaluate the quality, relevance, and overall fit of the proposed model, several key statistical indicators were assessed. The adjusted R^2 value of the model is 0.679 (67.9%), indicating a substantial explanatory power in accordance with Chin (1998). The Stone-Geisser's Q^2 value is greater than zero ($Q^2 > 0$), further confirming the predictive relevance of the model (Chin, 1998). Additionally, the Q^2 value for the independent variables is 0.321, which supports the model's predictive capability. Finally, these results indicate that the theoretical model demonstrates acceptable quality, satisfactory predictive relevance, and alignment with the underlying theoretical framework.

Table 5. Relevance and predictive quality of the model

Dependent variable	R^2 adjusted	Q^2
Innovation	0.674	0.321

Source: own study

5. Discussion

In the context of the literature on intellectual capital, our study shows that the components of intellectual capital (structural capital, relational capital and spiritual capital) have a significant impact on Islamic innovation for halal industry SMEs. Overall, the findings are consistent with previous empirical evidence highlighting intellectual

capital as an important driver of innovation performance (Aljuboori et al., 2022; Bontis, 1998; S. Cohen & Kaimenakis, 2007; Teoh et al., 2023), as well as the growing recognition of spiritual capital for ethically grounded innovation (Li et al., 2023; Usmanova et al., 2022). However, this study extends the existing literature by highlighting how intellectual capital operates within a value-driven and faith-oriented business context, where innovation is guided not only by efficiency and competitiveness but also by ethical and spiritual considerations.

These results are also aligned with the main theoretical perspectives that analyse the relationships between the different components of intellectual capital and innovation. Intellectual capital (IC), comprising human, structural, relational, and spiritual capital, plays a pivotal role in enhancing Islamic innovation, especially within small and medium enterprises (SMEs). Grounded in the Knowledge-Based Theory (KBT), which positions knowledge as a key strategic resource (Grant, 1996), IC enables organizations to generate innovative solutions that are not only efficient but also aligned with ethical and spiritual values. In the Islamic context, knowledge is regarded as an amanah (trust) from Allah, and its use must reflect *ihsan* (excellence) and *taqwa* (God-consciousness) (Azmi & Hashim, 2022).

Structural capital provides the internal systems, routines, and processes that allow knowledge to be systematically applied and institutionalized in line with Islamic principles (Arabiyat & Hasoneh, 2019; Beltramino et al., 2022). Relational capital further enhances innovation by facilitating collaboration and trust-based exchanges with stakeholders, supporting the development of products and processes that are socially responsible and shariah-compliant (Engelman et al., 2017; Onofrei et al., 2020).

Spiritual capital, a unique addition in the Islamic framework, enriches the innovative capacity of firms by fostering values such as sincerity (*ikhlas*), accountability, and a higher purpose (Khalique et al., 2018; Zohar & Marshall, 2004). These values guide entrepreneurial and organizational behaviour toward ethical innovation that serves the community and honours religious obligations. Spiritual practices like prayer and reflection further cultivate a creative mindset and emotional resilience among employees, enhancing their ability to innovate with integrity (Juliana et al., 2023; Neubert et al., 2017). As such, IC functions not merely as a set of intangible assets, but as a strategic enabler of value-driven innovation. When guided by KBT and grounded in Islamic teachings, IC empowers SMEs to produce innovations that are competitive, socially impactful, and spiritually meaningful which making it indispensable for long-term growth and sustainable development in Muslim-majority economies (Azmi & Hashim, 2022; Li et al., 2020).

Spiritual capital, as a distinctive dimension within the Islamic framework, plays a particularly important role in shaping innovation outcomes. Rather than directly generating new technologies, spiritual capital enriches the innovative capacity of firms by fostering values such as sincerity (*ikhlas*), accountability, and a sense of higher

purpose (Khalique et al., 2018; Zohar & Marshall, 2004). These values influence how entrepreneurial and organizational actors define innovation priorities, evaluate alternatives, and assess the appropriateness of innovation outcomes. Spiritual practices such as prayer and reflection also contribute to emotional resilience and creative clarity, enabling employees to innovate with integrity and long-term orientation (Juliana et al., 2023; Neubert et al., 2017).

Importantly, the strong effect of spiritual capital observed in this study is theoretically consistent with the measurement of innovation using general product and process indicators. Spiritual capital does not alter the technical form of innovation; instead, it conditions the direction, intention, and ethical quality of innovation. By shaping managerial cognition and organizational values, spiritual capital acts as an internal guiding mechanism that ensures innovation efforts remain aligned with Islamic ethical principles. In this way, spiritual capital strengthens and amplifies the contribution of other intellectual capital components, rather than replacing them.

On the other hand, human capital does not show a statistically significant effect on Islamic innovation in the proposed model. This finding suggests that innovation in the sampled SMEs is not primarily driven by employee competencies, but rather by owner-centric decision-making structures. Most firms are small (5–9 employees) and are owned and managed by the same individual, concentrating strategic and innovation decisions at the top level (Deichmann & Stam, 2015; Molthar & Indarti, 2021). In this contexts, employees are largely engaged in execution rather than ideation, limiting the extent to which their skills and knowledge translate into measurable innovation outcomes. Consequently, Islamic innovation tends to function as an owner-driven or compliance-oriented strategy, which focused on halal adherence, ethical positioning, and Islamic branding rather than as a collaborative, skill-intensive innovation process.

The non-significant role of human capital may also reflect a human capital mismatch, where available competencies are underutilized or allocated to routine operational activities instead of strategic innovation tasks (Huang et al., 2023; Marchiori & Franco, 2020). Previous studies similarly indicates that human capital alone does not automatically generate innovation in SMEs, particularly in traditional or low-technology sectors (Liu et al., 2017; López-Rodríguez et al., 2018). Moreover, human capital requires complementary structural mechanisms – such as formal systems, strategic alignment, and process integration – to transform individual knowledge into innovation performance (Costa et al., 2014; Crook et al., 2011). Without such organizational support, employee capabilities remain underleveraged, explaining the limited direct effect observed in this study.

Taken together, these findings suggest that intellectual capital functions not merely as a collection of intangible assets, but as an integrated strategic system that supports value-driven innovation. When guided by the Knowledge-Based Theory and grounded

in Islamic teachings, intellectual capital empowers SMEs to produce innovations that are competitive, socially impactful, and spiritually meaningful, making it indispensable for long-term growth and sustainable development in Muslim-majority economies (Azmi & Hashim, 2022; Li et al., 2020).

Finally, the results highlight the strategic role of intellectual capital in fostering Islamic innovation, particularly for SMEs operating in value-driven environments. SME leaders are encouraged to strengthen all dimensions of intellectual capital to support innovation that balances competitiveness with Islamic ethical commitments. This involves: (1) developing human capital by nurturing both technical capabilities and moral awareness; (2) enhancing structural capital through transparent systems, effective knowledge management, and ethical organizational processes; and (3) reinforcing relational capital by building trust-based relationships with key stakeholders. In addition, (4) spiritual capital should be embedded into the firm's vision and daily practices to instil ikhlas, accountability, and taqwa, ensuring that innovation serves both commercial objectives and broader societal and spiritual goals. Collectively, these dimensions provide a robust foundation for Islamic value-based innovation and sustainable SME growth in faith-oriented markets.

5.1. Robustness checks and additional analyses

To further strengthen the credibility of the empirical findings, this study conducts a set of robustness checks and additional analyses. These analyses aim to examine whether the main results remain stable under alternative model specifications and across different SME contexts. Two complementary approaches are adopted. First, the structural model is re-estimated by excluding spiritual capital to assess the robustness of the remaining intellectual capital components. Second, a multi-group analysis based on firm age is performed to explore whether the relationships between intellectual capital and Islamic innovation differ between young and mature SMEs.

5.1.1. Robustness check: model re-estimation excluding spiritual capital

In the main structural model, spiritual capital emerged as the most influential component of intellectual capital in explaining Islamic innovation. To examine whether the effects of the remaining intellectual capital dimensions are conditioned by the presence of spiritual capital, the model was re-estimated after excluding this construct.

As reported in Table 6, structural capital and relational capital remain positive and statistically significant predictors of Islamic innovation. Interestingly, human capital becomes statistically significant once spiritual capital is removed. This shift suggests that

the strong explanatory power of spiritual capital may partially absorb or overlap with the variance attributed to human capital in the full model.

The robustness analysis suggests that while structural and relational capital maintain stable effects across model specifications, the relationship between human capital and Islamic innovation appears sensitive to the inclusion of spiritual capital. These findings highlight the important role of spiritual capital in shaping the overall structure of relationships within the model, while confirming that the core structural relationships remain substantively consistent

Table 6. **Robustness check: structural model excluding spiritual capital**

Path	Path Coefficient	T Statistics	Significance	95% CI Lower	95% CI Upper	Remarks
HC → INV	0.152	1.972	0.025	0.024	0.283	Supported
RC → INV	0.427	5.395	0.000	0.283	0.545	Supported
SC → INV	0.273	3.189	0.001	0.134	0.411	Supported

Source: own study

5.1.2. Additional analysis: multi-group analysis by business age

Given the heterogeneity of SMEs in terms of business maturity, an additional analysis was conducted to examine whether the proposed relationships differ across stages of firm development (Muda et al., 2020). Following established SME lifecycle literature, firms operating for less than five years were classified as young businesses, while those operating for more than five years were categorized as mature businesses. Based on this classification, a multi-group analysis (MGA) was performed using a permutation-based approach.

A permutation-based multi-group analysis (MGA) was performed to test whether the path coefficients differ significantly across the two groups. As reported in Table 7, the results indicate no statistically significant differences between young and mature SMEs for any of the hypothesized relationships. This suggests that the effects of human capital, structural capital, relational capital, and spiritual capital on Islamic innovation are stable across firm maturity stages.

Table 7. Multi-group analysis by business age

Path	Young business (β)	Mature business (β)	Difference	Permutation p-value
HC \rightarrow INV	0.115	0.111	0.004	0.984
SC \rightarrow INV	0.099	0.252	-0.153	0.490
RC \rightarrow INV	0.335	0.146	0.189	0.332
SPC \rightarrow INV	0.370	0.372	-0.002	0.992

Source: own study

These findings imply that intellectual capital contributes to innovation in a consistent manner regardless of whether SMEs are at an early or more established stage of development. Importantly, the absence of significant group differences reinforces the robustness of the proposed model and enhances the external relevance of the findings for SMEs operating in the halal industry across different stages of business growth.

6. Conclusions

The objective of this study was to examine the relationships between the components of intellectual capital (human capital, structural capital, relational capital, and spiritual capital) and Islamic innovation among SMEs in the halal industry. The findings indicate that structural capital, relational capital, and spiritual capital positively influence Islamic innovation, with spiritual capital showing the most substantial effects. These results underscore the strategic role of intellectual capital in fostering innovation that aligns with Islamic values, emphasizing the need for SMEs to develop not only technical and relational capabilities but also spiritually grounded practices to enhance their innovative capacity.

6.1. Limitations and future lines of research

This study is subject to several limitations that also open avenues for future research. First, data collection was constrained by the absence of an official database specifically identifying halal-oriented SMEs in Banyumas Regency. Although the overall number of SMEs in the region is available, identifying firms actively operating within the halal industry required manual verification through direct communication with business owners and practitioners. While this approach enhanced sample relevance,

it was time-consuming and may have resulted in the exclusion of eligible but less accessible enterprises. Future studies would benefit from closer collaboration with government agencies and halal certification bodies, and the establishment of a centralized halal SME registry would significantly support both academic research and policy development.

Second, the sample is dominated by micro and small enterprises, reflecting the actual structure of SMEs in Banyumas Regency. While this composition is empirically realistic, it limits the ability to draw comparisons across firm size categories. Future research could adopt stratified sampling techniques or focus specifically on medium-sized enterprises to explore potential size-related differences in the role of intellectual capital. In addition, the cross-sectional design of this study restricts the ability to capture dynamic changes in intellectual capital and innovation over time. Longitudinal research designs are therefore recommended to better understand how Islamic value-based innovation evolves as firms mature.

Third, the study relies on self-reported data collected from a single respondent per firm, typically the owner or manager. Although this is common in SME research, particularly in emerging economies, it may introduce common method bias and social desirability effects – especially given the sensitivity of topics related to religion, ethics, and declared compliance with Islamic principles. Future studies could strengthen validity by incorporating multiple respondents within each firm or by combining survey data with objective indicators, such as certification status, documented innovation activities, or third-party assessments.

Nevertheless, robustness analyses indicate that the observed relationships between intellectual capital components and innovation remain stable across different firm maturity stages, enhancing confidence in the internal validity of the findings. That said, caution is required when extending these results beyond similar institutional, cultural, and regulatory contexts. Comparative cross-country studies and mixed-method approaches would be particularly valuable in strengthening the generalizability and theoretical development of Islamic innovation research.

6.2. Theoretical and management implications

Our findings offer both theoretical and managerial implications. From a theoretical perspective, this study contributes to the growing literature on the role of intellectual capital (human, structural, relational, and spiritual capital) in enhancing Islamic innovation among SMEs. While previous studies have discussed intellectual capital in general (e.g., Agostini et al., 2017; Giampaoli et al., 2019), few have explored how each component contributes to innovation rooted in Islamic values, especially in the context of SMEs operating in emerging economies such as Indonesia. This study adds depth to the discourse by highlighting the relevance of spiritual capital as an often

overlooked dimension in shaping innovation strategies that are aligned with sharia principles. The results also demonstrate that managing intellectual capital effectively is not only a driver of innovation but also a vital tool for SMEs seeking to differentiate themselves in the halal industry. In regions where literature on Islamic innovation is still limited, this study fills a critical gap and provides a foundation for future research in similar contexts.

From a managerial perspective, the results are particularly useful for SME owners and managers who aim to foster innovation through better utilization of their intellectual capital. Many halal SMEs, particularly in developing regions, may lack awareness of the strategic value of intellectual capital and its components. This research underscores the importance of strengthening human capital through continuous learning, building robust structural systems, enhancing networks through relational capital, and integrating spiritual values into daily business practices. Managers are encouraged to create knowledge-sharing environments, invest in digital infrastructure, and promote ethical innovation by involving employees in ideation processes aligned with Islamic ethics. These actions can help SMEs become more agile and competitive. Furthermore, the study signals to SME leaders the need to allocate more resources toward developing intellectual capital, as it directly influences their ability to innovate in accordance with Islamic principles. By doing so, SMEs can not only enhance their unique value propositions but also contribute to the broader development of the halal industry.

Authors' contribution

M.N.I.: article conception, theoretical content of the article, research methods applied, conducting the research, data collection, analysis and interpretation of results, draft manuscript preparation. **R.N.:** theoretical content of the article, analysis and interpretation of results, draft manuscript preparation. **R.M.:** analysis and interpretation of results, draft manuscript preparation.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors did not use Generative AI and AI-assisted technologies in the writing process.

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APPENDIX

Measurement model results					
Variable measurement		OL	α	CR	AVE
Islamic innovation (dependent)			0.905	0.918	0.508
<i>Islamic product innovation</i>					
INV1	Leadership in halal product or service offerings	0.746			
INV2	Commitment to ethical standards in products and services	0.787			
INV3	Product and service innovation aligned with Islamic principles	*			
INV4	Introduction of products aligned with Islamic values of excellence	0.809			
INV5	Ethical continuous improvement in products and services	0.796			
INV6	Social contribution through innovative products	*			
INV7	Trust-based image enhancement through innovation	0.657			
<i>Islamic process innovation</i>					
INV8	Ethical excellence in business processes	0.662			
INV9	Efficient and ethical manufacturing processes	*			
INV10	Ethical flexibility in adapting production methods	0.609			
INV11	Responsible and efficient resource utilization.	0.792			
INV12	High-quality assurance in production processes	0.625			
INV13	Commitment to excellence and perfection in processes	0.609			
INV14	Ethical adoption of new production technologies	*			
INV15	Proactive ethical standards in process improvement	0.608			
Human capital (independent)			0.958	0.964	0.688
<i>Competencies</i>					
HC1	Employees have valuable insight.	0.844			
HC2	Employees are mastery in their job.	0.834			
HC3	Employees are well-trained.	0.864			
<i>Attitude</i>					
HC4	Employees are eager to expand their knowledge.	0.862			

HC5	Employees are passionate.	0.865			
HC6	Employees are collaborate effectively.	0.847			
<i>Intellectual alertness</i>					
HC7	Employees are capable of complete task efficiently.	0.871			
HC8	Employees are able to spot risk early.	0.767			
HC9	Employees can identify chances for improvement.	0.748			
<i>Soft Skill</i>					
HC10	Employees communicate clearly.	0.868			
HC11	Employees show capable leadership.	0.802			
HC12	Employees are skilled to solve problem.	0.770			
Structural capital (independent)					
<i>Culture</i>					
SC1	Provides a supportive workplace.	0.759			
SC2	Top management consistently emphasizes ethic.	0.805			
SC3	Core value align with our long-term goals.	0.731			
<i>Process and procedures</i>					
SC4	Well-structured processes.	0.783			
SC5	Apply strategy consistently.	0.688			
SC6	Impactful research and development.	0.654			
<i>Information system</i>					
SC7	Enhance systems.	0.691			
SC8	Up-to-date database.	0.765			
SC9	Update policies and procedures regularly.	0.803			
SC10	Reliable infrastructure.	0.744			
Relational capital (independent)			0.964	0.968	0.671
<i>Customer</i>					
RC1	Maintaining customer relationship.	0.651			
RC2	Customers trust.	0.816			
RC3	Accessible product.	0.865			
RC4	Understand market demand.	0.890			

<i>Suppliers</i>					
RC5	Suppliers are paid on time.	0.905			
RC6	Consistent communication with suppliers.	0.901			
RC7	Suppliers provide our needs.	0.890			
<i>Social and community</i>					
RC8	Connect with community.	0.685			
RC9	Participate in community events.	0.812			
RC10	Actively listen to community opinion.	0.877			
<i>Government</i>					
RC11	Fulfil tax obligation promptly,	0.841			
RC12	Adhere to regulation from government.	0.873			
RC13	Taking part in in development initiatives.	0.805			
<i>Financial entities</i>					
RC14	Maintaining relationship with banking partners.	0.792			
RC15	Build credibility through responsible repayments.	0.608			
Spiritual capital (independent)			0.962	0.968	0.769
<i>Knowledge of religious</i>					
SPC1	Work is an act of devotion.	0.807			
SPC2	Business values rooted in moral responsibility.	0.866			
SPC3	Employees remain dedicated to their responsibilities.	0.900			
SPC4	Employees take pride in their roles.	0.904			
SPC5	Employees are guided by the teaching of faith.	0.924			
<i>Ethical values</i>					
SPC6	Commitment is seen as reflection of personal integrity.	0.912			
SPC7	Support religious beliefs of our employee.	0.898			
SPC8	Trust is seen as the foundation of our culture.	0.839			
SPC9	Sharing knowledge is an essential part of working.	0.834			

Note: OL (Outer Loading), (Cronbach Alpha), CR (Composite Reliability), AVE (Average Variance Extracted)

*Omitted

Source: own study