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The influence of human, relational, and structural capital on innovative performance in Indonesia's sharia banking industry: The mediating role of dynamic potential and realized absorptive capacity

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ABSTRACT

The challenge for the Sharia Banking industry is product innovation, which is considered unable to meet market needs and lacks high competitiveness compared to conventional bank products. This study aimed to demonstrate the influence of human, relational, and structural capital on innovation performance in the Indonesian Sharia Banking industry. The authors are concerned that dynamic potential absorptive capacity (DPAC) and dynamic realized absorptive capacity (DRAC) can mediate this relationship based on the dynamic capabilities theory. This study obtained 288 valid questionnaires that collected data from several Sharia Bank locations in Indonesia. PLS-SEM is a modeling technique that aims to determine structural equations. The findings of the study indicate that the development of human capital and relational capital, mediated by DPAC and DRAC, enhances innovative performance in Indonesia's Sharia banking sector. Moreover, the mediating role of DRAC, rather than DPAC, showed a significantly greater influence in improving the innovation performance of the antecedent variable, human capital, compared to other antecedent variables, namely relational capital. Theoretically, DRAC acts as a mediator to help banks transform and integrate new knowledge and insights gained from human capital, then transform them into innovative solutions. Banks can enhance their employees' ability to absorb and synthesize various types of knowledge, fostering creativity and innovation that result in stronger and more effective solutions.

Contribution/ Originality: This study introduces new variables (DPAC & DRAC) as mediating variables between HC, RC, and SC on innovative performance to address the research gap identified in previous studies. Both variables (DPAC & DRAC) have not been included in prior research.

1. INTRODUCTION

Sharia banking is important in developing the community's economy, namely productivity, contribution, and collaboration (Nugraheni & Muhammad, 2024). As the Financial Services Authority (FSA) stated, the Sharia Banking industry provides opportunities to improve the community's economy (Alam, Hoque, & Muda, 2023). The FSA has policies that focus on the role of society in collaboration with the government through the National Committee for Sharia Economics and Finance, as well as with all Sharia Banks in Indonesia (Muryanto, 2023). However, competition in the Islamic financial industry has increased since the implementation of the ASEAN Economic Community (AEC) (Bawana, Mansor, & Noordin, 2025). The Islamic banking sector must have a unique competitive advantage in products and services compared to the conventional banking industry so that it can become the community's preferred choice (Abasimel, 2023). In the digital economy

era, the Islamic banking industry is encouraged to take advantage of opportunities to grow into a contributing and strong industry, domestically and abroad. The development of the Islamic banking industry offers various benefits, including the innovation of products to provide a range of choices and expand the community's reach (Mansoor Khan & Ishaq Bhatti, 2008). The challenge for the Islamic Banking industry is product innovation, which is considered unable to meet market needs and lacks high competitiveness compared to conventional bank products (Chaudhry, Roomi, & Dar, 2020).

The challenge faced by Sharia banks is to create unique products that differentiate them from conventional bank products (Ullah, Ashfaque, Atiq, Khan, & Hussain, 2023). This effort requires the exploration of existing products and the exploitation of existing resources for the development and empowerment of these resources. Innovative Islamic bank products have not been optimal in utilizing and adapting to information and telecommunications technology, which is considered relatively limited (El Mallouli & Sassi, 2022). The optimization of service quality supported by information technology systems has not increased customer satisfaction, resulting in weaker competitiveness for the Islamic banking industry compared to conventional banks (Zouari & Abdelhedi, 2021). Their products have a relatively limited financing scheme and a limited number of products. Sharia Banks have limited product categories because the available features are inadequate (Ullah et al., 2023). The community's need for Sharia Banks has increased due to changes in market needs over time, particularly for conducting transactions (Ullah et al., 2023).

According to Qureshi, Ahmed, Khan, and Raza (2023), this technological development has influenced Islamic banks to implement strategies to improve banking quality. As stated by Asutay and Ubaidillah (2024), the banking system must implement the concept of Intellectual Capital (IC), which consists of Human Capital (HC), Relational Capital (RC), and Structural Capital (SC). The IC concept plays a crucial role for companies, especially banks, in developing innovation, strategy, and banking systems. IC has undergone updates in the measurement system for aspects of company development (Hanifah, Abd Halim, Vafaei-Zadeh, & Nawaser, 2022). HC focuses on the quality of human capital in mediating a company's innovative performance (Ahmed, Guozhu, Mubarik, Khan, & Khan, 2020; Beltramino, Garcia-Perez-de-Lema, & Valdez-Juarez, 2021; Dabić, Lažnjak, Smallbone, & Švarc, 2019; Fait, Cillo, Papa, Meissner, & Scorrano, 2023; Rehman, Elrehail, Poulin, Shamout, & Alzoubi, 2023). However, HC is less able to maximize innovative performance for further development due to the quality of human capital or company employees who are categorized as lacking in work competencies in the company (Hsu & Wang, 2012; Hutahayan, 2020; Oliveira, Curado, Balle, & Kianto, 2020). In addition, RC plays a crucial role in developing company innovation through communication and interaction with customers, distributors, the government, and other banking parties (Allameh, 2018; Vo & Tran, 2021; Xu & Li, 2022). However, RC sometimes contributes less to developing innovative performance due to less-than-optimal communication between the company and banking parties (Ahmed et al., 2020; Jordão & Novas, 2024). Furthermore, SC focuses on the company's structure, which comprises systems, data, technology, and information influencing innovation performance (Liu & Jiang, 2020). However, supply chain management in several aspects related to corporate systems remains inadequate due to the supply chain concept being too complex for start-up companies, resulting in suboptimal decision-making (Novas, Alves, & Sousa, 2017; Salangka, Kameo, & Harijono, 2024).

This study identified a gap in previous research, specifically the influence of HC, RC, and SC on innovative performance. Dynamic Absorptive Capacity serves as the main concept of this study, with the variables being Dynamic Potential Absorptive Capacity (DPAC) and Dynamic Realized Absorptive Capacity (DRAC). The Dynamic Capabilities View (DCV) serves as a framework for corporate systems that focus on market needs (Cordero, Pinho, & Prange, 2022). DCV allows companies to acquire, manage, and identify knowledge from internal and external sources (Muneeb, Ahmad, Abu Bakar, & Tehseen, 2023; Naqshbandi & Jasimuddin, 2022). Furthermore, DPAC focuses on a company's innovation process, which is influenced by knowledge, while DRAC focuses on the results of that innovation process, thus providing positive benefits to the company (Ferreira, Cardim, & Coelho, 2021; Kastelli,

Dimas, Stamopoulos, & Tsakanikas, 2024). This study aims to determine the influence of HC, RC, and SC on innovative performance, with DPAC and DRAC as mediators. Intellectual Capital (IC) has three important aspects for a company, particularly human capital, which influence innovative performance, work productivity, collaboration, and the company's system, particularly in Islamic banks, by implementing DCV, DPAC, and DRAC.

2. LITERATURE REVIEW

2.1. Dynamic Capabilities View (DCV)

The Dynamic Capabilities View (DCV) is an approach that companies implement to identify opportunities for improving the company's quality in systems, performance, and innovation moving forward (Teece, Pisano, & Shuen, 1997). DCV has benefits for company knowledge because it is a process of managing knowledge sourced from internal and external sources (Denford, 2013). DCV also focuses on the structure or system of acquired resources, which are then processed into company knowledge that becomes the background of the company's strategy and system design (Cordeiro, Puig, & Ruiz-Fernández, 2023; Denford, 2013). IC plays a crucial role in the process of dynamic knowledge absorption because it can be used as a basis for the continuous learning process, especially in the growing business sector (Wang, Su, Wang, & Zou, 2019). In addition, DAC also significantly influences the development of company quality, especially in developing superior and dedicated banking products and services. Figure 1 shows the theoretical model of this study.

2.2. Human Capital, Relational Capital, and Structural Capital toward Innovative Performance

Human capital represents the collection of knowledge possessed by each employee in the organization through skills, expertise, problem-solving abilities, and leadership style (Munjal & Kundu, 2017). Employees can exchange knowledge from obtaining and sharing skills and experiences to work more effectively (Alzoubi, Alrowwad, & Masa'deh, 2022). The banking industry, through the competencies possessed by its employees, seeks to develop new applications using existing technology and synthesize capabilities in innovative ways, thereby enabling the design of products or services with the latest features (Maddikunta et al., 2022). The knowledge and skills possessed by employees can help companies transform and adapt existing products and technologies based on preferences and input from local customers (Allameh, 2018). Thus, human capital is believed to enhance innovation performance because employees' knowledge, experience, and skills can help companies adapt to a dynamic business environment by developing product innovations (Inkinen, Kianto, Vanhala, & Ritala, 2017). Accordingly, we propose the hypothesis:

H_{1a}: Human capital positively influences innovative performance.

Relational capital (RC) is interactional knowledge created through strong relationships between members or with external parties, such as consumers and vendors (Allameh, 2018). Strong relationships with internal or external parties can facilitate the production and distribution of knowledge throughout the organization, promoting effective collaboration and integration with consumers and other companies (Ortiz, Donate, & Guadamillas, 2018). RC facilitates the acquisition and creation of knowledge through external resources, such as vendors, so that they can provide input and solutions to improve product innovation development (Inkinen et al., 2017). Experience with trusted vendor partners will increase collaboration and stimulate learning as harmonious relationships develop (Handoko, Bresnen, & Nugroho, 2018). Currently, banks are involved in closer relationships with their customers and vendors to utilize their skills, abilities, and information to develop new products more efficiently (Cabrilo & Dahms, 2018). The interaction and exchange of information between the bank and consumers, vendors, or other external partners in the form of input and improvements, as well as trust related to developing features in services or products (Allameh, 2018; Han & Li, 2015). Accordingly, we propose the hypothesis:

H_{1b}: Relational Capital positively influences innovative performance.

Structural Capital (SC) refers to the capital owned and managed by a firm, comprising tools and architecture provided by the organization to maintain and transfer knowledge across all operational activities of its business (Han

& Li, 2015). SC includes organizational culture, capacity, and commitment to effectively utilize information technology and communication networks to ensure the storage of information, database elements, and organizational structures related to formal mechanisms that regulate the operational activities of a company (Allameh, 2018). Planning and utilizing a good management structure can optimize the exchange of information and knowledge within the internal environment, enabling the application of participatory decision-making results to Standard Operating Procedures (SOPs) and information systems (Cabrilo & Dahms, 2018). Existing procedures and operating systems store employees' knowledge, enabling the company to utilize this knowledge even if employees resign and are no longer employed by the company (Sumbal et al., 2020). Infrastructure support, including information technology and standard operating procedures (SOPs), can enhance the efficiency of product innovation through technical manuals and databases (Zhang, Qi, Wang, Pawar, & Zhao, 2018). Accordingly, we propose the hypothesis:

H_{1c}: Structural capital positively influences innovative performance.

2.3. Dynamic Potential Absorptive Capacity as Mediator

Dynamic Absorptive Capacity is based on Dynamic Capabilities (DCV) theory. It emphasizes collaboration, innovation, and knowledge utilization to significantly influence company development. Halme and Korpela (2014) state that the company's resources are directed toward monitoring market needs, which are expected to foster innovations. In addition, Ferreira et al. (2021) stated that dynamic capabilities play a crucial role in developing superior and competitive companies. This perspective can be applied to banks seeking to increase the growth of their customers, including third-party funds and financing, in business conditions that reveal information and opportunities still in the abstract category obtained from the dynamic distribution of strategic capabilities. Optimizing skills to acquire knowledge in uncertain business conditions can improve innovation performance in banking (Taherparvar, Esmaeilpour, & Dostar, 2014). One of the organizational capacities that can acquire and assimilate knowledge or information to improve product development is dynamic potential absorptive capacity.

Human capital represents the collective knowledge possessed by each employee within an organization. Employees' education and training directly impact their capacity to assimilate and utilize new knowledge (Li, Sun, & Dong, 2018). Ahmed et al. (2020) stated that the diversity of experiences and knowledge of individual employees can increase the opportunity to absorb new knowledge into company knowledge, thereby creating an assimilation process. The recruitment and selection process for acquiring high-talent and competent human capital can enhance knowledge absorption capabilities, leading to better outcomes (Mubarik, Bontis, Mubarik, & Mahmood, 2022). According to Mariano and Walter (2015), the quality of employees is determined by the education and training they have received, which equips them with knowledge, skills, and experience to deliver superior performance. So that they can provide innovations that can be used as a strategy to develop profits, products, and loyal customers, reflecting the company's quality (Farida & Setiawan, 2022). Knowledge acquisition is developed through the active participation of internal employees with external parties and organizational structures, promoting adaptation, creating competitive advantages, and enhancing innovation performance (Azeem, Ahmed, Haider, & Sajjad, 2021). Accordingly, we propose the hypothesis:

H_{2a}: Dynamic potential absorptive capacity can mediate the relationship between human capital and innovative performance.

RC can increase dynamic realized absorptive capacity through relationships between employees and external parties (Ortiz et al., 2018). RC facilitates the acquisition and sharing of knowledge through trust and mutual understanding, which can improve a company's performance in the long term (Ahmed et al., 2020). The knowledge acquisition process is complex, where the assimilation of learning outcomes is expected due to established relationships and collaboration, such as strategic alliances in the technology field (Ebers & Maurer, 2014). More complex knowledge and interaction determine the level of trust in corporate collaboration that focuses on business knowledge (Ahmad & Erçek, 2019). Trust is a crucial intangible asset for maintaining relationships between organizations, particularly when direct interactions are necessary for knowledge exchange (Engelman, Fracasso,

Schmidt, & Zen, 2017). Oliveira et al. (2020) stated that DPAC achieved success through collecting information about technology obtained based on trust from external parties and collaboration between employees and vendors to acquire technological knowledge. This can improve innovation performance. Innovations are driven by the collaboration of knowledge from internal and external factors, resulting in new products and services (Rodríguez-Serrano & Martín-Armario, 2019). Accordingly, we propose the hypothesis:

H_{2b}: Dynamic potential absorptive capacity mediates the relationship between relational capital and innovative performance.

SC can increase dynamic realized absorptive capacity through technology infrastructure, information systems, standard operating procedures, consumer databases, and document digitization (Mariano & Walter, 2015). Furthermore, user-friendly information systems can facilitate the exchange of knowledge from external parties (Corvello, Gitto, Carlsson, & Migliarese, 2012). Employees are adept at converting technological knowledge from vendors into new products. They store knowledge through input from consumers or vendors regarding improvements to existing products or services. When new business opportunities arise, they can quickly apply existing knowledge to develop superior products (Engelman et al., 2017). Ahmed et al. (2020) stated that infrastructure, in the form of a robust information system and document digitization, can quickly facilitate the analysis and projection of dynamic market demand. Information systems and digitization will also impact the transformation of knowledge obtained from external parties into organizational knowledge through technological support. Information technology infrastructure can enhance the application and effectiveness of information and knowledge available on websites and mobile devices, resulting in more real-time and up-to-date information (García-Sánchez & Noguera-Gámez, 2017). Knowledge acquisition plays a crucial role in company performance, which is based on the quality of employees who possess superior knowledge, experience, and abilities (Lazzarotti, Manzini, Nosella, & Pellegrini, 2016). In addition, knowledge acquisition can also produce innovations in the form of visions for transactions, products, systems, and work structures within the company (Arias-Pérez, Velez-Ocampo, & Cepeda-Cardona, 2021). Accordingly, we propose the hypothesis.

H_{2c}: Dynamic potential absorptive capacity mediates the relationship between structural capital and innovative performance.

2.4. Dynamic Realized Absorptive Capacity as Mediator

The ability possessed by a company that focuses on acquiring, reviewing, updating, and implementing knowledge for a business is known as Dynamic Realized Absorptive Capacity (DRAC) (Chatterjee, Chaudhuri, & Vrontis, 2022). Exploitation capacity is the result of transformation measured using information from new initiatives. Company innovation can take the form of redesigning and renewing products and services within a company (Ferreira et al., 2021). The company stated that knowledge acquisition has little influence on the company's development, so the resources owned by the company must be further improved, updated, and redesigned to have a significant impact, as knowledge acquisition is influenced by the company's managerial relationship with the government and partnerships in existing businesses (Flor, Cooper, & Oltra, 2018). In addition, realized absorptive capacity plays a crucial role in acquiring knowledge, enhancing the company's quality, and making it superior.

HC plays an important role in the dynamic realization of absorptive capacity by leveraging employee quality, which encompasses knowledge, experience, and business skills that benefit the company's development (Soo, Tian, Teo, & Cordery, 2017). The company's quality can provide knowledge that creates innovations, influencing the transformation and exploitation of this knowledge (Ahmad & Erçek, 2019). The company can optimize knowledge from various sources to enhance its capabilities, yielding results that benefit its development, particularly regarding its products and services (Cepeda-Carrion, Leal-Millán, & Martelo-Landroguez, 2016). Extensive knowledge exchange can facilitate a sharing process, enabling companies to connect and integrate their extensive knowledge. Companies with in-depth knowledge benefit from acquiring market and consumer insights. Technology and markets can develop core competencies through knowledge transformation from external parties (Cepeda-Carrion et al., 2016).

Khan and Tao (2022) stated that DRAC can enhance innovation performance by leveraging expertise in transforming knowledge from technology into new products or services. DRAC will also facilitate the application of technological advancements to enhance innovation in new products. Knowledge conduits between various organizational units can be the basis for facilitating innovation activities. The knowledge acquired by company employees can be transformed to increase the speed and ease with which the organization absorbs new information Forés and Camisón (2016). The process of leveraging external knowledge is crucial in enhancing product innovation within the company and facilitating adaptation to changes, as well as a competitive business environment and potential threats from competitors (Curado, Oliveira, Maçada, & Nodari, 2017). Accordingly, we propose the hypothesis:

H_{3a}: Dynamic realized absorptive capacity mediates the relationship between human capital and innovative performance.

Relational Capital (RC) plays a crucial role in developing DRAC, which is influenced by companies, consumers, and other parties (Agostini & Nosella, 2017). Employees can obtain and share knowledge through the relationships and networks formed with external parties, fostering trust and mutual understanding. Trust between partners is based on collaboration, which involves exchanging information between companies (Panahifar, Byrne, Salam, & Heavey, 2018). Dynamic Capabilities View (DCV) is an approach companies implement to obtain opportunities to improve the company's quality in systems, performance, and innovation going forward (Teece et al., 1997). DCV has benefits for company knowledge because it is a process of managing knowledge sourced from internal and external sources (Denford, 2013). DCV also focuses on the structure or system of acquired resources, which are then processed into company knowledge that becomes the background of the company's strategy and system design (Cordeiro et al., 2023; Denford, 2013). IC plays a crucial role in the process of dynamic knowledge absorption because it can be used as a basis for the continuous learning process, especially in the growing business sector (Wang et al., 2019). In addition, DAC also significantly influences the development of company quality, especially in developing superior and dedicated banking products and services. Figure 1 shows the theoretical model of this study.

H_{3b}: Dynamic realized absorptive capacity mediates the relationship between relational capital and innovative performance.

Structural capital in an organization can increase Dynamic Realized Absorptive Capacity through technology infrastructure, information systems, procedural systems, consumer databases, and document digitization (Kastelli et al., 2024). A user-friendly information system can facilitate the exchange of knowledge from external parties. Employees store knowledge through input from consumers or vendors regarding improvements to existing products or services. When new business opportunities arise, they can quickly apply existing knowledge to develop superior products (Engelman et al., 2017). Ahmed et al. (2020) stated that strong information technology, system infrastructure, and document digitization can facilitate the rapid analysis and projection of dynamic market demand. Information systems and technology will also facilitate the transformation of knowledge obtained from external parties into organizational knowledge. Information technology infrastructure enhances the effectiveness of applying information and knowledge on websites and mobile devices, resulting in more real-time and up-to-date information data (García-Sánchez, 2017).

Leveraging external knowledge becomes an important element in increasing product innovation within the company. Companies can compete with their competitors by leveraging external knowledge (Curado et al., 2017). Innovation performance can also develop through dynamic capabilities that utilize new knowledge (Rodríguez-Serrano & Martín-Armario, 2019). Companies will have opportunities to improve quality through external transformations, enhancing the innovation process in their products and services (Lazzarotti et al., 2016). Saiz, Miguel, and Del Campo (2018) demonstrated that organizational learning encourages internal organizations to apply the knowledge obtained and transformed in developing new product features, thereby improving innovation performance. Accordingly, we propose the hypothesis:

H_{3c}: Dynamic realized absorptive capacity mediates the relationship between structural capital and innovative performance.

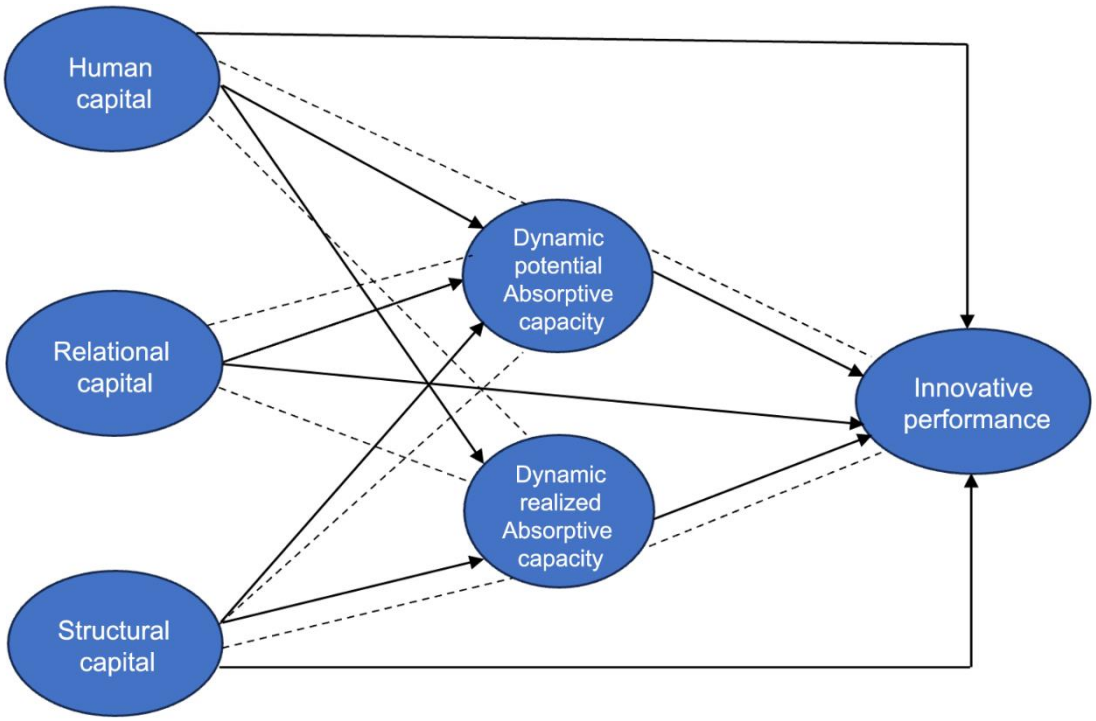

Figure 1. Conceptual model.

3. RESEARCH METHOD

The questionnaire survey was employed to test our hypothesis within the specific context. This research collected data from several Syariah Bank locations across Indonesia. The database from the latest 2024 report, published by the Financial Services Authority, was utilized to identify the target population. The total population for this study consisted of 1,030 Islamic branch banks, each with bank assets exceeding $10 million US dollars. All these banks were subsequently sent a research questionnaire. The top managers of the banks were required to complete the questionnaire. Data collection was conducted via email from November to December 2024, excluding banks that refused or did not participate in the research. Out of the 1,030 questionnaires distributed to these branch banks, the study obtained 288 valid responses, representing 27.96% of the target population. Table 1 shows the sample of this research.

This research comprises six models: human capital, relational capital, structural capital, dynamic potential absorptive capacity, dynamic realized absorptive capacity, and innovative performance. Each model is assessed using multiple items based on the theoretical framework of this study. The research employs a Likert scale ranging from 1 (disagree) to 5 (strongly agree). Human capital is measured through factors such as academic level, creative ideas, high skills, extensive experience, and strong competence (Liu & Jiang, 2020). Relational capital comprises six key elements: vendor relationships, customers, internal business processes, collaboration, problem-solving, and information exchange (Cabrilo, Kianto, & Milic, 2018). Structural capital comprises six key elements, focusing on information technology, decision support systems, digital documents, customer databases, and standard operating procedures (Cabrilo et al., 2018; Han & Li, 2015). DPAC consists of seven components, which are measurement items designed to facilitate the adjustment of information within the company's system (Ahmed et al., 2020). DRAC has six components in the form of measurement items that focus on the next stage, which emphasizes updating new knowledge (Rodríguez-Serrano & Martín-Armario, 2019). Innovative performance comprises five essential components for measuring company development (Allameh, Zare, & Davoodi, 2018).

This study employs PLS-SEM, a research modeling technique that focuses on determining structural equations based on the objectives of this research. Standard item loadings can be seen in Table 2, with values ranging from 0.737 to 0.952. Cronbach's Alpha values for the constructs range from 0.954 to 0.972. The Average Variance

Extracted (AVE) values range from 0.820 to 0.898. Furthermore, each construct within each category is declared significant in relation to its correlation with other constructs. It can be seen in Table 3, which shows the reliability, convergence, and validity, all of which are within the acceptable range.

4. RESULTS

This study used SmartPLS3, which functions as a hypothesis analysis tool that focuses on measuring and analyzing the conceptual and structural models of this research Hair, Risher, Sarstedt, and Ringle (2019). After measuring and verifying the model's validity, this study emphasizes the regression coefficients and the "t" statistic, which assess the validity of the research hypotheses. The two key indices for hypothesis testing are the "t" value and the "P" value, which determine the significance of the hypotheses. The "t" test should be higher than 1.96; if the significance level (P-value) is below 1.96, then the parameter indicating relevance can be considered statistically significant. In addition, if the p-value is less than 0.05, then each hypothesis is supported at the 95% and 99% significance levels. Table 4 shows the results of the PLS analysis, which indicates that the statistical significance of each hypothesis is based on the coefficient (β) and the t-test. It can be concluded that the relationship between human capital, relational capital, structural capital, and innovative performance is significant. These results support H1a: (β = 0.231, p-value < 0.05), H1b: (β = 0.117, p-value > 0.05), and H1c: (β = 0.003, p-value > 0.05).

Table 1. Demographics.

Characteristic	Frequency	Percent
Gender		
Male	228	79.16%
Female	60	20.84%
Education		
Undergraduate	229	79.51%
Post-graduate	59	20.49%
Doctoral	0	0%
Working experience		
< 1 years	4	1.38%
1 – 5 years	81	28.12%
> 10 years	203	70.48%
Total asset		
> USD 10 million	33	11.46%
USD 10 million – USD 100 million	233	80.90%
> USD 100 million	22	7.64%
Total	288	100%

The effect of human capital on innovative performance, mediated by dynamic potential absorptive capacity, shows that H2a (β = 0.203, p-value < 0.01) and H2b (β = 0.129, p-value < 0.01) are positive and significant. However, structural capital (β = 0.057, p-value > 0.05) is positive but non-significant. H2a and H2b are supported, but H2c is not accepted.

The path coefficients from the human capital construct towards innovative performance, mediated by dynamic realized absorptive capacity, are positive and significant: (β = 0.099, p-value < 0.01). Relational capital as an antecedent (β = 0.093, p-value < 0.05) is supported, but structural capital (β = 0.039, p-value > 0.05) is not. It can be concluded that H3a and H3b are supported, but H3c is not.

Table 2. Item measurement model.

Item name	Item loading	Cronbach's alpha	Ave
Human capital			
HC1	0.892		
HC2	0.737		
HC3	0.762		
HC4	0.783	0.946	0.823
HC5	0.823		
Relational capital			
RC1	0.823		
RC2	0.925	0.944	0.820
RC3	0.618*		
RC4	0.935		
RC5	0.926		
RC6	0.914		
Structural capital			
SC1	0.941		
SC2	0.942	0.954	0.879
SC3	0.915		
SC4	0.691*		
SC5	0.952		
Dynamic potential			
Absorptive capacity			
DPAC1	0.928		
DPAC2	0.934		
DPAC3	0.939	0.976	0.876
DPAC4	0.939		
DPAC5	0.936		
DPAC6	0.952		
DPAC7	0.926		
Dynamic realized			
Absorptive capacity			
DRAC1	0.945	0.972	0.878
DRAC2	0.932		
DRAC3	0.935		
DRAC4	0.923		
DRAC5	0.939		
DRAC6	0.946		
Innovative performance			
IP1	0.944		
IP2	0.942	0.972	0.898
IP3	0.952		
IP4	0.948		
IP5	0.952		

Note: * Dropped item loading < 0.7.

Table 3. Discriminant validity.

Variable	DPAC	DRAC	HC	IP	RC	SC
DPAC						
DRAC	0.587					
HC	0.694	0.711				
IP	0.712	0.712	0.618			
RC	0.645	0.685	0.631	0.614		
SC	0.689	0.612	0.599	0.543	0.456	

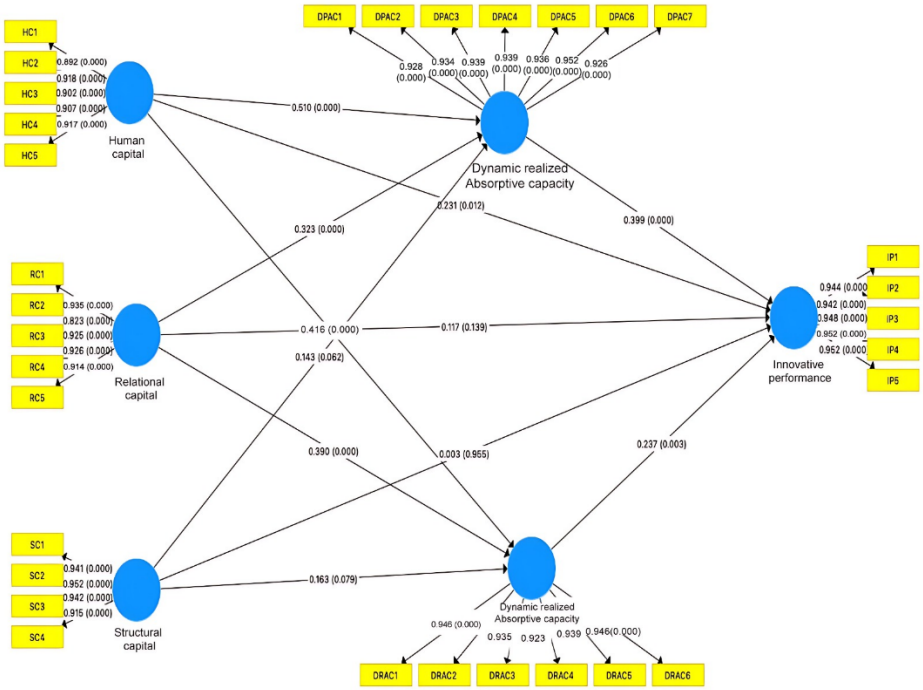

Figure 2. The model results.

The path diagram, presented as Figure 2: The model results, illustrates the conceptual relationships among the constructs, with latent variables depicted as blue circles and manifest variables represented by yellow rectangles. The model hypothesizes that Human Capital, Relational Capital, and Structural Capital exert influence on two mediating constructs: Dynamic Potential Absorptive Capacity and Dynamic Realized Absorptive Capacity. Subsequently, these mediating constructs are proposed to impact Innovative Performance. Path coefficients, indicated by the numerical values on the connecting arrows, quantify the strength and direction of these relationships, while the accompanying p-values displayed in parentheses serve to assess their statistical significance.

Table 4. The hypotheses results.

Hypothesis	Relationship	Path coefficients	Test Result
H1a	Human capital –> Innovative performance	0.231	Significant at α1%
H1b	Relational capital –> Innovative performance	0.117	Non-Significant
H1c	Structural capital –> Innovative performance	0.003	Non-Significant
H2a	Human capital → Dynamic potential absorptive capacity –> Innovative performance	0.203	Significant at α1%
H2b	Relational capital → Dynamic potential absorptive Capacity –> Innovative performance	0.129	Significant at α1%
H2c	Structural capital → Dynamic potential absorptive capacity –> Innovative performance	0.057	Non-Significant
H3a	Human capital → Dynamic realized absorptive capacity –> Innovative performance	0.099	Significant at α1%
H3b	Relational capital → Dynamic realized absorptive capacity –> Innovative performance	0.093	Significant at α1%
H3c	Structural capital → Dynamic realized absorptive capacity –> Innovative performance	0.039	Non-Significant

5. DISCUSSIONS

The empirical data showed that Human Capital (HC) increases innovative performance at Sharia Bank. By Financial Authority Services standards, bank employees with skills and expertise actively participate in banking training regularly. In banking, this training includes financial intelligence, risk management, regulatory knowledge, and technological literacy. The bank has invested in ongoing training and professional development, ensuring each branch office maintains a workforce equipped with the latest industry trends and best practices. For example, employees are encouraged to develop gold savings products where customers invest money in gold bars stored in banks. The banking sector has credit departments that are crucial in facilitating customer loans through savings deposits with low interest rates. Bank employees can develop problem-solving, creativity, and critical thinking skills in addressing obstacles, issues, or cases that arise within the company, particularly in the banking sector. Employee quality development is a company strategy that provides opportunities for employees to make decisions and implement new approaches to innovation that benefit the company. Furthermore, banks can improve the quality of the work environment by providing a complete, comfortable, and conducive environment so that employees feel valued and more motivated to work, thus maximizing performance innovation.

Human capital (HC) is crucial in developing employee quality, particularly innovation performance. It supports the significant influence of HC on innovative performance, especially in the banking sector (Ahmed et al., 2020; Allameh & Khalilakbar, 2018). However, HR contributes less to the development of innovative performance, particularly in the banking sector (Mubarak, Tiwari, Petraite, Mubarik, & Raja Mohd Rasi, 2021; Nigam, Mbarek, & Boughanmi, 2021; Oliveira et al., 2020). These results indicate that RC focuses solely on existing relationships without considering work innovation, even though innovation is fundamental to company development. This RC concept can threaten the quality of employee competency, resulting in banks losing trust in vendors because they sometimes lack accountability in their agreements with the bank.

Furthermore, the bank's operational system will be less than optimal due to the inadequate implementation of SC, particularly regarding flexibility and credibility within the bank. It supports the lack of SC, insignificantly impacting innovative performance in the banking sector (Novas et al., 2017; Salangka et al., 2024). While SC plays a crucial role for companies, its innovation performance remains inefficient because certain banks focus solely on strict, outdated regulations and limitations on operational time and costs within the banking system. Consequently, banks cannot develop their businesses due to limitations within the banking system, which prevent them from collaborating with other vendors, thereby reducing opportunities for innovation. Therefore, banks must implement SC optimally to improve the quality of their services, particularly in terms of work innovation. SC influences the DPAC by strengthening the banking operational system and focusing on developing technological and informational knowledge in the banking sector.

DPAC is based on internalizing new knowledge focused on bank work units by training employees with new knowledge, experience, and skills aligned with the bank's objectives, enabling them to develop collaboration with other departments. It allows banks to easily address obstacles, problems, and even incidents that arise within the bank, utilizing employee competency. Employees with competencies in the banking sector, particularly in credit, can support innovation performance that aligns with market needs and opportunities for the bank (Ahmed et al., 2020; Ming, Wu, Yang, & Yang, 2025). Furthermore, the DPAC plays a role in developing innovations in financial transaction products and services within the bank. It is because the DPAC is used to identify changes in the financial market, enabling banks to make decisions that can lead to innovations in the form of superior banking products and services (Martinez-Sanchez, Perez-Perez, & Vicente-Oliva, 2019; Mata, Moleiro Martins, & Inácio, 2024; Mubarik et al., 2022).

RC significantly influences DPAC, as evidenced by the company's ability to acquire and implement new knowledge that forms the basis of innovation and provides a competitive advantage over other competitors. Collaboration between banks and other parties, such as customers, employees, and partners, increases trust and

strengthens relationships with other banks. Furthermore, banks can develop technological and informational capabilities that provide valuable resources. This collaboration benefits banks in delivering sustainable innovation, a key strategy for the bank. This supports the possibility that RC can significantly influence the development of DPAC, particularly in the banking sector (Oliveira et al., 2020; Ortiz et al., 2018). RC facilitates DPAC in increasing trust and collaboration with banks that play an active role in the banking sector. Thus, RC can develop innovation and adaptability in companies, especially banks, to compete in the market.

However, SC does not significantly impact innovative performance using DPAC as a mediator in the banking sector. It is because SC focuses solely on data, processes, rules, and systems, which are limited in their role in company development. Furthermore, SC is rigid and does not adapt to market needs, which are constantly being updated. It hinders the adaptability of new knowledge, particularly within the financial services authority. Banks must significantly update their banking system standards with the approval of the financial services authority. Nazarpoori (2017) and Ortiz et al. (2018) demonstrate that SC does not significantly impact DPAC development in the banking sector.

The hypothetical results from this study's empirical data indicate that SC significantly indirectly influences innovative performance using DRAC as a mediator in the banking sector. This is because SC facilitates problem identification and decision-making, with employees possessing critical thinking, problem-solving, and creativity skills. HC in the banking sector presents an opportunity to develop a continuous learning and development culture, which can be achieved through employee training. This allows them to develop knowledge, experience, and skills that are valuable to the bank. SC is based on intercompany knowledge collaboration, which is the foundation for the development of DRAC.

Employee collaboration creates mutually beneficial knowledge, experience, and skills because the wealth of new information is crucial in generating innovations for companies, particularly in the banking sector. Ahmed, Shahzad, Aslam, Bajwa, and Riaz (2018) and Saiz et al. (2018) state that SC significantly influences DRAC in the banking sector.

DRAC provides banks with information that serves as the basis for business value for developing financial transaction products and services. It allows banks to develop information from internal and external sources, providing new and beneficial knowledge updates. RC can develop DRAC by implementing strategies and fostering close relationships through culture, technology, information, and knowledge collaboration. Banks can utilize RC as a bridge connecting departments to enhance communication and interaction with other employees. As a result, employees can demonstrate maximum work innovation.

Customer Relationship Management (CRM) is a banking sector approach focusing on customer investment. Therefore, banks must maintain close relationships with stakeholders active in the banking sector, such as customers, employees, and partners. It supports the belief that RC significantly influences DRAC in the banking sector (Ahmed et al., 2020; Ebers & Maurer, 2014; Saiz et al., 2018). RC can integrate DRAC into the banking sector, providing opportunities for developing superior and adaptive corporate innovation performance.

However, SC did not significantly influence innovative performance, with DRAC acting as a mediator in the banking sector. SC is still considered less than optimal in the banking sector due to limited information and knowledge for developing corporate work innovation. SC also faces obstacles in developing DRAC because it focuses on knowledge absorption and implementation, which is still considered less than optimal. Furthermore, operational systems in the banking sector experience problems due to inconsistencies in company operational standards. Petti and Zhang (2016) and Shafique and Kalyar (2018) state that SC does not significantly influence DRAC in the banking sector. In addition, SC is also not relevant to the company's objectives, is not up to date, and the use of technology remains limited.

5.1. Theoretical and Practical Implications

DCV facilitates the banking sector with an operational system based on DPAC as a mediator of human capital and innovative performance. HC is integrated into DPAC to identify and assimilate new knowledge. Additionally, dynamic capabilities enable banks to reconfigure their resources and processes to utilize this information effectively. Dynamic capabilities represent DPAC in facilitating the smooth integration of new knowledge and technology that bank employees acquire into existing operations. The employees respond quickly and adapt to changes in market conditions related to customer preferences, ensuring that the banking products launched become more innovative. DPAC is a strong driver of innovative performance in operational banking. DPAC acts as a mediator by facilitating banks to absorb and integrate external knowledge from outside parties, transforming it into innovative solutions and improving banking business performance. Moreover, the construct of dynamic potential absorptive capacity as a mediator significantly influences the innovation performance of the antecedent variable, human capital, when compared to other antecedent variables, namely relational capital. Furthermore, DRAC acts as a mediator to help banks transform and integrate new knowledge and insights gained from human capital, then transform them into innovative solutions optimization of relational capital to transform valuable external knowledge and insights so that banks can meet customer needs. The management and utilization of relational capital can be enhanced by developing dynamic capabilities so that banks can innovate and maintain a competitive advantage. Furthermore, the construct of dynamic realized absorptive capacity as a mediator significantly influences the innovation performance of the antecedent variable, human capital, compared to other antecedent variables, namely relational capital.

SC allows banks to implement human resource development strategies based on the company's operational system, particularly in the budget for training programs and competency certification development. It enables employees to acquire quality knowledge, experience, and skills, especially Bank Syariah Indonesia employees, to utilize new knowledge to enhance company performance. DPAC can also serve as a reference in identifying and assimilating employees' knowledge within the company. This knowledge, experience, and skills foster new innovations focused on banking products and services for customers in conducting financial transactions. The integration of HC with DPAC provides facilities for branch office management teams with diverse knowledge, experience, and skills to continue developing with integrity for the bank. It forms the basis for creating creativity and innovation that serve as solutions to issues occurring within the banking system. Banks must design strategies that emphasize knowledge absorption by these employees to become more responsive, creative, and innovative in adapting to changing market conditions.

6. CONCLUSIONS AND LIMITATIONS

This research focused on a new concept that provides information on the development of Human Capital (HC) and Relational Capital (RC), which implement DPAC and DRAC as mediators of innovative performance in the Indonesian Islamic banking sector. DRAC as a mediator significantly influences the development of the innovation performance of the antecedent variable, namely HC, compared to RC. Additionally, DPAC facilitates banks in managing new information to develop business value by utilizing innovations in banking products and services. DPAC also provides facilities for sustainable cultural development with innovation as the basis for competitive advantage, enabling companies to improve the quality of their business and compete in the market. Furthermore, DRAC serves as a foundation for developing a superior, responsive Islamic banking sector, especially as the market experiences technological changes. Conversely, DPAC and DRAC mediate the relationship between structural capital and innovative performance within the scope of Sharia Banking, which has no significant effect. The rigidity and standardization of structural capital, based on financial authority regulations, inhibit the adaptability needed to quickly identify and assimilate new knowledge from external parties. Moreover, a lack of operational effectiveness and efficiency can hinder the exploitation and transformation of new knowledge, limiting the impact on DRAC.

A limitation of this research was using a cross-sectional design, which could not reflect the long-term influence of human capital, relational capital, and structural capital on the development of Sharia banking innovation. Therefore, subsequent research can use a longitudinal design in data collection to obtain comprehensive data. The respondents' industrial sector scope was limited to only one type of banking industry, specifically Sharia banks, which limits their perspective to a single company and a particular background.

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