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New Horizons in Bank Mergers: A Quantum Spherical Fuzzy Decision-Making Framework for Analyzing Islamic and Conventional Bank Mergers and Enhancing Resilience

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Abstract: This study explores the implications of merging two fundamentally different types of banks: Islamic and conventional banks. The research aims to provide insight into the unique opportunities and challenges presented by such a merger and to offer strategic guidance for future mergers. A balanced scorecard-based strategic analysis using a Quantum Spherical Fuzzy Decision-Making Approach was used to develop short- and long-term strategic plans for the merged bank. The balanced scorecard included 12 key performance indicators (KPIs) in 4 groups, and the methodology incorporated several questions to guide the analysis. The results of the study offer valuable insights into the potential opportunities and challenges of merging these two types of banks, as well as strategic recommendations for stakeholders at all levels. The study serves as a useful guideline for future mergers between similar or different types of banks. Overall, the findings suggest that a well-planned merger strategy is essential for avoiding challenges and maximizing the benefits of merging Islamic and conventional banks. By integrating the strengths of both types of banks, a merged entity could create a competitive advantage and potentially improve financial performance. However, this requires careful consideration of cultural differences, regulatory challenges, and other factors that could impact on the success of the merger.

Keywords: resilience; bank merger; M&A; Islamic bank; conventional bank; quantum spherical fuzzy decision-making; balanced scorecard

1. Introduction

Since the early 20th century, bank mergers have been a topic of interest for economists and financial experts. However, the frequency and significance of bank mergers have varied over time. The first recorded bank merger in the United States occurred in 1904. The National City Bank of New York merged with the Bank of the Manhattan Company (Abbot, 1929) [1]. This merger was driven by the need to increase efficiency and reduce competition in the banking industry (Carletti et al., 2007) [2]. The Great Depression of the 1930s, however, led to a decline in bank mergers as many banks failed. Eventually, the government implemented regulations to stabilize the industry. After World War II, the banking industry experienced growth and consolidation. This was driven by the economy's growth and the increasing complexity of the banking business (Reinhart & Rogoff, 2013) [3]. Additionally, technological, and regulatory development made it easier for banks to merge and expand their operations. The 1960s and 1970s saw many bank mergers due to this trend (Bawani et al., 2016) [4].

In the 1970s, the banking sector started to deregulate more quickly. This included the removal of restrictions on interest rates, loosening of branching restrictions, and repealing of the Glass–Steagall Act, which separated commercial and investment banking (Sherman,

2009) [5]. As a result, banks could expand their operations and enter new markets. This increased competition led to a wave of bank mergers, as smaller banks could not compete with larger, more diversified banks.

The consolidation trend of the banking industry has continued in recent years. This is driven by the need to comply with new regulations and the increasing pressure to control costs. Additionally, the ongoing digital transformation in banking has enabled banks to serve customers online and expand their reach. The advent of fintech companies and the growing use of digital payments have pressured traditional banks to modernize their offerings to stay competitive.

The impact of bank mergers on the banking industry and the economy is a long-running debate (Rezitis, 2008; Al-Sharkas et al., 2008; Piloff & Santomero, 1998) [6–8]. On the one hand, bank mergers can increase efficiency and cost savings for the merged entity, thus benefiting consumers. They can also lead to the formation of more diversified banks that can better weather economic downturns. On the other hand, bank mergers can decrease competition, resulting in higher consumer prices and stagnant innovation, leading to a concentration of power in the hands of a few large banks. In many aspects, such a financial system is questionable in its health (Demirguc-Kunt & Levine, 2000) [9]. Eventually, the reasons for bank mergers, their historical development, and their impact on the banking industry and the economy have evolved and continue to be the subject of ongoing research and debate.

In today's general environment, an Islamic and a conventional bank usually do not have many reasons to merge. This is because it brings together two fundamentally different banking systems with distinct characteristics and objectives. Islamic banking is based on Sharia principles and prohibits riba, gharar, maysir, and others. Instead, Islamic banks engage in profit and loss sharing (PLS) transactions, in which the bank and the customer share the profits or losses of the venture (Lewis, 2008) [10]. On the other hand, conventional banks make most of their profit from interest payments, unlike their Islamic counterparts (Lewis, 2008) [10].

One of the benefits of merging an Islamic and conventional bank is the opportunity to create a more diversified and resilient financial institution. By combining the strengths of the two banking systems, the merged entity can mitigate the risks associated with a dependency on a single source of income, such as interest-based lending (Ullah, 2022) [11]. Furthermore, the merger allows the entity to tap into new markets and customer segments, as it can offer a broader range of financial products and services to customers.

Another benefit of the merger is the opportunity for the Islamic bank to expand its customer base and increase its market share. Islamic banks typically have a limited customer base, as their products and services target mainly Muslim customers. However, by merging with a conventional bank, the Islamic bank can reach a broader customer base and expand its market share (Purnamasari et al., 2022) [12].

However, the merger of an Islamic and conventional bank also poses several risks. One risk is the potential for operational challenges, as the merged entity will have to integrate different systems and processes, which can be time-consuming and costly. Another risk is the potential for cultural and management conflicts, as the merged entity will have to navigate the two banking systems' different cultures, values, and management styles (Lewis, 2008) [10].

Another risk is the potential for regulatory challenges, as the merged entity must comply with the regulatory frameworks of both the Islamic and conventional banking systems. This can be particularly challenging in countries where the regulatory framework for Islamic banking is still evolving. However, if the type of banking is set up into one of the regulatory frameworks, this dual framework problem can be solved significantly.

An example of an Islamic and conventional bank merger has been completed recently in Qatar between Masraf al-Rayan and Al Khalij Commercial Bank, completed in November 2021 (Masraf al-Rayan, 2021) [13]. This merger has many unique characteristics in the region, such as being the first merger between two publicly listed banks and with the

merged bank operating as an Islamic bank (Masraf al-Rayan, 2021) [13]. As this paper contributes to the literature with an analysis of Islamic and conventional bank mergers, the Masraf al-Rayan and Al Khalij Commercial Bank merger is an appropriate case study for investigating the effects and results of such a merger. In the analysis section, the primary purpose is to measure the potential and the performance of the merger process and the merged entity. Therefore, the balanced scorecard technique is appropriate for analyzing this specific merger.

There are several reasons why Islamic and conventional banks are encouraged to merge. One reason is that such mergers can create economies of scale by combining the resources and operations of the two banks, which can lead to cost savings and increased profitability. Additionally, by merging, banks can gain access to new customer segments and expand their market share (Susanti, 2021) [14].

Another reason is that Islamic and conventional banks can complement each other in terms of their product offerings. Islamic banks operate under Shariah law, which prohibits interest-based transactions and requires profit and loss sharing. Conventional banks, on the other hand, offer interest-based products, such as loans and mortgages. By merging, banks can offer a wider range of financial products to their customers, including both interest-based and Shariah-compliant products.

Furthermore, Islamic and conventional bank mergers can help promote financial inclusion by making Shariah-compliant financial products more accessible to a broader range of customers. This can be particularly important in countries with large Muslim populations, where there may be a demand for Islamic banking services but limited availability.

Overall, by merging, Islamic and conventional banks can leverage their respective strengths to create a more diverse and competitive financial landscape that better serves the needs of their customers.

The balanced scorecard technique is a tool used to evaluate the performance of a business, institution, or event. It considers multiple perspectives, including financial, customer, internal processes, and learning and growth. The balanced scorecard is especially effective in assessing a business's overall health and success and can be applied to various industries, including banking. One main detail about the balanced scorecard technique is that the scores could be obtained directly from industry experts for high accuracy in results. It reduces the misinformation risk, as the information is obtained directly from point zero (Luo et al., 2012) [15]. The availability of experts who played a role in the Masraf al-Rayan and Al Khalij Commercial Bank merger allows the opportunity to apply a balanced scorecard rating from these experts, which is the main reason for selecting this methodology for the study.

We aimed to investigate the motivations and outcomes of the Masraf al-Rayan and Al Khalij Commercial Bank merger through the designed scorecard. We provide a comprehensive understanding of this merger and its context through a case study approach and the integration of multiple data sources. The findings of this study contribute to the existing literature on bank mergers and provide insights for other Islamic and conventional banks considering a merger. Additionally, the study will offer a valuable reference for policymakers and regulators as they consider the implications of such mergers for the stability and growth of the Islamic finance industry.

Some information about the merged banks is necessary to understand better the background of the merger. Masraf al-Rayan is a Qatari Islamic bank that offers a wide range of Shariah-compliant financial products and services. The bank was established in 2006 with the aim of providing innovative and flexible financial solutions to individuals, corporations, and institutions. Masraf al-Rayan has been consistently ranked as one of the top Islamic banks in the Middle East and has received numerous awards for its performance and excellence in the banking industry. The bank's mission is to become the preferred choice of customers by offering a comprehensive range of financial solutions that are in line with the principles of Islamic finance (Masraf al-Rayan Press News, 2021) [13].

Masraf al-Rayan offers a diverse portfolio of products and services that cater to the needs of its customers. The bank's offerings include retail banking, corporate banking, investment banking, and treasury services. Its retail banking division offers a variety of savings accounts, current accounts, credit cards, and personal finance solutions, while its corporate banking division provides tailored financial solutions to small, medium, and large businesses. The investment banking division offers a range of services, such as asset management, private equity, and investment advisory services, while the treasury division offers a wide range of treasury products and services to its customers. Masraf al-Rayan has a strong presence in the Qatari banking industry, with a network of branches and ATMs located throughout the country and is well positioned to meet the growing demand for Shariah-compliant financial products and services in the region (Masraf al-Rayan Press News, 2021) [13].

Al-Khalij Commercial Bank (al khaliji) is a leading Islamic bank in Qatar, with a focus on offering financial solutions to individuals, corporates, and government entities. The bank was established in 2007 and has since then grown to become one of the top banks in the country. Al-Khalij Commercial Bank offers a range of banking products and services, including corporate banking, retail banking, private banking, and treasury and investment services. The bank operates through a network of branches across Qatar and has a presence in UAE, France, and Switzerland. Al-Khalij commercial bank is known for its commitment to providing innovative and customized financial solutions to its clients and has won numerous awards for its excellent customer service and financial performance.

In addition to its focus on providing innovative financial solutions, Al-Khalij Commercial Bank is committed to corporate social responsibility (CSR) initiatives that benefit the local community. The bank has undertaken various initiatives to support education, health, and environmental causes in Qatar, including sponsoring scholarships for students, supporting hospitals and medical centers, and promoting sustainability and environmental conservation through various initiatives. Al-Khalij Commercial Bank's CSR initiatives align with the Qatar National Vision 2030, which seeks to promote sustainable development and social welfare in the country (Masraf al-Rayan Press News, 2021) [13].

The Qatari financial market has undergone significant growth and transformation in recent years, driven by the country's strong economic growth and development. The Qatar Stock Exchange (QSE) is the principal stock market in Qatar, with more than 42 listed companies representing a variety of sectors, including banking and finance, energy, real estate, and industry. The QSE has shown steady growth in recent years, with the market capitalization reaching over QAR 700 billion in 2021. However, the market has faced some challenges, including the impact of the COVID-19 pandemic and the ongoing diplomatic crisis with other Gulf nations (Qatar Stock Exchange, 2020) [16].

In addition to the stock market, the Qatari financial market encompasses a range of other institutions and entities, including commercial banks, investment banks, and insurance companies. The country's banking sector is dominated by several large institutions, including Qatar National Bank, Masraf Al Rayan, and Commercial Bank of Qatar. These banks have played a critical role in supporting the country's economy and growth, providing financing and other financial services to a range of clients. Overall, the Qatari financial market is a vital component of the country's economy, driving growth and development in various sectors and supporting the country's overall economic resilience (Qatar Central Bank, 2023) [17].

Some of the key results of the paper are summarized in this part. Firstly, bank mergers are intricate procedures that call for proactive financial policies to increase the combined bank's long- and short-term resilience. Such tactics can guarantee stability and operational continuity while removing potential dangers and structural interruptions. It is crucial to have a solid financial plan that considers potential difficulties when combining two banks because stakeholders, including clients, investors, and regulators, actively monitor the financial stability of the merged bank. Proactive financial strategies should also anticipate potential possibilities and plan the best course for capitalizing on them,

including allocating resources and generating desirable synergies between the two financial systems. Consequently, the most crucial key performance indicator (KPI) for bank mergers is resilience with proactive financial initiatives.

The continuity of the amalgamated bank depends on meeting the needs of consumers who use Islamic finance, as customer loyalty and retention are essential for long-term success. Understanding the demands of both consumer groups is crucial since Islamic banking services have needs and expectations that are distinct from traditional banking services. Such a plan will assist the combined company in maintaining financial products that are Shariah-compliant for clients of Islamic banks and competitive rates for consumers of conventional banks. The merged bank will have a reputation in the market, retain client loyalty, and improve the likelihood of having a competitive advantage over other banks in the market if the needs of both customer groups are met. Therefore, satisfying customer needs with Islamic banking services is another critical KPI for bank mergers.

Finally, for a combined bank to successfully manage the opportunities and difficulties in the financial sector, it is essential to boost agility and human capital. High agility will guarantee the bank's responsiveness to changes in industry legislation or levels of competition. On the other side, qualified personnel will successfully manage risks, deliver top-notch customer service, and guarantee the bank's strong financial performance. Consequently, one of the most crucial KPIs for a bank merger seems to be an increase in agility and human capital. While it affects only two other KPIs—resilience with proactive financial measures and an increase in agility and human capital—continuity of profit looks to be less important in a bank merger.

Under the light of this introduction to the matter, some research questions are presented below for investigation:

Q1: Which indicators are the most important for an Islamic and conventional bank merger?

Q2: Which indicators are the least important for such a merger?

Q3: What are the short- and long-term plans on which such a merged entity must focus?

These questions are critically answered in the following parts. Before answering the research questions, the hypotheses below are predicted to be confirmed within the research section:

Hypothesis 1 (H1). *Islamic and conventional bank mergers are more challenging than mergers within the same bank category.*

Hypothesis 2 (H2). *If the merged bank continues as an Islamic bank, the lack of Islamic finance knowledge from conventional bank employees is one of the most critical challenges.*

Hypothesis 3 (H3). *Increased market share of the merged bank is a negative sign, due to reduced competition in the market and increased risk of monopoly.*

The hypotheses are answered within the discussion section after the main analysis. The remainder of the paper continues as follows; Chapter Two discussed the existing literature about bank mergers, Islamic–conventional bank mergers, and using the balanced scorecard technique for analyzing the performance of a bank merger. Chapter Three presents the data and methodology, and Chapters Four and Five discuss the results. Finally, Chapter Six includes concluding remarks.

2. Background for the Selection of the Model

Mergers and acquisitions (M&A) are familiar strategies that firms adopt to achieve external expansion. According to Oh, Peter, and Johnson (2014) [18], M&A is a measure that firms use to expand their operations and gain a competitive advantage in the market. Sheidu and Yusuf (2015) [19] defined a merger as blending two or more companies. In a broad sense, M&A encompasses companies' coming together, combination, fusion, and

synergy, in which one company loses its identity and the other retains it. Anyanwu and Agwor (2015) [20] viewed mergers as a "strategic alliance" in which two firms work together to pursue similar objectives. Ahmed and Ahmed (2014) [21] also described mergers as an amalgamation involving combining two previously independent entities into a single entity. This can be achieved through "absorption" or "consolidation". Absorption is achieved when one of the entities retains its name (Anyanwu & Agwor, 2015) [20].

The reasons for banks to merge can be classified based on four hypotheses: diversity, synergy, market share, and manager benefit maximization. The Synergy Hypothesis states that merged banks would create synergies through economies of scale, resulting in increased stock prices and profitability. The Diversity Hypothesis suggests that mergers provide banks with diversified product and service portfolios while minimizing risks with a broader geographical exposure. This risk-mitigating diversification would increase stock prices for both the target and acquirer banks. The Market Share Hypothesis states that the merger of two competitors would result in decreased price competition due to increased prices and decreased supervisory costs. The hypothesis of Manager Benefit Maximization states that bank managers would prefer the merger as to increase shareholders' profitability, maintain job security, and maximize their benefits. However, this may not lead to an increase in public welfare (Palombo, 1997) [22].

Correa (2006) [23] studied international bank acquisitions between 1994 and 2003, using banks from the USA, Germany, France, Brazil, Argentina, and Panama. The study found that the performance of the banks improved after only two years had passed from the transaction date. Lin (2009) [24] focused on the scale dimension as a significant factor in cross-border bank mergers and acquisitions. Using World Bank data, it was determined that large-scale banks with high profits have a greater tendency for acquisition compared with smaller ones and that low cost is also an essential indicator for bank selection.

Mehra (2011) [25] evaluated mergers and acquisitions within the American banking system by analyzing a 1986–2008 quarter-based dataset using a logit model. The study found that banks that had undergone mergers and acquisitions in their history were more inclined towards consolidation and that regulations also influence banks towards consolidation. Large-scale banks strategically position mergers to increase their market share, and it was agreed that liquidity issues during the merger process negatively impact earnings.

The literature does not cover any analysis of an Islamic and a conventional bank merger analysis or a more general focus that investigates the two types of bank mergers. Therefore, to the best of our knowledge, this study fills an important gap in the existing literature by investigating such a merger.

In the existing literature, a few studies utilized the balanced scorecard technique for bank M&As. Lindblom & Von Koch (2002) [26] analyzed the cross-border bank M&As in the E.U. market by using a balanced scorecard technique. Their research suggests that the M&A strategy is a good fit, as the banks complement each other well in different aspects of the model. The authors indicate that a merger's success will depend on the ability of the banks to utilize each other's strengths and characteristics effectively.

Oghuvwu & Omoye [27] studied the relationship between the M&A of banks and their financial performance before and after the merger. The balanced scorecard is used to analyze the financial indicators of both banks during the pre- and post-merger periods. Authors signify a solid positive relationship between M&A and bank performance in their datasets.

As is visible from the existing literature, Islamic and conventional bank mergers are still very undiscovered from many aspects. There are only a few papers that analyzed Islamic and conventional bank mergers, and none of them used a balanced-scorecard methodology from the other studies. Such a merger is unique from several perspectives. There is a very limited understanding of the unique characteristics of this merger, its challenges, and opportunities. The main challenge is the cultural differences within the dual-banking system, which raises question about the success of the merged entity in the

future. Academic research in this field would reduce the unexpected negative results for future experiences significantly and help with future readiness. Therefore, this paper aims to fill such a critical gap by using a case study in the Qatar financial market.

Analysis of an Islamic and conventional bank merger with an accurate balanced scorecard method provides several contributions to the existing literature. First of all, this paper aims to enlighten the opportunities and challenges of the merger of two different types of banks and, therefore, be a guideline for future mergers. This purpose of the study is supported by short- and long-term strategic plan suggestions in the last sections. Therefore, more Islamic and conventional future mergers are encouraged with a better enlightened roadmap.

Secondly, financial performance analysis is also considered while building the scorecards and challenges related to risk management and banking products, and customer retention is also included. Therefore, the study aims to be an anchor for future studies that concern the financial performance of merged banks with the same or different financial systems.

Furthermore, this lack of research creates a need for the optimal decision-making processes for such types of mergers, which may impact the success and continuity of the merger. A better understanding of the decision-making process and the use of advanced decision-making tools can help to improve the success of such mergers.

The balanced scorecard designed for this study includes four main categories: financial, customer satisfaction, internal business, and learning and growth. Each category has 3 KPIs, for a total of 12. References regarding each KPI are given in Table 1.

Table 1. References for KPIs in the scorecard.

BSC Perspective	KPIs	References
Financial	Continuity of Profit	Bikker & Bos, 2008 [28]; Demirgüç-Kunt & Huizinga, 2000 [29]; Linder & Crane, 1993 [30]; Staikouras & Wood, 2004 [31]; Vong & Chan, 2009 [32]; Gur et al., 2023 [33]
	Competitive Market Share	Behn & Riley Jr., 1999 [34]; Belkhaoui et al., 2014 [35]; Berger & Bouwman, 2013 [36]; Cleverley, 1990 [37]; Rau, 2000 [38]
	Resilience with Proactive Financial Strategies	Bakir, 2013 [39]; Corbet et al., 2022 [40]; Indupurnahayu et al., 2022 [41]; Khan et al., 2020 [42]; Maddaus, 2020 [43]; Markman & Venzin, 2014 [44]; Aysan et al., 2021 [45], Manisaligil et al., 2023 [46], Smolo et al., 2023 [47]
Customer Satisfaction	Improvements in Service Quality	Afthanorhan et al., 2019 [48]; Coelho & Henseler, 2012 [49]; Hernon et al., 1999 [50]; Lenka et al., 2009 [51]; Oh & Kim, 2017 [52]; Succi et al., 2001 [53]; Sureshchandar et al., 2002 [54]
	Satisfying Customer Needs with Islamic Banking Services	Ahmed et al., 2021 [55]; Ali et al., 2009 [56]; Farah, 2017 [57]; Lee & Ullah, 2011 [58]; Metawa & Almossawi, 1998 [59]; Naser et al., 1999 [60]; Aysan et al., 2019 [61]
	Enhancing Customer Loyalty	Amin et al., 2011 [62]; Bilal et al., 2010 [63]; Coelho & Henseler, 2012 [49]; Ehigie, 2006 [64]; Fry et al., 1973 [65]; Lenka et al., 2009 [51]

Table 1. *Cont.*

BSC Perspective	KPIs	References
Internal Business	Managerial and Organizational Competencies	Alkhazali et al., 2020 [66]; Chen & Vashishtha, 2017 [67]; Çetin et al., 2012 [68]; Kamukama et al., 2017 [69]; Aysan et al., 2009 [70], Mufti et al., 2016 [71]; Salman et al., 2020 [72]
	Technical Requirements, including Technological and Organizational Infrastructure	Haleem & Kevin, 2018 [73]; Hickson et al., 1969 [74]; Khazanchi & Arora, 2016 [75]; Linder & Crane, 1993 [30]; Ringim et al., 1993 [76]
	Increase in Agility and Human Capital	Alkhazali et al., 2020 [66]; Brueller et al., 2018 [77]; Hassan & Lukman, 2020 [78]; Larsson & Finkelstein, 1999 [79]
Learning and Growth	Information Enhancements of the Customers and Doing Business	Chen & Vashishtha, 2017 [67]; DeLong & DeYoung, 2007 [80]; Houston et al., 2001 [81]; Panetta et al., 2009 [82]; Piloff & Santomero, 1998 [8]; Zollo & Singh, 2004 [83]
	Future Readiness and Adaptability	Bajaj, 2009 [84]; Davis, 2000 [85]; Marshall, 1960 [86]; Smith & Walter, 1998 [87]
	New Generation Banking Services for Sustainable Financial Development	Ahmed et al., 2015 [88]; Fauzi et al., 2010 [89]; Houston & Shan, 2022 [90]; Neffati et al., 2011 [91]; Olson & Pagano, 2005 [92]; Smith, 2010 [93]

Source: Author's own.

3. Data and Methodology

This paper utilizes the balanced scorecard technique for analyzing the Masraf al-Rayan and Al Khalij Commercial Bank merger. A balanced scorecard often has four categories: financial, customer satisfaction, internal business, and learning and growth. Table 2 below is the scorecard designed for this analysis. KPIs for the scorecard are extracted from the existing body of banking M&A literature by carefully detecting the most important indicators for each dimension when a merger exists.

Table 2. Balanced Scorecard.

BSC Perspective	Dimensions	KPIs	#	Details
Financial	Performance (D1)	Continuity of Profit	C1	Profit and its Consistency, Earning Quality, Profitability Ratios
		Competitive Market Share	C2	Market Share, Rivals, Competitiveness
		Resilience with Proactive Financial Strategies	C3	Risk Management, Capital Adequacy, Strong Financial Discipline, Clear Strategy, Productivity

Table 2. *Cont.*

BSC Perspective	Dimensions	KPIs	#	Details
Customer Satisfaction	Meeting Customer Expectations (D2)	Improvements in Service Quality	C4	Demand Customization, Meeting Customer Expectations, Smooth Operations, Quality Software, User Interface
		Satisfying Customer Needs with Islamic Banking Services	C5	Having Shariah-compliant Products, Giving Trust to Customers who have Sensitivity to Islamic Values
		Enhancing Customer Loyalty	C6	Satisfaction, Loyalty, Reducing Complaints, Higher Positive Feedback
Internal Business	Organizational Structure (D3)	Managerial and Organizational Competencies	C7	Institutionalization, Employee Competencies, Managerial Structure of the Merged Bank, Employee Age
		Technical Requirements, including Technological and Organizational Infrastructure	C8	Market Data, Infrastructure, Technological Competency, Databases, etc.
		Increase in Agility and Human Capital	C9	Employee Age, Experience, and Other Dynamics; Employees' Islamic Finance Knowledge
Learning and Growth	Future Readiness and Prospects of the Bank (D4)	Information Enhancements of the Customers and Doing Business	C10	Learning from Each Other, Skill Enhancement in an Islamic–Conventional Bank Merger, Skill Transition, Market-based Information, Innovation
		Future Readiness and Adaptability	C11	Competitive Power, Being Ready for Future Market Place, Adaption Speed, Flexibility
		New Generation Banking Services for Sustainable Financial Development	C12	ESG approach, Integrated Reporting, Sustainable Programs

Source: Author's own contribution.

In this section, the approaches in the proposed model are explained.

3.1. Quantum Spherical Fuzzy Sets with Golden Cut

Quantum theory (Q) focuses on different probabilities in the evaluation process. This new perspective aims to increase the effectiveness of the decision-making processes (Kayacık et al., 2022) [94]. This theory considers phase angle (θ^2) and amplitude items (φ^2) (Sun et al., 2022) [95]. The details are denoted in Equations (1)–(3), where u represents events and ς shows collective events (Hou et al., 2022) [96].

$$Q(|u>) = \varphi e^{j\theta} \tag{1}$$

$$|\varsigma > = \{|u_1 >, |u_2 >, \ldots, |u_n >\} \tag{2}$$

$$\sum_{|u> \subseteq |\varsigma>} |Q(|u>)| = 1 \tag{3}$$

These approaches can be integrated with other techniques, such as fuzzy logic, to minimize uncertainty in decision-making techniques. Thus, it is aimed at solving problems more successfully. In this context, many different fuzzy numbers have been developed in the literature. Spherical fuzzy sets ($\widetilde{A}_S$) were also generated for this purpose in which membership, non-membership, and hesitation (μ, ν, π) parameters are used (Kutlu Gündoğdu and Kahraman, 2019) [97]. The main benefit of these sets is that they consider hesitancy issues (Ashraf et al., 2019) [98]. They are explained in Equations (4) and (5) (Kahraman, 2021) [99].

$$\widetilde{A}_S = \left\{ \left\langle u, \left(\mu_{\widetilde{A}_S}(u), v_{\widetilde{A}_S}(u), h_{\widetilde{A}_S}(u) \right) \right| u \in U \right\} \tag{4}$$

$$0 \le \mu^2_{\widetilde{A}_S}(u) + v^2_{\widetilde{A}_S}(u) + h^2_{\widetilde{A}_S}(u) \le 1, \ \forall_u \in U \tag{5}$$

In this proposed model, these sets are improved by integrating quantum theory to increase problem-solving success. The details are indicated in Equations (6)–(8), in which the amplitudes of degrees are given by ς_μ, ς_v, and ς_h. Additionally, α, γ, and β refer to the set of θ.

$$|\varsigma_{\widetilde{A}_S} > = \{\langle u, (\varsigma_{\mu_{\widetilde{A}_S}}(u), \varsigma_{v_{\widetilde{A}_S}}(u), \varsigma_{h_{\widetilde{A}_S}}(u))| u \in 2^{|\varsigma_{\widetilde{A}_S} >}\} \tag{6}$$

$$\varsigma = \left[\varsigma_\mu . e^{j2\pi.\alpha}, \varsigma_v . e^{j2\pi.\gamma}, \varsigma_h . e^{j2\pi.\beta} \right] \tag{7}$$

$$\varphi^2 = \left| \varsigma_\mu(|u_i >) \right| \tag{8}$$

There are different views on how to calculate degrees in spherical fuzzy sets. In this study, criteria related to golden ratio (G) are considered (Xu et al., 2023) [100]. The division of the extreme (b) and mean ratio (a) in a straight line is considered for this situation, as in Equations (9) and (10) (Li et al., 2022) [101].

$$G = \frac{a}{b} \tag{9}$$

$$G = \frac{1 + \sqrt{5}}{2} = 1.618\ldots \tag{10}$$

The amplitudes of degrees are shown in Equations (11) and (12).

$$\varsigma_v = \frac{\varsigma_\mu}{G} \tag{11}$$

$$\varsigma_h = 1 - \varsigma_\mu - \varsigma_v \tag{12}$$

Moreover, phase angles are created by Equations (13)–(15).

$$\alpha = \left| \varsigma_\mu(|u_i >) \right| \tag{13}$$

$$\gamma = \frac{\alpha}{G} \tag{14}$$

$$\beta = 1 - \alpha - \gamma \tag{15}$$

In addition, Equations (16)–(19) demonstrate the mathematical operations.

$$
\lambda * \widetilde{A}_\varsigma = \left\{ \left(1 - \left(1 - \varsigma_{\mu_{\widetilde{A}}}^2\right)^\lambda\right)^{\frac{1}{2}} e^{j2\pi.\left(1 - \left(1 - \left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda\right)^{\frac{1}{2}}}, \varsigma_{v_{\widetilde{A}}}^\lambda e^{j2\pi.\left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^\lambda}, \left(\left(1 - \varsigma_{h_{\widetilde{A}}}^2\right)^\lambda - \right.\right.
$$
$$
\left.\left.\left(1 - \varsigma_{\mu_{\widetilde{A}}}^2 - \varsigma_{h_{\widetilde{A}}}^2\right)^\lambda\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(1 - \left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda - \left(1 - \left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^2 - \left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda\right)^{\frac{1}{2}}} \right\}, \lambda > 0
\tag{16}
$$

$$
\widetilde{A}_\varsigma^{\ \lambda} = \left\{ \varsigma_{\mu_{\widetilde{A}}}^\lambda e^{j2\pi.\left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^\lambda}, \left(1 - \left(1 - \varsigma_{v_{\widetilde{A}}}^2\right)^\lambda\right)^{\frac{1}{2}} e^{j2\pi.\left(1 - \left(1 - \left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda\right)^{\frac{1}{2}}}, \left(\left(1 - \varsigma_{v_{\widetilde{A}}}^2\right)^\lambda - \right.\right.
$$
$$
\left.\left.\left(1 - \varsigma_{v_{\widetilde{A}}}^2 - \varsigma_{h_{\widetilde{A}}}^2\right)^\lambda\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(1 - \left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda - \left(1 - \left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2 - \left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2\right)^\lambda\right)^{\frac{1}{2}}} \right\}, \lambda > 0
\tag{17}
$$

$$
\widetilde{A}_\varsigma \oplus \widetilde{B}_\varsigma = \left\{ \left(\varsigma_{\mu_{\widetilde{A}}}^2 + \varsigma_{\mu_{\widetilde{B}}}^2 - \varsigma_{\mu_{\widetilde{A}}}^2 \varsigma_{\mu_{\widetilde{B}}}^2\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^2 + \left(\frac{\alpha_{\widetilde{B}}}{2\pi}\right)^2 - \left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^2 \left(\frac{\alpha_{\widetilde{B}}}{2\pi}\right)^2\right)^{\frac{1}{2}}}, \varsigma_{v_{\widetilde{A}}} \varsigma_{v_{\widetilde{B}}} e^{j2\pi.\left(\left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)\left(\frac{\gamma_{\widetilde{B}}}{2\pi}\right)\right)}, \right.
$$
$$
\left. \left(\left(1 - \varsigma_{\mu_{\widetilde{B}}}^2\right)\varsigma_{h_{\widetilde{A}}}^2 + \left(1 - \varsigma_{\mu_{\widetilde{A}}}^2\right)\varsigma_{h_{\widetilde{B}}}^2 - \varsigma_{h_{\widetilde{A}}}^2 \varsigma_{h_{\widetilde{B}}}^2\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(1 - \left(\frac{\alpha_{\widetilde{B}}}{2\pi}\right)^2\right)\left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2 + \left(1 - \left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)^2\right)\left(\frac{\beta_{\widetilde{B}}}{2\pi}\right)^2 - \left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2 \left(\frac{\beta_{\widetilde{B}}}{2\pi}\right)^2\right)^{\frac{1}{2}}} \right\}
\tag{18}
$$

$$
\widetilde{A}_\varsigma \otimes \widetilde{B}_\varsigma = \left\{ \varsigma_{\mu_{\widetilde{A}}} \varsigma_{\mu_{\widetilde{B}}} e^{j2\pi.\left(\frac{\alpha_{\widetilde{A}}}{2\pi}\right)\left(\frac{\alpha_{\widetilde{B}}}{2\pi}\right)}, \left(\varsigma_{v_{\widetilde{A}}}^2 + \varsigma_{v_{\widetilde{B}}}^2 - \varsigma_{v_{\widetilde{A}}}^2 \varsigma_{v_{\widetilde{B}}}^2\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2 + \left(\frac{\gamma_{\widetilde{B}}}{2\pi}\right)^2 - \left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2 \left(\frac{\gamma_{\widetilde{B}}}{2\pi}\right)^2\right)^{\frac{1}{2}}}, \right.
$$
$$
\left. \left(\left(1 - \varsigma_{v_{\widetilde{B}}}^2\right)\varsigma_{h_{\widetilde{A}}}^2 + \left(1 - \varsigma_{v_{\widetilde{A}}}^2\right)\varsigma_{h_{\widetilde{B}}}^2 - \varsigma_{h_{\widetilde{A}}}^2 \varsigma_{h_{\widetilde{B}}}^2\right)^{\frac{1}{2}} e^{j2\pi.\left(\left(1 - \left(\frac{\gamma_{\widetilde{B}}}{2\pi}\right)^2\right)\left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2 + \left(1 - \left(\frac{\gamma_{\widetilde{A}}}{2\pi}\right)^2\right)\left(\frac{\beta_{\widetilde{B}}}{2\pi}\right)^2 - \left(\frac{\beta_{\widetilde{A}}}{2\pi}\right)^2 \left(\frac{\beta_{\widetilde{B}}}{2\pi}\right)^2\right)^{\frac{1}{2}}} \right\}
\tag{19}
$$

3.2. The Extension of DEMATEL

DEMATEL is used to identify those issues deemed to be more important among different issues affecting a purpose. With this method, it is also possible to determine the causal relationship among these factors (Chang et al., 2011) [102]. DEMATEL is integrated with spherical fuzzy numbers whose degrees are calculated with the golden ratio in this originally developed model. This integrated model based on DEMATEL is selected for solving the complex problems of the decision makers more accurately by using the advantages of the spherical fuzzy sets, including the hesitancy degrees and the quantum mechanics with the sets of phase angle and amplitude items. Moreover, the fuzzy sets are constructed by using the essentials of golden cuts to eliminate the problem of subjective judgments. Because it is based on a mathematical formula, it uses objective data and is not influenced by personal opinions or biases. However, the methodology of DEMATEL has several advantages, including the interdependency among the factors and the flexibility in the application process of the items for effectively evaluating the uncertain conditions of the decision-making problems when it is compared with other conventional multi-criteria decision-making models, such as the AHP, the BWM, and so on. The steps of this generated method are shown below (Abdullah and Zulkifli, 2015) [103].

Step 1: Evaluations are collected from the experts.

Step 2: Relation matrix is constructed by Equation (20).

$$\varsigma_k = \begin{bmatrix} 0 & \varsigma_{12} & \cdots & \cdots & \varsigma_{1n} \\ \varsigma_{21} & 0 & \cdots & \cdots & \varsigma_{2n} \\ \vdots & \vdots & \ddots & \cdots & \cdots \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ \varsigma_{n1} & \varsigma_{n2} & \cdots & \cdots & 0 \end{bmatrix} \tag{20}$$

Equation (21) is also used to compute aggregated values.

$$\varsigma = \left\{ \left[1 - \prod_{i=1}^{k} \left(1 - \varsigma_{\mu_i}^2 \right)^{\frac{1}{k}} \right]^{\frac{1}{2}} e^{2\pi \cdot \left[1 - \prod_{i=1}^{k} \left(1 - \left(\frac{\alpha_i}{2\pi} \right)^2 \right)^{\frac{1}{k}} \right]^{\frac{1}{2}}}, \prod_{i=1}^{k} \varsigma_{v_i}^{\frac{1}{k}} e^{2\pi \cdot \prod_{i=1}^{k} \left(\frac{\gamma_i}{2\pi} \right)^{\frac{1}{k}}}, \left[\prod_{i=1}^{k} \left(1 - \varsigma_{\mu_i}^2 \right)^{\frac{1}{k}} - \right. \right.$$
$$\left. \left. \prod_{i=1}^{k} \left(1 - \varsigma_{\mu_i}^2 - \varsigma_{h_i}^2 \right)^{\frac{1}{k}} \right]^{\frac{1}{2}} e^{2\pi \cdot \left[\prod_{i=1}^{k} \left(1 - \left(\frac{\alpha_i}{2\pi} \right)^2 \right)^{\frac{1}{k}} - \prod_{i=1}^{k} \left(1 - \left(\frac{\alpha_i}{2\pi} \right)^2 - \left(\frac{\beta_i}{2\pi} \right)^2 \right)^{\frac{1}{k}} \right]^{\frac{1}{2}}} \right\} \tag{21}$$

Step 3: Values are defuzzified by Equation (22)

$$Def\varsigma_i = \varsigma_{\mu_i} + \varsigma_{h_i} \left(\frac{\varsigma_{\mu_i}}{\varsigma_{\mu_i} + \varsigma_{v_i}} \right) + \left(\frac{\alpha_i}{2\pi} \right) + \left(\frac{\gamma_i}{2\pi} \right) \left(\frac{\left(\frac{\alpha_i}{2\pi} \right)}{\left(\frac{\alpha_i}{2\pi} \right) + \left(\frac{\beta_i}{2\pi} \right)} \right) \tag{22}$$

Step 4: Normalization procedure is applied with Equations (23) and (24).

$$B = \frac{\varsigma}{max_{1 \leq i \leq n} \sum_{j=1}^{n} \varsigma_{ij}} \tag{23}$$

$$0 \leq b_{ij} \leq 1 \tag{24}$$

Step 5: Total relation matrix is created by Equation (25).

$$\lim_{k \to \infty} \left(B + B^2 + \ldots + B^k \right) = B(I - B)^{-1} \tag{25}$$

Step 6: Sums of rows and columns (*D*, *E*) are computed to identify causal degrees as in Equations (26) and (27).

$$D = \left[\sum_{j=1}^{n} e_{ij} \right]_{nx1} \tag{26}$$

$$E = \left[\sum_{i=1}^{n} e_{ij} \right]_{1xn} \tag{27}$$

The sum/difference of these values are considered to define the weights/causal degrees of the factors. For the purpose of defining causality relationship, the differences of these values are compared with the threshold value (α) by Equation (28).

$$\alpha = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} [e_{ij}]}{N} \tag{28}$$

4. Results

This study is aimed to determine the most influential factors in the merger process of banks. In this context, 12 different indicators are determined as a result of a comprehensive literature review. In this process, the indicators of the balanced scorecard technique are considered. The main advantage of using this approach is that financial and non-financial determinants can be considered. Within this scope, the selected 12 indicators are derived from 4 different balanced scorecard perspectives: finance, customer satisfaction, internal

business, and learning and growth. Table A3 provides the abbreviations of the KPIs used throughout the paper.

Banks may merge primarily to increase their profitability. The new bank, which has been formed due to the merger of the two banks, is likely to be successful in its activities in different fields. On the other hand, with the merger's help, the new bank's market share will be more significant. This will contribute to an increase in the competitive power of the bank. Banks that want to improve their financial strategies can also choose to merge. In the case of merging with a bank that is successful in different segments, it will be possible to develop more effective financial strategies. Increasing customer satisfaction is one of the critical reasons for bank mergers; as a result of the merger of two different banks in the sector, there is a higher chance of increasing service quality. For example, the number of branches and ATMs of the new bank will increase, which will help provide more comprehensive service to customers. In addition, due to the bank merger, it is possible to provide services to customers in different segments. For example, when a conventional bank is combined with an Islamic bank, it can also serve interest-sensitive customers. This situation contributes to both increasing service quality and ensuring customer loyalty.

Bank mergers also help increase organizational effectiveness. Merging with another bank also means benefiting from the qualified workforce of that bank. In this context, merging banks, which both have successful managers and a solid corporate culture, provides many benefits. This is also very important for technological development. In the case of a merger with a bank with a strong technological infrastructure, it will be possible for the new bank to have robust technology. Bank mergers can also provide some benefits in terms of agility so that it can be possible to increase the efficiency of the bank. Bank mergers also include some benefits in terms of research and development performance. In the case of merging with a bank that carries out active research activities, it will be possible to use the information more effectively. Additionally, the more substantial bank resulting from the merger is likely to adapt more successfully to technological developments. Thus, the bank will be able to develop effective new services, which will enable the bank to be more competitive.

We created 132 different questions from these criteria. The questions were created by asking the effect of each KPI compared with all others (12×11 questions) (What is the effect of KPI1 compared with KPI2?). Questions are illustrated in Appendix A.1. Thus, the analysis will expose the most effective criteria which will be necessary for building the strategic planning recommendations for the banks. These questions were posed to five different experts face-to-face. The experts were critically selected and are top managers in the merged bank currently. They have the necessary sufficiency to evaluate these items. Important information about the experts is indicated in Table A3. More details about the experts are not given due to privacy reasons.

These individuals made evaluations using five different scales. The details of these scales, the degrees, and the fuzzy sets are presented in Table A4. Additionally, the details of the evaluations are indicated in Table A1 in the Appendix A of the manuscript.

In the following stage, the average values of the evaluations are computed by considering Equations (20) and (21). The details of these values are demonstrated in Table A5.

In the following section, score values were computed. These values are shown in Table A6.

After that, the values were normalized by applying the operations stated in Equations (23) and (24). Table A7 indicates the details of these values.

The total relation matrix was created by Equation (25) in the next stage. Table A8 provides information about the total relation matrix.

The sums of rows and columns (D, E) were calculated to create causal direction. For this purpose, Equations (26) and (27) were taken into consideration. Additionally, threshold value was also considered in this process via Equation (28). Causality relationship between the indicators is indicated in Table 3.

Table 3. Causal Directions.

Impact Directions
PBL → (RFS, IAH)
MKS → (RFS, MGP, TNF, IAH, RDP, NWD)
RFS → (PBL, MKS, ISQ, SBS, CTY, MGP, TNF, IAH, FDB, RDP, NWD)
ISQ → (MKS, RFS, IAH, NWD)
SBS → (MKS, RFS, ISQ, MGP, TNF, IAH, RDP, NWD)
CTY → (MKS, RFS, IAH)
MGP → (MKS, RFS, IAH)
TNF → (MKS, RFS, MGP, IAH, NWD)
IAH → (MKS, RFS, SBS, MGP, TNF, RDP, NWD)
FDB → (MKS, RFS, IAH)
RDP → (MKS, IAH)
NWD → (MKS, RFS, MGP, TNF, IAH, RDP)

Table 3 demonstrates that resilience with proactive financial strategies is the most influencing factor because it affected all other 11 criteria. This situation provides information that it is very critical in the merger process of the banks. On the other hand, increase in agility and human capital is the most influenced indicator since it was affected by all other factors. This situation also plays a crucial role in the effectiveness of the merger process of the banks. Additionally, the weights of the criteria are stated in Table 4.

Table 4. Weights of the determinants.

	D	E	D + E	D − E	Weighting Results	Weighting Priorities
PBL	55.622	55.809	111.431	−0.186	0.0828	11
MKS	56.264	56.350	112.614	−0.086	0.0836	3
RFS	57.018	56.728	113.746	0.290	0.0845	1
ISQ	55.947	55.912	111.859	0.035	0.0831	8
SBS	56.354	55.902	112.256	0.452	0.0834	5
CTY	55.934	55.754	111.689	0.180	0.0830	10
MGP	55.851	56.158	112.009	−0.307	0.0832	7
TNF	56.058	56.149	112.207	−0.091	0.0833	6
IAH	56.299	56.635	112.934	−0.336	0.0839	2
FDB	55.918	55.495	111.413	0.423	0.0827	12
RDP	55.679	56.045	111.724	−0.366	0.0830	9
NWD	56.249	56.257	112.506	−0.008	0.0836	4

Table 4 identifies that resilience with proactive financial strategies played the most critical role in the merger process of the banks because it had the highest weight (0.0845). Increases in agility and human capital as well as competitive market share also had high weights (0.0839 and 0.0836). Nevertheless, enhancing customer loyalty, increasing profitability and information enhancements of the customers, and doing business had lower importance than the others in this process. Table 5 below sorts KPIs according to their weights from Table 4. Highest weighted KPIs are sorted with the highest impact factor. Discussion of the tables is presented in the next chapter.

Table 5. KPIs Impact Factor Ranking.

KPI	CODE	Impact Factor
Resilience with Proactive Financial Strategies	RFS	11
Satisfying Customer Needs with Islamic Banking Services	SBS	8
Increase in Agility and Human Capital	IAH	7
Competitive Market Share	MKS	6
New Generation Banking Services for Sustainable Financial Development	NWD	6
Technical Requirements, including Technological and Organizational Infrastructure	TNF	5
Improvements in Service Quality	ISQ	4
Enhancing Customer Loyalty	CTY	3
Managerial and Organizational Competencies	MGP	3
Information Enhancements of the Customers and Doing Business	FDB	3
Future Readiness and Adoptability	RDP	2
Continuity of Profit	PBL	2

The comparative analysis was also applied with the M-SWARA for the robustness check of the proposed model as well as the sensitivity analysis to explore the consistency of the weighting results in the hybrid decision making approach. M-SWARA is one of the weighting methods that are currently used for measuring the relative importance and the causality of the criteria set (Yuksel and Dincer, 2023) [104]. Table 6 identifies the comparative weighting results together with the sensitivity analysis carried out by adjusting the weights up and down by 10%.

Table 6. Comparative weighting ranks and sensitivity results.

	DEMATEL		M-SWARA	
	Case 1	Case 2	Case 1	Case 2
PBL	10	11	10	11
MKS	2	4	2	4
RFS	1	2	1	2
ISQ	9	9	9	9
SBS	5	6	5	6
CTY	6	7	6	7
MGP	8	8	8	8
TNF	7	5	7	5
IAH	3	1	3	1
FDB	12	10	12	10
RDP	11	10	11	10
NWD	4	3	4	3

As seen in Table 6, two cases were considered to compute the sensitivity results. Case 1 defined the scenario of increase in the weights by 10%, whereas Case 2 included the decrease in the weights with 10%. On the basis of the results above, it seems that RFS, IAH, MKS, and NWD are the most important variables, while SBS, CTY, PBL, MGP, TNF, ISQ, RDP, and FDB have relatively lower importance. It is seen that the proposed model is stable and reliable according to the comparative weighting and sensitivity analysis results.

5. Discussion

Resilience with proactive financial strategies is the most essential criterion for bank mergers. Bank merger is already a very complex and challenging process in most regulation

systems. Following proactive financial strategies with strong managerial instincts would help improve the resilience of the merged bank in both the short and long terms (Bakir, 2013) [39]. A robust and well-thought-out initial financial strategy can eliminate most potential risks and structural disruptions for the merged bank.

Moreover, a clear financial strategy will ensure the operations' stability and continuity in most scenarios. Moreover, stakeholders, such as customers, investors, and regulators, take an extremely close look at the financial resilience of the merged bank for the initial stages to make decisions about their plans. Smith et al. (2011) [105] discussed the importance of having a significant financial strategy on financial success and the overall performance deeply in their book. Having a clear financial strategy is crucial for banks to ensure their long-term success and sustainability in an ever-changing financial landscape. A financial strategy provides a roadmap for the bank to achieve its financial goals and objectives, manage risks, and make informed decisions. In this context, this essay discusses why having a clear financial strategy is essential for banks.

Firstly, a clear financial strategy helps banks to manage risk effectively. Banks are exposed to a range of risks, including credit risk, market risk, liquidity risk, and operational risk. A sound financial strategy enables banks to identify, measure, and manage these risks effectively, ensuring that they are within acceptable limits. By having a well-defined risk management framework, banks can reduce the likelihood and impact of financial losses caused by unexpected events (Calandro & Flynn, 2007) [106].

Secondly, a financial strategy provides banks with a framework for capital management. Adequate capital is essential for banks to absorb unexpected losses, meet regulatory requirements, and pursue growth opportunities. A clear financial strategy allows banks to determine their capital needs and optimize their capital structure to meet these needs. Banks can also use their financial strategy to decide on the appropriate level of capital reserves and the optimal mix of debt and equity financing (Xue et al., 2021) [107].

Thirdly, a financial strategy enables banks to make informed decisions regarding their product and service offerings. Banks operate in a highly competitive environment, and they must continually innovate to remain relevant and attract and retain customers. A clear financial strategy allows banks to identify profitable product lines and customer segments, allocate resources effectively, and manage pricing and profitability. By aligning their product and service offerings with their financial strategy, banks can improve their financial performance and achieve sustainable growth (Hacioglu & Aksoy, 2021) [108].

Furthermore, having a robust financial strategy means considering potential challenges when integrating two banks (Indupurnahayu et al., 2022) [41]. For example, the existing debt of the two institutions, the alignment of Islamic and conventional business systems, and the different risk management approaches of the two systems are potential challenges for such a merger. A robust financial strategy would and should include the worst- and best-case scenarios for all these potential challenges.

In addition, having proactive financial strategies would also predict possible opportunities and design the best path for making the most out of them [109]. In the case of this merger, increased market share, increased economies of scale, and access to new customer segments are critical opportunities for the merged bank. Strategizing these opportunities well is critical for the future resilience of the bank. For this, the financial plan must include the allocation of resources, optimization of the operations, and achieving the desired synergies between the two financial systems (Markman & Venzin, 2014) [44].

Therefore, the resilience that comes from a proactive financial strategy is the most essential KPI for bank mergers. It helps mitigate potential risks and enhance the chances of achieving the planned outcomes in any scenario.

Secondly, satisfying customer needs with Islamic banking services takes place with an impact on eight other KPIs. In the case of Islamic finance customers, satisfying their needs is crucial for the continuity of the merged bank (Ahmed et al., 2021) [55]. Customer loyalty and retention are critical in a merger integration process, as a loss in customer loyalty would result in a necessary amount of profit reductions (Farah, 2017) [57]. Although such a

loss would be eliminated in the short term, it certainly will be vital for the bank's long-term success. As Islamic banking services differentiate from conventional services, customers who prefer Islamic banking products have different needs and expectations compared with their conventional counterparts. Therefore, for a successful merger, the merged entity must clearly understand the needs of both customer groups. Such a strategy would carefully keep the financial products within their Shariah-compatible lines for Islamic bank customers and stay competitive in their rates for conventional bank customers.

When a conventional bank merges with an Islamic bank, the merged bank must ensure that the Islamic products and services they offer are of the same high quality as those provided by the Islamic bank before the merger (Zouari & Abdelhedi, 2021) [110]. Customers who were previously doing business with the Islamic bank may be skeptical of the merged bank's ability to provide Shariah-compliant products and services. Therefore, any perceived decline in product quality could lead to a loss of customer trust, satisfaction, and loyalty (Rahmayati, 2021) [111].

Moreover, maintaining high-quality Islamic products and services is essential for the merged bank's long-term success and growth. Islamic finance is a rapidly growing industry, and there is intense competition among Islamic banks to offer innovative and high-quality products and services. A merged bank that fails to maintain high-quality Islamic products and services may struggle to attract and retain customers, resulting in lower market share and revenue (Alam & Al-Amri, 2022) [112].

In addition to maintaining product quality, the merged bank must also ensure that its products and services are aligned with the needs and expectations of its customers. This requires the merged bank to conduct market research and customer surveys to understand customer preferences and identify areas for improvement (Ahmed et al., 2022) [55]. By providing customized, Shariah-compliant products and services that meet the needs of their customers, the merged bank can build customer loyalty and differentiate itself from its competitors (Asnawi et al., 2020) [113].

Satisfying the needs of both customer groups will ensure the merged bank has a reputation in the market, maintains customer loyalty and retention, and increases the chance of having a competitive advantage over other banks in the market (Ahmed et al., 2021) [55].

Increase in agility and human capital takes third place by impacting seven other KPIs in the results. Certainly, agility and human capital are the primary tools for a merged bank to effectively navigate the challenges and opportunities explained in previous paragraphs. In a bank merger, an increase in agility can empower the merged bank to respond better to the changes in the finance business and the storms in today's financial volatility (Alkhazali et al., 2020) [66]. Moreover, high agility will ensure the responsive attitude of the bank in a change of regulations or competition level in the industry. Such an attitude will increase the competitiveness of the merged entity in the banking market (Chen & Vashishtha, 2017) [67].

In the same way, solid and skilled human capital plays a critical role in the smooth integration of the two banks. A substantial investment in human capital will ensure the inclusion of the required skills in the employees (Hassan & Lukman, 2020) [78]. In the investigated bank merger case, an employee of the merged bank should have enough knowledge and experience in Islamic finance and Shariah rulings to keep the business and products within the permissible borders. In the case of Islamic banks, the workforce should be trained in the principles of Islamic finance, such as the details and limitations of interest-based transactions and the promotion of risk-sharing. Ensuring the merged entity's employee knowledge will help other strategies, such as having a proactive financial strategy or customer loyalty and retention. Moreover, a skilled workforce will effectively manage risks, provide high-quality customer service, and ensure the high financial performance of the bank. Therefore, an increase in agility and human capital appears to be one of the most important KPIs for a bank merger.

Investing in human capital through training and development programs is crucial to ensure that employees have the necessary skills and knowledge to manage the operations

of the merged bank (Calandro & Flynn, 2007) [106]. For instance, the workforce of Islamic banks should be trained in the principles of Islamic finance, including the details and limitations of interest-based transactions and the promotion of risk-sharing. Such training ensures that the employees have a good understanding of the Islamic financial system and can offer high-quality products and services to customers.

Moreover, a skilled workforce is essential for managing risks, providing high-quality customer service, and ensuring the high financial performance of the bank. In a competitive market, a bank's ability to retain customers depends on its ability to provide excellent customer service. Therefore, employees should be trained to understand customer needs and expectations and to provide personalized and efficient services.

On the flip side, some other KPIs appear to have less priority for a bank merger. For one, the continuity of profit, which impacts only two other KPIs, has the most negligible effect on the bank merger. Continuity of profit is unquestionably vital for the existence of the merged bank. However, analysis results show that the two KPIs it impacts are resilience with proactive financial strategies and an increase in agility and human capital, which are the most critical KPIs in the overall results. This allows the conclusion that if a proactive financial plan and strong workforce are ensured, a continuous profit stream will inevitably result in success (Bikker & Bos, 2008) [28]. In any case, focusing on the quality of the work output instead of the profit itself matters for the success of almost any type of entity. Therefore, continuity to profit is not less important than the others, but it is expected to be the result of the most critical KPIs in the merged bank.

In the same way, future readiness and adaptability have a shallow impact factor with very similar reasoning. A clear strategic plan should naturally include the agility for the changes in the future marketplace (Bajaj, 2009) [84]. All mentioned KPIs with strong impact require a future-ready entity to stay competitive in the marketplace and to ensure customer retention.

Lastly, four KPIs—competitive market share; new generation banking services for sustainable financial development; technical requirements including technological and organizational infrastructure; and improvements in service quality—appear to have a mid-level impact on a bank merger. These KPIs should be included in the mid- and long-term plans of the merged entity for the business success, depending on the current level of the bank in each of them.

Based on the research, the hypotheses established at the beginning of the paper are answered clearly. Firstly, a bank merger between two different types of banking is not common and comes with its own risks. Islamic banking has its own values and limitations; therefore, bringing conventional bank capital into it has positive and negative aspects. Conventional banking assets are riskier than Islamic banks. Therefore, the overall risk of the merged entity is expected to increase after the merger period. Moreover, institution culture must change significantly to achieve the same performance as pre-merger levels (Bajaj, 2009) [84]. Overall, analysis and discussion show that H1 is accepted.

The second hypothesis concerns the assumption that the employee from the conventional bank will lack the knowledge required for Islamic banking operations. As mentioned, Islamic banking comes with its own values from Shariah and the Maqasid principles. Islamic finance is based on the principles of Shariah law, which prohibits interest-based transactions, speculation, and uncertainty. The conventional banking system, on the other hand, operates on interest-based transactions and does not consider the ethical and moral aspects of finance. Therefore, when a conventional bank merges with an Islamic bank, the employees of the conventional bank may lack the knowledge and understanding of the principles of Islamic finance, which could lead to difficulties in implementing Islamic financial principles.

Conventional bank employees' lack of knowledge of Islamic finance principles can lead to several challenges. For example, the employees may not be able to design and market Shariah-compliant products, or they may not be able to handle the day-to-day operations of an Islamic bank. Additionally, the lack of knowledge of Islamic finance

principles may lead to non-compliance with Shariah law, resulting in reputational damage and legal consequences.

Moreover, Islamic banking requires specialized expertise in areas such as Shariah law, Islamic contracts, and risk management, which may not be available in the conventional bank. Therefore, the merged bank may need to invest in training and development programs to ensure employees have the necessary skills and knowledge to operate in the Islamic banking industry. Overall, there is a concern about the second hypothesis, which supports its validity.

The third hypothesis raises a concern related to the monopoly power due to the rising market share of the merged bank. Masraf al Rayan is the second-largest Islamic bank in Qatar and the third-largest overall (ADV Ratings, 2023) [114]. The top banks of Qatar are close to each other in terms of size, which puts them in competition with each other. Therefore, the case merger in this paper does not raise a concern of monopoly within the market. Indeed, experts agree that the merger will contribute positively to the health of the overall financial system of the country (Masraf al Rayan Press News, 2022) [13]. Overall, H3 is also rejected. Considering the positioning of each criterion, the merged entity should have short-term and long-term plans to improve them. For the short term, it would be appropriate to focus on essential criteria for the business's success.

Starting from resilience with proactive financial strategies, the bank should develop and implement a comprehensive financial plan. Such a financial plan must include risk management strategies. The bank should review and improve the risk management processes and systems because Islamic and conventional banks have very different risk management approaches. The merged bank should align the risk management per the Islamic Law requirements. Furthermore, the bank may explore new ways of revenue streams, such as investment banking or wealth management services. Increased human capital and economies of scale would be an excellent opportunity for expanding business into these areas. In order to stay resilient, the bank must also monitor the financial environment closely. The bank must proactively adjust its businesses and strategies in response to the financial world's trends, volatility, and risks.

Moreover, the merged entity must focus on providing high-quality Islamic banking services to meet their needs and expectations. The bank must offer investment and financing products that are Shariah-compliant while improving customer awareness about Islamic finance. Keeping the products high quality and compatible is also crucial for customer retention in the near future.

The bank must invest in its agility and human capital to achieve all these. The employee must be trained carefully in the new business style, and the organizational structure must be improved to stay flexible and responsive. Moreover, investing in technology will keep the bank competitive and ready for the future.

In the longer terms, it is suggested that the bank focus on profit continuity. Diversifying the revenue streams will help in this matter critically. Expansion into new markets and optimizing the cost structure are two critical factors for the profit structure of the bank. Moreover, the bank must be ready for future changes in the financial world. Long term plan of the merged bank must include the adoption strategies for fintech and digitalization tools. Investing in technology and digital solutions is critical for having the required infrastructure when needed. To ensure a competitive advantage, the bank must stay ahead of the regulatory changes and include those related to Islamic finance to ensure compliance and maintain its position in the market. Continual development of new products and services to meet the evolving needs of modern customers should be at the center point of this strategy. Lastly, the bank must prioritize improving the information and knowledge available to the customers and improving the ease of doing business. Educating customers about Islamic financial products will increase awareness and increase the number of customers with a reason to work with Islamic banks only. Moreover, today's customers are very precise about what they want (Aysan et al., 2022) [115]. Strong and

smooth software, light-speed-fast transactions, and digital solutions will ensure customer satisfaction and loyalty.

Overall, the criteria derived from the results of this study are beneficial in building short- and long-term plans for the merged bank. The impact factor of the criteria is located in each of them in the short- or long-term lists. More important criteria are critical in the short term to ensure the business is compatible and in the game. Other criteria are located in the long-term plans for the perfection and enhancement of the business in the marketplace.

6. Conclusions

The findings of this study are substantial because they provide a multi-dimensional and comprehensive analysis of the merger of an Islamic and a conventional bank in the Qatari financial system. The study offers a unique and critical perspective on the opportunities and challenges of bank mergers in different markets by utilizing a balanced scorecard approach and incorporating a quantum spherical fuzzy decision-making methodology.

One of the study's key results is the importance of considering different dimensions in a bank merger process, such as financial planning, customer satisfaction and retention, operational efficiency, and human capital. Investigating the relevance of each criterion in terms of the impact on the merger process will ease the evaluation and prioritization of the strategic plans for the M&A processes in the future (Alkhazali et al., 2020) [66]. From this perspective, this study has a set of guidelines for future bank mergers, including their short- and long-term business plans.

Another critical insight is the potential of M&A strategies for expanding the Islamic finance sector. Results of the study show that mergers increase the market competitiveness and overall size of Islamic banks, giving them a more substantial hand in the future market. As a successful example of Islamic and conventional bank mergers, the Masraf Al-Rayan and Al-Khalij Commercial Bank union can set the standards for future mergers. Moreover, several policy recommendations for all stakeholders can be derived from the lessons taken from the merger and this study.

The analysis provides several policy implications. Firstly, it highlights the importance of considering all aspects of the organization, including financial and non-financial factors, when evaluating a merger. This approach ensures that decision-makers have a comprehensive understanding of the potential impact of the merger on the organization, its employees, customers, and stakeholders. Moreover, policymakers can use this approach to identify potential challenges that may arise during the merger process, such as cultural differences, communication barriers, or conflicting objectives, and develop strategies to address them.

Secondly, the study emphasizes the need for transparency and communication during the merger process. It is crucial to keep all stakeholders informed and engaged throughout the process to minimize uncertainties and build trust. This includes communicating the rationale behind the merger, its potential impact on the organization, and any changes that may occur in the short and long term. Policymakers can develop guidelines for communication and stakeholder engagement, including regular updates, town hall meetings, and feedback mechanisms, to ensure that all parties have a voice and are heard. This approach can help mitigate potential risks associated with the merger, such as loss of talent, customer attrition, or reputation damage, and promote a successful integration of the two organizations.

Policy recommendations for regulators include several vital points. To start with the most important one, regulators must promote financial stability and encourage the merged bank to implement its strategies on this path. Risk management frameworks and contingency planning should be regulated for the safest levels of financial system stability.

Moreover, encouraging transparency in the merger process, including disclosing relevant documents and information related to the financial and operational aspects, will be vital to prepare guidelines for future mergers (Chen & Vashishtha, 2017) [67]. With this encouragement, more data from the merger experience could be derived so that future mergers will include fewer potential risks.

Furthermore, since less competition in the banking sector is often perceived negatively in the current regulatory environment, regulators must promote competition and not allow banks to merge and excessively control a financial system, such as the examples during the 2008 sub-prime crisis in the U.S. market.

On the other side, investors must research the merger process well to decide whether to continue their investment or withdraw. The strategic rationale of the merger, the financial health of the merged bank, and the current market environment are some of the main factors that would directly affect the stock prices of the merged bank. Lastly, investors would be safer diversifying their portfolio more during, and for the short term after, the merger process to minimize quick losses. With the close follow-up and research, investors would safely ensure their investment in the merged bank is well-informed, diversified, and managed effectively.

Lastly, top executives of the merged bank should be well aware of the implementation details of all financial and strategic merger plans, as minor mistakes during this process could bring devastating results later. They also must push human capital transformation to be quick and successful enough to ensure a smooth shifting of the business.

The main limitation of this study is that it relies solely on expert opinions obtained through interviews, rather than using actual financial data to assess the performance of the merger. While expert opinions can provide valuable insights into the merger process and its outcomes, they may not always accurately reflect the financial performance of the banks. Additionally, the use of a balanced scorecard with quantum fuzzy with golden sets technique may not be widely recognized or accepted in the financial industry, which could further limit the generalizability of the study's findings.

Furthermore, the study focuses only on the merger of Masraf al-Rayan bank and Al-Khalij Commercial Bank, which may not be representative of all bank mergers in Qatar or other countries. The findings of this study may not be applicable to other mergers involving different banks, industries, or countries. Additionally, the study does not account for external factors that may have affected the performance of the banks during the merger, such as changes in market conditions or regulatory environments. Therefore, caution should be taken when interpreting the results of this study and applying them to other situations.

In conclusion, this study provides insightful details for practitioners, regulators, executives, and investors in the Islamic finance industry. Moreover, the paper highlights the usefulness of the balanced scorecard approach for analyzing critical processes such as M&As. The study's results demonstrate the potential benefits of utilizing quantum spherical fuzzy decision-making methodology for strategizing short-term and long-term plans for a challenging merger process and the merged entity. Ultimately, the insights and recommendations from the paper support the growth and development of the Islamic finance sector and encourage future M&As with safer guidelines for the best outcome for all stakeholders.

Appendix A

Table A1. Evaluations.

STXP 1											
	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL		FAIR	STRONG	PERFECT	STRONG	FAIR	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG
MKS	STRONG		STRONG	STRONG	STRONG	FAIR	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG
RFS	STRONG	STRONG		STRONG	STRONG	STRONG	PERFECT	STRONG	STRONG	STRONG	PERFECT	PERFECT
ISQ	STRONG	STRONG	STRONG		PERFECT	PERFECT	FAIR	STRONG	STRONG	STRONG	STRONG	STRONG
SBS	STRONG	STRONG	STRONG	STRONG		PERFECT	STRONG	STRONG	STRONG	STRONG	STRONG	PERFECT
CTY	STRONG	STRONG	STRONG	STRONG	FAIR		FAIR	STRONG	STRONG	STRONG	STRONG	STRONG
MGP	PERFECT	STRONG	PERFECT	PERFECT	STRONG	STRONG		STRONG	PERFECT	PERFECT	PERFECT	PERFECT
TNF	PERFECT	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG		STRONG	STRONG	PERFECT	PERFECT
IAH	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG		STRONG	STRONG	STRONG
FDB	STRONG	STRONG	STRONG	STRONG	FAIR	STRONG	STRONG	FAIR	STRONG		STRONG	STRONG
RDP	STRONG	PERFECT	STRONG	STRONG	STRONG	PERFECT	STRONG	STRONG	STRONG	STRONG		STRONG
NWD	STRONG	FAIR	STRONG	FAIR	FAIR	STRONG	STRONG	FAIR	STRONG	STRONG	STRONG	

STXP 2											
	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL		STRONG	STRONG	FAIR	STRONG	FAIR	FAIR	FAIR	LOW	FAIR	FAIR	FAIR
MKS	STRONG		FAIR	FAIR	FAIR	FAIR	FAIR	FAIR	FAIR	LOW	LOW	LOW
RFS	STRONG	STRONG		STRONG	LOW	STRONG	FAIR	FAIR	PERFECT	STRONG	PERFECT	STRONG
ISQ	STRONG	STRONG	LOW		STRONG	PERFECT	FAIR	FAIR	FAIR	FAIR	STRONG	FAIR
SBS	FAIR	STRONG	LOW	FAIR		FAIR	FAIR	FAIR	FAIR	LOW	FAIR	STRONG
CTY	STRONG	STRONG	FAIR	STRONG	STRONG		FAIR	FAIR	STRONG	STRONG	STRONG	STRONG
MGP	PERFECT	PERFECT	PERFECT	PERFECT	FAIR	PERFECT		STRONG	PERFECT	PERFECT	PERFECT	PERFECT
TNF	STRONG	STRONG	STRONG	STRONG	FAIR	STRONG	FAIR		STRONG	STRONG	PERFECT	PERFECT
IAH	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG		FAIR	STRONG	STRONG
FDB	STRONG	STRONG	FAIR	STRONG	FAIR	STRONG	LOW	FAIR	FAIR		STRONG	STRONG
RDP	STRONG	STRONG	STRONG	FAIR	FAIR	STRONG	FAIR	STRONG	STRONG	STRONG		STRONG
NWD	STRONG	FAIR	LOW	LOW	LOW	FAIR	LOW	LOW	LOW	FAIR	FAIR	

STXP 3											
	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL		STRONG	STRONG	PERFECT	STRONG	FAIR	PERFECT	PERFECT	STRONG	STRONG	STRONG	STRONG
MKS	STRONG		STRONG	PERFECT	STRONG	FAIR	PERFECT	PERFECT	STRONG	STRONG	STRONG	STRONG
RFS	STRONG	STRONG		STRONG	STRONG	STRONG	PERFECT	STRONG	STRONG	STRONG	PERFECT	PERFECT
ISQ	STRONG	STRONG	STRONG		PERFECT	PERFECT	FAIR	PERFECT	STRONG	STRONG	STRONG	PERFECT
SBS	STRONG	STRONG	STRONG	STRONG		PERFECT	STRONG	STRONG	STRONG	STRONG	STRONG	PERFECT
CTY	STRONG	STRONG	STRONG	PERFECT	STRONG		FAIR	STRONG	STRONG	STRONG	STRONG	STRONG
MGP	STRONG	STRONG	PERFECT	PERFECT	STRONG	STRONG		STRONG	PERFECT	STRONG	STRONG	STRONG
TNF	PERFECT	STRONG	STRONG	PERFECT	STRONG	STRONG	STRONG		STRONG	STRONG	STRONG	PERFECT
IAH	PERFECT	PERFECT	PERFECT	PERFECT	PERFECT	PERFECT	PERFECT	PERFECT		PERFECT	PERFECT	PERFECT
FDB	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG		STRONG	STRONG
RDP	STRONG	PERFECT	STRONG	STRONG	STRONG	PERFECT	PERFECT	PERFECT	STRONG	STRONG		STRONG
NWD	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	

Table A1. *Cont.*

STXP 4											
	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL		NO	STRONG	PERFECT	STRONG	FAIR	STRONG	STRONG	FAIR	STRONG	NO	STRONG
MKS	STRONG		LOW	PERFECT	FAIR	PERFECT	LOW	NO	LOW	PERFECT	PERFECT	LOW
RFS	STRONG	NO		NO	NO	NO	FAIR	LOW	NO	FAIR	LOW	LOW
ISQ	PERFECT	PERFECT	NO		FAIR	PERFECT	FAIR	LOW	NO	PERFECT	PERFECT	FAIR
SBS	STRONG	STRONG	NO	PERFECT		PERFECT	FAIR	NO	NO	FAIR	N	LOW
CTY	PERFECT	STRONG	NO	PERFECT	PERFECT		LOW	LOW	NO	PERFECT	PERFECT	LOW
MGP	STRONG	NO	PERFECT	PERFECT	PERFECT	STRONG		PERFECT	PERFECT	PERFECT	PERFECT	FAIR
TNF	LOW	FAIR	NO	PERFECT	STRONG	STRONG	LOW		NO	STRONG	PERFECT	STRONG
IAH	LOW	NO	FAIR	STRONG	FAIR	FAIR	PERFECT	STRONG		NO	STRONG	LOW
FDB	LOW	STRONG	NO	PERFECT	STRONG	PERFECT	NO	NO	LOW		PERFECT	STRONG
RDP	PERFECT	LOW	LOW	PERFECT	FAIR	PERFECT	PERFECT	PERFECT	STRONG	STRONG		STRONG
NWD	PERFECT	LOW	NO	LOW	STRONG	FAIR	NO	FAIR	NO	LOW	STRONG	
STXP 5											
	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL		STRONG	LOW	STRONG	FAIR	STRONG	PERFECT	PERFECT	STRONG	LOW	PERFECT	LOW
MKS	STRONG		LOW	STRONG	STRONG	STRONG	LOW	NO	LOW	STRONG	STRONG	NO
RFS	STRONG	NO		NO	NO	NO	LOW	LOW	NO	FAIR	LOW	LOW
ISQ	STRONG	STRONG	NO		FAIR	PERFECT	LOW	STRONG	LOW	PERFECT	STRONG	LOW
SBS	STRONG	STRONG	NO	PERFECT		STRONG	LOW	LOW	NO	FAIR	NO	LOW
CTY	STRONG	PERFECT	NO	STRONG	STRONG		LOW	LOW	NO	PERFECT	STRONG	LOW
MGP	STRONG	LOW	STRONG	FAIR	STRONG	FAIR		STRONG	PERFECT	FAIR	PERFECT	FAIR
TNF	LOW	FAIR	NO	STRONG	LOW	STRONG	LOW		NO	STRONG	PERFECT	STRONG
IAH	LOW	NO	LOW	STRONG	LOW	STRONG	PERFECT	STRONG		LOW	STRONG	FAIR
FDB	LOW	STRONG	NO	STRONG	FAIR	PERFECT	NO	LOW	LOW		PERFECT	STRONG
RDP	STRONG	FAIR	LOW	STRONG	LOW	STRONG	STRONG	PERFECT	STRONG	STRONG		PERFECT
NWD	LOW	NO	NO	LOW	STRONG	LOW	LOW	STRONG	NO	LOW	STRONG	

Table A2. Abbreviations.

KPI	CODE
Resilience with Proactive Financial Strategies	RFS
Satisfying Customer Needs with Islamic Banking Services	SBS
Increase in Agility and Human Capital	IAH
Competitive Market Share	MKS
New Generation Banking Services for Sustainable Financial Development	NWD
Technical Requirements, including Technological and Organizational Infrastructure	TNF
Improvements in Service Quality	ISQ
Enhancing Customer Loyalty	CTY
Managerial and Organizational Competencies	MGP
Information Enhancements of the Customers and Doing Business	FDB
Future Readiness and Adoptability	RDP
Continuity of Profit	PBL

Table A3. Details of Experts (STXPs).

Number	Work Area	Educational Background	Work Experience (years)
1	Group Head of Audit	BC and ACAMC	33
2	Associate Director of Financial Advisory	MBA/CFA	13
3	CEO	MBA	25
4	Associate Director	MS	17
5	Asset Management	Bachelor's Degree	13

Table A4. Scales, degrees, and fuzzy numbers.

Scheme	Degrees	Numerical Scales	QSFNs
NO	0.40	1	$\left[\sqrt{0.16}e^{j2\pi...4}, \sqrt{0.10}e^{j2\pi...25}, \sqrt{0.74}e^{j2\pi...35}\right]$
LOW	0.45	2	$\left[\sqrt{0.20}e^{j2\pi...45}, \sqrt{0.13}e^{j2\pi...28}, \sqrt{0.67}e^{j2\pi...27}\right]$
FAIR	0.50	3	$\left[\sqrt{0.25}e^{j2\pi...50}, \sqrt{0.15}e^{j2\pi...31}, \sqrt{0.60}e^{j2\pi...19}\right]$
STRONG	0.55	4	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$
PERFECT	0.60	5	$\left[\sqrt{0.36}e^{j2\pi...6}, \sqrt{0.22}e^{j2\pi...37}, \sqrt{0.42}e^{j2\pi...03}\right]$

Table A5. Average values.

	PBL	MKS	RFS	ISQ	SBS	CTY
PBL		$\left[\sqrt{0.27}e^{j2\pi...51}, \sqrt{0.15}e^{j2\pi...31}, \sqrt{0.60}e^{j2\pi...22}\right]$	$\left[\sqrt{0.29}e^{j2\pi...54}, \sqrt{0.18}e^{j2\pi...33}, \sqrt{0.54}e^{j2\pi...15}\right]$	$\left[\sqrt{0.33}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.49}e^{j2\pi...11}\right]$	$\left[\sqrt{0.29}e^{j2\pi...54}, \sqrt{0.18}e^{j2\pi...33}, \sqrt{0.54}e^{j2\pi...15}\right]$	$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$
MKS	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$		$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$	$\left[\sqrt{0.28}e^{j2\pi...52}, \sqrt{0.16}e^{j2\pi...32}, \sqrt{0.58}e^{j2\pi...19}\right]$	$\left[\sqrt{0.29}e^{j2\pi...54}, \sqrt{0.18}e^{j2\pi...33}, \sqrt{0.54}e^{j2\pi...15}\right]$
RFS	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$	$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$		$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$	$\left[\sqrt{0.24}e^{j2\pi...48}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...22}\right]$	$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$
ISQ	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$	$\left[\sqrt{0.24}e^{j2\pi...48}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...22}\right]$		$\left[\sqrt{0.31}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...13}\right]$	$\left[\sqrt{0.36}e^{j2\pi...60}, \sqrt{0.22}e^{j2\pi...37}, \sqrt{0.42}e^{j2\pi...03}\right]$
SBS	$\left[\sqrt{0.29}e^{j2\pi...54}, \sqrt{0.18}e^{j2\pi...33}, \sqrt{0.54}e^{j2\pi...15}\right]$	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$	$\left[\sqrt{0.24}e^{j2\pi...48}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...22}\right]$	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$		$\left[\sqrt{0.33}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.49}e^{j2\pi...11}\right]$
CTY	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$	$\left[\sqrt{0.32}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.48}e^{j2\pi...09}\right]$	$\left[\sqrt{0.24}e^{j2\pi...48}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...22}\right]$	$\left[\sqrt{0.33}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.49}e^{j2\pi...11}\right]$	$\left[\sqrt{0.31}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...13}\right]$	
MGP	$\left[\sqrt{0.33}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.49}e^{j2\pi...11}\right]$	$\left[\sqrt{0.28}e^{j2\pi...52}, \sqrt{0.16}e^{j2\pi...32}, \sqrt{0.58}e^{j2\pi...19}\right]$	$\left[\sqrt{0.35}e^{j2\pi...59}, \sqrt{0.21}e^{j2\pi...36}, \sqrt{0.44}e^{j2\pi...05}\right]$	$\left[\sqrt{0.34}e^{j2\pi...58}, \sqrt{0.21}e^{j2\pi...36}, \sqrt{0.46}e^{j2\pi...09}\right]$	$\left[\sqrt{0.31}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...13}\right]$	$\left[\sqrt{0.31}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...13}\right]$
TNF	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$	$\left[\sqrt{0.28}e^{j2\pi...52}, \sqrt{0.16}e^{j2\pi...32}, \sqrt{0.58}e^{j2\pi...19}\right]$	$\left[\sqrt{0.26}e^{j2\pi...50}, \sqrt{0.14}e^{j2\pi...30}, \sqrt{0.62}e^{j2\pi...23}\right]$	$\left[\sqrt{0.33}e^{j2\pi...57}, \sqrt{0.20}e^{j2\pi...35}, \sqrt{0.49}e^{j2\pi...11}\right]$	$\left[\sqrt{0.28}e^{j2\pi...52}, \sqrt{0.16}e^{j2\pi...32}, \sqrt{0.58}e^{j2\pi...19}\right]$	$\left[\sqrt{0.30}e^{j2\pi...55}, \sqrt{0.19}e^{j2\pi...34}, \sqrt{0.51}e^{j2\pi...11}\right]$

Table A5. *Cont.*

	PBL	MKS	RFS	ISQ	SBS	CTY
IAH	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.31}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots13}\end{bmatrix}$
FDB	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.57}e^{j2\pi\ldots18}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.33}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.49}e^{j2\pi\ldots11}\end{bmatrix}$
RDP	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.31}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots13}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.34}e^{j2\pi\ldots58}\\ \sqrt{0.21}e^{j2\pi\ldots36}\\ \sqrt{0.46}e^{j2\pi\ldots09}\end{bmatrix}$
NWD	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$

	MGP	TNF	IAH	FDB	RDP	NWD
PBL	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$
MKS	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$
RFS	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.31}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots13}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$
ISQ	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.25}e^{j2\pi\ldots50}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.28}e^{j2\pi\ldots52}\\ \sqrt{0.16}e^{j2\pi\ldots32}\\ \sqrt{0.58}e^{j2\pi\ldots19}\end{bmatrix}$
SBS	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.25}e^{j2\pi\ldots50}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots19}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$
CTY	$\begin{bmatrix}\sqrt{0.23}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.63}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.33}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.49}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$
MGP		$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.36}e^{j2\pi\ldots60}\\ \sqrt{0.22}e^{j2\pi\ldots37}\\ \sqrt{0.42}e^{j2\pi\ldots03}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.33}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.49}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.35}e^{j2\pi\ldots59}\\ \sqrt{0.21}e^{j2\pi\ldots36}\\ \sqrt{0.44}e^{j2\pi\ldots05}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.31}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots13}\end{bmatrix}$
TNF	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$		$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.35}e^{j2\pi\ldots59}\\ \sqrt{0.21}e^{j2\pi\ldots36}\\ \sqrt{0.44}e^{j2\pi\ldots05}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.34}e^{j2\pi\ldots58}\\ \sqrt{0.21}e^{j2\pi\ldots36}\\ \sqrt{0.46}e^{j2\pi\ldots09}\end{bmatrix}$
IAH	$\begin{bmatrix}\sqrt{0.34}e^{j2\pi\ldots58}\\ \sqrt{0.21}e^{j2\pi\ldots36}\\ \sqrt{0.46}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$		$\begin{bmatrix}\sqrt{0.27}e^{j2\pi\ldots51}\\ \sqrt{0.15}e^{j2\pi\ldots31}\\ \sqrt{0.60}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$
FDB	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$		$\begin{bmatrix}\sqrt{0.33}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.49}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$
RDP	$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$		$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.30}e^{j2\pi\ldots55}\\ \sqrt{0.19}e^{j2\pi\ldots34}\\ \sqrt{0.51}e^{j2\pi\ldots11}\end{bmatrix}$		$\begin{bmatrix}\sqrt{0.32}e^{j2\pi\ldots57}\\ \sqrt{0.20}e^{j2\pi\ldots35}\\ \sqrt{0.48}e^{j2\pi\ldots09}\end{bmatrix}$
NWD	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.24}e^{j2\pi\ldots48}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots22}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.26}e^{j2\pi\ldots50}\\ \sqrt{0.14}e^{j2\pi\ldots30}\\ \sqrt{0.62}e^{j2\pi\ldots23}\end{bmatrix}$	$\begin{bmatrix}\sqrt{0.29}e^{j2\pi\ldots54}\\ \sqrt{0.18}e^{j2\pi\ldots33}\\ \sqrt{0.54}e^{j2\pi\ldots15}\end{bmatrix}$	

Table A6. Score values.

	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL	0.000	1.276	1.256	1.261	1.241	1.241	1.257	1.257	1.256	1.151	1.291	1.256
MKS	1.236	0.000	1.260	1.257	1.244	1.257	1.278	1.310	1.260	1.267	1.267	1.278
RFS	1.236	1.298	0.000	1.298	1.290	1.298	1.282	1.260	1.316	1.244	1.304	1.293
ISQ	1.242	1.242	1.290	0.000	1.264	1.236	1.241	1.269	1.276	1.257	1.242	1.269
SBS	1.241	1.236	1.290	1.257	0.000	1.261	1.253	1.276	1.289	1.253	1.289	1.293
CTY	1.242	1.242	1.289	1.246	1.250	0.000	1.243	1.260	1.298	1.246	1.242	1.265
MGP	1.246	1.299	1.245	1.263	1.250	1.250	0.000	1.242	1.236	1.261	1.245	1.264
TNF	1.293	1.244	1.298	1.246	1.256	1.236	1.260	0.000	1.298	1.236	1.245	1.247
IAH	1.280	1.316	1.269	1.242	1.269	1.250	1.247	1.242	0.000	1.295	1.242	1.269
FDB	1.265	1.236	1.289	1.242	1.244	1.246	1.290	1.266	1.260	0.000	1.246	1.236
RDP	1.242	1.280	1.265	1.250	1.253	1.247	1.257	1.247	1.236	1.236	0.000	1.242
NWD	1.267	1.266	1.290	1.255	1.256	1.253	1.278	1.253	1.290	1.260	1.241	0.000

Table A7. Normalized values.

	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL	0.000	0.090	0.089	0.089	0.088	0.088	0.089	0.089	0.089	0.082	0.091	0.089
MKS	0.088	0.000	0.089	0.089	0.088	0.089	0.091	0.093	0.089	0.090	0.090	0.091
RFS	0.088	0.092	0.000	0.092	0.091	0.092	0.091	0.089	0.093	0.088	0.092	0.092
ISQ	0.088	0.088	0.091	0.000	0.090	0.088	0.088	0.090	0.090	0.089	0.088	0.090
SBS	0.088	0.088	0.091	0.089	0.000	0.089	0.089	0.090	0.091	0.089	0.091	0.092
CTY	0.088	0.088	0.091	0.088	0.089	0.000	0.088	0.089	0.092	0.088	0.088	0.090
MGP	0.088	0.092	0.088	0.089	0.089	0.089	0.000	0.088	0.088	0.089	0.088	0.090
TNF	0.092	0.088	0.092	0.088	0.089	0.088	0.089	0.000	0.092	0.088	0.088	0.088
IAH	0.091	0.093	0.090	0.088	0.090	0.089	0.088	0.088	0.000	0.092	0.088	0.090
FDB	0.090	0.088	0.091	0.088	0.088	0.088	0.091	0.090	0.089	0.000	0.088	0.088
RDP	0.088	0.091	0.090	0.089	0.089	0.088	0.089	0.088	0.088	0.088	0.000	0.088
NWD	0.090	0.090	0.091	0.089	0.089	0.089	0.091	0.089	0.091	0.089	0.088	0.000

Table A8. Total relation matrix.

	PBL	MKS	RFS	ISQ	SBS	CTY	MGP	TNF	IAH	FDB	RDP	NWD
PBL	4.537	4.664	4.693	4.627	4.625	4.613	4.647	4.646	4.686	4.587	4.640	4.655
MKS	4.670	4.634	4.747	4.680	4.678	4.667	4.701	4.702	4.739	4.646	4.691	4.709
RFS	4.731	4.780	4.727	4.744	4.742	4.731	4.763	4.761	4.805	4.706	4.755	4.772
ISQ	4.644	4.689	4.722	4.572	4.653	4.640	4.673	4.674	4.714	4.620	4.664	4.683
SBS	4.678	4.722	4.756	4.687	4.604	4.674	4.707	4.708	4.748	4.652	4.700	4.718
CTY	4.643	4.688	4.721	4.652	4.651	4.558	4.672	4.672	4.714	4.618	4.663	4.681
MGP	4.637	4.684	4.712	4.646	4.645	4.633	4.584	4.664	4.704	4.612	4.656	4.674
TNF	4.656	4.698	4.732	4.662	4.662	4.649	4.683	4.600	4.724	4.627	4.673	4.690
IAH	4.675	4.722	4.750	4.682	4.682	4.669	4.702	4.701	4.660	4.650	4.693	4.712
FDB	4.643	4.686	4.720	4.650	4.650	4.638	4.673	4.671	4.711	4.535	4.662	4.678
RDP	4.623	4.669	4.699	4.631	4.631	4.618	4.652	4.651	4.689	4.597	4.561	4.659
NWD	4.671	4.715	4.747	4.678	4.678	4.665	4.700	4.698	4.740	4.644	4.688	4.625

Appendix A.1. Expert Questions

QUESTIONS

Note: In this study, it is aimed to determine the most effective factors in the merger process of banks. In this context, firstly, 12 different indicators are determined as a result of a comprehensive literature review. The analysis will determine which of these factors will play an active role in the merger process of banks. In this context, you should consider the following questions in this context. Please make the option you see appropriate in bold. Thank you very much for your support of our work.

Experience (years):

Education level:

Title:

1. Evaluate the impact of "Continuity of Profit" on "Competitive Market Share". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
2. Evaluate the impact of "Continuity of Profit" on "Resilience with Proactive Financial strategies". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
3. Evaluate the impact of "Continuity of Profit" on "Improvements in Service Quality". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
4. Evaluate the impact of "Continuity of Profit" on "Satisfying Customer Needs with Islamic Banking Services". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
5. Evaluate the impact of "Continuity of Profit" on "Enhancing Customer Loyalty". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
6. Evaluate the impact of "Continuity of Profit" on "Managerial & Organizational Competencies". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
7. Evaluate the impact of "Continuity of Profit" on "Technical Requirements Including Technological and Organizational Infrastructure". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
8. Evaluate the impact of "Continuity of Profit" on "Increase in Agility and Human Capital". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
9. Evaluate the impact of "Continuity of Profit" on "Information Enhancements of the Customers and Doing Business". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
10. Evaluate the impact of "Continuity of Profit" on "Future Readiness and Adoptability". (A) NONE (B) SOME (C) NORMAL (D) HIGH (E) VERY HIGH
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