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UNVEILING THE INTANGIBLE: AN EMPIRICAL STUDY ON INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE IN ISLAMIC BANKS

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Abstract

In the evolving knowledge-based economy, intellectual capital (IC) has become a pivotal factor influencing firm performance, particularly in the banking sector. However, there is limited empirical evidence regarding its impact within Islamic financial institutions, especially in Pakistan. This study examines the impact of intellectual capital performance on the financial outcomes of five major Islamic banks in Pakistan from 2019 to 2023. The study employs the Modified Value-Added Intellectual Coefficient (MVAIC) model to measure IC efficiency, including Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), and Capital Employed Efficiency (CEE). Using panel data regression with 28 observations, the analysis reveals that only HCE has a statistically significant and positive effect on Return on Equity (ROE) ($\beta = 31.05$, $p < 0.05$). At the same time, other components, such as SCE, RCE, and CEE, show no significant relationship. The results highlight that human capital is the most critical intangible asset driving profitability in Islamic banking. The study recommends that Islamic banks prioritize investments in human capital through training, retention, and development strategies. It also suggests the need to strengthen both structural and relational capital to achieve a more balanced and sustainable intellectual capital framework, thereby securing long-term competitive advantage.

Keywords: Intellectual Capital, Financial Performance, Return on Equity, Islamic Banks.

Introduction

In an increasingly knowledge-driven global economy, intellectual capital (IC) has emerged as a critical determinant of organizational success. Particularly in the financial services sector, intangible resources such as human skills, institutional processes, and stakeholder relationships are essential for achieving sustainable competitive advantage. While numerous studies have investigated the role of IC in conventional banking institutions (e.g., Kamath, 2007; Chen et al., 2005), Islamic

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banks, which operate under distinct ethical and operational frameworks based on Shariah principles, remain underexplored (Nawaz & Haniffa, 2017).

Pakistan's Islamic banking sector has experienced remarkable growth over the past decade, currently accounting for a substantial share of the financial market. Despite this expansion, there is limited empirical evidence linking IC components with financial outcomes in this sector. Given that Islamic banks emphasize ethical finance, profit-sharing, and risk aversion, the efficient management of intellectual assets becomes even more crucial for enhancing performance.

To bridge this research gap, this study explores the impact of IC—measured using the Modified Value Added Intellectual Coefficient (MVAIC)—on the financial performance of Pakistan's leading Islamic banks over the 2019–2023 period, using return on equity (ROE) as the dependent variable.

Rationale

The rationale for this research stems from the need to understand how intangible resources contribute to profitability in Islamic banking—a system grounded in socio-economic justice and prohibition of interest. Intellectual capital is not only vital for operational effectiveness but also for fulfilling the ethical mandates of Islamic finance (Nawaz, 2019a). Existing literature has confirmed the strong impact of IC in conventional financial institutions, yet the implications for Islamic banks, particularly in the Pakistani context, remain inadequately addressed (Al-Musali & Ismail, 2016). As Islamic banking becomes a pillar of Pakistan's economy, this study is essential to guide strategic investments in knowledge assets that align with Shariah compliance and organizational objectives.

Problem Statement

Despite the growing dominance of Islamic banking in Pakistan, little is known about how effectively these institutions leverage intellectual capital to improve their financial outcomes. While human capital and organizational knowledge are considered vital for banking success, empirical studies evaluating their direct contribution to profitability in Islamic banks are scarce. Furthermore, traditional performance metrics often overlook intangible value drivers. This research, therefore, aims to determine whether intellectual capital performance, particularly as measured by MVAIC, has a significant influence on the financial performance—measured by ROE—of Islamic banks in Pakistan.

Research Questions

1. Does the performance of intellectual capital have a significant impact on the financial performance (ROE) of Islamic banks in Pakistan?

2. Which components of intellectual capital—HCE, SCE, RCE, and CEE—have the most significant effect on ROE?

3. Can MVAIC serve as a reliable tool for evaluating the intellectual capital efficiency of Islamic banks?

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Volume 5, Issue 1, Page 131-146

Research Objectives

- To assess the relationship between intellectual capital performance (measured by MVAIC) and the financial performance (ROE) of Islamic banks in Pakistan.
- To identify the most influential IC components in determining profitability in Islamic banking.
- To recommend strategic directions for IC investment in Islamic banks for sustainable financial outcomes.

Theoretical Framework

This study is anchored in the **Resource-Based View (RBV)** of the firm (Barney, 1991), which posits that sustainable competitive advantage stems from the strategic utilization of valuable, rare, inimitable, and non-substitutable resources. In this context, intellectual capital—encompassing human, structural, and relational elements—is considered a core internal resource that enables firms to outperform competitors (Mention & Bontis, 2013; Kamaluddin & Rahman, 2013).

The **RBV** framework allows for a nuanced understanding of how intangible assets contribute to value creation in Islamic banks. It provides the lens through which intellectual capital is not only assessed as a performance driver but also evaluated for its strategic relevance within Shariah-compliant financial models.

Conceptual Framework

The conceptual framework of this study is based on the **Modified Value Added Intellectual Coefficient (MVAIC)** model developed by Ulum et al. (2014), which extends Pulic's (2000) VAIC by incorporating Relational Capital Efficiency (RCE). The model is structured around five dimensions:

- **HCE (Human Capital Efficiency):** Skills, competencies, and expertise of employees.
- **SCE (Structural Capital Efficiency):** Institutional systems, culture, and infrastructure that support productivity.
- **RCE (Relational Capital Efficiency):** Quality of external stakeholder relationships, such as customer and community trust.
- **CEE (Capital Employed Efficiency):** Efficient use of tangible capital in value creation.
- **MVAIC (Aggregate Measure):** Sum of HCE, SCE, RCE, and CEE, representing total IC efficiency.

This framework enables empirical measurement of IC's contribution to financial outcomes using financial statements data, thus offering actionable insights for decision-makers in Islamic banking institutions.

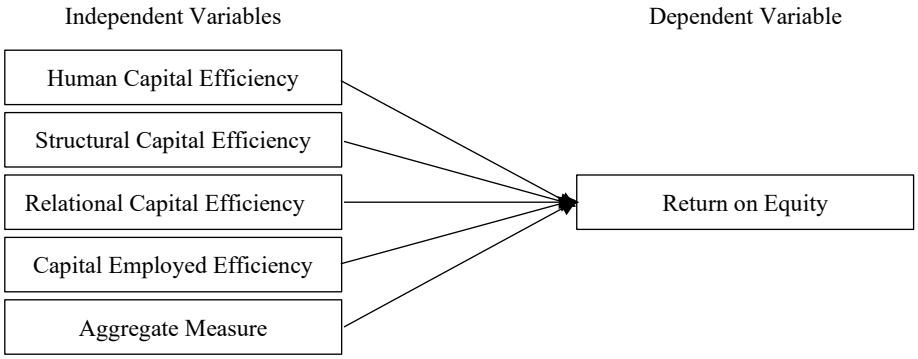


Figure 01: Research Framework

Significance

This study makes a significant contribution to the limited empirical research on intellectual capital in the context of Islamic banking, particularly in Pakistan. By adopting the MVAIC model and analyzing multiple components of IC, the study advances the theoretical understanding of how intangible assets drive financial performance in ethically governed financial institutions. The results validate the resource-based view (Barney, 1991) in the Islamic banking setting, highlighting that competitive advantage stems from leveraging internal, knowledge-based resources. The findings offer practical implications for bank executives, policymakers, and regulators in designing policies and frameworks that emphasize intellectual capital development as a strategic priority.

Literature Review

Intellectual Capital (IC) has emerged as a fundamental driver of competitive advantage in the knowledge and innovation era (Mention & Bontis, 2013). Defined as the accumulated knowledge, experience, and intellectual assets within a firm (Zéghal & Maaloul, 2010; Chen et al., 2014), IC is closely linked to value creation. The resource-based view (RBV), proposed by Barney (1991), posits that firms gain sustainable advantage through strategic utilization of both tangible and intangible assets. IC, therefore, is seen as a crucial internal resource that supports organizational performance (Galabova & Ahonen, 2011; Kamaluddin & Rahman, 2013).

Pulic (1998) originally classified IC into Human Capital (HC) and Structural Capital (SC), with Petty and Guthrie (2000) later adding Relational Capital (RC). HC pertains to individual and organizational knowledge and skills, especially relevant in Islamic banking, where expertise in Shari'ah and conventional finance is essential (Nawaz, 2019a). SC encompasses institutional infrastructure, such as culture, procedures, and intellectual property. RC refers to external relationships that enhance a firm's value creation capacity (Marti, 2001).

Existing Models and Empirical Studies

The Value-Added Intellectual Coefficient (VAIC) model, developed by Pulic (1998), has been extensively used to measure Intellectual Capital Performance (ICP)

in the banking sector. However, recognizing limitations, Ulum et al. (2014) introduced the Modified VAIC™ (MVAIC™), which includes Relational Capital Efficiency (RCE) alongside Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE).

Numerous studies have validated the significance of IC using VAIC and MVAIC models across various contexts. Joshi et al. (2010), Kamath (2007), and Ulum et al. (2014) revealed differing levels of ICP across countries and bank types, often emphasizing the dominant role of HCE. In Malaysia and Tanzania, studies consistently found a positive link between IC and financial performance (Ting & Lean, 2009; Goh, 2005; Isanzu, 2015).

The literature on Islamic banks (IBs) is relatively sparse but growing in volume. Nawaz (2019a, 2019b) and Nawaz & Haniffa (2017) found that HCE and CEE have a positive influence on performance, while SCE often lacks significance. Aziz and Hashim (2017) and Siswanti et al. (2017, 2019) confirmed similar patterns in Malaysia and Indonesia. GCC-focused studies (Buallay et al., 2019, 2020; Ousama et al., 2020) highlighted that while IC enhances financial and market performance in both Islamic and conventional banks, SC appears weaker in IBs.

In Pakistan, Ul Rehman et al. (2012) and Khan et al. (2015) confirmed the positive impact of IC, particularly HCE and CEE, on financial performance. Similar conclusions were reached in Bangladesh (Hasan et al., 2017) and India (Weqar et al., 2021); however, some studies reported inconsistencies, particularly regarding the significance of SCE.

Finally, some researchers have shifted their focus towards IC disclosure analysis (Akkas & Asutay, 2022b; Rehman et al., 2021), finding that institutional and resource-based factors influence the quality of disclosure. However, unlike disclosure-based studies, the current research relies on empirical financial data to evaluate the actual performance impact of IC.

Hypothesis Development

Grounded in resource-based theory, this study posits that intellectual capital (IC) plays a pivotal role in fostering competitive advantage and improving firm performance in today's knowledge-based economy (Barney, 1991). As emphasized by Mention and Bontis (2013), organizational success and long-term sustainability hinge on the effective management of knowledge assets. However, traditional financial metrics may fall short in capturing the value generated through innovation, human expertise, and stakeholder relationships. Therefore, assessing intellectual capital performance (ICP) through suitable models becomes crucial.

This research employs the Modified Value-Added Intellectual Coefficient (MVAIC) to examine the relationship between ICP and financial performance in Islamic banks (IBs), using Return on Equity (ROE) as a measure of profitability.

Accordingly, the primary hypothesis is formulated as:

H_1: Higher IC performance is positively associated with stronger financial performance in banks.

IC is widely recognized to encompass three core components—Human Capital (HC), Structural Capital (SC), and Relational Capital (RC)—each contributing differently to value creation:

Human Capital (HC) includes employee skills, competencies, and knowledge. Effective investment in HC is expected to enhance operational efficiency and firm performance, although existing evidence remains mixed (Mondal & Ghosh, 2012).

Structural Capital (SC) represents the internal systems, procedures, and culture that support human resource productivity. A robust SC framework can improve efficiency and lower operational costs in IBs (Bozbura, 2004).

Relational Capital (RC) refers to the quality of external stakeholder relationships, particularly with customers. Strong RC is believed to enhance reputation and client trust, thus supporting productivity (Nazari & Herremans, 2007).

Based on these dimensions, the study proposes the following sub-hypotheses:

$H_{1(a)}$: Greater Modified-Value Added Intellectual Coefficient (MVAIC) leads to stronger financial performance.

$H_{1(b)}$: Greater human capital efficiency (HCE) leads to stronger financial performance.

$H_{1(c)}$: Greater structural capital efficiency (SCE) leads to stronger financial performance.

$H_{1(d)}$: Greater relational capital efficiency (RCE) leads to stronger financial performance.

Furthermore, intellectual capital must operate in conjunction with physical and financial capital to drive performance, particularly in capital-intensive sectors like banking. Pulic (1998) and Chen et al. (2005) emphasize the role of Capital Employed Efficiency (CEE) in augmenting financial outcomes. Therefore, the final hypothesis is:

$H1_{(e)}$: Greater efficiency in utilizing tangible capital (CEE) leads to stronger financial performance.

Research Methodology

Measurement of IC and its Aspects

In this research, a quantitative approach has been used. Pulic (1998, 2000) emphasized that intellectual capital and capital employed are fundamental to generating added value. VAIC™ is composed of three elements: human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency

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Volume 5, Issue 1, Page 131-146

(CEE). A higher VAIC™ score indicates stronger ICP, as noted by Young et al. (2009), and is expressed in Equation (1):

VAIC™ = HCE + SCE + CEE

The components of VAIC™ are calculated as follows (Nimtrakoon, 2015):

Value Added (VA) is the difference between total revenues (OUT) and total expenses excluding employee costs (IN): **VA = OUT – IN**

Pulic (2004) refined this calculation by incorporating specific financial elements:

VA = OP + EC + D + A

Where:

OP = Operating Profits

EC = Employee Costs

D = Depreciation

A = Amortization

The efficiency ratios are then defined as:

CEE (Capital Employed Efficiency) = VA / CE

(CE is capital employed, calculated as total assets minus intangible assets)

HCE (Human Capital Efficiency) = VA / HC

(HC is the total employee expenditure)

SCE (Structural Capital Efficiency) = SC / VA

(SC is structural capital, computed as VA – HC)

ICE (Intellectual Capital Efficiency) = HCE + SCE

Thus, the full VAIC™ model is:

VAIC™ = ICE + CEE

Despite its widespread use, VAIC™ has been critiqued for certain limitations. To address these, Ulum et al. (2014) proposed an enhanced version—MVAIC™—which includes relational capital (RC) as an additional component of ICE. This expanded model is shown in the following formulas:

MVAIC™ = ICE + CEE

ICE = HCE + SCE + RCE

RCE (Relational Capital Efficiency) = RC / VA

(Marketing expenditure typically represents RC)

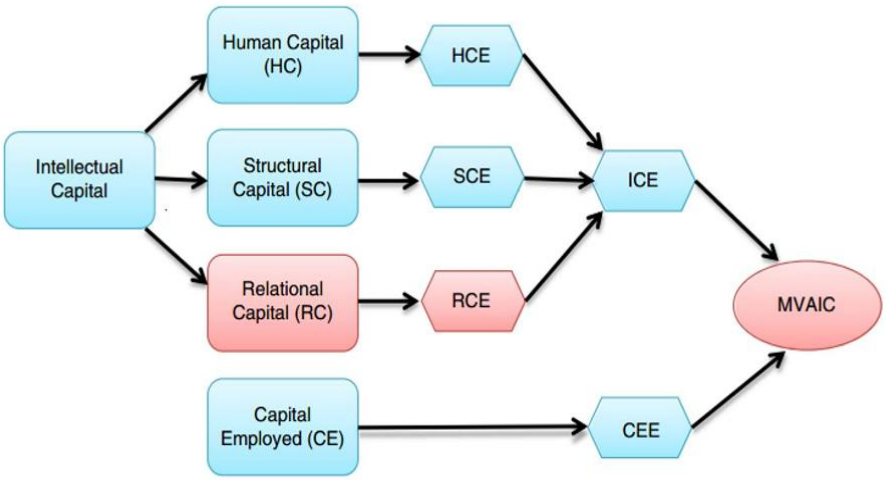


Fig. 1 The formulation of MVAIC™.*Source*: Ulum et al. (2014: 110)

Empirical Modelling and Variable Definition

To assess the relationship between intellectual capital (IC) and financial performance, this study adopts the framework and measurement model proposed by Ulum et al. (2014) and Mondal and Ghosh (2012).

The regression equation is presented below:

Model 1: $ROE = \alpha + \beta_1(MVAIC™)_{i,t} + \beta_2(HCE)_{i,t} + \beta_5(SCE)_{i,t} + \beta_4(RCE)_{i,t} + \beta_3(CEE)_{i,t} + \varepsilon$

Dependent Variables

ROE illustrates a firm's capacity to deliver net profit in relation to its shareholders' equity. Considered a key metric by investors, it is computed as the ratio of net profit to the book value of average total equity.

Independent Variables

MVAIC, HCE, RCE, SCE, and CEE are the Independent variables in this study.

Data and Sources

The financial data used in this empirical analysis were sourced from the electronically published financial reports of the sampled banks in Pakistan over the

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Volume 5, Issue 1, Page 131-146

five years, namely 2019-2023. This timeframe was selected based on the assumption of relative economic stability.

The sampling criteria also considered the availability of financial data for the specified period, leading to the exclusion of banks that did not meet this requirement. Furthermore, the study focuses exclusively on Islamic commercial banks.

Empirical Process

The estimation of MVAIC™ is used to rank and compare the ICP of selected IBs. The steps in calculating ICP using the MVAIC™ method are as follows:

Table 01: Sampled Islamic commercial banks of Pakistan

Country	Number of Eligible Samples	Banks
Pakistan	5	• Meezan Bank Limited • BankIslami Pakistan Limited • MCB Islamic Bank • Al-Baraka Bank (Pakistan) • Dubai Islamic Bank (Pakistan)

In Pakistan, these five banks hold a 75% market share, which is why they have been selected for this study.

To calculate MVAIC:

Step (1): Calculate Value Added (VA).

Step (2): Calculate Intellectual Capital Efficiency (ICE).

Step (3): Calculate Capital Employed Efficiency (CEE).

Step (4): Derivation of MVAIC™.

Step (5): Create a ranking and comparison for IBs based on ICP means measured with MVAIC™.

The result of the average value will be sorted based on MVAIC™ performance and classified into four categories (Ulum et al., 2014):

1. Top performers: MVAIC™ score ≥ 3.50
2. Good performers: MVAIC™ score 2.5 to 3.49
3. Common performers: MVAIC™ score 1.5 to 2.49
4. Bad performers: MVAIC™ score < 1.5

Analyses and Interpretations

Descriptive Analysis

The analysis of the results is presented for the sampled period from 2019 to 2023. The mean values of the variables related to intellectual capital performance, including CEE, HCE, SCE, RCE, and MVAIC, are presented in Table 2, which is organized by MVAIC rank.

Table 02: IC performance of IBs in Pakistan

Year	CEE	HCE	SCE	RCE	MVAIC
2019	0.02	1.27	0.10	0.03	1.42
2020	0.02	1.65	0.34	0.01	2.03
2021	0.26	1.50	0.06	0.02	1.84
2022	0.02	1.92	0.44	0.02	2.39
2023	0.03	2.47	0.58	0.01	3.09
Mean	0.07	1.76	0.31	0.02	2.16
Max	0.26	2.47	0.58	0.03	3.09
Min	0.02	1.27	0.06	0.01	1.42

According to the statistics, MVAIC in 2023 reached its highest level in all years, indicating that the Islamic Banking System has recognized the importance of MVAIC. HCE also has the highest value among all IC Components in all five years, which means HCE has consistently performed well in Pakistan. Between 2019 and 2022, MVAIC was part of a common performance matrix and was striving for improvement. As shown in 2023, MVAIC transitioned into the Good Performance Matrix, indicating stability. They strive for greater sustainability; they can achieve a consistently good performance matrix and a top-performing one in the future as well.

Table 03: Descriptive statistics of performance measures and continuous independent variables

	ROE	MVAIC	CEE	RCE	HCE	SCE
Mean	8.221	2.110	0.110	0.020	1.761	0.262
Median	0.124	2.299	0.020	0.020	1.794	0.360
Maximum	45.690	3.845	1.260	0.044	3.115	0.679
Minimum	-0.023	-0.815	0.006	0.004	0.437	-1.284
Std. Deviation	15.662	1.183	0.325	0.011	0.722	0.494
Skewness	1.541	-0.902	3.320	0.545	0.033	-2.245
Kurtosis	3.648	3.594	12.044	2.826	2.380	7.524
Jarque-Bera	11.566	4.213	146.872	1.424	0.454	47.402
Probability	0.003	0.122	0.000	0.491	0.797	0.000
Sum	230.193	59.091	3.092	0.573	49.318	7.335
Sum Sq. Dev.	6623.322	37.755	2.850	0.003	14.061	6.596
Observations	28	28	28	28	28	28

This table also reveals that the MVAIC is falling in a common performance matrix, and HCE is positive and significant among all other IC components. In this analysis, Standard deviation, Skewness, Kurtosis, Jarque-Bera, Probability, Sum, and sum of squares deviation have been used to verify the results.

Table interpretation: **MVAIC**, with a mean of 2.11, shows a reasonably strong level of intellectual capital efficiency overall. Among its components, **HCE** holds the highest average (1.76) with low skewness (0.03), indicating that human capital efficiency is relatively stable across banks and likely a major contributor to MVAIC.

In contrast, **CEE** exhibits high skewness (3.32) and kurtosis (12.04), suggesting the presence of extreme values and uneven utilization of physical and financial capital.

SCE displays negative skewness (–2.24) and high kurtosis (7.52), indicating a concentration of lower values and potential inefficiencies in structural processes.

RCE shows minimal variation, with a narrow standard deviation and values clustered around the mean (0.0204).

The Jarque-Bera statistics confirm that ROE, CEE, and SCE significantly deviate from normality ($p < 0.01$), which may influence regression assumptions and model stability.

Overall, the descriptive statistics indicate that while human capital is consistently leveraged across the Islamic banking sector, variability in other intellectual capital components, such as CEE and SCE, reflects differential strategic applications among banks.

Regression Model

Among the IC components, only **Human Capital Efficiency (HCE)** shows a statistically significant positive effect on ROE, with a coefficient of 31.05 and a p-value of 0.0197. This underscores the importance of investing in employee competencies and capabilities in driving shareholder returns. The results are in line with those of Mehmet Asutay and Ubaidullah (2023).

Other components—**MVAIC**, **CEE**, **SCE**, and **RCE**—do not exhibit statistically significant impacts on ROE, as their p-values exceed the 0.05 threshold. Although **RCE** has a high coefficient (154.18), its high standard error and p-value (0.4972) suggest that the estimate is unreliable and lacks statistical significance.

The analysis confirms that **HCE is a key determinant of financial performance in Islamic banks**. These findings offer important implications for human resource investment and strategic IC management in the Islamic banking sector.

Table 04: Regression Analysis				
Dependent Variable: ROE				
Method: Least Squares				
Date: 06/16/25 Time: 13:44				
Sample: 1 28				
Included observations: 28				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-35.77	11.69	-3.06	0.01
MVAIC	-5.10	14.43	-0.35	0.73
HCE	31.05	12.35	2.51	0.02
CEE	5.86	11.33	0.52	0.61
RCE	154.18	223.35	0.69	0.50
SCE	-14.30	18.93	-0.76	0.46
R-squared	0.65	Mean dependent var		8.22
Adjusted R-squared	0.57	S.D. dependent var		15.66
S.E. of regression	10.23	Akaike info criterion		7.67
Sum squared resid	2303.06	Schwarz criterion		7.96
Log likelihood	-101.47	Hannan-Quinn criterion.		7.76
F-statistic	8.254	Durbin-Watson stat		1.18
Prob(F-statistic)	0.0001			

Critical Reflections on the Results

This study reveals that HCE has yielded positive and significant results across all IC components over a five-year tenure. MVAIC is in a common matrix in all five years. It means MVAIC has been performing at an average level over the past five years but is continuously striving for better results. At the same time, HCE remains at the top all year.

It has also been studied that the CEE shows negative and insignificant results over five years, SCE also shows negative and insignificant results, and RCE shows negative and insignificant results over a five-year tenure.

It is showing that the Islamic Banking System of Pakistan is not utilizing its IC resources efficiently. At the same time, these Islamic Banks are investing more in these IC Components without getting significant results.

Islamic Banks need to correct their over-investment strategy in these components to get better results for their shareholders.

Relying on a single component, i.e., HCE, for the results is not a suitable option for the Knowledge-based sector. More Investments in HCE are a good option to achieve results and a source to improve ROE; HCE is a promising, results-oriented component. Islamic Banks can benefit after investing in HCE.

Discussion

This study examined the impact of intellectual capital (IC) performance—measured through the Modified Value Added Intellectual Coefficient (MVAIC)—on the financial performance of Islamic banks in Pakistan, with Return on Equity (ROE) as the primary indicator of profitability. The analysis covered five major Islamic banks from 2019 to 2023 and used a panel data regression approach to examine the influence of five IC components: HCE, SCE, RCE, CEE, and MVAIC.

The regression results demonstrate that **Human Capital Efficiency (HCE)** has a **statistically significant and positive impact** on ROE ($\beta = 31.05$, $p < 0.05$), confirming the hypothesis that investment in human capital contributes to improving financial performance in the Islamic Banking System of Pakistan. This finding is consistent with prior research, which emphasizes that well-trained, skilled employees play a crucial role in enhancing organizational performance, particularly in knowledge-intensive sectors such as banking (Mondal & Ghosh, 2012; Nawaz, 2019a; Mentzer & Bontis, 2013). Given that Islamic banks require personnel with dual expertise in both conventional finance and Islamic jurisprudence, this result highlights the strategic value of human capital development (Ahamad, Arif & Yazdifar, 2022; Alhassan & Asare 2016)..

Contrarily, other components—**SCE, RCE, CEE**, and even the aggregate **MVAIC**—did not show significant effects on ROE. This outcome suggests that, while intellectual capital, as a composite measure, is important, its impact on profitability is primarily driven by human capital in the current Pakistani Islamic banking context. The **non-significant effect of Structural Capital Efficiency (SCE)** is in line with previous literature, such as Nawaz and Haniffa (2017), which found that the role of institutional structures in Islamic banks may not directly contribute to profitability due to inefficiencies in internal processes or underutilized systems. Likewise, **Relational Capital Efficiency (RCE)** showed no meaningful effect, suggesting that external relationships—although valuable—may not yet be strategically leveraged for financial gains in Pakistan's Islamic banking sector (Nimtrakoon, 2015; Siswanti et al., 2019).

Furthermore, **Capital Employed Efficiency (CEE)** was found to be insignificant, echoing findings from Al-Musali and Ismail (2016), who noted that tangible resources in Islamic banks often play a secondary role compared to intellectual inputs. The lack of statistical significance in the overall MVAIC score may reflect an imbalance in how IC components are utilized within Islamic banks, where human capital is more dominant. However, other forms of capital are either underdeveloped or not managed efficiently.

The descriptive statistics support this interpretation: HCE consistently holds the highest average value (1.76) across the five years, while CEE and RCE show high variability and low mean values. This reflects a potential **misallocation of IC resources**, where over-investment in structural or relational elements without corresponding strategic alignment might dilute the expected performance outcomes (Chen et al., 2014; Phusavat, et al., 2011).

The results also indicate a critical need for the **strategic integration of IC components**. As suggested by Zéghal and Maaloul (2010), a firm's ability to leverage

synergies among human, structural, and relational capital is crucial for achieving a sustainable competitive advantage. In this study, however, the synergy appears weak, leading to underperformance in some IC dimensions despite their theoretical relevance.

Importantly, this study contributes to the **limited empirical literature on Islamic banking and intellectual capital** in Pakistan. While several studies have explored IC in conventional banks (Joshi et al., 2010; Kamath, 2007), very few have examined its components within the ethical and Shariah-compliant structure of Islamic banks. This research bridges that gap and suggests that Islamic banks in Pakistan can benefit from **prioritizing human capital investments**, but must also work on enhancing the effectiveness of structural and relational capital to achieve holistic intellectual capital performance.

Policy Implications

Regarding the practical implications, the findings established that intellectual capital is highly significant to IBs, which implies that IBs require multitalented human resources to operate in a Shariah-compliant manner. IBs are encouraged to invest relatively more in IC to nurture human resources that align with the ethical commitments underlying their business model.

Conclusion

This study examined the influence of intellectual capital (IC) on the financial performance of Islamic banks in Pakistan from 2019 to 2023, utilizing the Modified Value Added Intellectual Coefficient (MVAIC) model. Among the five IC components analyzed—Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE), Capital Employed Efficiency (CEE), and the composite MVAIC—only HCE was found to have a statistically significant and positive impact on Return on Equity (ROE). This confirms that human capital, particularly the knowledge, skills, and competencies of employees, plays a vital role in enhancing profitability within the Islamic banking sector. The findings reinforce prior literature, which asserts that human capital is the cornerstone of value creation in service-oriented and knowledge-intensive industries such as banking (Mondal & Ghosh, 2012; Nawaz, 2019a).

Recommendations

Given that HCE demonstrated a significant positive relationship with financial performance, Islamic banks in Pakistan are strongly advised to invest more strategically in employee development, training programs, and talent retention policies. These banks should particularly focus on enhancing the dual competencies of their workforce in both conventional banking and Islamic jurisprudence, which is essential for Shariah-compliant financial operations (Nawaz & Haniffa, 2017). Furthermore, to realize the full potential of intellectual capital, banks must also focus on improving the efficiency of structural and relational capital. Investments in technology infrastructure, process optimization, and customer relationship management should be aligned with overall strategic goals to balance the IC components and drive holistic performance (Mention & Bontis, 2013).

ISSN (Print): 2790–7848, ISSN (Online): 2790-7856
Volume 5, Issue 1, Page 131-146

Limitations

While the study offers useful insights, it has several limitations. First, the sample size is limited to five Islamic banks in Pakistan, which may restrict the generalizability of the findings to the broader financial sector. Second, the study relies solely on secondary financial data extracted from published annual reports, without incorporating primary data such as managerial perspectives or employee insights. Third, the MVAIC model, despite being more comprehensive than its predecessor (VAIC), still has limitations in capturing the qualitative aspects of IC, such as employee creativity, organizational culture, and informal networks (Chen et al., 2005). Lastly, the regression model shows potential issues of autocorrelation and non-normality in some variables, which may affect estimation accuracy and predictive power.

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