

Strategic Assets, Corporate Governance and Firm Performance: a study on an emerging economy

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A thesis submitted to the Department of Economics and Social Sciences in partial fulfilment of the requirements for the degree of
Master of Science in Applied Economics

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Declaration

It is hereby declared that

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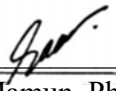
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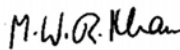
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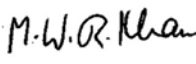
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Ethics Statement

Abstract/ Executive Summary

This study examines the impact of intellectual capital (IC) as a strategic asset and corporate governance on firm performance in Bangladesh's manufacturing sector from 2018 to 2024. Utilizing an unbalanced panel of 101 listed firms (678 firm-year observations), the analysis employs the Value Added Intellectual Coefficient (VAIC) model and a two-step system GMM estimator to address endogeneity. The findings reveal that intellectual capital efficiency has a significant positive effect on Return on Assets (ROA), underscoring its role as a key driver of operational performance. However, this relationship is not consistently observed for Return on Equity (ROE). Furthermore, institutional ownership strengthens firm performance, while board independence negatively moderates the IC-performance link. The study concludes that intellectual capital is a critical strategic resource, but its effectiveness is contingent on specific governance structures and the chosen performance metric.

Keywords: Strategic Asset, Intellectual Capital; Corporate Governance; Firm Performance; System GMM; Emerging Markets; Bangladesh.

Dedication

I dedicate this to my lovely and strong late grandmother. May she rest in peace in heaven now.

Acknowledgement

All praises and thanks be to Allah, the Almighty.

There are many people I would like to thank for enabling me to reach this stage. First, I want to express my deepest gratitude to my supervisor, Prof. Dr. Syed Abdullah Mamun, without whose encouragement, scholarly support and commitment of time, this thesis would not have become a reality.

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Table of Contents

Declaration.....	ii
Approval	iii
Ethics Statement.....	iv
Abstract/ Executive Summary	v
Dedication	vi
Acknowledgement.....	vii
Table of Contents	viii
List of Tables	x
List of Figures.....	xi
List of Acronyms.....	xii
Glossary	Error! Bookmark not defined.
Chapter 1 Introduction.....	1
1.1 Background.....	1
1.2 Problem Statement.....	2
1.3 Research Questions.....	3
1.4 Research Objectives.....	4
1.5 Significance of the Study	5
Chapter 2 Literature Review	7
2.1 Intellectual Capital and its Components	7
2.2 Theoretical Implications	8

2.3 Hypothesis Development	10
2.4 Theoretical Framework	14
Chapter 3 Research Methodology	17
3.1 Sample size and Data collection	17
3.2 Variables and their Proxy Measures	18
3.3 Regression Models	23
Chapter 4 Findings & Discussion	26
4.1 Descriptive Statistics	26
4.2 Multicollinearity	28
4.3 Endogeneity and Heteroskedasticity	29
4.4 Scatter Plots	29
4.5 Hypotheses Testing	32
4.6 Discussion of Results	33
Chapter 5 Conclusion and Policy Implications	39
5.1 Summary of the Study	39
5.2 Comparison with Existing Studies and Possible Explanations	40
5.3 Theoretical Implications	42
5.4 Policy and Managerial Implications	43
5.5 Contribution	45
5.6 Limitations and Future Research Avenues	46
References	47

List of Tables

Table 1. Review of literature of selected studies.....15

Table 2: Sample composition of the firms based on sector 18

Table 3: Summary of the Operationalization of the Study Variables.....22

Table 4: Descriptive Statistics.....27

Table 5: Pearson Correlation Matrix.....28

Table 6: Multiple Regression Results.....33

Table 7: Summary of Results.....38

List of Figures

Figure 2.1: Theoretical Framework	14
Figure 4.1: Intellectual Capital & ROA Scatter Plot	30
Figure 4.2: Total Value Added & ROA Scatter Plot.....	30
Figure 4.3: Intellectual Capital & ROE Scatter Plot.....	32
Figure 4.4: Total Value Added & ROE Scatter Plot.....	31

List of Acronyms

DSE	Dhaka Stock Exchange
ROA	Return on Assets
ROE	Return on Equity
IC	Intellectual Capital
CG	Corporate Governance
RBV	Resource-based view
KBV	Knowledge-based view
RD	Resource dependency
VAIC	Value Added Intellectual Capital
HC	Human Capital
SC	Structural Capital
CE	Capital Employed

Chapter 1

Introduction

1.1 Background

With the rapid advancement of technology, the primary drivers of production have shifted from tangible to intangible assets. These intangible strategic assets, often termed as intellectual capital (IC), consists of the abilities and talents of the employees, their ability to solve problems creatively, the knowledge embedded in the organization such as in R&D, databases and information systems and relational networks with the stakeholders (Sharma et al., 2024; Singla & Rastogi, 2025; Weqar et al., 2021). Although the conceptual roots of IC can be traced as far back as the 17th century, the early 1990s marked a turning point in which knowledge began to be explicitly recognized as an independent factor of production (Serrat, 2011). Within the knowledge-based economy, there is broad consensus among both scholars and practitioners that IC, rather than financial or physical capital, constitutes the key determinant of firm value creation and the sustainability of competitive advantage (Ahuja & Ahuja, 2012; Amitrano et al., 2025; Islam et al., 2025; Wang, 2011). One of the most compelling pieces of evidence of the increasing significance of IC is the mismatch between companies' market values and book values, commonly associated with the existence of intangible assets such as IC (Chen et al., 2005; Singla & Rastogi, 2025).

Strategic assets like intellectual capital have been seen as important in corporate governance and Al-Musali (2013) and Shakri & Xiang (2025) agree that corporate governance mechanics are identified as critical for IC performance. For example, the board of directors – perhaps the most relevant internal governance mechanism – is perceived to have a pivotal role in shaping or employing strategic assets as well as managing IC and bearing an impact on firm outcome (Abidin et al., 2009; Al- Musali, 2013; Shakri & Xiang, 2025). Beyond such resource-

dependency (RD) implications of firm performance within the theoretical lens of corporate governance, the RD theory further suggests that larger boards and greater board diversity enhance firm performance by facilitating the acquisition of critical resources, including IC, through broader networks and expertise (Abeysekera, 2010; Goodstein et al., 1994). Ownership structure is also the corporate governance mechanism that affects the development of IC. Previous studies emphasize that ownership types influence decision-making and performance because they are associated with varying levels of risk aversion and access to resources (Hossain & Rana, 2024; Keenan & Aggestam, 2001; Shah et al., 2012).

Building on agency theory, shareholders with large stakes have significant power over corporate decision and policy-making, particularly with respect to risk-taking and investment in projects carrying a high level of uncertainty and a long payback period (Belanes & Hachana, 2010; Fama & Jensen, 1983; Shah et al., 2012). As a result, owners risk-taking intention might become a predictor of the company's decisions to invest on IC resources, such as human resources development and information technology that are characterized as having a high level of risk and uncertainty and need lengthy payback period to provide return, if any (Al-Musali, 2013; Edvinsson & Malone, 1997).

1.2 Problem Statement

The intellectual capital is more and more recognized as a vital strategic asset in sustainable development and competitiveness. Islam et al. (2025) argue that sophistication of IC management is far more important in value generation than reliance upon tangible assets. But the prospect of using IC in developing countries such as Bangladesh still remains unexplored. This challenge is further compounded by the agency problem, stemming from the separation of ownership and management, which often creates information asymmetry. Particularly in emerging countries like Bangladesh, which suffers from weak institutional and legal systems,

the problems are severe (Mamun & Akter, 2021; Sharma et al., 2024). The manufacturing sector is the backbone of the economy of Bangladesh, accounting for an important share of its GDP and employment (Zaman and Berkel, 2022). Nonetheless, despite being acknowledged worldwide as a driver of competitive advantage (Islam et al., 2025; Xu et al., 2019), the understanding and utilization of intellectual capital (IC) as a strategic asset in the industry remain embryonic (Ahmad and Rus, 2021; Islam et al., 2025). Because the industry has been traditionally cheap labour and tangible asset-based, it provides an important setting for IC studies. Despite its recognized significance, there is gross lack of studies on the linkage between IC and financial performance among manufacturing organizations in Bangladesh (Islam et al., 2025), creating a clear information gap.

1.3 Research Questions

The current study is based on unbalanced panel data set of 101 manufacturing firms in Bangladesh over the period of 2018-2024, corresponding to 678 firm-year observations. By using the two-step system GMM modelling framework, we control for the possible endogeneity and unobserved heterogeneity, and, as a result, we offer a robust foundation for studying the dynamic impact of IC and corporate governance mechanisms on firm performance. This analytical structure allows the research to address two specific questions for research, which were raised after identifying the gaps of the literature and they contribute to theory and application in the case of emerging economies.

RQ1. Does intellectual capital (VAIC), as a strategic asset, affect the firm performance?

RQ2. How does corporate governance on institutional ownership and board diversity (independent and number of female directors) impact firm performance by using the vehicle of intellectual capital?

1.4 Research Objectives

Earlier studies in the Bangladesh perspective (Abhayawansa & Azim, 2014; Afroz et al., 2018; Dey & Faruq, 2019; Jisun et al., 2024; Khan & Khan, 2010; Rahman et al., 2020) that concentrated in the nonfinancial industries were either focused on single sector industry like pharmaceuticals or textile, or were confined to a very small sample that included some top 30 listed firms in Dhaka Stock Exchange (DSE). Islam et al. (2025) has already done a study on the manufacturing companies of Bangladesh using 92 DSE listed companies between 2017 and 2022 with the fixed-effect model. However, to the best of the author's knowledge, this study is likely the first of its kind in exploring the novel findings based on the relationship with firm's strategic asset, corporate governance and firm's performance using two-step system GMM, which has rarely been used in this field of study. The Value Added Intellectual Coefficient (VAIC) model, a tool conceived by Pulic (2000) was used to evaluate IC performance in a comprehensive manner in the study.

In addition, inspired by the urge of how the comparative analysis can be a precursor for other studies carried out in emerging markets, with reference to Al-Musali (2013) in Malaysia and Weqar and Haque (2020) in India, this study examines the influence of board diversity, consisting the independence and gender facets of the board, on IC performance in the context of the manufacturing companies based in Bangladesh. This study reflects the resource dependence perspective that considers board composition as strategically significant for gaining access to vital resources. Empirical studies of the effects of ownership structure on IC performance demonstrated inconsistent effects on firm performance, i.e., positive, negative and not significant results in the past (Bhakar et al., 2024). Therefore, a more empirical study needs to be conducted in other countries, e.g. Bangladesh in order to better understand how ownership structure affects the IC performance.

1.5 Significance of the Study

This research fills the existing gaps in the literature at different levels. First, it adds a novel dimension to the literature by focusing on the impact of IC, along with corporate governance mechanisms, on the performance of firms in a developing economy like Bangladesh. Concentration on an emerging economy such as Bangladesh is particularly imperative, since there is scarcity of academic works that are available in relation to IC and its influence on performance in manufacturing companies, overall and also for Bangladesh. In addition, differences in economic, political and cultural context across countries may mean that findings from one nation may not be able to be applied directly to another; hence findings from developed economies may not be sufficiently representative of a developing economy such as Bangladesh. Second, the current study adds to the literature within the context of Bangladesh. Previous knowledge management studies primarily focused on the IC reporting or IC-related behaviour in the banking sector (Belal et al., 2019; Islam, 2021; Islam et al., 2025; Khan & Ali, 2010; Majumder et al., 2023; Mamun & Akter, 2021; Nurunnabi et al., 2011). However, there is still a lack of research regarding the association between IC with corporate governance and the performance of the manufacturing industry. In examining this relationship, the current work contributes to the advancement of our knowledge regarding the impact of corporate governance, firm characteristics and industry-specific factors on the IC performance in a developing country setting, with limited work reported in the literature. As regards corporate governance perspective, this research analyses its effect on IC performance via based on two main dimensions: board diversity which consists board size, independent and female directors and ownership structure. From a theoretical perspective, the study adds to the existing studies of IC performance and ownership structure that have been examined using the theoretical frameworks of agency theory, resource dependency theory and the resource-based view. It offers empirical evidence of the relationship between ownership structure and IC performance,

which is of great interest to public policy and managerial practices in the context of an emerging market such as Bangladesh. Lastly, the study considers data spanning the period from 2018 to 2024, encompassing both the pre- and post-COVID-19 pandemic eras. This timeframe allows for an examination of the pandemic's impact on manufacturing firms, thereby providing a more comprehensive understanding of IC performance and corporate governance dynamics during periods of significant economic disruption.

The rest of the analysis is organized as follows. We begin with section 2 that presents the literature and hypotheses development. The research methodology is discussed in Section 3, while Section 4 presents the findings. Section 5 concludes with summary and policy implications.

Chapter 2

Literature Review

2.1 Intellectual Capital and its Components

2.1 Intellectual Capital and Its Components

Intellectual capital (IC) is perceived as a significant contributor to creating competitive advantage and value addition for corporations, ultimately leading to enhanced financial performance (Islam et al., 2025; Weqar et al., 2020). Wang and Chang (2005) regard IC as "the most valuable asset and competitive weapon in business." One of the first and seminal classifications of IC was formulated by Edvinsson and Malone (1997), which divided IC into three areas: human capital, structural (internal) capital and relational (external) capital. Similarly, Saint-Onge (1996) classified IC into human capital, structural capital, and customer capital. Weqar et al. (2021) stress that traditional financial statements are insufficient to communicate the principalities of IC, since things like employees' skills, expertise, innovation, stakeholder relationships, and organizational system are hard to measure in any currency. To compensate for these deficiencies in traditional reporting, the Value Added Intellectual Coefficient (VAIC) model, developed by Pulic (1998, 2000), was developed for gearing an organization's approach to managing intangibles.

Human capital (HC) constitutes the essential intangible asset, encompassing employees' knowledge, skills, problem-solving abilities, originality, and experience (Weqar et al., 2021). Structural capital (SC) refers to organizational resources that remain when employees leave, including databases, organizational charts, patents, models, processes, culture, business strategies, and information systems (Akpınar & Akdemir, 1999). SC reinforces and improves the efficiency of HC (Ghosh & Mondal, 2009; Weqar et al., 2021). The resource-dependency (RD) theory provides theoretical support for IC's significance, with Barney (1991) considering

HC as an organizational resource itself. Abeysekera (2010) maintains that firms with effective human capital and learning capabilities can develop better relations with their external environment. Pulic (2000) also claimed that in addition to IC, tangible and financial resources (capital employed) are needed for the generation of organizational value, consistent with Wernerfelt's (1984) resource-based view (RBV) that firms require a combination of tangible and tacit resources to sustain competitive advantage.

2.2 Theories Relating to IC and CG

This research is rooted on the basis of several theories on intellectual capital (IC) and their effects on the performance of a firm as follows: resource-based view (RBV), resource dependence (RD) theory, and agency theory. Taken altogether, the theories provide the basis to understand how internal resources, external relationships, governance devices, and information unbalance impact on IC efficiency and how the latter influences firm outcomes.

2.2.1 Resource-based view. The resource-based view (RBV) provides the foundation for understanding intellectual capital as a strategic resource that drives competitive advantage and performance (Barney, 1991; Wernerfelt, 1984). Barney (1991) and Majumder et al. (2023) argue that the long-term survival of a firm depends on the proper use of complete resource base. According to this logic, IC, including human, structural, and relational capital, is viewed in terms of strategic assets rather than merely financial and physical resources which create value and underpin long-term performance (Al-Musali, 2013; Yin & Xu, 2025). The RBV also emphasizes the significance of board characteristics in leveraging these resources, noting that diverse boards are more capable of decision making, stimulating innovation, and knowledge integration in value creation (D'Este et al., 2025; Hsu et al., 2019; Isola et al., 2020). Knowledge has been regarded as the foundation of knowledge-based view (KBV), an expansion of RBV, which has been considered the most important resource that enables firms

to outperform their competitors (Alavi & Leidner, 2001; Carneiro, 2000; Cosa et al., 2024; D'Este et al., 2025). This theoretical perspective is therefore particularly apt in highlighting the manner in which ownership forms and corporate governance mechanisms impact on IC performance. Accordingly, capital employed efficiency (CEE) is considered as an important dimension of the VAIC model.

2.2.2 Resource dependency theory. The resource dependency theory emphasizes the board's role in acquiring and utilizing external resources, particularly through diverse composition (Pfeffer & Salancik, 2015). RBV is complemented by RD theory, which emphasizes the firm's reliance on external actors and networks to obtain the strategic resources. Majumder et al. (2023) also emphasize that RD theory has two implications: First, it stresses the need to build long-term relationships with the stakeholder of a company and second, to build effective human resources. Boards of directors are the conduit between firms and their external environment, connecting firms to information, legitimacy and scarce resources needed for survival and growth (Al-Musali, 2013; Zahra & Pearce, 1989). Based on Abeysekera (2010) and Wincent et al. (2010), this influences a decrease in uncertainty and a better IC by facilitating access to environmental human and relational capital. Board diversity in this case strengthens strategic decision-making, stimulates creativity, and increases the firm's ability to obtain resources from external service providers (Al-Musali, 2013; Isola et al., 2020; Goodstein, Gautam, & Boeker, 1994). In the same line of argument, RDT emphasizes the relational capital role in confronting environmental uncertainty by establishing strong relationship with suppliers, customers and partners (Zahra & Pearce, 1989). Therefore, boards are not only monitors of IC, but also providers and managers of IC via their external networks and strategic resource sourcing (Al-Musali; Ho & Williams, 2003).

2.2.3 Agency theory. Agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) outlines the principal-agent relationship and explains how governance mechanisms can reduce

information asymmetry and agency costs. Managers may act in their own interests (Ho and William, 2003) and become risk-averse as they shy away from investing in IC activities – such as R&D, on IT and employee development – that most of the time have little visibility, their cost is high, and benefits only accrue in the future that will take long duration to realize (Al-Musali, 2013; Edvinsson, and Malone, 1997). This under investment is limiting IC performance and shareholder value. Agency theorists maintain that ownership structure and monitoring mechanisms can help alleviate these problems by aligning the decisions made by managers with the long-term interests of shareholders (Al-Musali, 2013; Belanes & Hachana, 2010; Shah et al., 2012). Independent and diversified boards generate more diverse knowledge, enabling better oversight of management (Goyal et al., 2019). Appropriate incentive systems and governance reduce agency costs and lead to efficient resources allocation to IC development (Donnelly & Mulcahy, 2008; Keter et al., 2024).

These theories, taken as a whole, lay a solid foundation for examining the relationship between IC and firm performance. Primarily, the RBV and KBV focuses on strategic significance of IC, RDT notes the significance of external ties, and board diversity agency theory highlights desirability/necessity of ICB, and signalling theory explains how firms are able to mitigate information asymmetry at play by means of IC disclosure. Incorporating these views will foster a more holistic understanding of the mechanisms by which IC contributes to performance and competitive advantage.

2.3 Hypothesis Development

2.3.1 Intellectual Capital and Firm Performance

Empirically, there is an overall positive association between IC and corporate performance, even if the conclusion differs according to the environmental setting. Sardo et al. (2018), found that all three components of IC –the human capital, structural capital and relational capital have

a positive impact on profitability of the Portuguese small and medium-sized hotel companies. Smriti and Das (2018), examining a sample consisting of 710 Indian listed companies, reported positive associations of IC components with indicators of financial performance and human capital efficiency (HCE) particularly affected asset turnover. However, context matters significantly. Afroz et al. (2018) showed that there was no significant association between HCE, and financial performance of Bangladeshi textile sector but capital employed efficiency (CEE) demonstrated strong and positive relationships. Similarly, Maditinos et al. (2011) failed to provide any evidence of a relationship between the structural capital efficiency (SCE), CEE, or the overall VAIC and ROA, ROE, or growth in 96 Greek firms with the exception of the fact that HCE was positively related to ROE. Furthermore, no evidence of impact of SCE was found on firm profitability in a sample of 44 companies of hotel industry in India (Singla & Rastogi, 2025). Inconsistent evidence contradictory to these findings was reported by Al-Musali and Ku Ismail (2016) where VAIC was found to have an impact on profitability (ROA and ROE) in GCC banks, and by Mohammed and Irbo (2018) where VAIC and all its components were found to improve ROA in Ethiopian banks. Chen et al. (2005), investigated positive association between CEE and ROA.

Our focal point is on the value-added efficiency between intellectual capital and total resources (which include physical capital). In combination, prior studies indicate that IC is positively linked to firms' financial performance through which value addition and competitive advantage are achieved. Based on these considerations, the following hypothesis is formulated:

H1a. The Value Added efficiency of IC has a significant positive impact on firm performance as measured by ROA and ROE in the manufacturing companies of Bangladesh.

H1b. The Value Added efficiency of total resources has a significant positive impact on the firm performance as measured by return on assets (ROA) and return on equity ROE in the manufacturing companies of Bangladesh.

2.3.2 Corporate Governance and Firm Performance

Investors, products, and markets are also affected by corporate governance mechanisms, and ultimately affect the translations of intellectual capital effects into company performance. Agency theory further argues that a board that is more independent and diversified is more likely to be diverse in knowledge, and thus is better able to monitor management (Goyal et al., 2019). In addition, resource dependency theory posits that board heterogeneity increases a firm's capability to access and use external resources (Al-Musali et al., 2015; Isola et al., 2020). Based on this perspective, this study examines, the three governance dimensions: the size of independent members, female members and the level of institutional shareholders.

The empirical evidence related to individual governance mechanisms is mixed. Risk preferences differ among different ownership types family owners become more risk-averse as ownership increases, while institutional investors, being diversified, are more risk-tolerant (Paligorova, 2010). A substantial body of literature has documented a positive correlation between institutional ownership (IO) and firm performance (Alkurdi et al., 2021, Kao et al., 2019, Queiri et al., 2021). However, Saleh et al. (2017) reported a negative correlation, and Al-Matari et al. (2017), Ali et al. (2018); Rashid (2020) found mixed or as well as inconclusive results. Lee (2008) as cited in Bhakar (2024) also did not find any significant relationship. In the setting of Bangladesh, Hossain & Rana (2024) documented that the institutional ownership had statistically significant and optimistic relation with the firm performance. Consequently, these contradictions reveal the imperativeness to re-evaluate the moderation effect of ownership structure on IC and firm performance, particularly under diverse emerging market

conditions. The diversity of the board, in particular diversity in gender, enhance strategic decision making and enhance the competitive advantage of the firm, in particular the representation of women on the board (Ahmad et al., 2018; D’Este et al., 2025).

Based on these theoretical and empirical considerations, the following hypotheses are formulated:

H2. The interaction effect of the proportion of independent board directors with IC has a positive influence on firm performance (ROA and ROE).

H3. The interaction effect of the proportion of female board directors with IC has a positive influence on firm performance (ROA and ROE).

H4. The interaction effect of the proportion of institutional ownership with IC has a positive influence on firm performance (ROA and ROE).

2.3.3 COVID-19 and Firm Performance

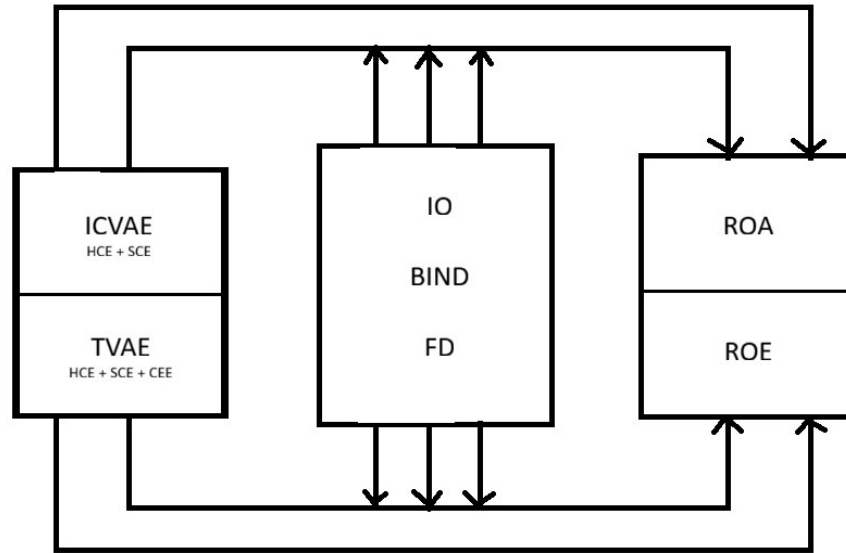
Firms in today’s global economy are faced with uncertainties that originate from various arenas. Political uncertainty, such as Brexit and U.S.–China trade war (Boungou & Yatie, 2022), and economic volatilities like that occurred during the 2008 global financial crisis and more recent bank casualties (Pandey et al., 2023), emphasize the vulnerability of the business environment. To manage these complexities, it is strategically important that a firm increases its intellectual assets to curtail turbulence (Cosa et al., 2024; Herremans et al., 2011; Khan & Ali, 2017). Complementary evidence is provided by Ngo and Duong (2024), which found that the Covid-19 pandemic significantly impacted performance of 402 listed firms in all sectors of Vietnam, particularly among those sectors vulnerable to government restrictions.

Given that the present study focuses on the manufacturing sector in Bangladesh, where firms have also faced pandemic-related disruptions, the following hypothesis is proposed:

H5. The consequences of the Covid-19 pandemic negatively affected firm performance in Bangladesh.

2.4 Theoretical Framework

Figure 2.1 Theoretical Framework



The theoretical framework (Figure 2.1) applicable to this study is developed in terms of firm performance as the dependent variable, and in relation to ROA and ROE. The main independent variables are ICVAE and TVAE, which are used to measure the efficiency of intellectual capital and hypothesized to have a direct impact on firm performance. In order to capture the effect of corporate governance mechanisms, IO, BIND, and FD are adopted as moderating variables influencing the degree and direction of the relation between intellectual capital efficiency and firm performance, not as predictors themselves. Furthermore, we control long-term liabilities leverage (LT_Leverage), firm size (Log_TA) and the COVID-19 dummy variable (covid_dummy) to account for other explanations and reduce the risk of omitted variable bias, so as to reflect the estimated effects of intellectual capital efficiency more accurately.

Table 1. Review of literature of selected studies

SL No.	Author (Year)	Objective	Methodology	DV	IV	CV	Findings	Solution	Theory
1	Syed Abdulla Al Mamun and Alima Aktar (2021)	To investigate the intellectual capital disclosure (ICD) practices of financial institutions in an emerging economy of Bangladesh.	Based on 93 items of intellectual capital categorized into internal, external, and human capital, an ICD index was developed for 53 financial institutions listed in Dhaka Stock Exchange. Descriptive statistics, parametric, and non-parametric tests were used.	Intellectual Capital Disclosure (ICD) practices/level	Intellectual capital categories (internal capital, external capital, human capital), financial institution sectors (banking companies, non-banking financial institutions).		More than 70% of ICD items are generally not disclosed. Highest disclosure for external capital (36%), lowest for human resource capital (18%). Significant variability of ICD practices across categories and between banking companies and non-banking financial institutions.	Findings have critical implications for managers, policymakers, and regulators for setting appropriate strategies and regulations for improving the level of ICD, which may reduce information asymmetry problems.	Agency Theory, Legitimacy Theory, Knowledge based view
2	Wakeel Atanda Isola, Bosede Ngozi Adeleye, and Aminat Olayinka Olohunlana (2020)	To focus on the implications of female participation in the board on the management of intellectual capital for improved firm performance, particularly in the Nigerian-banking sector.	Longitudinal panel analysis to analyze data obtained from the annual reports of selected listed commercial banks in Nigeria (14 banks, 2008-2017). Random effect regression adopted after Hausman test. Pulic's (2000) VAIC and Moreno-Gómez et al's (2017) measure of female board participation used.	Bank performances (Return on Assets (ROA) and Return on Equity (ROE)).	Female board participation, intellectual capital efficiency (VAIC and its components: HCE, SCE, CEE), interactions of female board participation and components of intellectual capital efficiency.	Bank size, bank age, board independence, director shareholding structure.	Female board participation has insignificant influence on bank performances, whereas intellectual capital efficiencies positively contribute to bank performances. Significant influences were exhibited upon the interactions of female board participation and components of intellectual capital efficiency on bank performances.	Bring to light the issue of gender-biasedness and inequality in the corporate world and highlight the need to give the female gender some proportionate representation in boardroom decision-making.	Resource Dependency theory, resource-based view, gender
3	Faizi Weqar, Zubair Ahmad Sofi and S.M. Imamul Haque (2021)	To examine the influence of intellectual capital (IC) on the financial performance of Indian companies listed on Standard and Poor Bombay Stock Exchange Sensitive Index (BSE SENSEX).	Data of 30 most significant and prominent Indian companies listed on BSE SENSEX for 10 years (2009-2010 to 2018-2019). Value Added Intellectual Coefficient (VAIC™) methodology developed by Pulic (2000) was employed.	Financial performance (measured by return on assets (ROA), market-to-book (MB) ratio and return on equity (ROE)).	Intellectual capital (IC) (measured by VAIC™ and its dimensions: Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE)).	Firm size (size), Physical capital (PC) intensity.	The efficiency of IC is substantially and positively associated with the financial performance of the Indian companies as measured by ROA, MB ratio and ROE. Amongst the three dimensions of VAIC, CEE was the most vital element, followed by HCE. SCE only helps in enhancing the ROA of Indian firms.	It must be made mandatory to disclose IC in the annual reports of the company.	Resource Based view, Pulic model
4	Marcello Cosa, Eugénia Pedro and Boris Urban (2024)	To propose the Integrated Intellectual Capital Measurement (IICM) model, a comprehensive framework to capture Intellectual Capital (IC) amid business uncertainty. To bridge the research gap by proposing a comprehensive IC measurement model adaptable to uncertain business environments. To deepen academic understanding of IC valuation methodologies and provide practical guidance for businesses navigating turbulence.	Systematic literature review (SLR) and bibliometric analysis across Web of Science, Scopus and EBSCO Business Source Ultimate in February 2023. This yielded 2,709 IC measurement studies, from which the authors selected 27 quantitative papers published from 1985 to 2023.	The document does not explicitly list dependent variables in a general sense for the entire review. However, the findings discuss the impact of IC on: Firm performance, Financial performance, Economic and environmental outcomes, Market value, Operating profit, Societal sustainability, Productivity and creativity.	Intellectual Capital (IC) and its components (Human Capital, Structural Capital, Relational Capital). The study also examines IC measurement in contexts of digital transformation, environmental impact, financial crisis, social impact, and turbulent environments.	Not explicitly mentioned as control variables for the review itself, but notes that company attributes (size, industry, location, country's economic development) significantly influence IC measurement methods.	No single, universally accepted approach for measuring IC. Company attributes (size, industry, location) significantly influence IC measurement methods. Human capital's critical yet underrepresented role in firm competitiveness. Digital transformation necessitates evolving IC measurement tools. IC intertwines with environmental performance. IC plays a strategic role during financial crises. IC enhances societal prosperity and equity. Measuring and leveraging IC in turbulent environments is complex. Prominence of human and structural capital; relational capital is underexplored.	Proposed Integrated Intellectual Capital Measurement (IICM) model: multidimensional analysis, adaptability to digital transformation, contextual flexibility, quantitative and qualitative indicators, robustness to uncertainty. Practical implications include enhancing ability to handle uncertainty, specialized training programs for IC, and establishing cross-functional teams for holistic IC management.	Knowledge based, COVID
5	Md. Tofael Hossain Majumder, Israt Jahan Ruma and Aklima Akter (2023)	To evaluate the impact of intellectual capital on bank performance in Bangladesh.	Unbalanced longitudinal data of 32 banks, covering 318 observations of bank-year from 2010 to 2019. Employed a dynamic panel model with the two-step system generalized methods of moments (SGMM).	Bank performance (ROA - Return on Assets).	Intellectual capital (IC) (measured by VAIC™ and its dimensions: Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE)).	Capital, bank size, credit risk, cost inefficiency, income.	Bank performance is significantly positively affected by intellectual capital (IC) in Bangladesh. Capital employed efficiency (CEE) is an essential determinant of bank performance rather than structural capital efficiency (SCE) and human capital efficiency (HCE) for the Bangladeshi banking sector.	Business owners, managers, and policymakers should continuously spend on IC and expand investment into CEE (financial and physical resources) to obtain better bank performance.	RB, RD, Organization Learning theory
6	Islam, M. S. (2021)	To observe the disclosure pattern of integrated reporting (IR) and investigate its relationship with a firm's operational, financial, and market growth performance in	Quantitative research based on a pooled-OLS regression analysis of 20 firms listed under ten different nonfinancial industries of the Dhaka Stock Exchange (DSE) for three financial years from 2015-2016 to 2017-2018.	Operational performance (Return on Assets - ROA), financial performance (Return on Equity - ROE), and market	Integrated Reporting (IR)	firm size, debt-to-equity ratio	Integrated reporting has a significant positive impact on ROA, ROE, and market-to-book value ratio.	Firms should consider adopting integrated reporting practices to improve their financial, operational, and market performance.	Agency, Legitimacy Theory.

		the voluntary disclosure regime of Bangladesh.		growth performance (Market-to-Book Value Ratio).					
7	Al-Musali, M. A. K. (2013)	To investigate the determinants of Intellectual Capital Performance (ICP) for listed banks in the Gulf Co-operation Council (GCC) countries.	Empirical study on a sample of GCC Listed Banks using VAIC model.	Intellectual Capital Performance (ICP) (VAICTM)	Determinants including Board Characteristics (e.g., size, independence) and various firm-specific attributes (size, age).	Bank size	Confirmed that firm and board characteristics are significant factors influencing the efficiency and performance of intellectual capital in GCC banks.	Agency Theory, Resource Dependency Theory	
8	D'Este et al. (2025)	To investigate the cascading effect of board gender diversity on firm-level diversity management and its ultimate impact on Intellectual Capital (IC) performance.	Quantitative survey data; Conceptual adoption of VAIC; Focus on gender diversity.	Intellectual Capital (IC) (VAIC Components)	Board Gender Diversity; Diversity & Inclusion Management Practices	workplace profile, female managers, proportion of female directors, tenure, expertise, risk committee, firm size, roe, industry	Board gender diversity positively influences diversity management, which, in turn, significantly enhances a firm's Intellectual Capital.	Implement inclusive gender diversity management practices to systematically enhance organizational IC.	Resource-Based View (RBV), Human Capital Theory
9	Hossain & Rana (2024)	To explore the impacts of Ownership Structure (OS) on Intellectual Capital (IC) in publicly listed banks in Bangladesh.	Quantitative analysis on publicly listed banks.	Intellectual Capital (IC)	Ownership Structure (OS) components (e.g., Institutional, Foreign, State Ownership).	Firm Size, Financial Leverage (total liabilities/total shareholders' equity)	Ownership structure is a significant determinant of IC performance in Bangladeshi banks, implying governance structure is key to intangible asset creation.	Policymakers should focus on ownership structure reform to enhance IC development in the banking sector.	Resource-Based View (RBV)
10	Islam, Maniruzzaman, & Hossain (2025)	To appraise how IC affects the financial performance of DSE listed manufacturing companies in Bangladesh.	Fixed-Effect Model (built around the Hausman test); 92 DSE-listed manufacturing firms (2017-2022).	Financial Performance (FP)	Intellectual Capital (IC) (Measured by VAICTM)	Firm Size, Financial Leverage (total liabilities/total assets)	IC can enhance the financial performance of manufacturing companies in Bangladesh.	Manufacturing firms should recognize IC as a strategic asset and invest accordingly to boost FP.	

Chapter 3

Research Methodology

3.1 Sample size and data collection

The sample size of this study encompasses 102 companies listed under manufacturing sectors in the Dhaka Stock Exchange (DSE) of Bangladesh. The data were extracted from the annual reports published by all the companies in their websites for investors. Some missing data, due to the lack of proper disclosure of annual reports, were taken from the Wall Street Journal (WSJ) website. The period of the study is 7 years and it ranges from 2018-2024. The reason for taking this particular industry is as follows: (1) they are under-researched. Most IC research in Bangladesh, and South Asia broadly, has focused on banking and financial institutions given their transparency and regulation, (2) they are central to the Bangladeshi economy. Since manufacturing drives industrialization and employment, examining IC in this industry has strong economic policy implications, (3) IC manifests differently in manufacturing than in finance. Ownership patterns differ from banks and financial institutions, giving richer insights into CG mechanisms, (4) they have unique governance structures, (5) COVID made their challenges more pronounced and, (6) DSE-listed manufacturing firms publish annual reports consistently (A and B categories), allowing for panel data collection. Z-category firms were excluded due to underperformance and irregular disclosure, thus improving data reliability and comparability. Companies listed after 2018 were also excluded, regardless of their market category. Stata itself dropped companies with too many missing variables or generated extra rows for a smoother regression analysis. Hence, the final sample is an unbalanced panel database of 101 companies for 7 years (678 observations). The sample distribution based on the industry/sector is given in Table 1.

Table 2. *Sample composition of the firms based on sector*

S.No	Sector	Number of firms	Actual number of firms	Percentage of firms taken (%)
1	Cement	5	7	71
2	Ceramics	4	5	80
3	Engineering	25	42	60
4	Miscellaneous	7	15	47
5	Paper & Printing	4	6	67
6	Pharmaceuticals & Chemicals	20	34	59
7	Tannery	5	6	83
8	Textile	30	58	52
Total		100	173	58

Source(s): DSE's website

<https://www.dsebd.org/companylistbyindustry.php?industry=18>4

3.2 Variables and their proxy measures

3.2.1 Dependent variables. In line with the previous research studies on IC, two indicators of financial performance are employed – ROA (Chen et al., 2005; Chowdhury et al., 2024; Majumder et al., 2023; Mohammed & Irbo, 2018; Weqar & Haque, 2020) and ROE (Al-Musali & Ku Ismail, 2016; Isola et al., 2020; Maditinos, 2011; Sharma et al., 2024;). These are further explained as under:

(1) Return on assets (ROA): It indicates the operational performance and which measures the profit earned by the company concerning the amount invested in their total assets (Islam et al., 2025; Majumder et al., 2023;). ROA is calculated as:

$$\text{ROA} = \text{Net Income after tax} / \text{Total Assets (year-ended)} \quad (1)$$

(2) Return on equity (ROE): It indicates financial performance and measures the profitability of the firm to its equity (Isola et al, 2020; Weqar et al., 2021). ROE is calculated as:

$$\text{ROE} = \text{Net Income after tax} / \text{Total Shareholder Equity (year-ended)} \quad (2)$$

3.2.2 Independent variables. To measure IC performance, this study applies value added intellectual coefficient (VAIC) method developed by Pulic (1998), an instrument used by many researchers to measure IC performance (see e.g. Al-Musali, 2013; Majumder et al., 2023; Sharma et al., 2024; Weqar et al., 2021 etc). According to Pulic (2000), to create value-addition, the firm needs physical and financial capital along with the IC, as IC alone cannot add value to the firm. Algebraically, VAIC is the total sum of the value creation efficiency a business unit's capital employed (physical and financial) and two major components of IC (namely human capital and structural capital), expressed as follows:

$$\text{VAIC} = \text{CEE} + \text{HCE} + \text{SCE}$$

Where, CEE is an indicator of Value Added efficiency of capital employed; HCE is an indicator of Value Added efficiency of human capital; SCE is an indicator of Value Added efficiency of structural capital. The calculation of the CEE, HCE and SCE follows a number of different steps. The first step is to calculate the firm's ability to create value added (VA). The value added (VA) is calculated as follows:

$$\text{VA} = \text{OUTPUT} - \text{INPUT}$$

Output is the gross income, which is the full revenue that an organization generates from its operations, such as sales of either goods or services, in a fiscal year. On the other hand, input is the cost to provide the commodities needed by the organization to run their business and to keep it going (Al-Musali, 2013, Pulic, 2004).

The second step is to calculate the Value Added efficiency of human capital (HCE) by dividing the total value added over human capital.

$$HCE = VA \div HC$$

HCE is that value-added per unit of money invested in employees (Al-Musali, 2013)

The third step is to determine the value added efficiency of the structural capital, which represents the percentage of the added value created by structural capital, over the total value added. It relies upon the generated VA and is inversely related with HC (Pulic, 2004).

$$SC=VA-HC$$

$$SCE= SC \div VA$$

According to the methodology, structural capital is explained by the past performance of human capital (organization, licenses, patents, image, standards, and relationship with customers) (Al-Musali, 2013).

The fourth step is to calculate the capital employed efficiency (CEE) by dividing the total value added over capital employed (CE).

$$CEE = VA \div CE$$

Capital employed comprises both financial and physical capital of a company (i.e. the book value of the net tangible assets of a company) (Pulic, 2004). CEE is represented in terms of the value added produced by each monetary unit of capital employed (Al-Musali, 2013).

For the purpose of this study, we divide the VAIC into two parts:

Intellectual Capital Value Added Efficiency (ICVAE) = HCE+SCE (1)

Total Value Added Efficiency or VAIC (TVAE) = ICVAE+CEE (2)

This was done to separately check the effects of the intangible assets and then measure the total VAIC including the tangible assets as effects of CEE often contradict the effects of the other two as found in the literature review. However, it is strongly believed that the higher the VAIC, the better the firm performance (Al-Musali, 2013).

Covid-19 (covid_dummy) as a dummy variable where 2020 and 2021 were taken as years effected by the Covid-19 pandemic, denoted as 1 and 0 otherwise. (3)

3.2.3 Moderating variables. Widely used (Ahmad, 2018; Ali et al., 2018; Alkurdi et al., 2021; Al-Musali et al., 2015; Belanes & Hachana, 2010; Bhakar et al., 2024; Cosa et al., 2024; Goyal et al., 2019; Isola et al., 2020; Ngo & Duong, 2024) components of corporate governance will act as the moderating/interaction variables for this study to grasp the effectiveness of the influence of corporate governance in the relationship between IC and firm performance. These variables are:

Percentage of Institutional Ownership (IO) (1)

Percentage of independent directors (BIND) = Number of independent directors/Total number of directors in the firm (2)

Percentage of female directors (FD) = Number of female directors/Total number of directors in the firm (3)

3.2.4 Control variables. Two control variables are also incorporated into the study. These variables are as follows:

(1) *LT_leverage*: The level of a company's debt, which can affect its risk and profitability. It controls for the effect of debt-to-equity ratio (Islam, 2021; Islam et al., 2025). Algebraically

$$LT_leverage = \text{Long-term Liabilities} / \text{Total Shareholders equity}$$

(2) *Log_TA*: Firm size is measured as the natural log of total assets of a firm. Logarithm is used to reduce the effect of extremely high and low data values in order to improve the goodness fit of the model (Al-Musali, 2013; Islam, 2021). Algebraically

$$\text{Log_TA} = \text{Log (Total Assets)}$$

Table 3. *Summary of the Operationalization of the Study Variables*

Variables	Acronym	Operationalization
Dependent Variables:		
Return on Assets	ROA	Net income after tax divided by total assets, measuring efficiency in using assets to generate earnings.
Return on Equity	ROE	Net income after tax divided by shareholders' equity, indicating profitability relative to equity capital.
Independent Variables:		
Intellectual Capital Value Added Efficiency	ICVAE	Composite measure of human and structural capital efficiency.
Total Value Added Efficiency	TVAE	Overall efficiency of human, structural, and capital employed resources combined.

Covid-19	covid_dummy	Binary variable taking 1 for pandemic years (2020–2021) and 0 otherwise.
Moderating Variables:		
Institutional Ownership	IO	Percentage of shares held by institutional investors.
Board Independence	BIND	Proportion of independent directors on the board.
Female Directors	FD	Percentage of women on the board of directors.
Control Variables:		
Long-Term Leverage	LT_leverage	Ratio of long-term debt to total shareholder equity, capturing financial risk.
Firm Size	Log_TA	Natural logarithm of total assets, representing firm size.

3.3 Regression Models

To achieve the objective of this study, we use a multiple regression analysis. Multiple hierarchical regression analysis is conducted to test on all the different variables and achieve the second objective of the study. All the data was analysed using STATA 15.0.

Eight regression models have been formulated to measure the impact of IC efficiency (ICVAE and TVAE) on the financial performance (ROA and ROE) of Bangladeshi manufacturing companies. ICVAE and TVAE were checked separately to avoid possible collinearity bias.

Models 1, 2, 3 and 4 are used to test the hypothesis H1a and H1b.

$$\text{Model 1: } ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 ICVAE_{it} + \beta_3 LT_leverage_{it} + \beta_4 Log_TA_{it} + \beta_5 covid_dummy_{it} + (\eta_i + v_{it})$$

$$\text{Model 2: } ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 TVAE_{it} + \beta_3 LT_leverage_{it} + \beta_4 Log_TA_{it} + \beta_5 covid_dummy_{it} + (\eta_i + v_{it})$$

$$\text{Model 3: } ROE_{it} = \beta_0 + \beta_1 ROE_{it-1} + \beta_2 ICVAE_{it} + \beta_3 LT_leverage_{it} + \beta_4 Log_TA_{it} + \beta_5 covid_dummy_{it} + (\eta_i + v_{it})$$

$$\text{Model 4: } ROE_{it} = \beta_0 + \beta_1 ROE_{it-1} + \beta_2 TVAE_{it} + \beta_3 LT_leverage_{it} + \beta_4 Log_TA_{it} + \beta_5 covid_dummy_{it} + (\eta_i + v_{it})$$

Models 5, 6, 7 and 8 are used to test the hypothesis H2, H3, H4 and H5.

Model 5:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 ICVAE_{it} + \beta_3 BIND_{it} + \beta_4 IO_{it} + \beta_5 FD_{it} + \beta_6 (ICVAE \times BIND)_{it} + \beta_7 (ICVAE \times IO)_{it} + \beta_8 (ICVAE \times FD)_{it} + \beta_9 LT_leverage_{it} + \beta_{10} Log_TA_{it} + \beta_{11} covid_dummy_{it} + (\eta_i + v_{it})$$

Model 6:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 TVAE_{it} + \beta_3 BIND_{it} + \beta_4 IO_{it} + \beta_5 FD_{it} + \beta_6 (TVAE \times BIND)_{it} + \beta_7 (TVAE \times IO)_{it} + \beta_8 (TVAE \times FD)_{it} + \beta_9 LT_leverage_{it} + \beta_{10} Log_TA_{it} + \beta_{11} covid_dummy_{it} + (\eta_i + v_{it})$$

Model 7:

$$ROE_{it} = \beta_0 + \beta_1 ROE_{it-1} + \beta_2 ICVAE_{it} + \beta_3 BIND_{it} + \beta_4 IO_{it} + \beta_5 FD_{it} + \beta_6 (ICVAE \times BIND)_{it} + \beta_7 (ICVAE \times IO)_{it} + \beta_8 (ICVAE \times FD)_{it} + \beta_9 LT_leverage_{it} + \beta_{10} Log_TA_{it} + \beta_{11} covid_dummy_{it} + (\eta_i + v_{it})$$

Model 8:

$$\begin{aligned} ROE_{it} = & \beta_0 + \beta_1 ROE_{it-1} + \beta_2 TVAE_{it} + \beta_3 BIND_{it} + \beta_4 IO_{it} + \beta_5 FD_{it} + \beta_6 (TVAE \times BIND)_{it} + \\ & \beta_7 (TVAE \times IO)_{it} + \beta_8 (TVAE \times FD)_{it} + \beta_9 LT_leverage_{it} + \beta_{10} Log_TA_{it} + \beta_{11} covid_dummy_{it} + (\eta_i \\ & + v_{it}) \end{aligned}$$

Where

- i and t represent the firm and time period (year), respectively.
- ROA_{it} is the dependent variable (Return on Assets) for firm i in year t .
- ROE_{it} is the dependent variable (Return on Equity) for firm i in year t .
- ROA_{it-1} and ROE_{it-1} are the lagged dependent variables (the dynamic component).
- η_i represents unobserved time-invariant firm-specific effects (e.g., management quality, corporate culture).
- v_{it} represents the idiosyncratic error term.

By following previous studies (e.g. Majumder et al., 2023), this study uses a two-step system GMM. This model is appropriate over a fixed effect model for a number of reasons. Firstly, it incorporates a Dynamic Specification (ROA_{it-1}/ROE_{it-1}) to account for the persistence of firm performance. Secondly, the System GMM estimator is specifically designed to control for endogeneity, a critical weakness of static panel models like fixed effects. It uses internal instruments—lagged levels and differences of the variables—to address both unobserved firm heterogeneity (η_i), such as time-invariant management quality, and simultaneity (reverse causality), where profitability might also influence intellectual capital investment. Furthermore, this technique is ideal for panels with short time periods and reduces sample heterogeneity issues. While Difference GMM can provide weak instruments for persistent variables, the System GMM approach employed here overcomes this weakness by combining equations in differences and levels for more robust estimation. Finally, this framework allows for testing Moderation Effects through interaction terms (e.g., $ICVAE \times FD$), which explicitly test whether the relationship between intellectual capital and performance is dependent on the level of corporate governance.

Chapter 4

Findings and Discussion

4.1 Descriptive Statistics

Descriptive statistics for all the variables are shown in Table 3. The examination uncovers some interesting properties of the dataset. The dependent variables (ROA and ROE) have mean values of 3.4% and 8.1%, respectively, which means, average profitability for the sample companies in the time of the analysis is relatively low. Yet, both variables also show a variance and distribution that is broadly distributed and strongly skewed to the positive (1.78 for ROA and 3.81 for ROE). This indicates that most firms have had low or even negative returns during this period and a few high-performance outliers are driving the mean upwards, classic characteristics of financial data.

The mean values of the independent variables for intellectual capital, ICVAE and TVAE, are close to 9.9. However, their distributions have large ranges and exhibited strong positive skewness (approximately 4.75). This means that most of the firms are tightly concentrated around the lower range of intellectual capital efficiency, but there are some outliers having quite high values. There is also a great deal of diversity in the corporate governance variables among the sample. The average board independence (BIND) is 26.1%, and female directors (FD) and institutional ownership (IO) average 18.5% and 14.5% respectively, and maximum values suggest that some firms have significantly more concentrated governance structures. On the other hand, minimum values for BIND and FD are 0%, which is below the Bangladesh Securities and Exchange Commission's (BSEC) Corporate Governance Code 2018 stating that at least 20% of the board should consist of independent directors and a more recent directive that there should be at least one female director in the board. This shows that some

manufacturing firms in Bangladesh are not fully complying with the Corporate Governance standard of the country.

The mean LT_leverage for control variables is 48.6%, and has a high positive skewness (3.37) indicating that only few companies are with the high leverage proportion. Firm size (Log_TA) is approximately normally distributed around its mean, indicating an average sample of firm size. And, the mean value of the COVID-19 dummy variable is 0.284, implying that 28.4% of the firm-year observations belong to the pandemic period. Given the significant variance among the firms in their performance, intellectual capital and corporate governance practices in the sample, it forms a robust basis for the regression designed to capture these intricate relationships.

Table 4. *Descriptive statistics*

VARIABLE	MEAN	STD. DEV.	MIN	MAX	SKEWNESS
ROA (%)	3.4	0.072	-30.6	53.7	1.78
ROE (%)	8.1	0.281	-167.5	326.4	3.81
ICVAE	9.968	15.092	-43.828	185.879	4.78
TVAE	9.955	15.113	-43.852	185.974	4.75
IO (%)	14.458	11.543	0.0	57.250	0.82
BIND (%)	26.1	0.080	0.0	60	0.74
FD (%)	18.5	0.152	0.0	62.5	0.48
LT_LEVERAGE	48.6	0.905	-529.8	978.7	3.37
TOTAL ASSETS (MILLIONS)	4415	0.663	50.2	187068	-0.08
COVID_DUMMY	0.284	0.451	0.000	1.000	0.96

4.2 Multicollinearity

The correlation analysis in Table 4 indicates a significant positive relationship between ROA and ROE ($r = 0.659$) and that both measures of intellectual capital, ICVAE and TVAE, correlate positively with performance, but more strongly with ROA ($r \approx 0.31$) than ROE ($r \approx 0.13$). Importantly, ICVAE and TVAE are perfectly correlated ($r = 1.000$), necessitating the separation between these variables in further regressions to prevent multicollinearity. Corporate Governance variables present mixed results: board independence (BIND) has a slightly positive effect over performance, institutional ownership (IO) a weakly negative effect and female directors (FD) have no significant relationship. For controls, long-term leverage has a strong negative association with performance, whereas firm size has a weak positive association with ROA. The COVID-19 dummy has no significant relationship.

Table 5. *Pearson Correlation Matrix*

	ROA	ROE	ICVAE	TVAE	BIND	IO	FD	LT_leverage	Log_TA	covid_dummy
ROA	1									
ROE	0.6591*	1								
ICVAE	0.3070*	0.1251*	1							
TVAE	0.3124*	0.1289*	1.0000*	1						
BIND	0.0789*	0.0877*	0.0406	0.041	1					
IO	-0.0876*	-0.0795*	-0.0117	-0.0128	-0.0037	1				
FD	-0.0134	-0.009	-0.1424*	-0.1423*	0.0765	0.0615	1			
LT_leverage	-0.1814*	-0.2861*	-0.0448	-0.0443	-0.0171	-0.0699	-0.1019*	1		
Log_TA	0.1117*	0.0658	0.2055*	0.2051*	-0.0089	0.1397*	-0.2299*	0.0914*	1	
covid_dummy	-0.053	-0.0584	-0.0785*	-0.0786*	-0.0108	0.0194	0.0124	-0.002	-0.0296	1

Notes: Total number of observations 678; ***correlation is significant at 1% level (2-tailed);

**correlation is significant at 5% level (2-tailed); *correlation is significant at 10% level (2-tailed).

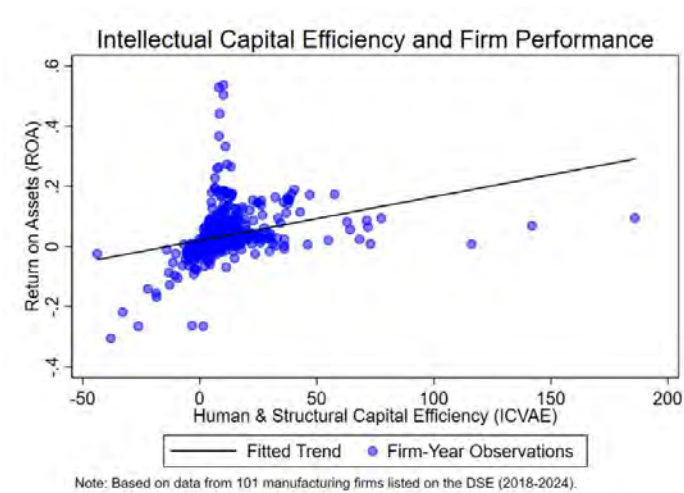
4.3 Endogeneity and Heteroskedasticity

The adoption of a two-step system Generalized Method of Moments (GMM) estimator, implemented by the `xtabond2` command in Stata, is induced by the specific problem of endogeneity, which could emerge from the dynamic structure of the panel data and take the form either of unobserved firm-specific effects or of simultaneous equations with the error term. The central assumption of the model, i.e. the exogeneity of the lagged instruments, is formally tested by the Hansen test of overidentifying restrictions. An insignificant p-value reject the null hypothesis that the instruments are valid and confirms the identification strategy of the model is extremely crucial. In addition, the Arellano-Bond test for second-order serial correlation [AR(2)] of the first-differenced errors is of fundamental importance; a rejection of the null hypothesis means that no serial correlation is present and this is an important requisite for the GMM estimator to be consistent. The model also adjusts for heteroskedasticity (robust option) that derives Windmeijer-corrected standard errors to facilitate efficient inferences with respect to the estimator. Accordingly, as the estimator we propose is derived explicitly for the purpose to address endogeneity and the Hansen and AR(2) tests which demonstrate that our method is manifestly effective, we do not need additional post-estimation tests on endogeneity either.

4.4 Scatter Plots

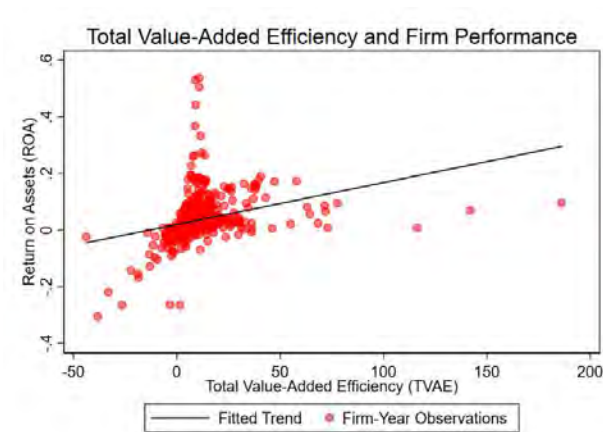
Scatter plots are used before the evaluation of econometric relationships of interest above. These scatter plots were used to examine the bivariate relationships in the variables of interest graphically. These plots offer a first (though limited) glimpse on the patterns in the data and on possible relationships.

Figure 4.1: Intellectual Capital and Return on Assets (ROA)



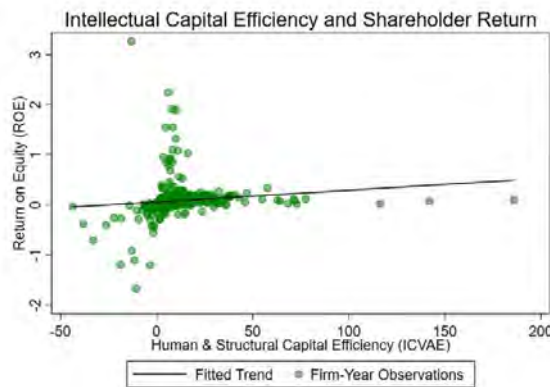
The scatterplot of ICVAE and ROA demonstrates an evident upward trend. The fitted linear regression line shows that the firms with a higher value of IC have a higher ROA. This visual evidence tentatively supports H1a. In addition, there is a large cluster of firms in the lower left quadrant of the plot and few data points in the northeast quadrant with a high level of ROA indicating that the level of intellectual capital performance varied considerably among Bangladeshi manufacturing industry.

Figure 4.2: Total Value Added and Return on Assets (ROA)



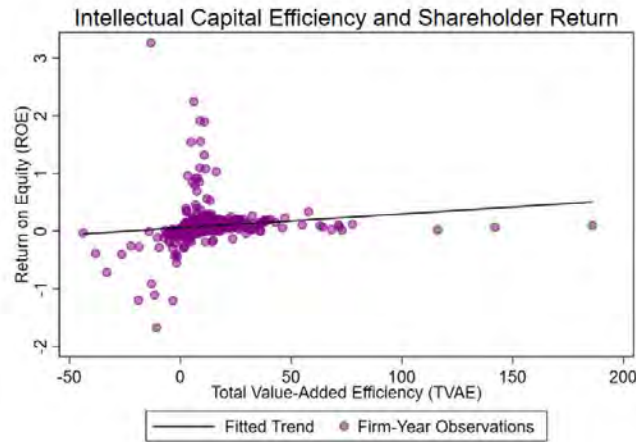
A positive relationship can also be found using the scatterplot between TVAE and ROA. A line of best fit is superimposed on the scatter plot, which shows that firms with superior total value added efficiency display higher profitability (as measured by ROA). This visual evidence offers preliminary support for H1a. From the plot it can be observed that the firms are grouped in the lower-left corner which indicates that there are not many firms with high ROA values.

Figure 4.3: Intellectual Capital and Return on Equity (ROE)



The correlation between ICVAE and ROE is less stronger than that of ROA. The points are more dispersed, and the lines fitted to the same points are shallower. This graphic, in turn, hints that the relationship between the intellectual capital and the shareholder returns (ROE) might not be direct, but is probably mediated by other variables such as debt or ownership which is confirmed by the following regression results.

Figure 4.4: Total Value Added and Return on Equity (ROE)



The relationship between TVAIE and ROE seems to be also weaker than that with ROA. The points are more spread out, and the gradient of the best-fit line is smaller. This visualization implies that relationship between intellectual capital and shareholder return (ROE) be not just direct or be affected by other things, such as leverage or ownership structure that is consistent with the situation of subsequent regression result.

In conclusion, the visual examination of the data indicates preliminary descriptive evidence that supports the hypothesized positive relationship of intellectual capital with operational efficiency, in particular, ROA. But it highlights the ambiguity of that relationship desire with market-based performance measures (ROE). These patterns also motivate the multivariate econometric analysis that is to come, which will hold these other possible influences constant and scrutinize the relationships more precisely.

4.5 Hypotheses Testing

This chapter reports the results of the two-step system GMM regression analysis, and it tests hypothesis formulated in Chapter 3. The analysis is organized to capture the direct effect of intellectual capital on firm performance first, then to estimate the moderation effects of corporate governance variables, and finally to study the integrated model and the pattern of control variables.

Table 6. Multiple Regression Results

Variables	Model 1 (ROA)	Model 2 (ROA)	Model 3 (ROE)	Model 4 (ROE)	Model 5 (ROA)	Model 6 (ROA)	Model 7 (ROE)	Model 8 (ROE)
ICVAE	0.0019**		0.0033		0.0276*		0.0726*	
TVAE		0.0018**		0.0034		0.0275*		0.0724*
BIND					0.468	0.473	-0.597	-0.592
IO					0.0091**	0.0091**	0.017	0.017
FD					-0.939	-0.935	-2.072	-2.069
ICVAE_BIND					-0.063**		-0.172*	
TVAE_BIND						-0.063**		-0.171*
ICVAE_IO					-0.0002		-0.0002	
TVAE_IO						-0.0002		-0.0002
ICVAE_FD					-0.0046		-0.027	
TVAE_FD						-0.0044		-0.027
LT_leverage	-0.087**	-0.087**	-0.246	-0.249	0.091	0.090	-0.060	-0.060
Log_TA	0.015**	0.015**	0.031	0.031	-0.116*	-0.115*	-0.268*	-0.267*
covid_dummy	0.006	0.006	0.001	0.001	-0.017	-0.016	0.012	0.012
_cons	-0.091	-0.091	-0.147	-0.148	0.952	0.943	2.770	2.759
Hansen P-value	0.123	0.120	0.234	0.234	0.889	0.885	0.476	0.476
AR(2) P-value	0.840	0.839	0.335	0.338	0.595	0.594	0.966	0.967
Wald P-value	0.000***	0.000***	0.041**	0.041**	0.002***	0.001***	0.496	0.514

Notes:

- *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.
- A coefficient without a significance asterisk means its p-value is greater than 0.10.
- ROA and ROE in parentheses denote the dependent variable for that model.
- The Wald test for Models 7 and 8 is not significant, indicating the variables as a group are not jointly significant.
- All models passed the Hansen and AR(2) tests, confirming their validity and correct specification.

4.5.1 Regression Results

The final results from all eight GMM regression models are summarized in the table below.

Each model was well-fitted, and all models cleared the critical Hansen test and the Arellano-Bond test of second order serial correlation (AR (2)).

4.5.1.1 Intellectual Capital and Firm Performance

Models 1-4 were developed to examine the direct association between intellectual capital and firm performance (Hypotheses H1a and H1b).

The estimates from Model 1 and Model 2, with ROA as the dependent variable, show a statistically significant positive prediction. The coefficients of ICVAE (0.0019) and TVAE (0.0018) are positive and statistically significant at the 5% level. The results strongly provide evidence in line with H1a, which suggests that the efficiency of intellectual capital, either ICVAE or TVAE, positively impacts manufacturing firms' operating performance in Bangladesh.

In opposition, the output of the Model 3 and the Model 4 based on ROE as dependent variable, we find no relationship. Neither ICVAE (0.0033) nor TVAE's (0.0034) coefficients are statistically significant. This makes it possible to reject the H1b and indicates that the relationship between IC and shareholder return is non-significant in the sample. This finding emphasizes that the relationship between intellectual capital and market-based performance measures could be complicated by variables, such as market volatility.

4.5.1.2 Corporate Governance Mediation and Firm Performance

Models 5–8 examined the moderating roles of corporate governance, addressing Hypotheses H2, H3, and H4.

Board Independence. All of the interaction term ICVAE_BIND in Model 5(−0.063) and Model 7 (−0.172), TVAE_BIND in Model 6(−0.063), and Model 8 (−0.171) are consistently held significantly negative. All these coefficients are statistically significant at 10%, if not at 5%. This unexpected result contradicts H2, and implies that independent directors at Bangladeshi manufacturing firms may apply risk aversion behaviour which may limit the complete application of intellectual capital investments.

Female directors (FD) has no statistical significance in all models. Although the coefficient of FD is negative in all models, they are not statistically significant at the 5% level (all $p >$

0.10). This indicates that gender diversity on boards does not significantly moderate the IC-performance relationship in this context.

On institutional ownership, the IO variable plays a direct role in ROA in Model 5 and Model 6 (0.0091, $p < 0.05$). However, in the ROE models, it is not important. This refutes H3 since institutional ownership does not have a significant impact on the shareholder return portion of performance. Nevertheless, it evidences strong support for H4 and support the monitoring theory that institutional investors help in improving firm performance by effectively monitoring and providing resources.

Although Models 7 and 8 satisfied the instruments by passing the critical diagnostics for instrument validity (Hansen test) and no serial correlation (AR(2)), they did not pass the Wald test of joint significance. That is as a whole, the independent variables in these models are not statistically significant in explaining the variations in ROE.

4.5.1.3 Covid-19 and Firm Performance

Hypothesis H5 was examined by adding covid_dummy in all models to capture the impact of the pandemic. The outcomes indicate that covid_dummy variable is not statistically significant in any of the eight models. This means that, for the companies in this sample and during the period analysed, there is no statistical evidence that the COVID-19 pandemic, as an isolated event, generated any negative effect on either ROA or ROE, thus not supporting H5. This surprising finding may reflect effective adaptation strategies, government support measures, or the sector's resilience to external shocks.

4.5.1.4 Control Variables and Firm Performance

The control variables exhibit the anticipated signs according to financial theory. The lagged dependent variable (L.ROA or L.ROE) is positive and significant at 1% level in all models which indicates the dynamic nature of firm performance and that the past profitability is useful

in predicting the current profitability. There was also a statistically significant negative influence of firm size (as proxied by Log_TA) in the latter models (5-8), meaning that bigger firms in our sample could be less profitable than small firms which may suggest possible diseconomies of scale or undue bureaucratic costs in large Bangladeshi manufacturing firms. Long-term leverage (LT_leverage) has a strong negative and highly significant effect on ROA in the core models (-0.0089, $p < 0.01$), thus supporting the idea that high leverage has a negative impact on profitability due to higher financial risk and interest expenses. Nevertheless, its impact is generally inconclusive across all architectures.

4.6 Discussion of Results

The findings obtained from this GMM estimation are provide greater insights to the firm performance of manufacturing in Bangladesh. This analysis shows that ICVAE (as well as TVAE) represents a primary source of variance in operational performance (ROA) which is consistent with the previous literature. However, such linkage does not exist for firm returns (ROE), suggesting that market-related performance is driven by different factors. Although not completely surprising, the failure of the Wald-Chi test can be rationalized in light of several issues that are consistent with other findings from this study. Firstly, ROE is a measure of shareholder return, which is closely related to company's capital structure (i.e. leverage). Findings in correlation matrix (Table 4) illustrated that there was already a significant negative correlation between LT_leverage and ROE (-0.2861**). This may indicate that leverage and dividend policy are likely to more directly influence ROE than the efficiency of intellectual capital, which often brings along long-term benefits that may not be strictly associated with the form of the financial ratio. Secondly, the report has been consistent in demonstrating that intellectual capital (ICVAE/TVAE) has a significant effect on operational performance (ROA) rather than the shareholder's market-induced performance (ROE). ROE is associated with the forces such as market sentiment, investors' attitude and speculative forces that operate in

Dhaka Stock Exchange (DSE) and is beyond the internal resource-based IC and CG that is considered in measuring these models. The IC efficiency variable and the governance moderators are drivers of operational efficiency and asset utilization but are not so direct, or as powerful at explaining the kinds of financial engineering and leverage effects that drive ROE.

The most important result of this study is the evidence of the consistent negative effect, as a moderating factor, of the independent director's role on Intellectual Capital and profitability. This finding refutes the common perception that board independence always improves firm performance and offers a specific focal point for corporate governance practice in Bangladesh. From this result, we can assume that independent directors in Bangladesh are more risk-averse than usual. These results validate the choice of the robust GMM methodology and prepare the ground for a more exhaustive discussion of theoretical and practical implications in the next chapter.

Below is a table summarizing the final interpretation of all eight models, focusing on the key variables of interest.

Table 7. Summary of Results

Dependent Variable	Model	Independent Variables	Coefficient & Significance	Interpretation
ROA	1	ICVAE	0.0019**	A significant positive relationship.
ROA	2	TVAE	0.0018**	A significant positive relationship.
ROE	3	ICVAE	0.0033	Not significant.
ROE	4	TVAE	0.0034	Not significant.
ROA	5	ICVAE	0.0276*	A positive relationship (10% sig).
		ICVAE x BIND	-0.063**	BIND negatively moderates the ICVAE-ROA relationship.
		IO	0.0091**	A significant positive relationship.
		Log_TA	-0.115*	A negative relationship (10% sig).
ROA	6	TVAE	0.0275*	A positive relationship (10% sig).
		TVAE x BIND	-0.063**	BIND negatively moderates the TVAE-ROA relationship.
		IO	0.0091**	A significant positive relationship.
		Log_TA	-0.115*	A negative relationship (10% sig).
ROE	7	ICVAE	0.0726*	A positive relationship (10% sig).
		ICVAE x BIND	-0.172*	BIND negatively moderates the ICVAE-ROE relationship.
		Log_TA	-0.268*	A negative relationship (10% sig).
ROE	8	TVAE	0.0724*	A positive relationship (10% sig).
		TVAE x BIND	-0.171*	BIND negatively moderates the TVAE-ROE relationship.
		Log_TA	-0.268*	A negative relationship (10% sig).

Chapter 5

Conclusion and Policy Implications

5.1 Summary of the Study

This empirical study aims to investigate the complex relationships between strategic asset (as intellectual capital (IC)), corporate governance (CG) mechanisms, and firm performance (FP) in a sample group of the manufacturing companies of an emerging market, Bangladesh. With an unbalanced panel data set including 101 listed firms in the Dhaka Stock Exchange (DSE) during 2018 to 2024 (678 firm-year observations), the study used the robust two-step system Generalized Method of Moments (GMM) to address endogeneity problems and unobservable heterogeneity.

The research was driven by two key research questions. The first (RQ1) investigated the direct effect of strategic assets (as measured by the Value Added Intellectual Coefficient (VAIC) and its building blocks of ICVAE and TVAE) on firm performance (as proxied by ROA and ROE). The second (RQ2) examined how corporate governance factors, that is, institutional ownership (IO), board independence (BIND), and female directorship (FD), moderate the relationship between IC and performance.

The results give a complex image. Intellectual capital efficiency has a significant positive effect on operational performance (ROA), which provides evidence to accept the Hypothesis (H1a). Its impact on the shareholder returns (ROE), however, is irrelevant and H1b is rejected. The set of predictors employed does not represent the best combination for explaining ROE in the context of the Bangladeshi manufacturing industry. Most likely, other motives like leverages, interest rates, dividend pay-out ratios, and broader market volatilities are more prevalent force. On corporate governance, institutional ownership positively affected ROA directly, corroborating its effectiveness as monitoring mechanism (H4). In contrast to common belief

and hypothesis H2, board independence had a consistently negative moderating effect on the IC-ROA and the IC-ROE relationship. Female directorship was not found to moderate significantly, thus rejecting H3. Notably, the COVID-19 pandemic dummy coefficient was not statistically significant in the estimation of all models, implying that the sample manufacturing firms were immune from its short-term financial consequences, rejecting H5.

5.2 Comparison with Existing Studies and Possible Explanations

The positive link between the effectiveness of strategic assets (ICVAE/TVAE) and ROA is also consistent with a mass of international literature (e.g., Sardo et al., 2018; Smriti & Das, 2018; Al-Musali & Ku Ismail, 2016) and provides evidence for the resource-based view (RBV) that the invisible assets would have the significant effect on the operational efficiency and competitive advantage. For Bangladesh, this finding is especially important as it expands the small body of IC studies conducted to date, which has focused on the banking sector (Khan & Ali, 2010; Majumder et al., 2023) and indicates that even in traditional manufacturing industries, IC is a vital resource.

The lack of significance of the ROE, nevertheless, suggests a disconnect between technical efficiency and market-based performance. It can be explained by the particular characteristic of the DSE that shareholder returns are usually shaped by external market moods, speculation in trading and others that go beyond the basic operational performance documented under IC like leverage and dividend policies (Afroz et al., 2018).

The most significant result is the negative moderating effect of board independence. This is inconsistent with findings in more mature markets (Goyal et al., 2019) as well as with hypothesis H2 derived from agency theory. There are a number of possible context-sensitive explanations for this fact:

1. Risk-Aversion: Independent directors in the context of Bangladesh may tend to be risk-averse. Such investments in expensive, high-risk IC (e.g., R&D, employee skills) may be discouraged in the short-term to protect financial indicators, translating into a loss of innovation and long-term value creation (Al-Musali, 2013; Edvinsson & Malone, 1997).
2. Lack of IC Expertise: Independent directors may not be experienced in techniques or knowledge to evaluate and advocate investments in IC and inferior monitoring of IC management strategies will be a consequence.
3. Form over Substance: Independent Director appointment may only be a check-the-box activity for regulatory compliance rather than a genuine value adding endeavour to improve governance quotient - which may prove to be at best futile and at worst detrimental.

The positive direct effect of IO on ROA is consistent with the monitoring hypothesis of agency theory (Shah et al., 2012; Alkurdi et al., 2021). In fact, the institutional investor in Bangladesh seems to play an effective monitoring role, mitigating agency costs, and even granting access to important resources that may contribute to positive firms' operational performance. The insignificant relationship for moderating role or effect on ROE implies that these effects are more direct than interactive or automatic and may have not been realized to shareholder returns yet in this market.

The insignificance of FD is consistent with certain mixed results reported in the governance literature (Ahmad et al., 2018). This could also mean that mere representation might not be enough, and that the involvement, skills, and empowerment of female directors are more important in this regard, which are not necessarily captured in this quantitative measure.

Finally, the resilience to the COVID-19 pandemic, to the extent of being unexpected, may be explained by government support measures and the life-saving nature of many of the manufacturing sub-sectors (e.g., pharmaceuticals, textiles), and the ability of the firms to react

flexibly to the new challenges, who may possibly have relied on their existing human and structural capital.

5.3 Theoretical Implications

This study provides a number of important theoretical contributions which contribute to the literature on intellectual capital, corporate governance, and firm performance especially in the context of an emerging economy.

First, we contribute to the empirical validation of RBV and KBV through the context we examine. The strong positive association between intellectual capital efficiency (ICVAE/TVAE) and operational performance (ROA) verifies that intangible resources are crucial strategic resources which enhance competitive advantage and value creation, even in a labour-intensive manufacturing sector like Bangladesh's (Barney, 1991; Islam et al., 2025; Weqar et al., 2021). This provides support for the principal contentions of the theories that heterogeneity in firms' resource bases, particularly in terms of intellectual capital, is a core source of performance differentials.

Second, the findings offer a more refined view of Agency Theory. The positive direct impact of institutional ownership is consistent with the monitoring proposition of the theory (Shah et al., 2012; Alkurdi et al., 2021), but the significantly negative moderating influence of board independence disputes a straightforward application of the theory. This means that in developing countries with weaker institutional infrastructures that the presumed alignment function of independent directors may be inhibited by risk aversions or a lack of IC expertise (Al-Musali, 2013; Edvinsson & Malone, 1997). This suggests that agency theory should be contextualized, since governance mechanisms take place in a broader economic and institutional setting, and their effectiveness depends on local factors.

Third, the study develops the RD theory. The nonsignificant moderating effect of female director and the opposite impact of independent directors are indicative that a heterogeneous board to attain external resources is not enough. The results indicate that the quality of the external linkages and the capacity of the board leverage them for strategic resources like IC are more essential than just the presence of diversity. This suggests that a finer application of theories of RD is necessary, taking into account the actual competences and strategic orientations of board members rather than their demographical or structural characteristics.

5.4 Policy and Managerial Implications

The results derived from this study offer a number of significant implications for the policy makers, the regulators as well as the corporate decision makers and the investors operating in the context of Bangladesh, or in any other emerging economy.

For Policymakers and Regulators (e.g., BSEC, DSE):

- **Beyond Compliance in Governance:** Current corporate governance codes emphasize the quantity (e.g., a minimum number) of independent directors. The results imply that attention should be given to the quality and expertise of board members. Regulators may wish to contemplate guidance that encourages independent board representation with experience in innovation, technology, and human capital to better understand and provide input on IC investments.
- **Promote IC Disclosure:** Encourage or require increased disclosure of IC-related activities and holdings in annual reports. This would mitigate information asymmetry, aid investors in making a more informed decision and help the market more accurately price intangible assets.

- Support for Institutional Investors: We should maintain and enhance policies that promote the development and active involvement of institutional investors, which have been a beneficial organization in terms of governance and performance.

For Corporate Managers and Board Members:

- Strategically Invest in IC: Managers must view investments in intellectual capital as a key contributor to operational excellence, sustained viability, and long-term competitiveness, not an optional spending category. This entails ongoing employee training, R&D and improving customer and supplier relations.
- Re-evaluate Board Composition: Boards need to take a hard look at the skillsets of the independent directors who serve on their boards. Seeking directors who understand and value intangible assets may help to nullify the negative moderation effect revealed in our study and shift the board to be an enabler of innovation.
- Mobilize institutional shareholders: Management should proactively communicate with institutional investors, who are partners with access to capital and governance guidance and who usually seek stable value creation.

For Investors:

- Look Beyond ROE: When selecting manufacturing companies in Bangladesh, investors are advised to specifically consider operating ratios such as ROA as well as indicators for IC efficiency that predict the intrinsic health of the firm, which has not reflected into the ROE.
- Build governance quality: Investors must not only look at the number of independent directors; they should be interested in the knowledge, profile and dynamics of the board members, how they view innovation and long-term development.

5.5 Contribution

This study provides a significant contribution to the scholarly work and practical implications in the context of intellectual capital in emerging markets.

Contextual Contribution to IC Literature: IC has not been widely studied in Bangladesh as a strategic asset, so this study deepens understanding of this developing economy by focusing on the manufacturing sector, an engine of the economy that has the potential to open up new prospects, versus the well-studied banking sector (Islam et al., 2025; Ahmad and Rus, 2021). Providing strong empirical evidence on relationship between IC and operational efficiency in this industry sector, the study expands the geographical and industrial range of IC research, and supports the argument that the importance of intangibles is not restricted to developed economies or pure service industries.

Methodological Contribution: As far as the author's awareness, this is one of the first in Bangladeshi context and among few in IC literature worldwide that uses a two-step system GMM estimator to study the IC-performance relationship. This method properly addresses endogeneity, unobserved heterogeneity and dynamic panel bias, which are frequently neglected in previous studies that employ OLS or static panel models (e.g., fixed effects). It makes the basis for the results a little bit more solid, at the same time as it raises the methodological bar in this area of research.

Theoretical Contributions to Corporate Governance: Perhaps, the key contribution of this study is to find the moderating negative role of board independence. This counter-intuitive finding undermines the common belief and the universalistic presumption that independent directors are always good for governance. It adds to literature by indicating that effectiveness of governance mechanisms for corporate risk-taking is context specific, and it provides implications on transplanting from the developed world to emerging markets without

acknowledging the risk cultures and director competences of local individuals. This raises question of influence of independent directors in emerging markets.

5.6 Limitations and Future Research Avenues

The present study, as with all research, has limitations that suggest various for further research.

- **VAIC Methodology:** The VAIC model is deeply and widely applied, though criticized for its accounting perspective toward IC and over simplification. Alternative measures of IC may be possible to use in future studies or qualitative research to further examine this relationship.
- **Context Generalizability:** The results of the study are contextually limited to the Bangladeshi manufacturing sector. Cross-section research on other emerging economies may reveal common or specific patterns.
- **Other Governance Variables:** Governance attributes other than board characteristics such as director ownership, board meeting frequency, and the audit committee role in the governance mechanism should be used as variables in future study to provide a fuller picture.
- **Longitudinal Analysis:** The long-time span data would better capture the long-term impact of IC investments and governance changes.

In conclusion, this study, in general, brings out the importance of intellectual capital in the manufacturing sector of Bangladesh. Its other contribution is a reminder to all would-be governance transplanter to be wary of adverse side effects arising from transplantation of corporate governance tools from developed economies without due attention to domestic contexts. The way to enduring competitive advantage, therefore, is beyond owning intellectual capital and is, rather in building a governance culture that knows how to grow it, does grow it, and has the courage to invest in it.

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