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Paradigm Transformers: Six Forces Business Must Address to Achieve Success in the Next Decade

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Abstract

The goal of this paper is to identify how business organizations, in general and in specific cases, address six disruptive forces that are shaping and changing Business Model Innovation (BMI) modelling. These forces, or 'Paradigm Transformers' are artificial intelligence, cryptocurrency and blockchain technology, compliance, chaos planning, governance and global warming. We outline the nature of these forces and highlight several major business organizations which have or are responding to these forces in their planning and execution of BMI. In the Introduction we provide a brief overview of the Paradigm Transformers and in the following six sections of the paper, explore these in depth and demonstrate their integration into business planning. Based on our research, these Paradigm Transformers, when incorporated with business planning sustain and create value for the organization.

Keywords: Business Model Innovation (BMI); Paradigm Transformers; Disruptive Forces.

1. INTRODUCTION

The concept of disruptive technology has existed for almost 30 years (Christensen and Bower 1995). This paper focuses on six variables, the major disruptive forces requiring unique and organization-specific response. Figure 1 below illustrates how these Paradigm Transformers are integrated with fundamental business concepts such as idea development, strategic planning, production development, and execution and sales.

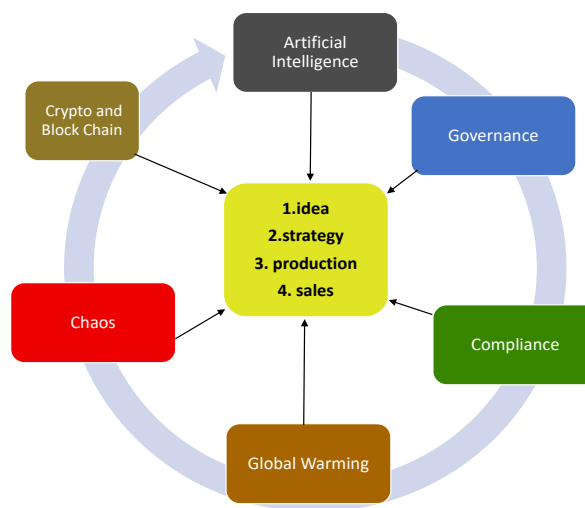


Figure 1. Paradigm Transformers

The first of these six forces is Artificial Intelligence (AI). The term was defined by J. McCarthy as “the science and engineering of making intelligent machines, especially intelligent computer programs” (Dartmouth Workshop 1955). The definition has been modified on countless occasions, but the fundamental premise remains. The second disrupting force, cryptocurrency, includes a wide range of applications and activity but is basically a digital currency secured by cryptography operating on a decentralized network rather than a central bank (Ullah, Shakir, 2025). Linked to cryptocurrency is blockchain, a digital database shared across a network of computers and encrypted to ensure security and privacy. The history of blockchain can be traced back to a seminal paper setting out how cryptography could secure digital records to prevent tampering, essentially laying the groundwork for blockchain technology by creating a system to prove a document's existence at a specific time (Haber and Stornetta, 1991). The third disruptive force addressed in this paper is the inclusion of chaos theory to risk management strategy. The application of chaos theory to business risk and uncertainty focused on the occurrence of random events that have underlying patterns that are sensitive to given situations where small changes can lead to unpredictable outcomes (Chambers, 2025). The fourth paradigm Transformer is the overwhelming importance of compliance with environmental and social guidelines and regulations. Compliance is today an essential part of any business, large or small. It is more than a token of recognition of social and environmental challenges. It is the foundation for key values in a business and provides a foundation to mitigate risk including financial penalties for noncompliance. Governance is the fifth Paradigm Transformer. The past role of boards of directors, up to the early 2000s was often passive, acting as an advisory body or ‘rubber stamp’ for top management rather than truly monitoring or challenging decisions, despite their formal duty to govern. Boards focused on conforming. There was little role in measuring performance and being involved in strategy and innovation (Aguilera and Castillo (2025). Global warming is the sixth disruptive force and impacts business organization in terms of greenhouse (GHG) gas emissions control and adapting to global warming induced severe weather. In addition, many corporations are forced to examine their fossil fuel assets which, in the world converting to renewable fuels, may become stranded (Pasula, 2023).

The goal of the research is two-fold. The first objective is to explain and describe each of the six Paradigm Transformers; how they arose and analysis of these forces from expert testimony. The second part demonstrates how several current businesses have successfully incorporated one or more Paradigm Transformers into their business planning. With a clear understanding of these disruptive forces and their application, an organization, for profit or not for profit, will be able to contemplate how to evaluate and implement and or respond to each Paradigm Transformer.

2. CONCEPTUAL FRAMEWORK

Business model innovation (BMI) is the process of changing how an organization adapts to new market forces, technological advances and societal expectations to survive and thrive in an ever-changing competitive market. Any one of the six Paradigm Transformers noted above will call into question a businesses’ current approach to short- and longer-term strategy. Given that the goal of our research is to illustrate how Paradigm Transformers can be incorporated into business planning in general and in specific cases, the conceptual framework is a narrative explaining the relationship between a Paradigm Transformer and one of more components of a business plan.

None of these six disruptive forces is confined to one component of a business model; there are ripple effects throughout and beyond the organization. How a business responds to the challenge of mitigating carbon emissions and adapting to weather-related disasters is one example of the

challenge. Understanding the nature of these forces and how established businesses are addressing the disruption can provide direction for businesses of all sizes.

3. METHODOLOGY

To understand how any one of the Paradigm Transformers may influence current business planning, a brief overview of the characteristics of the disruption, the emergence of the Paradigm Transformer and expert testimony provides the base for the empirical work. The empirical work is an analysis of how one or more Paradigm Transformers has been integrated into the planning and culture of a business. The businesses chosen for this analysis are reasonably well known and have existed, in some cases, for decades. They include banking, global engineering services, vehicle parts manufacturing, communications and technology. The approach to the integration of Paradigm Transformers into these businesses was drawn from reports published by the businesses and independent media academic sources.

4. RESULTS

4.1. Artificial Intelligence

There is considerable 'hype' about Artificial Intelligence (AI). The billions of dollars invested in developing AI models is based on extraordinary forecasts of the efficiency gains for society, but business penetrations varied from under three percent to ninety-nine percent depending on the size and classification of the business. Nevertheless, the topic dominates discussions in business, government, and personal venues around the globe. In businesses, the fundamental points centre on: What and where is the best application of AI? Should a company buy, rent or build their own AI software? What will it cost to train staff how to manage and use AI? Does AI adoption lead to massive restructuring of a company's work force? Should companies, part way through the launch of a new or revised strategic plan, re-think the foundations supporting the plan? What are the ethical and privacy issues associated with AI that must be considered if the technology is to be adopted?

Less than a decade ago, Forbes reported that 260 AI start up firms were in existence; a fourteen-fold increase since 2000. Today, there are approximately 70,000 such businesses exploring and/or serving a wide range of business and not for profit organizations (Haan, 2024). There have been a myriad publications related to the implementation of AI in business operations. From this expanding data base, an article on AI principles is noteworthy (Wade and Yokio, 2024). Based on their analysis of a broad range of businesses engaged in AI development the authors suggest that four principles should be followed to ensure a successful integration of AI with a business's current and expected operations. These are:

- *Translate*, or moving ethics statements and goals to the implementation stage,
- *Integrate*, and align key beliefs around AI with multiple departments/teams to ensure compliance and a smooth implementation of software. Be initiative-taking, and develop policies and procedures around concerns e.g. ethics, during the development stage.
- *Calibrate Solutions and Audit* the launch of AI solutions and their effectiveness in terms of meeting goals to 'iron out' any errors or problems.
- *Proliferate Solutions* to ensure transparency of practices where AI is implemented by using study groups, share best practices and encourage participation among individuals in the organization whether they are directly or only indirectly involved in the application of AI.

These broad principles can be adopted by business for procedures and processes such as human resource management, accounting and finance, supply chain networks, product quality control, and marketing. One interesting application of AI occurred recently in Linamar Corporation. Across three machines, Linamar operators were responsible for loading unmachined transmission discs on to the machines' feeder system. Due to labor shortages, Linamar wanted to automate this process. They chose a combination of ABB Robotics industrial robots and Apera AI's Vue robotic vision software. After success with the first cell, the same solution was applied to the remaining two cells (Apera, 2024).

The number of AI software packages for businesses grows day- by -day as illustrated in the table in Appendix 1.

With the entry of new and revised AI software packages, there is a corresponding increase in studies designed to measure the effectiveness of AI in specific applications. Hundreds of AI producers extol the virtues of their product. However, the accuracy, reliability, and security come with independent analysis. A good starting point is a recent publication examining the characteristics of AI software (Jorzik, 2024). The paper reviews 180 articles on the topic of AI and Business Model Innovation (BMI) structured to shed light on evolving research and a framework addressing specific managerial focuses. Among the conclusions drawn from this review, the authors note that AI applications for BMI require a new type of leadership in AI driven companies. Failure of BMI can be explained by “. cultural deficits and a weak mindset toward new machine-human interact on” (Jorzik, p 10). To ensure success with AI there must be an unclouded vision of how AI will align with strategy and at the same time consider an approach whereby AI is introduced in incremental steps. To be successful, the introduction of AI in BMI planning requires thinking about the social value of the technology and its implications for ethical standards.

4.2. Cryptocurrency and Block Chain

4.2.1. Cryptocurrency

The idea of digital currency goes back forty years, but crypto currency entered mainstream financial and investment discussions in 2008. Cryptocurrencies have no legislated or intrinsic value; they are simply worth what people are willing to pay for them in the market. The use of Bitcoin, the dominant crypto, stands for 0.64 percent of the world's money supply (Reiff, 2025).

The introduction of specific crypto currencies fifteen years ago generated questions related to the role of the currency in asset portfolio selection, as a substitute for fiat currencies, whether and how should crypto currencies be regulated, the correlation between crypto currency values and prices of various financial assets and environmental concerns regarding the enormous energy drain of coin mining. Since 2009, hundreds of research papers on the topic have been published (Urquhart and Yarovaya, 2023).

The reputation of digital currencies has been placed under a microscope by the collapse of large digital currency funds. Sam Bankman-Fried founded FTX, a crypto currency exchange in 2019 and by 2022 the company had a market value of \$ 18 billion. In 2022 the United States Securities and Exchange Commission (SEC) charged the company with fraud and related crimes. Bankman-Fried was convicted by a United States court in November 2023 and in 2024 sentenced to 25 years in prison. He had to give up \$ 11 billion of FTX wealth (Bekiempis, 2024). In 2023 alone there were ten major

cryptocurrency failures including Terra Luna (where investors lost \$ 60 billion) and stablecoin fund, USDT, which lost 99 percent of its value (Q.ai, 2022).

Crypto currencies and their relationship to money laundering have come under the watchful eye of financial authorities around the globe. It has become such a crucial issue confronting a wide range of businesses and their boards of directors that the Basel Institute on Governance published a guide on the subject (Guy, 2025). While businesses in general work diligently to ensure compliance with laws and regulations, reporting and random tests will add to business costs going forward.

The introductory comments in a paper by the Financial Consumer Agency of Canada (Canada, 2025) states, “. crypto assets are very risky”. Established regulated financial institutions have approached crypto currency with wariness. The Royal Bank of Canada’s (RBC) move toward cryptocurrencies is cautious but strategic, balancing innovation with the risks of volatility and regulatory uncertainty (Investor Team, 2025). The bank focused on researching Central Bank Digital Currencies (CBDCs), state-backed digital currencies that provide greater stability than decentralized cryptocurrencies. CBDCs also promise to streamline payment systems and improve financial inclusion. This proactive research aligns with the managerial economics principle of preparing for future market shifts and ensuring resource allocation aligns with evolving client needs.

Despite this forward-looking strategy, RBC’s implementation of cryptocurrency services remains limited. The bank employs a ‘hands-off’ approach, relying on third-party vendors to facilitate cryptocurrency transactions. This allows RBC to enter the digital assets market while minimizing direct exposure to the risks associated with handling volatile assets. While this strategy is prudent, it limits RBC’s ability to capitalize fully on the growing demand for crypto-related financial products, such as tokenized assets or blockchain-based investment vehicles.

4.2.2. Blockchain

Blockchain is a ledger, digitally distributed among agents involved in one or more transactions. The structure of blockchain and how information is exchanged among participants makes the system difficult to alter, be hacked or manipulated by criminals. Originally constructed to ease transactions in crypto currencies, blockchain programs are now widely employed in a range of businesses and other organization around the globe (Systems Analysis Program Development, 2024). Block chain is in part, a substitute for databases and spreadsheets but the methods of data structuring and how data is accessed/transmitted sets it apart from its earlier cousins. A wide range of businesses such as insurance, real estate and vehicle manufacturing apply this technology. Companies that develop blockchains are experimenting with the software to decide its value to the organization’s goals. For example, International Business Machines (IBM) has created a Food Trust blockchain to trace the journey that food products take to get to their locations. Where does the value lie in such development? The food industry has seen countless outbreaks of E. coli, salmonella, and listeria when hazardous materials were transferred to foods in the manufacturing process. Formerly, it has taken weeks to find the source of these outbreaks or the cause of sickness from what people were eating. Using blockchain allows brands to track a food product’s route from its origin, through each stop it makes to delivery. In addition, these companies can also now see everything else it may have met, allowing the identification of the problem to occur far sooner and therefore potentially saving lives. This is one example of blockchain in practice, but as the authors of one study point out, other forms of blockchain implementation are being examined to appraise the positive features and attraction of the technology (Gaur and Gaiha, 2020). The authors explain the shortcomings of

conventional management systems, highlight how and when errors are likely to occur. This provides a framework to examine the same system in the context of blockchain technology.

Blockchain has found a market by enhancing customer loyalty programs. The Royal Bank of Canada (RBC) implemented the technology to allow real-time updates for customers (Data Insights, 2024). With this system, customers can track and redeem their points seamlessly, making the experience more efficient and user-friendly. For example, by using blockchain's transparent and secure structure, RBC has reduced errors in tracking points while also removing delays that often frustrate customers. Blockchain technology is not costless. It requires significant energy demands, scalability challenges, and complex integration with existing systems. Adopting more energy-efficient blockchain models, enhancing scalability, and simplifying integration processes are key to overcoming these disadvantages.

4.3. Chaos

The strategies and goals for any organization, profit or not-for-profit, should highlight the practice of Enterprise Risk Management (ERM). ERM is a strategic business discipline that supports the achievement of an organization's aims by addressing the full spectrum of risks and managing the combined impact of those risks as an interrelated risk portfolio. Increasingly, the principles of chaos theory are incorporated as part of ERM planning. A crucial difference between risk and chaos is that risk is the probability of a defined event happening, while chaos is a complex, unpredictable, and orderly disorder. Risk analysis is often presented in the context of protocols like a Risk Prioritization Matrix where expected outcomes result in plans to mitigate damages, insure against damages, and alter, if practical, probabilities associated with expected events.

The approach to chaos as part of a business's risk management is vague and fuzzy but ignoring the existence of chaotic events, no matter how remote, can be short sighted. In contrast to traditional risk analysis, one of the founders of chaos theory suggested chaos is a situation when the present determines the future, but the approximate present does not approximately determine the future (Danforth, 2013). While chaos precludes the application of Bernoulli principles of uncertainty, there are patterns associated with chaos that can be part of risk planning to reduce the costs of a chaotic event affecting business.

- One of these signals is to focus on the initial conditions driving any business plan since chaos may emanate from a disturbance in these conditions (Englund, 2009). Chaos theory addresses systems that are dynamic and thus changing over time.
- Second, most chaos events are not periodic and unstable. Such events require a planning and response that is highly flexible.
- Third, despite its complexity a chaotic event may have a simple cause. Identify potential causes is a key characteristic of chaos planning.

Analysis of chaos theory suggests project managers and executives must learn to operate within 'bounded instability' and identify up-front practices that set the stage for project teams, whether co-located or virtual, to be more creative and productive when it comes to reflecting on chaos. Leaders and planning staff should accept the possibility of chaotic events and prepare for such an episode by ensuring that staff are apprised on a regular basis on the progress toward express goals of the organization and any deviations from initial plans.

The Covid pandemic was a classic example of a chaotic event. While the onset sent shockwaves through the business world, some companies in specific sectors were better prepared than others, due to the nature of their business and early adoption of flexible work models. Examples of companies that showed a degree of preparedness or adaptability at the onset of the pandemic include Microsoft, which had plans in place to transition smoothly to remote work. Grocery chains like Kroger and large retailers such as Walmart already had robust operational plans and supply chain coordination that could be adapted to manage increased demand and implement new safety protocols (e.g., social distancing, cleaning). \ Panasonic was an early adopter of cloud computing and developed a comprehensive work-from-home policy and collaboration software years before the pandemic, which eased a smooth transition (Strawer, 2023). Royal Bank of Canada (RBC) was able to revisit a pandemic plan established prior to 2020 that provided immediate guidance for employees, customers, and suppliers on how to respond to the chaos that ensued. (McLaughlin 2020).

In another case, Stantec Corporation set up a pandemic response protocol in 2011 to guide decision-making in the event of an outbreak. “In the case of a pandemic, a Pandemic Committee is formed consisting of qualified Stantec personnel who have the background and expertise to advise on issues surrounding pandemic preparedness and business continuity planning. During an outbreak, the committee oversees the implementation of the pandemic plan and offers advice where needed” (Stantec, 2020). Having a plan ‘on the shelf’ was instrumental in Stantec’s success in supporting operations during the COVID-19 pandemic.

4.4. Compliance: Social And Environmental

One of the earlier pioneers of the concept of Corporate Social Responsibility (CSR) was Howard Bowen who argued that business decisions should be made considering the broader objectives and values of society (Bowen, 1953). The idea was challenged by Chicago economist Milton Friedman who argued: “There is one and only one social responsibility of business; to use its resources and engage in activities designed to increase profit so long as it stays in the rules of the game, which is to say, engages in open and free competition without deception or fraud” (Friedman 1970). Six years later the first business ethics conference was held in the United States at the University of Kansas (University of Kansas 1976).

The nineteen eighties marked an increase in appeals by society for business to be more responsible to needs of the wider community such as the regulation of questionable labor practices by several businesses (Ontario 1980). In 1991 the phrase “Institutional Logic” was coined to pressure businesses to work within a framework of ethics, good governance and concern for the environment (Friedland and Alford, 1991), leading to the replacement of CSR with the phrase, Environment, Social and Governance (ESG).

The principles of ESG are imbedded in the legal requirement for corporate reporting and vary by jurisdiction and type of business. While past ESG disclosures were historically voluntary, new laws and directives are making them mandatory, with potential penalties for non-compliance. The European Union legislated legally binding ESG regulations established the Corporate Sustainable Reporting Directive (CSRD) and the EU

Taxonomy for Sustainable Activities among other directives (Commission Staff 2021). In the United States, the Securities Exchange Commission adopted rules that obliged businesses to report climate risks. The State of California has legislated detailed and strict emissions reporting. A unique piece of legislation in Canada, the *Fighting Against Forced Labour and Child Labour in Supply Chains Act* requires

companies to report annually on how they are preventing forced and child labor in their supply chains (Canada 2024).

In addition to legal directives and regulations, there are international associations which rank organizations according to social and environmental criteria. Independent firms offer corporate ratings and certifications for compliance programs. Compliance is costly, as a recent study highlighted. (Gergely, 2025). The major focus in this study is corporate environmental policies, both voluntary and practices mandated by government. The average of compliance in the United States is \$ 12,800 per employee (Metricstream 2025).

4.5. Governance

Governance has been a significant concern and major challenge for boards of directors, boards of governance and boards of trustees in the past decade and will become more complex in the future. Boards are faced with responding to the following agenda.

- Corporate oversight related to new regulation governing AI technology as well as building the ethical framework for Artificial Intelligence in BMI.
- There is growing uncertainty in the world related to geopolitics, wars and emergence of new economic 'blocks.'
- Investors are exerting more pressure on companies to adopt governance practices that go beyond legal requirements.
- Corporations are spending more time and money on the composition of boards of directors, looking to build and support boards with a variety of perspectives, including cultural and social diversity, and generational balancing.
- The rapid emergence of government regulations and mandatory reporting on ESG issues (related to global warming and social responsibility) will require boards to be more active in the establishment of compliance protocols.
- The proliferation of armed conflicts, unexpected and incredibly damaging weather events related to global warming, destabilizing supply chains and the unknown complexity of non-traditional financial flows require boards to become more directly involved in the development of enterprise risk management policy.

How boards will develop protocols to respond to these challenges will differ among businesses. What follows are the approaches by three global corporations.

- *Verizon Corporation* As part of its Corporate Governance Guidelines, the company includes a Corporate Governance and Policy Committee which among other duties, oversees ESG issues, including ESG commitments, reporting and engagement, corporate responsibility, and sustainability (Verizon, 2025). The Committee also watches over the company's position and engagement on important public policy issues, including those relating to political contributions, lobbying activities, and human rights, which may affect our business and reputation. The activities of Verizon's community and social impact initiatives, including philanthropic activities is a responsibility of the Committee.
- *Linamar Corporation*: The Board of Directors, along with the Human Resources and Corporate Governance (HRGC) Committee, is responsible for aligning corporate governance with the ESG principles (Linamar, 2019). This includes the regular reviewing of key policies such as the Employee Code of Conduct, Ethical Business Conduct Policy, and Whistleblower Policy annually.

This approach ensures there is compliance with ethical behaviour, creating stakeholder trust throughout the organisation. The Senior Executive Group (SEG) plays a pivotal role by integrating governance into strategic decisions. This executive team ensures that policies are not just guidelines, but actionable frameworks tied to the metrics of specific goals, such as sustainability benchmarks linked to leadership compensation. Linamar's Global Operations System (GOS) further reinforces governance by having a standard for all policy creation, updates, and application. Governance also extends to stakeholder engagement. By consulting with regulators, investors, and community partners, Linamar proactively addresses risks and aligns its aims with external expectations. This approach, by collaborating with external groups, shows that effective governance is not confined to internal policies but also involves meaningful engagement with the broader ecosystem across all industries. Significant environmental and process safety issues are also reviewed by the Board's Human Resources and Corporate Governance Committee (HRCG) on a quarterly basis to ensure compliance with the Company's rigorous policies. The HRCG Committee assists the Board to identify, evaluate and monitor public policy trends and environmental issues that could affect the Company's business activities and performance. It also reviews and makes recommendations for Linamar's strategies related to corporate responsibility and reputation management.

- *Chase Manhattan Bank*: Within its governance framework, the Bank has set up a Public Responsibility Committee charged with "oversight and review of the Firm's positions and practices on public responsibility (Public Responsibility Committee, 2025). The policy includes matters such as community investment, fair lending, sustainability, consumer practices, and other public policy issues that reflect the Firm's values and character and impact the Firm's reputation among its stakeholders provide guidance on these matters to management and the Board as appropriate. Within the terms of the Committee, two of the seventeen major duties involve a review of the Firm's policies and practices related to environmental and social matters as well as shareholder proposals involving issues of public interest and public respect.

4.6. Global Warming

Across the globe, addressing the challenges of global warming and the related compliance with environmental, social and governance goals, occupy a significant share of the agenda in most organizations. The regulatory focus is clearly on carbon emissions and what businesses emit; not what they claim they emit. In Europe, the bar for reporting emission accurately has been raised with the appearance of new ESG reporting requirements in 2023 particularly with the passing of the Sustainable Finance Disclosure Regulation in 2021 (European Commission, 2011). In Canada, new regulations in 2024 ushered in fundamental reforms addressing the way companies are held accountable for carbon emissions (Canada, 2025). These will be supported by expected changes to the Canada Business Corporations Act which will require mandatory, climate related financial disclosure for private companies. Recently, in the United States, the Securities and Exchange Commission issued its final climate rules, entitled *The Enhancement and Standardization of Climate-Related Disclosures for Investors*, requiring certain public companies to make disclosures about their climate-related risks and greenhouse gas emissions (Securities and Exchange Commission 2024). While not a leader in ESG reporting standards, Australia's framework for sustainability reporting is now in place after the climate-related financial disclosures legislation received Royal Assent in September 2024 (Australian Treasury, 2024). Mandatory reporting of climate-related disclosures began in the fiscal year on or after January 1, 2025.

While ESG compliance affects the bottom line of business the cost is low compared to the direct expense associated with the damage from global warming induced catastrophic damages as illustrated in Figure 2. From billions it has reached over a trillion dollars U.S. dollars.

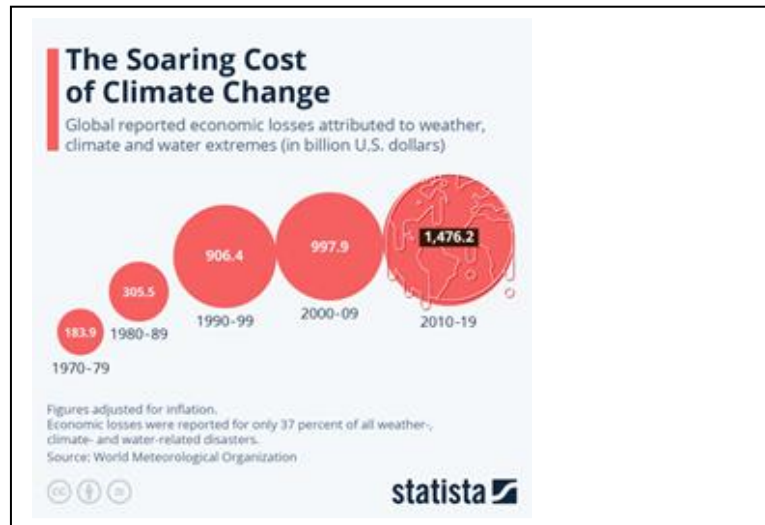


Figure 2. Cost of Climate Change Damage, 1970-79 to 2010-19

Whether these damages occurred in residential, commercial, industrial, or rural property, one way or another, they are businesses costs. In addition to the expense of insurance premiums, businesses have developed climate change adapting processes which add to both capital and operating costs. On the climate change mitigation side of the ledger, carbon taxes, and retooling business models to meet emission target add to these costs.

Most business organizations include the topic of Climate Change in short- and long-term planning but few provide longitudinal data on annual costs to adapt to or mitigate damages associated with global warming. Goals are becoming more focussed as emerging mandatory regulation for business to follow sustainable standards proliferate.

For example, Stantec Corporation, whose business focuses on helping clients develop low carbon emission, water and land stewardship goals, has established a robust climate change program for the company. Internally, Stantec's Sustainability Reports note the company has achieved operational carbon neutrality for the second year in a row (Stantec, 2024). This has been accomplished by consuming renewable energy equivalent to 96% of their operational energy usage and balancing residual emissions by purchasing high-value carbon offset projects like the Great Bear Temperate Rainforest. Real estate carbon emissions have declined 39% relative to 2019 by selecting energy-efficient buildings. Furthermore, Stantec purchased around 90,000 gallons of sustainable aviation fuel for business travel, helping reduce emissions (Stantec, 2022).

Google Corporation's approach to global warming focuses on both adaptation and carbon emission mitigation. Internally, the company, like many business organizations, has a net zero carbon goal. In the shorter term, the primary approach to reducing Scope 2 emissions is to convert to carbon-free energy. In 2020, the goal was to run on 24/7 carbon-free energy every hour of every day on every

grid by 2030 (Environmental Report, 2025). The Company has achieved its goal by buying carbon-free energy, accelerating new and improved technologies, and transforming the energy system through policy, partnerships, and advocacy. Because of the pressure from governments and investors to avoid 'greenwashing' Google tracks its progress toward the goal on an annual basis.

5. DISCUSSION AND CONCLUSION

The appearance and strengthening presence of the Paradigm Transformers discussed in this paper do not affect firms or industries equally. Decision makers will find it necessary to change their BMI to accommodate the current and expected disturbances caused by these forces. Not all six forces are new. Artificial Intelligence has passed the childhood stage and is now well proven in the adolescent juncture of existence. Including cryptocurrency and the application of chaos theory to traditional Enterprise Risk Management practices will unfold in diverse ways depending on the needs of individual businesses. Global warming and its attending weather related catastrophes will demand a strong commitment to adapting to climate change and assigning funds for carbon mitigation. Finally, the costs associated with ESG compliance have risen in the past decade and are likely to put further pressure on BMI to set up formal procedures to avoid reputational risk and financial penalties which noncompliance engenders.

REFERENCES

- Aguilera, R. & Maria R. C. (2025). Toward an updated corporate governance framework: Fundamentals, disruptions and future research, *Business Research Quarterly*, 29(2) 336-348.
- Apera. (2024). *Linamar automates random bin picking with Apera AI x ABB Robotics*, Apera AI Newsletter, Waterford, Ontario
- Australia, Treasury (2024). *Financial Market Infrastructure and Other Measures Laws Amendment*, Government of Australia, Canberra.
- Basel Institute on Governance [http:// baselgovernance.org/crypto-aml-training](http://baselgovernance.org/crypto-aml-training) [Date of access: 3.12.2026].
- Bekiempis, V. (2024). The rise and fall of Sam Bankman-Fried: an unrepentant ex-mogul faces down decades in prison, *The Guardian*, Sat 23 March.
- Bowen, H. (1953). *Social Responsibilities of the Businessman*, University of Iowa Press, Iowa City, United States.
- Bryan, V., Shivani S., & Johnston, C. (2024). *Analysis on artificial intelligence use by businesses in Canada*, Statistics. Canada, Second Quarter.
- Canada, Office of the Auditor General. (2025). *Implementing the Canadian Net-Zero Emissions Accountability Act*, Report of the Commissioner of the Environment and Sustainable Development, Ottawa, Canada.
- Canada. (2024). *Fighting Against Forced Labour and Child Labour in Supply Chains Act (Bill S-211)*, Department of Justice, Government of Canada.
- Commission Staff Working Document. (2021). *Strategy for Financing the Transition to a Sustainable Economy*, European Commission, Strasbourg, Germany.

- Chambers, R. (2025). Risk-Induced Chaos in 2025 Demands A New Approach, *Forbes Business Council*, Forbes, July.
- Christensen, C. M. & Bower, J. (1995). Disruptive Technologies; Catching the Wave, *Harvard Business Review*, January-February.
- Danforth, C. M. (2013). Chaos in an Atmosphere Hanging on a Wall, *Mathematics of Planet Earth*, Rutgers University, New Brunswick, New Jersey.
- Data Insights. (2024). RBC in blockchain: Theme Innovation Strategy, *Retail Banker International*, May 17.
- Englund, R. L. (2009). Applying chaos theory in a project-based organization, *Management Institute PMI Global Congress*, EMEA, Amsterdam, North Holland
- Environmental Report. (2025). *An overview of our sustainability strategy, ambitions, and progress*, Google Corporation, Mountain View, California, USA.
- Financial Consumer Agency of Canada. (2024). <https://www.canada.ca/en/financial-consumer-agency/services/payment/digital-currency.html> [Date of access: 3.12.2026].
- Friedman, M. (1970). The Social Responsibility of Business Is to Increase Its Profits, *The New York Times Magazine*, September 13, 1970.
- Friedland, R. & Alford, R. R. (1991). Bringing Society Back in: Symbols, Practices, and Institutional Contradictions, *The New Institutionalism in Organizational Analysis*, edited by Walter W. Powell and Paul J. DiMaggio. (pp. 232-266). University of Chicago Press.
- Gaur, V. & Gaiha, A. (2020). Building a Transparent Supply Chain, *Harvard Business Review, The Magazine*, May-June.
- Gergely, S. (2025). *The Cost of ESG In Procurement and How to Control It*. Veridion, Bucharest, Romania
- Guy, M. (2025). *Crypto: The ultimate enabler of corruption?*. The Basel Institute of Governance, Switzerland.
- Haan, K. (2024). 22 Top AI Statistics and Trends in 2025, *Forbes*, October 16. <https://www.forbes.com/advisor/business/ai-statistics>
- Haber, S. & Stornetta, W.S. (1991). How to Time-Stamp a Digital Document, *Journal of Cryptology*, 3(2), 99-111
- Investor Team. (2025). *Crypto Curious? What You Need to Know About Crypto ETF*, Royal Bank of Canada, Toronto.
- Jorzik, P., Klein, S.P., Kanbach, D.K. & Kraus, S. (2024). AI-driven business model innovation: A systematic review and research agenda, *Journal of business Research*, 182 (18) 1-17.
- Karjian, R. & Sheldon, R. (2024). <https://www.techtarget.com/whatis/feature/A-timeline-and-history-of-blockchain-technology> [Date of access: 3.12.2026].
- Linamar. (2019). *Linamar Corporation Code of Governance Practices*, [Linamar.com/wp-content/uploads/2021/09/Code-of-Governance-Practices-Formatted.pdf](https://www.linamar.com/wp-content/uploads/2021/09/Code-of-Governance-Practices-Formatted.pdf) [Date of access: 3.12.2026].

- McLaughlin, N. (2020). *COVID-19: How RBC is helping our clients*, Royal Bank of Canada.
- Metricstream. (2025). *Understanding Compliance Cost: What It is and How to Turn It into Opportunity*, <https://www.metricstream.com/learn/compliance-cost>. HTML [Date of access: 3.12.2026].
- Ontario. (1980). *Employment Standards Amendment Act, 1981* (S.O. 1981, c. 22), Government of Ontario.
- Pasula, S. K. (2023). From a business risk to full scale crisis; the understanding of 'climate threat' in The World Economic Forum's Global Risks Reports, *Globalizations*, 21(2) 1197-1214.
- Public Responsibility Committee. (2025). J.P. Morgan Chase Manhattan Bank, New York.
- Q.ai. (2022). Powering a personal Wealth Movement, *Forbes*, September.
- Systems Analysis Program Development. (2024). What is Blockchain Technology? <https://www.sap.com/canada/products/artificial-intelligence/what-is-blockchain.html> [Date of access: 3.12.2026].
- Securities and Exchange Commission, (2024). *The Enhancement and Standardization of Climate-Related Disclosures for Investors*, Federal Register, United States Government, Washington.
- Stantec. (2022). <https://www.stantec.com/en/about/sustainability/2022-sustainability-report> [Date of access: 3.12.2026].
- Strawer, B. (2023). How 3 companies have managed the covid 19 pandemic, *BryghtPath*, Minnesota, United States.
- Stantec. (2024). *Sustainability Reports*, Stantec Corporation, Edmonton, Alberta, Canada.
- Stantec. (2020). Stantec Pandemic Leadership and Response Plan. <https://www.stantec.com/content/dam/stantec/files/PDFAssets/2020/business-continuity-client-resource-3-19-20-en.pdf> [Date of access: 3.12.2026].
- Urquhart, A. & Yarovaya, L. (2023). Crypto Currency Research: Future Directions, *The European Journal of Finance*, 30(12), 1849-1854.
- University of Kansas. (1976). *Partners in Business Ethics Conference*, University of Kansas, Lawrence, Kansas, U.S.
- Ullah, S. (2025). Intention to Use Cryptocurrencies for Business Transactions: The Case of North Carolina, *Journal of Risk Financial Management*, (18)58 1-21.
- Verizon. (2025). *Corporate Governance*, Verizon Way, Basking Ridge, New Jersey. <https://www.verizon.com/about/investors/corporate-governance> [Date of access: 3.12.2026].
- Wade, M. & Yokoi, T. (2024). How to Implement AI Responsibly, *Harvard Business Review*, May 10.

Appendix 1

Use of artificial intelligence (AI) by selected industries in producing goods or delivering services over the last 12 months, second quarter of 2024

Type of AI application used	All industries	Information and cultural industries	Professional, scientific and technical services	Finance and insurance
	percent of businesses			
AI used in producing goods or delivering services	6.1	20.9	13.7	10.9
Natural language processing	28.9	41.3	24.2	30.5
Text analytics using AI	27.0	27.1	37.7	23.7
Virtual agents or chatbots	26.5	26.8	25.4	66.8
Data analytics using AI	25.0	18.4	27.0	34.2
Large language models	21.9	35.2	32.2	28.3
Image or pattern recognition	21.8	15.7	47.1	5.2
Machine learning	20.1	17.3	39.0	12.9
Speech or voice recognition using AI	18.1	28.6	12.5	30.8
Marketing automation using AI	15.2	28.0	16.0	5.9
Recommendation systems using AI	12.3	8.8	17.5	18.2
Decision making systems based on AI	6.1	10.2	1.1	20.9
Machine or computer vision	4.7	7.5	4.7	4.2
Neural networks	4.4	14.9	6.0	2.0
Augmented reality	2.6	2.7	2.5	2.1
Robotics process automation	2.6	2.4	0.9	3.6
Deep learning	1.9	4.9	1.9	2.0
Biometrics	1.0	2.4	0.0	2.5
Other	6.7	18.3	4.3	0.8

Notes: The results in this table are based on the survey that was in collection from April 2 to May 6, 2024, and respondents were asked what the business or organization experienced in the last 12-month period. As a result, those 12 months could range from April 2, 2023, to May 6, 2024, depending on when the business responded.

Source: Statistics Canada. (2024). *Canadian Survey on Business Conditions*, Second Quarter. (Table 33-10-0825-01).

Board Attributes and Firm Profitability: Moderating Role of Board Diversity

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Abstract

The study investigates the association between board attributes and firm profitability. To illustrate the links, the case of listed nonfinancial companies on the Dhaka Stock Exchange is examined between 2018 and 2022. To effectively manage the concern of endogeneity, the generalised method of moments (GMM) is used as the econometric technique in this research. The study reveals that, among the attributes of the board, board size and gender diversity have positive and significant effects on profitability; however, the effect of directors' independence on profitability is not significant. Further, the study finds that gender diversity enhances the relationship between board size and profitability, with a compounding effect. The outcome of this study suggests that although gender diversity enhances the power of board size, it has yet to demonstrate effectiveness in the power of board independence.

Keywords: Board Attributes, Gender Diversity, Firm Performance, Generalised Method of Moments

1. INTRODUCTION

When it comes to tackling corporate governance (CG) issues, boards play a crucial role (Fauver et al., 2017). According to Singh et al. (2018), the roles and duties of a board come from two main theories: agency theory and resource dependency theory. The resource dependency theory suggests that board members can offer valuable support and guidance (Pfeffer & Salancik, 1978), helping companies gain a competitive edge (Barney & Clark, 2007). Meanwhile, agency theory sees the board as a watchdog to keep management's actions in check, especially those that might harm shareholders' interests. This approach can help reduce agency problems (Fama & Jensen, 1983) and boost company performance (Jiang et al., 2024).

The board's strategic capabilities are greatly influenced by the often-overlooked diversity of its members (Harjoto et al., 2019). Today, the topic of board member diversity is getting a lot of attention because it's seen as a key part of effective corporate governance (Khan et al., 2024; Ali et al., 2021). Papangkorn et al. (2021) argue that having a diverse board allows for a more thorough review of management activities, which helps reduce potential conflicts of interest between management and ownership, as highlighted by Adams and Ferreira (2009). Additionally, resource provisioning theory suggests that diverse boards are important for protecting valuable company resources by building connections with the outside world (Assenga, 2021; Estélyi and Nisar, 2016; Pfeffer, 1972).

However, Pandey et al. (2023) point out that a company's financial performance isn't just affected by board gender diversity; it's also influenced by a mix of other board and company traits. There's

not much research looking at how diversity and board characteristics together affect company outcomes, even though many studies have explored the link between board traits and performance (Singh et al., 2018). Researchers generally agree that empirical work isn't valued as much anymore, leading to the neglect of important factors, as noted by Carpenter et al. (2004). This study investigates the impact of boardroom diversity and related CG variables on company profitability, filling the research gap mentioned earlier.

Board diversity, including aspects like gender, ethnicity, age, and professional experience, is believed to enhance organizational performance in various ways. The resource dependence hypothesis (Khatib et al., 2020) suggests that diverse boards can access a broader range of resources, perspectives, and networks, improve decision-making and optimize organizational performance. The upper echelons hypothesis (Noja et al., 2021) asserts that the demographic traits of board members might affect their cognitive biases and decision-making, hence impacting organizational effectiveness.

According to Islam et al. (2023), the composition of Bangladeshi boards is heavily skewed towards males and domestic directors; consequently, corporations in Bangladesh exhibit a limited inclination towards the appointment of directors from varied backgrounds. The corporate sector of Bangladesh has seen the enactment of three CG codes, regrettably, none of the CG regulations in Bangladesh has imposed conditions regarding board diversity in the boardroom. Therefore, this study aims to propose policy suggestions to design governance and operational norms that can effectively widen the path to include directors from assorted backgrounds, thereby safeguarding the interests of minority shareholders.

Based on the research gap on Bangladesh, the key purpose of this study is to analysis of one of the notable temporal and contextual factors, board diversity, influencing the performance of firms in a developing nation, Bangladesh. This study is believed to be the maiden empirical research that fills the void of moderation research in the vein of corporate governance. The project has the following two research objectives.

Firstly, the study will analyse the impact of board attributes on firm profitability.

Secondly, unlike the other governance studies, it will further examine the moderation effect of diversity and board characteristics on the performance of firms.

This study utilizes a quantitative research approach to examine the potential moderating effect of board diversity on the relationship between board attributes and firm profitability in Bangladesh, employing a comprehensive dataset and rigorous analytical methods to yield empirical insights relevant to both academic and practitioner perspectives in this significant field of study. The outcomes of the investigation comprise theoretical, methodological, and empirical developments. *First*, the study's findings will contribute to the current understanding of agential and resource dependence perspectives by examining the relationship between the moderating influence of diversity and corporate governance domains on firm performance. *Second*, to adequately mitigate endogeneity concerns, the study will employ the Generalised Method of Moments (GMM). GMM is a robust statistical technique that efficiently handles issues related to dynamic endogeneity, omitted variable bias, and simultaneity. *Third*, this study will contribute to the existing body of knowledge on moderation-mediation research within the specific setting of a developing nation such as Bangladesh, particularly about the dynamic nature of corporate governance legislation.

The remaining part of this report is organized as follows. Chapter 2 outlines the literature review on the study, followed by the hypothesis development. Data, method, and methodology are

discussed in Chapter 3. Chapter 4 presents data analysis and discussion. Recommendations and concluding remarks are presented in Chapter 5.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Many stakeholders, including investors looking for high returns, creditors worried about timely loan repayments, and policymakers hoping to promote a healthy economy, place a high value on a company's success and financial health (Rahman et al., 2016). In Bangladesh, comprehending the principal factors of business profitability is essential, given the nation's ongoing rapid economic growth and expanding corporate sector.

According to Chhillar and Lellapalli (2015), different countries' unique institutional frameworks and business characteristics provide a unique link dimension across companies. This problem is known as a "principal-principal" issue among researchers (Dharwadkar et al., 2000). The existence of concentrated ownership and the inadequacy of formal institutional settings as external tools for governance in safeguarding minority shareholders are the two conditions that scholars (e.g., Sauerwald and Peng, 2013; Young et al., 2008) argue must be met for principal-principal disagreement to occur. As a result of the prevailing institutional arrangements in these industrialized nations, the classic Anglo-American model of CG— mostly used by the United Kingdom and the United States—is at odds with that of emerging nations. Separation of ownership and management is a hallmark of the Anglo-American nations' dispersed ownership structure (Aguilera and Jackson, 2003). In addition, investors have faith in the capital market because of its strong efficiency and large liquidity (Porta et al., 1998). Furthermore, minority owners are exceptionally well-protected by the market (Porta et al., 1998).

A significant amount of research has investigated the correlation between many elements of corporate governance, such as board attributes, and business financial performance (Rahman et al., 2016; Hossain et al., 2021). While some research has reported positive associations between board independence and size with bank performance, others have found negative impacts of gender diversity (AbeySirigunawardana, 2018; AlQanea & Hamdan, 2017). This study is to examine the relationship between board characteristics and profitability in Bangladeshi listed businesses (Noja et al., 2021). The study utilizes a dataset that includes a sample of Bangladeshi listed companies. It reveals the relationships between board characteristics such as board size, independence, diversity, and their influence on firm profitability.

2.1 Board Size and Profitability

According to Zahra and Pearce (1990), a successful CG structure is possible provided that the board members fully carry out their obligations. On the other hand, there are research that suggest that larger boards in firms might lead to issues in several ways. For instance, according to Lipton and Lorsch (1992), group interaction may suffer if members have trouble communicating with one another (Evans and Dion, 2012). In the long run, it aids businesses in developing strategies that boosts their performance (Arosa et al., 2010). Board size is mostly dictated by a country's cultural domain, according to Zabri et al. (2016), who present the competing logics of smaller and bigger boards.

There is a lack of consistency in the empirical results about the relationship between board size and company success. Evidence of no correlation between board size and performance has been found by several researchers (e.g., Coles et al., 2008; Dalton and Dalton, 2011). Yermack (1996), Paniagua et al. (2018), Bhagat and Black (2001), and Hermalin and Weisbach (1998) all found that bigger boards were associated with worse company performance. On the other hand, researchers

have found that bigger boards have a beneficial effect on company performance (Singh and Harianto, 1989; Coles et al., 2008; Dalton et al., 1999). Previous research on Bangladesh by Rashid et al. (2010) found a favorable correlation between board size and business performance according to Tobin's Q, but a negative correlation with return on assets (ROA). With the use of the instrumental variable (IV) technique, fixed effect estimation, and ordinary least squares (OLS), Muttakin et al. (2012) found a favorable and statistically significant association in their study regarding operational and financial performance. Taking into account the literatures, the first theory is:

H1: There is a positive relationship between board size and firm performance.

2.2 Board Independence and Profitability

Two CG research schools, agency and stewardship theory, disagree on whether board independence as a percentage affects business performance. According to stewardship theory (Davis et al., 1997; Donaldson and Davis, 1991), managers (agents) are self-motivated and should behave in the best interests of principals (shareholders). Davis et al. (1997) also suggest that top management and inside directors will help one other since they share a goal. Outside directors don't know as much about a company's operations as internal directors, who spend many hours on company business (Donaldson and Davis, 1991). According to this approach, IDs use insider knowledge to monitor management operations (Armstrong et al., 2012) because they know less about the organization.

In contrast to stewardship, agency theory holds that outside independent directors can monitor management-shareholder conflict (Bathala and Rao, 1995) to reduce agency cost (Fama and Jensen, 1983). Independent directors on a board can be trusted and impartial for parties that depend on directorial and management actions. Independent directors may supervise board decisions and activities to prioritize shareowner interests because they have no financial stake in a corporation.

The literature on board independence and company performance is divided. Research suggests that board size negatively affects business performance in the US (Hermalin and Weisbach, 1998) and Australia (Grace et al., 1995). Bhagat and Black (2002) in the US and Nguyen et al. (2019) in Vietnam find little indication that enterprises with more independence perform better. Underperforming corporations also nominate more independent directors to satisfy shareholders (Hermalin and Weisbach, 1988). Other studies, such as those in the US (Pearce and Zahra, 1992) and the UK (Ullah et al., 2018), show a favorable relationship between outsiders' board membership and performance. In emerging markets, Jackling and Johl (2009) in India, and Liu et al. (2015) in China found a positive correlation. Accordingly, several studies show that boards with a majority of independent directors are more efficient.

H2: There is a positive relationship between board independence and firm profitability.

2.3 Gender Diversity and Profitability

The advocates of the agency model (Fama and Jensen, 1983; Jensen and Meckling, 1976) argue that the board should effectively oversee managerial activities to reduce agency conflict, thereby impacting firm value. Research indicates that diverse boards enhance monitoring effectiveness by incorporating directors with unconventional characteristics, thereby improving board independence (Adams and Ferreira 2009; Carter et al. 2003; Erhardt et al., 2003). Females exhibit the capacity for independent thought (Adams and Ferreira, 2009; Adams et al., 2011), thereby

serving as supplementary identifiers (Adams and Ferreira, 2009). This enhancement improves the overall monitoring capabilities of companies and, consequently, increases firm performance.

Huang and Kisgen (2013) argue that firms with a higher proportion of women in top positions experience lower growth compared to those dominated by men. Dobbin and Jung (2010) indicate that shareholders question the competence of female directors, which adversely impacts stock prices. Farrell and Hersch (2005) suggest that when women are appointed as directors, it's often because of regulatory requirements rather than genuine interest, which might lead to them struggling to effectively manage due to a lack of experience.

Adams and Ferreira (2009), in US firms, found that having more women on boards seemed to be linked with poorer operating and market performance. Looking at developing countries, Ujunwa et al. (2012) studied Nigerian companies and discovered that gender diversity seemed to harm their accounting performance. Meanwhile, a recent study by Kweh et al. (2019) on companies listed in Bursa Malaysia found that having women directors negatively affected profitability. On the flip side, Khan and Vieito (2013) noted that companies led by women tend to be less risky, with more stable share prices, and they also perform better overall. Additionally, research by Arfken et al. (2004) and Adams and Flynn (2005) shows that investors believe more gender diversity leads to better accountability and fairness, which boosts their confidence in the company. Terjesen et al. (2016) conducted a cross-country study that identifies a significant correlation between the presence of more women on corporate boards and firm performance, as assessed by Tobin's Q and ROA. Lükerath-Rovers (2013) conducted a study on Dutch firms, indicating that boards with women directors exhibit superior performance compared to those comprised solely of men.

H3: there is a positive relationship between gender diversity and firm profitability.

Given the prior hypothesis, it can be conjectured that the moderation effect on both the board size and board independence will have a positive impact.

H4: there is a positive relationship between the moderation effect of board size and gender diversity and firm profitability.

H5: there is a positive relationship between the moderation effect of board independence and gender diversity and firm profitability.

3. DATA, METHOD AND METHODOLOGY

3.1 Data Sources

The annual reports of non-financial companies listed on the Dhaka Stock Exchange (DSE) in Bangladesh were used as the sample for this research. Cement, Ceramics, Engineering, Food and Allied, Fuel and Power, IT, Jute, Paper and Printing, Pharmaceuticals and Chemical, Services and Real Estate, Tannery, Telecommunication, Textile, Travel and Leisure, and Miscellaneous are among the diverse non-financial sectors for 5 years, 2018-2022, represented in the dataset. Companies that were delisted at the time the data was collected would be excluded from the analysis due to the lack of annual reports. Following Arcot et al. (2010), the analysis excluded financial companies due to their distinct regulatory and governance frameworks.

3.2 Variable

The variable of interest, i.e., outcome variable is firm profitability. In this study, return on assets (ROA) is used as a proxy of profitability (Savitri & Abdullah, 2023). This study identifies four

essential characteristics pertaining to board composition, as established in the existing literature. The board size, *bSIZE*, is the natural logarithm of the total number of board members in a corporation; board independence, *bINDEP*, is the proportion of outside independent members to the total number of board members; Gender diversity, *genDIV*, signifies the percentage of female directors to the total number of directors on the board.

In accordance with previous research, this analysis employs additional control factors that have been shown to influence company performance. As a result, the research covers control variables, such as institutional ownership, family ownership, risk, firm age, and market capitalization. The variable descriptions for the investigation are included in Table 1.

Table 1. Variables Description

Acronym	Scale of Measurement
<i>rOA</i>	Earnings before interest and taxes (EBIT) scaled by yearend book value of total assets
<i>genDIV</i>	Number of female directors scaled by total number of board members
<i>bSIZE</i>	Natural logarithm of number of board members
<i>bINDEP</i>	Proportion of independent directors as measured by total number of independent directors scaled by total board members
<i>iOWN</i>	Proportion of institutional shareholdings scaled by total number of shares
<i>famFIRM</i>	Indicator variable set equal to 1 if it is a family firm, 0 if non-family firm
<i>fiAGE</i>	Natural logarithm of the number of years since the firm is incorporated
<i>lnMC</i>	Natural logarithm of market capitalization
<i>rISK</i>	Standard deviation of market price movements

3.3 Method and Methodology

In CG research, ordinary least squares (OLS) and fixed effects methodologies are widely utilized for performance measurement. The OLS method does not take into account unobserved differences, which can lead to estimates that are biased upwards (Hillier et al., 2011). To tackle the problem of endogeneity caused by these unobserved differences, one approach is to use fixed effect estimates. However, a major drawback of this method is that it relies on the assumption of strict exogeneity within the model. This means that past dependent variables are not included as explanatory variables in the equation to handle dynamic issues (Đặng et al., 2025).

Instrumental Variable Two-Stage Least Squares (IV 2SLS) is a widely used estimation technique that mitigates the problem of endogeneity. However, in the field of CG study, there is a restricted selection of instruments available for use (Nguyen, 2015). This study examines the influence of moderation between board diversity and board attributes on business profitability. Therefore, it is essential to utilize an econometric approach that adequately addresses potential endogeneity issues among key variables. Like previous research (e.g., Arora, 2022; Suss et al., 2021; Terjesen et al., 2016), this study is subject to endogeneity effects. The literature commonly argues that dynamic models, such as GMM, are optimal for estimating models when addressing endogeneity concerns (Ullah et al., 2018).

Researchers, including Arora (2024) and Wintoki et al. (2012), identify three distinct forms of endogeneity that are common in the relationship between corporate governance and firm performance. Endogeneity concerns substantially influence the relationship between board diversity, encompassing both gender (Brahma et al., 2021) and nationality heterogeneity (Miletkov et al., 2017), and firm profitability. Additionally, omitted variable bias may occur when analyzing the relationship between diversity and corporate performance. Ryan and Haslam (2005) suggest the potential for reverse causality, indicating that organizations with lower performance may be more likely to appoint a greater number of female directors. Oxelheim et al. (2013) assert that organizations focused on improving profitability and considering the expansion of international operations are more likely to appoint individuals from other countries to their boards. The performance of the previous year may significantly influence the evaluation of internal governance practices within organizations, as indicated by Wintoki et al. (2012). This study will utilize GMM to analyze the empirical relationships between predictor and explanatory variables. The study has followed the following model:

$$rOA_{it} = \alpha + \delta rOA_{it-1} + \beta_1 genDIV + \beta_2 bSIZE + \beta_3 bINDEP + \beta_4 iOWN + \beta_5 famFIRM + \beta_6 fAGE + \beta_7 lnMC + \beta_8 rISK + year\ dummies + industry\ dummies + \eta_i + vit$$

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics for the study's relevant variables are shown in Table 2. According to the statistics, the sample period's average return on assets was 8.10 percent, with a standard deviation of 6.90 percent. The average number of directors was 1.93, or around seven directors, according to the natural logarithm. On average, 16.60 percent of the board was made up of independent directors. In almost 73.50% of businesses, family domination was evident. The average percentage of women on boards during the course of the data period is around 14.30 percent.

Table 2. Descriptive Statistics

Variable	Mean	Median	Standard Deviation
rOA (%)	0.081	0.063	0.069
genDIV (%)	0.143	0	0.136
bSIZE (ln)	1.93	1.94	0.238
bINDEP (%)	0.166	0.194	0.121
famFIRM (dummy)	0.735	1	0.501
iOWN (%)	0.1	0.13	0.120
fAGE (ln)	3.122	2.988	0.483
lnMC	7.413	7.355	1.806
rISK	0.454	0.44	0.161

4.2 Multiple Regression Results

Table 3 presents the results of regression analysis using GMM estimation for two models – one without the moderation effect and the other with the moderation effect.

Table 3. Regression Results

Variables	Main Model	Moderation Model
<i>ROAt-1</i>	0.576 (0.000)***	0.562 (0.000)***
<i>genDIV</i>	0.045 (0.049)**	0.899 (0.031)**
<i>bSIZE</i>	0.022 (0.035)**	0.112 (0.027)**
<i>bINDEP</i>	0.028 (0.291)	0.027 (0.592)
<i>iOWN</i>	0.018 (0.336)	-0.006 (0.836)
<i>famFIRM</i>	0.037 (0.001)***	0.038 (0.001)***
<i>fiAGE</i>	0.006 (0.0008)***	0.008 (0.012)**
<i>lnMC</i>	0.021 (0.000)***	0.025 (0.000)***
<i>rISK</i>	-0.003 (0.765)	0.002 (0.879)
<i>genDIV*bSIZE</i>		0.235 (0.024)**
<i>genDIV*bINDEP</i>		0.138 (0.463)
Year Dummy	Yes	Yes
Industry Dummy	Yes	Yes
Number of Observations	1400	1400
F Statistic (p-value)	19.02 (0.000)	13.33 (0.000)
AR (1)	0.000	0.000
AR (2)	0.116	0.100
Hansen J Statistic	0.102	0.242

Note: *p*-values are in the parenthesis *, **, *** denote significance at the 10%, 5% and 1% level of significance, respectively

From the table, it is evident that proportionate presence of women directors in the board for both the models find a significance. Hence, hypothesis 3 in this case is supported. For both models, it is found that board size is positively and significantly associated with profitability at $p < 0.05$). It indicates that the number of board members positively affects ROA. It supports the notion of resource dependency view that larger boards with more knowledge and expertise will help to generate more return for companies. Hence, hypothesis 1 is supported. In terms of moderation effect of gender diversity and board size, the outcome indicates a positive significance and with higher coefficient value than the board size alone. It indicates that female board member influences more when they are in the boardroom. Thus, hypothesis 4 is supported. However, there is no sign of association between the moderation effect of gender and independent board members on profitability.

5. RECOMMENDATION AND CONCLUSION

According to Islam et al. (2023), the composition of Bangladeshi boards is heavily skewed towards males; consequently, corporations in Bangladesh exhibit a limited inclination towards the appointment of directors from varied backgrounds. The corporate sector of Bangladesh has seen the enactment of three CG codes, regrettably, none of the CG regulations in Bangladesh has imposed conditions regarding board diversity in the boardroom. Therefore, this study aims to propose policy suggestions to design governance and operational norms that can effectively widen the path to include directors from assorted backgrounds, thereby safeguarding the interests of minority shareholders.

From the analysis, it is evident that the gender diversity effectively and positively impacts corporate-level profit, suggesting the importance of appointing more female directors in the boardroom of the listed companies of Bangladesh. Moreover, it is found that the board members can be more influential when the women are included in the decision making of board and thus enhances profitability. However, in the context of Bangladesh, board independence yet to demonstrate any impact on the profitability of firms. Even the strong positive effect of gender diversity fails to bring any changes in the independence of the board members' capability towards generating profit. Future research could explore the timing and mechanisms through which gender-diverse boards impact the operational performance of companies in Bangladesh.

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References

- Abeyasingunawardana, S. (2018). The impact of board structure on bank performance: Evidence from European banks. *Staff Studies*, 48(2), 83. <https://doi.org/10.4038/ss.v48i2.4713>
- Adams, R., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291–309.
- Adams, R., & Ferreira, D. (2007). A theory of friendly boards. *Journal of Finance*, 62(1), 217–250.
- Adams, S. M., & Flynn, P. M. (2005). Local knowledge advances women's access to corporate boards. *Corporate Governance: An International Review*, 13(6), 836–846.
- Adams, R., Gray, S., & Nowland, J. (2011). Does gender matter in the boardroom? Evidence from the market reaction to mandatory new director announcements. *Evidence from the Market Reaction to Mandatory New Director Announcements (November 2, 2011)*.
- Aggarwal, R., Erel, I., Stulz, R., & Williamson, R. (2009). Differences in governance practices between US and foreign firms: Measurement, causes, and consequences. *Review of Financial Studies*, 22(8), 3131–3169.
- Aguilera, R. V., & Jackson, G. (2003). The cross-national diversity of corporate governance: Dimensions and determinants. *Academy of Management Review*, 28(3), 447–465.
- Ali, F., Wang, M., Jebran, K., & Ali, S. T. (2021). Board diversity and firm efficiency: evidence from China. *Corporate Governance: The International Journal of Business in Society*, 21(4), 587–607.
- AlQanea, M. K., & Hamdan, A. (2017). Islamic banks board independence and its relation to performance in GCC countries. *International Journal of Islamic Marketing and Branding*, 2(2), 100. <https://doi.org/10.1504/ijimb.2017.10005952>.
- Arcot, S., Bruno, V., & Faure-Grimaud, A. (2010). Corporate governance in the UK: Is the comply or explain approach working?. *International Review of Law and Economics*, 30(2), 193–201.
- Arfken, D. E., Bellar, S. L., & Helms, M. M. (2004). The ultimate glass ceiling revisited: The presence of women on corporate boards. *Journal of Business Ethics*, 50(2), 177–186.
- Arora, A. (2024). Do independent directors enhance better corporate governance in companies in India?. *Public Administration and Policy*, 27(2), 154–166.
- Arosa, B., Iturralde, T., & Maseda, A. (2010). Ownership structure and firm performance in non-listed firms: Evidence from Spain. *Journal of Family Business Strategy*, 1(2), 88–96.
- Armstrong, C. S., Core, J. E., & Guay, W. R. (2012). When do independent directors improve firms' information environments. *The Wharton School, University of Pennsylvania Pub*.
- Assenga, M. P. (2021). Foreign directors and firm financial performance: evidence from the Tanzanian listed companies. *Business Education Journal*, 7(1).
- Barney, J. B., & Clark, D. N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. Oup Oxford.

- Bathala, C. T., & Rao, R. P. (1995). The determinants of board composition: An agency theory perspective. *Managerial and decision economics*, 16(1), 59-69.
- Bhagat, S., & Black, B. (2002). The non-correlation between board independence and long-term firm performance. *J. Corp. L.*, 27, 231.
- Brahma, S., Nwafor, C., & Boateng, A. (2021). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics*, 26(4), 5704-5719.
- Carpenter, M. A., Geletkanycz, M. A., & Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30(6), 749-778.
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial review*, 38(1), 33-53.
- Chhillar, P., & Lellapalli, R. V. (2015). Divergence or convergence: Paradoxes in corporate governance? *Corporate Governance*, 15(5), 693-705.
- Coles, J. L., Lemmon, M. L., & Wang, A. Y. (2008, February). The joint determinants of managerial ownership, board independence, and firm performance. In *EFA 2008 Athens Meetings Paper, AFA 2009 San Francisco Meetings Paper*.
- Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management journal*, 42(6), 674-686.
- Dalton, D. R., & Dalton, C. M. (2011). Integration of micro and macro studies in governance research: CEO duality, board composition, and financial performance. *Journal of management*, 37(2), 404-411.
- Đặng, R., Houanti, L. H., Simioni, M., & Sahut, J. M. (2025). The role of endogeneity in the relationship between board gender diversity and corporate social performance: evidence from a control function method. *Annals of Operations Research*, 347(1), 333-365.
- Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management review*, 22(1), 20-47.
- Dharwadkar, R., George, G., & Brandes, P. (2000). Privatization in emerging economies: An agency theory perspective. *Academy of Management Review*, 25(3), 650-669.
- Dobbin, F., & Jung, J. (2010). Corporate board gender diversity and stock performance: The competence gap or institutional investor bias. *NCL Rev.*, 89, 809.
- Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16(1), 49-64.
- Erhardt, N. L. (2003). Diversity in the boardroom: Gender, ethnicity and firm performance. *Graduate School-New Brunswick Rutgers, the State University of New Jersey, USA*.
- Estélyi, K. S., & Nisar, T. M. (2016). Firms benefit when board directors have different nationalities. *LSE Business Review*.
- Evans, C. R., & Dion, K. L. (2012). Group cohesion and performance: A meta-analysis. *Small Group Research*, 43(6), 690-701.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26(2), 301-325.
- Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: The effect of gender. *Journal of Corporate finance*, 11(1-2), 85-106.
- Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of Financial Economics*, 125(1), 120-142.
- Grace, M., Ireland, A., & Dunstan, K. (1995). Board composition, non-executive directors' characteristics and corporate financial performance. *Asia-Pacific Journal of Accounting*, 2(1), 121-137.

- Harjoto, M. A., Laksmana, I., & Yang, Y. W. (2019). Board nationality and educational background diversity and corporate social performance. *Corporate Governance: The International Journal of Business in Society*, 19(2), 217-239.
- Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review*, 96-118.
- Hillier, D., Pindado, J., Queiroz, V. D., & Torre, C. D. L. (2011). The impact of country-level corporate governance on research and development. *Journal of International Business Studies*, 42(1), 76-98.
- Hossain, S. K., Sultan, M. I., & Ahmed, M. M. (2021). Ownership structure and firm performance: Evidence from manufacturing companies listed in the Dhaka Stock Exchange. *International Journal of Financial, Accounting, and Management*, 3(3), 227-243.
- Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives?. *Journal of Financial Economics*, 108(3), 822-839.
- Islam, M. T., Saha, S., & Rahman, M. (2023). Diversity-performance nexus in an emerging economy: An investigation of family and non-family firms. *International Journal of Emerging Markets*. Advance online publication.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate governance: an international review*, 17(4), 492-509.
- Jiang, Y., Mubarik, M. S., Zaman, S. I., Alam, S. H., & Arif, M. (2024). Corporate governance, cash holding, and firm performance in an emerging market. *International Journal of Finance & Economics*, 29(3), 2787-2803.
- Khan, I., Khan, I., Khan, I. U., Suleman, S., & Ali, S. (2024). Board diversity on firm performance from resource-based view perspective: new evidence from Pakistan. *International Journal of Productivity and Performance Management*, 73(3), 649-675.
- Khan, W. A., & Vieito, J. P. (2013). CEO gender and firm performance. *Journal of Economics and Business*, 67, 55-66.
- Khatib, S. F. A., Abdullah, D. F., Elamer, A. A., & Abueid, R. (2020). Nudging toward diversity in the boardroom: A systematic literature review of board diversity of financial institutions. *Business Strategy and the Environment*, 30(2), 985. <https://doi.org/10.1002/bse.2665>
- Kılıç, M., & Kuzey, C. (2016). The effect of board gender diversity on firm performance: Evidence from Turkey. *Gender in Management: An International Journal*, 31(7), 434. <https://doi.org/10.1108/gm10-2015-0088>.
- Kweh, Q. L., Ahmad, N., Ting, I. W. K., Zhang, C., & Hassan, H. (2019). Board gender diversity, board independence and firm performance in Malaysia. *Institutions and Economics*, 1-20.
- Lipton, M., & Lorsch, J. W. (1992). A modest proposal for improved corporate governance. *The business lawyer*, 59-77.
- Liu, Y., Miletkov, M. K., Wei, Z., & Yang, T. (2015). Board independence and firm performance in China. *Journal of Corporate Finance*, 30, 223-244.
- Locatelli, R., Schena, C., Tanda, A., & Uselli, A. (2018). Diversity measures and quality of banks' boards: The Italian case. *Journal of Financial Management, Markets and Institutions*, 6(2), Article 1850009. <https://doi.org/10.1142/s2282717x18500093>.
- Lückerath-Rovers, M. (2013). Women on boards and firm performance. *Journal of Management & Governance*, 17(2), 491-509.
- Miletkov, M., Poulsen, A., & Wintoki, M. B. (2017). Foreign independent directors and the quality of legal institutions. *Journal of International Business Studies*, 48(2), 267-292.
- Muttakin, M. B., Khan, A., & Subramaniam, N. (2012). Board structure and performance: Evidence from an emerging economy. *AT Business Management Review*, 8(2), 97-108.

- Muttakin, M. B., Monem, R. M., Khan, A., & Subramaniam, N. (2015). Family firms, firm performance and political connections: Evidence from Bangladesh. *Journal of Contemporary Accounting & Economics*, 11(3), 215–230.
- Nguyen, T. T. M., Evans, E., & Lu, M. (2019). Perceptions of independent directors about their roles of and challenges on corporate boards: Evidence from a survey in Vietnam. *Asian Review of Accounting*, 27(1), 69-96.
- Nguyen, T. V. (2015). *Corporate governance structures and financial performance: A comparative study of publicly listed companies in Singapore and Vietnam* (Doctoral dissertation, University of Waikato).
- Noja, G. G., Thalassinou, E., Cristea, M., & Grecu, I. M. (2021). The interplay between board characteristics, financial performance, and risk management disclosure in the financial services sector: New empirical evidence from Europe. *Journal of Risk and Financial Management*, 14(2), 79. <https://doi.org/10.3390/jrfm14020079>.
- Oxelheim, L., Gregorič, A., Randøy, T., & Thomsen, S. (2013). On the internationalization of corporate boards: The case of Nordic firms. *Journal of International Business Studies*, 44(3), 173-194.
- Pandey, N., Kumar, S., Post, C., Goodell, J. W., & García-Ramos, R. (2023). Board gender diversity and firm performance: A complexity theory perspective. *Asia Pacific Journal of Management*, 40(3), 1289-1320.
- Paniagua, J., Rivelles, R., & Sapena, J. (2018). Corporate governance and financial performance: The role of ownership and board structure. *Journal of Business Research*, 89, 229-234.
- Papangkorn, S., Chatjuthamard, P., & Jiraporn, P. (2021). Gender diversity and corporate governance. In *Corporate Governance-Recent Advances and Perspectives*. IntechOpen.
- Pfeffer, J. (1972). Size and composition of corporate boards of directors: The organization and its environment. In *Corporate Governance* (pp. 53-64). Gower.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Porta, R. L., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113-1155.
- Rahman, M. A., Qi, X., & Islam, M. (2016). Banking access for the poor: Adoption and strategies in rural areas of Bangladesh. *Journal of Economic & Financial Studies*, 4(3), 1–10.
- Rashid, A., De Zoysa, A., Lodh, S., & Rudkin, K. (2010). Board composition and firm performance: Evidence from Bangladesh. *Australasian Accounting, Business and Finance Journal*, 4(1).
- Ryan, M. K., & Haslam, S. A. (2005). The glass cliff: Evidence that women are over-represented in precarious leadership positions. *British Journal of Management*, 16(2), 81-90.
- Sauerwald, S., & Peng, M. W. (2013). Informal institutions, shareholder coalitions, and principal–principal conflicts. *Asia Pacific Journal of Management*, 30(3), 853–870.
- Savitri, E., & Nik Abdullah, N. H. (2023). The effect of eco-efficiency and good corporate governance on firm value: Profitability as a mediator. *Management & Accounting Review (MAR)*, 22(1), 379–399.
- Singh, H., & Harianto, F. (1989). Top management tenure, corporate ownership structure and the magnitude of golden parachutes. *Strategic Management Journal*, 10(S1), 143-156.
- Singh, S., Tabassum, N., Darwish, T. K., & Batsakis, G. (2018). Corporate governance and Tobin's Q as a measure of organizational performance. *British Journal of Management*, 29(1), 171–190.
- Taljaard, C. C., Ward, M., & Müller, C. (2015). Board diversity and financial performance: A graphical time-series approach. *South African Journal of Economic and Management Sciences*, 18(3), 425. <https://doi.org/10.4102/sajems.v18i3.926>.

- Terjesen, S., Couto, E. B., & Francisco, P. M. (2016). Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *Journal of Management & Governance*, 20(3), 447-483.
- Ujunwa, A., Okoyeuzu, C., & Nwakoby, I. (2012). Corporate board diversity and firm performance: Evidence from Nigeria. *Revista de Management Comparat International*, 13(4), 605.
- Ullah, S., Akhtar, P., & Zaefarian, G. (2018). Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Industrial Marketing Management*, 71, 69-78.
- Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of financial economics*, 105(3), 581-606.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of financial economics*, 40(2), 185-211.
- Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D., & Jiang, Y. (2008). Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management Studies*, 45(1), 196-220.
- Zabri, S. M., Ahmad, K., & Wah, K. K. (2016). Corporate governance practices and firm performance: Evidence from top 100 public listed companies in Malaysia. *Procedia Economics and Finance*, 35, 287–296.
- Zahra, S. A., & Pearce II, J. A. (1990). Determinants of board directors' strategic involvement. *European Management Journal*, 8(2), 164-173.