

# INPOS 2023

2<sup>nd</sup> INTERNATIONAL POSTGRADUATE  
RESEARCH SYMPOSIUM 2023 (INPOS 2023)

**BREAKING  
BOUNDARIES:  
ACCELERATING RESEARCH IMPACT AND  
SHAPING THE FUTURE**

**26-27 OCTOBER 2023**

SCHOOL OF MANAGEMENT, USM

**PROCEEDING BOOK**

**2<sup>nd</sup> International Postgraduate Research  
Symposium (INPOS) 2023**

***Breaking Boundaries: Accelerating Research  
Impact and Shaping the Future***

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**Breaking Boundaries: Accelerating Research Impact and Shaping The Future**

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## MESSAGE FROM THE DEAN



Assalamualaikum Warahmatullahi Wabarakatuh, greetings of peace and welcome to Penang, Malaysia. It is my pleasure to welcome all participants to the 2nd International Postgraduate Symposium 2023 (INPOS 2023), which will take place on October 26th and 27th, 2023. We have the privilege of collaborating with Bina Nusantara University in Indonesia (BINUS) to bring top-tier, highly referenced, and known professionals in research methods to INPOS 2023. I hope that this event will provide participants with an opportunity to exchange ideas, uncover new prospects, reconnect with colleagues, make new acquaintances, and broaden their knowledge. The theme of INPOS 2023 is **Breaking Boundaries: Accelerating Research Impact and Shaping the Future** which includes scientific knowledge, theory and data, as well as to emphasize relevance, which focuses on practical examples, timeliness, and applicability to life. The goal is to make research outcomes more immediate and influential, ultimately shaping a better and more impactful future through innovative research. In essence, the title encapsulates a visionary commitment to creating a lasting impact on society and the world.

To accelerate a dynamic and forward-thinking approach to research and innovation, it is imperative to have a proactive intent to transcend traditional limits, challenge existing norms, and explore new frontiers. It expresses a commitment to pushing past boundaries, questioning existing standards, and entering into new territory in the search of knowledge and advancement. In short, the aim is to ensure that research findings have a swift and significant impact, extending beyond academic circles to create tangible benefits for society. Additionally, it signifies the responsibility to actively use research and innovation to shape a better, more impactful future, addressing a wide range of societal and global challenges. Overall, the theme embodies an ambitious and visionary approach to research, dedicated to pushing the boundaries of what's possible and creating a more promising future for all. Hence, we need to ensure rigor research yields knowledge that provides impact to effective organizational decisions and actions.

For this year INPOS 2023, we have received an immense number of submissions. In total we have about 83 presenters including 24 presenters from Bina Nusantara University. In this vein, it is my sincere hope that INPOS 2023 will pave the way for a more rigorous pursuit of significant research for theory and practise With the gathering of intellectual forces from

various countries, locals and internationals, I am confident that INPOS 2023 will be able to ignite the transformation spark and inspire new ideas that we never imagined conceivable. I would like to take this opportunity to congratulate Postgraduate Student Society (PGSS) and all administrative staff for organizing this symposium. To all participants, I extend my warmest wishes for a truly enjoyable and memorable time in Penang. May your visit to this enchanting destination be filled with wonderful experiences, cultural discoveries, and enriching moments. Thank you.

Professor Dr. Noor Hazlina Ahmad,

Dean, School of Management

## ABOUT THE SYMPOSIUM

INPOS @USM is a one-of-a-kind symposium. A platform where we bring top-tier, highly referenced, and known research methodology specialists. An avenue for all scholars and researchers to immerse themselves in understanding the real meaning of research. School of Management proudly presents the 2<sup>nd</sup> International Postgraduate Symposium 2023 (INPOS2023) that will be held from 26<sup>th</sup> – 27<sup>th</sup> October 2023. Postgraduate students, researchers, and academics are invited to exchange ideas and experiences dealing with the rigor and relevance of research and management issues globally. Importantly, INPOS 2023 provides chances for postgraduate students and researchers to comprehend the significance of the research, as well as features of scientific rigour, real-world relevance, and impact. The objective is to improve the shared comprehension among researchers who possess distinct values and methodologies, while maintaining the significance and meticulousness of promoting research and its influence. Specifically, the objectives are:

1. To establish strategic networking and engagement among the academics, students, and community.
2. To contribute to new and expanding research ideas from diverse topics.
3. To provide a platform for sharing new and expanding research ideas from various areas
4. To have interactive sessions among scholars to debate and disseminate research findings undertaken in areas of interest.
5. To offer opportunities to academics and students to get feedback from the research ideas and findings presented at the symposium.

The theme of INPOS 2023 is *Breaking Boundaries: Accelerating Research Impact and Shaping the Future* refers to a concerted effort within the academic, professionals, industry and society to challenge traditional limitations, broaden the scope of research, and create a greater impact beyond boundaries. Consistent with this, researchers and academics are expected to go beyond conventional thinking and explore new frontiers of knowledge. It involves pushing the boundaries of established theories, methodologies, and paradigms to uncover novel insights and perspectives. This might entail interdisciplinary collaboration, innovative research approaches, and exploring emerging fields to expand the horizons of knowledge. In doing this, academics are able to accelerate research impact to ensure that academic discoveries and findings are translated into practical applications, policies, or solutions that can benefit society. This could involve fostering stronger connections between academia and industry, engaging with policymakers, or actively pursuing avenues for technology transfer and commercialization. Through the pursuit of innovative research and the cultivation of comprehensive education, academia possesses the capacity to exert a profound impact on societal advancement, economic growth, technological breakthroughs, and various other domains. In order to shape the future effectively, it is imperative to take into account the potential long-term ramifications of research endeavours and ensure their alignment with overarching societal objectives and sustainable methodologies.

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# **Patient Safety Culture and Hospital Performance: The Role of Patient Right and Patient Safety Outcomes of Public Traditional Chinese Medicine Hospitals Context**

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## **Abstract**

The growing emphasis on patient-centred care, transparency, and quality improvement has further driven the need to explore hospital performance (HP). Patient safety culture is an essential component of healthcare and has prompted various studies to determine and establish its relationship with hospital performance. This review article aims to comprehensively understand these key concepts and their interrelationship by focusing on Traditional Chinese Medicine (TCM) hospitals in Sichuan, where unique culture and contextual factors present challenges and opportunities for improving patient safety and hospital performance.

**Keywords:** hospital performance, patient right, patient safety culture, patient safety outcomes, public traditional Chinese medicine.

## **Introduction**

In 2009, China's "Implementation Plan for Deepening the Reform of the Medical and Health System" aimed to prioritise public welfare in hospitals, which are places for healing and saving lives. Therefore, the first consideration should be patient safety and medical quality, followed by hospital benefits. Importantly, General Secretary Xi Jinping pointed out at the National Health and Health Conference: "Strive to ensure people's health in all aspects and throughout the cycle", "Adhere to the public welfare of essential medical and health services, and continuously improve the system, expand services, and improve quality (The National Health Council, 2020). Moreover, the healthcare performance management concept first appeared in the World Health Report 2000. The Institute of Medicine (IOM) defines patient safety as the prevention of damage to patients. It emphasises 1) the prevention of errors, 2) deriving lessons from mistakes, and 3) the establishment of a healthcare delivery system based on a security culture that includes health professionals, organisations, and hospitals(Weick et al., 2001). The

concept of core competence was published in the Harvard Business Review for the first time (Prahalad & Hamel, 2009); they described the accumulated knowledge and skills within the organisation, especially about operating various production skills and integrating different technological knowledge and skills. Public hospitals are nonprofit organisations. In China, the government has invested in public hospitals; therefore, the Chinese government hopes that hospitals reflect public welfare. Therefore, non-healthcare and healthcare performance are two suitable dimensions of hospital performance: quality performance, finance performance, and satisfaction performance. Health care performance mainly included indicators of medical quality and operational effectiveness; non-health care performance included internal and external satisfaction, hospital finance, marketing share, and reputation. This article aims to guide how patient safety culture impacts hospital performance through a systematic review.

Patient safety culture has been studied in various disciplines, ranging from social anthropology to the healthcare industry. The word culture is derived from the idea of cultivation, which refers to development patterns. Sometimes known as “corporate culture” (Childress, 2013), corporate culture is used to denote the more commercialised meaning of organizational culture (Deal & Kennedy, 1982).

Over the past decade, the focus on patient safety culture has increasingly become a major component of everyday healthcare organisations functioning because hospital performance has been perceived to depend on patient safety culture. Hospital performance management challenges have attracted the attention of researchers in management, especially in the healthcare field. By providing an in-depth understanding of the key concepts and their interrelationships, this literature review seeks to offer insight into how patient safety culture (PSC), hospital performance (HP), patients’ right to know, and patient safety outcomes can be improved in TCM hospitals and other healthcare settings. Furthermore, it aims to contribute to the development of evidence-based interventions and policies to enhance the quality of care and patient outcomes, ultimately benefiting patients, healthcare providers, and society as a whole.

In this review, the authors critically examined the literature to identify studies that address the importance of beliefs, attitudes, and behaviours that are integral to the culture of safety in hospitals, and systematically studied and outlined the methods of hospital performance evaluation used in TCM hospitals in Sichuan, China.

## **Literature Review**

### **Hospital Performance**

The World Health Organization (WHO) underscores this view by defining hospitals as institutions that provide treatment to patients through the deployment of a performing hospital that not only meets its objectives but also aligns with the ultimate goal of improving patient health outcomes, offering optimal treatment, and minimising costs.

The definition of hospital performance (HP) transcends the mere achievement of objectives. It also indicates an institution’s ability to meet the diverse needs of its stakeholders, including patients, healthcare professionals, and administrators. Each of these stakeholders possesses unique perspectives and collective expectations from an overarching benchmark against which performance is measured. However, measuring hospital performance is a

complex and challenging endeavour. The diversity of stakeholders, the variety of their expectations, and the broad spectrum of clinical and nonclinical objectives contribute to the complexity of this task.

Measuring hospital performance is a complex and challenging endeavour. The diversity of stakeholders, the variety of their expectations, and the broad spectrum of clinical and non-clinical objectives all contribute to the complexity of this task (Damschroder et al., 2009). Adding to the intricacy is the fact that hospitals are composed of teams of professionals with different educational backgrounds, introducing an additional layer of complexity in the measurement of performance. The challenge is further amplified by research suggesting that current Hospital Performance (HP) is yet to meet societal expectations. This highlights the urgent need for a thorough understanding of Hospital Performance (HP), its determinants, and ways to enhance it.

### **Finance Performance**

A multifaceted approach is warranted to assess a hospital's financial performance, which is an essential determinant of operational success and stability (Liu et al., 2019). Financial income and market share are crucial in denoting a hospital's financial stability and competitive position in the healthcare sector (Min, 2020). They represent critical indices of a hospital's financial resilience and success in its competitive strategy. Notably, robust financial income allows hospitals to reinvest in cutting-edge technologies, broaden their service provision, and draw on superior talent, thereby enhancing the overall quality of healthcare provided. In the context of TCM hospitals, a solid financial base is important to support continued research and development in traditional medicine, which often requires substantial resources. Moreover, an extensive market share typically equates to a competitive advantage and possibly greater opportunities for business expansion and service diversification, which is particularly relevant in China's highly competitive healthcare sector (Min, 2020).

### **Customer Satisfaction**

Customer satisfaction performance serves as an indispensable barometer for (HP). A measure of how well a hospital meets or exceeds patient expectations is often assessed through various indicators, such as patient satisfaction, hospital reputation, service quality, patient engagement, and patient experience (Sofaer & Firminger, 2005). In the context of this thesis, focusing specifically on public Traditional Chinese Hospitals in Sichuan, patient safety satisfaction, hospital reputation, and other indicators such as service quality, patient engagement, and overall patient experience are undeniably crucial for a comprehensive evaluation of customer satisfaction and hospitals (Gan et al., 2022). The specific relationship dynamics, traditional healing practices, and unique patient-hospital interactions intrinsic to these institutions make patient satisfaction and hospital reputation particularly pertinent to this research context.

### **Internal Operational Process Performance**

Assessing a hospital's operational performance requires examining key internal processes (Zhang et al., 2023). Although multiple metrics, such as process efficiency, waste reduction, and technological integration, can provide a broader evaluation scope, bed turnover, medical quality, and safety should be more concentrated. These two indicators are specifically relevant

to the operational intricacies of public Traditional Chinese Medicine (TCM) hospitals in China and the thesis's focus on Patient Safety Culture (Zhou et al., 2023). The ensuing discussion will argue why these two indicators are vital in the context of this research and sufficient for evaluating Internal Operational Process performance.

### **Learning and Growth Performance**

A hospital's commitment to learning and growth performance signals its propensity for innovation, continuous enhancement, and employee well-being (Liu et al., 2017). This performance dimension often relies on the adoption of new technologies and employee satisfaction as key metrics. These elements form the backbone of maintaining a competitive edge, elevating service quality, and fostering an empowering work environment. However, in the context of the current research, these indicators, while still relevant, are given unique consideration, arguing their specific importance and adequacy for evaluating learning and growth performance in tertiary public Traditional Chinese Medicine (TCM) hospitals in China (Zhang et al., 2023).

### **Patient Safety Culture**

Patient safety culture emerged as a significant concern in the healthcare sector following the Institute of Medicine (IOM) ground-breaking report, "To Err is Human. Building a Safer Health System" 199 (Kohn & Corrigan, 1999). The report highlighted the alarming prevalence of medical errors in the United States, estimating that as many as 98,000 patients die each year because of preventable errors. This revelation sparked renewed focus on patient safety and the cultivation of a culture that prioritises preventing harm and reducing errors (Kohn et al., 1999). As the concept of safety culture was adapted to healthcare, it emphasised communication based on mutual trust, shared perceptions of the importance of safety, and confidence in preventive measures. The World Health Organization (WHO) and the Agency for Healthcare Research and Quality (AHRQ) have developed frameworks and guidelines to help healthcare organisations assess and improve their Patient Safety Culture (PSC) (Ortiz et al., 2002; World Health Organization, 2000).

**Leadership commitment to safety.** Strong leadership is crucial for fostering a culture of safety within healthcare organisations. Leaders who demonstrate a genuine commitment to safety by prioritising safety goals, allocating necessary resources, and engaging in open communication can significantly influence safety culture (Weaver et al., 2013).

**Teamwork and collaboration.** Effective teamwork and collaboration among healthcare professionals are essential for promoting patient safety. When staff members work together, share knowledge, and support one another, they can better identify potential safety risks, learn from mistakes, and work collectively to prevent errors (Weaver et al., 2013).

**Communication openness.** Open communication is a vital aspect of Patient Safety Culture (PSC). Encouraging staff members to freely share safety concerns, report errors, and discuss ways to improve safety can contribute to a more transparent, learning-oriented culture (Weaver et al., 2013).

**Continuous Learning:** A strong Patient Safety Culture (PSC) emphasises the importance of continuous learning and improvement. Organisations that actively identify areas for

improvement, implement evidence-based interventions, and evaluate their effectiveness are likely to achieve better patient safety outcomes (Weaver et al., 2013).

**Non-punitive response to errors.** A culture that encourages reporting and learning from errors rather than punishing individuals for mistakes is more likely to result in continuous improvement in patient safety. A non-punitive response to errors fosters a supportive environment where staff members feel comfortable discussing mistakes and learning from them (Weaver et al., 2013).

**Patient-centred culture** is the seventh subculture we identified. A patient-centred culture embraces the patient and family as the sole reason for the hospital’s existence (Connor et al., 2002; Hansen et al., 2003; McCarthy & Blumenthal, 2006). It promises to value the patient by providing a healing environment during hospitalisation and promoting health and well-being as a continuum of care (Hansen et al.). The leadership’s responsibility is to commit to patient-centredness as a core value. Leaders should challenge medical staff and all employees to make every effort to focus on the patient and offer the patient an exemplary experience marked by caring and compassion (Gelinias & Loh, 2004; Morath & Leary, 2004; Rose et al., 2006). Patient-centred hospitals allow and empower patients to participate in their care decisions (Reiling, 2004). Leaders who share their patient-centred vision with their community allow the community to feel a sense of pride and ownership of their hospital (Apold et al., 2006; Ketring & White, 2002). Patient stories can be used to put a “face” on system failures leading to potentially serious adverse events. Strongly enhance the richness of descriptions and create an atmosphere where discussion can lead to safe action (Morath & Leary, 2004).

Table 1. Key Dimensions of Patient Safety Culture

Dimension	Description
Leadership commitment to safety	Leaders prioritize safety goals, allocate necessary resources, and engage in open communication.
Teamwork and collaboration	Healthcare professionals work together, share knowledge, and support one another.
Teamwork and collaboration	Healthcare professionals work together, share knowledge, and support one another.
Communication openness	Encouraging staff to share safety concerns, report errors, and discuss ways to improve safety.
Non-punitive response to errors	Fostering a supportive environment where staff can discuss mistakes and learn from them.
Continuous learning and improvement	Actively identifying areas for improvement and implementing evidence-based interventions.

### **Patient Safety Culture Outcomes**

A strong Patient Safety Culture (PSC) can lead to several beneficial outcomes, including reduced adverse events, improved patient satisfaction, and enhanced organizational performance (Sammer et al., 2018; Sorra & Dyer, 2010; Weaver et al., 2013).

**Reduced adverse events:** A positive Patient Safety Culture (PSC) is associated with a decreased frequency of adverse events, such as medication errors, hospital-acquired infections, and patient falls. By fostering open communication, teamwork, and a blame-free environment, healthcare organisations can better identify, report, and address potential risks and hazards, ultimately reducing the likelihood of adverse events (Weaver et al., 2013).

Improved patient satisfaction: Patients who receive care in organisations with a strong Patient Safety Culture (PSC) are more likely to report higher satisfaction levels. A culture that prioritises patient safety and well-being can lead to more patient-centred care, enhanced trust in healthcare providers, and better patient-provider communication (Weaver et al., 2013).

### **Patient Right**

The Right to Know can be defined as the right of patients to have access to accurate, timely, and comprehensible information about their healthcare, which allows them to make informed decisions regarding their treatment options, care providers, and overall health management (Detmer et al., 2008). This concept is closely related to patient autonomy, informed consent, and shared decision-making (Henderson, 2018).

### **Theoretical Foundation**

High-reliability organisations theory: High Reliability Organization (HRO) theory focuses on organisations that consistently maintain exceptional safety records despite operating in complex, high-stakes environments where errors can have catastrophic consequences (Weinger & Gaba, 2014). This theory emerged from studies of industries such as nuclear power, aviation, and military operations, where organisations developed unique strategies and practices to minimise the risk of accidents and failures (Gaba, 2004).

### **HRO Theory is Grounded in Five Key Principles**

Preoccupation with failure. HROs are vigilant in identifying and addressing potential errors and failures before they escalate to more significant problems.

Reluctance to simplify the interpretation. HROs understand the complexities of their operations and avoid oversimplification, ensuring that they consider multiple perspectives and potential issues.

Sensitivity to Operations. HROs comprehensively understand their ongoing operations, allowing them to quickly and effectively identify and address potential problems.

Commitment to resilience. HROs are prepared to respond to and recover from adverse events and unexpected challenges by continually adapting to maintain their safety and performance.

Deference to expertise. HROs prioritise expertise and knowledge over hierarchy, ensuring that the most informed and skilled individuals make critical decisions.

The HRO theory is relevant to patient safety and Hospital Performance (HP) in healthcare settings, particularly in high-stakes environments where errors can have severe consequences for patients (Nieva & Sorra, 2003). Applying HRO principles in healthcare can lead to a proactive and adaptive culture that prioritises patient safety, minimises the risk of errors, and enhances overall Hospital Performance (HP) (Damschroder et al., 2009). Moreover, HRO theory is closely related to Patient Safety Culture (PSC), emphasising the importance of organizational culture, communication, and leadership in fostering a safety-conscious environment.

Resource-Based View Theory: Resource-Based View (RBV) theory is an influential strategic management framework that emphasises the role of an organisation's internal resources and capabilities in achieving competitive advantage and superior performance (Wong,

2015). According to the RBV, organisations can differentiate themselves and gain a competitive edge by effectively leveraging their unique resources and capabilities, which are valuable, rare, inimitable, and nonsubstitutable (Wong, 2015). In the context of healthcare, RBV can provide valuable insights into the role of Patient Safety Culture (PSC) and Hospital Performance (HP) (Alalawi et al., 2019). Moreover, the RBV perspective underscores the importance of leveraging resources and capabilities to improve patient safety and Hospital Performance (HP) (Achieng & Ruhode, 2021). Furthermore, the RBV suggests that the effective alignment and integration of these resources and capabilities can lead to synergistic effects, enhancing an organisation's ability to deliver safe and high-quality care. This perspective highlights the importance of strategic management and leadership in fostering strong Patient Safety Culture (PSC) and leveraging resources to optimise Hospital Performance (HP).

**Balance Scorecard Theory:** The Balanced Scorecard (BSC) theory, propounded by Kaplan and Norton (1992), has emerged as a holistic tool for assessing organizational performance. Instead of relying solely on traditional financial metrics, the BSC framework offers a comprehensive evaluation by integrating four primary perspectives: Financial, Customer, Internal Processes, and Learning and Growth (Kaplan & Norton, 2001).

In healthcare settings, particularly hospitals, the BSC is an effective measurement tool because of its comprehensive evaluation of various performance indicators. These indicators span financial performance, patient satisfaction, process efficiency, and the capacity for organizational improvement (Elg et al., 2013). This broad, multifaceted performance assessment method aligns well with this study's focus, namely, the examination of Hospital Performance (HP) in tertiary public Traditional Chinese Medicine (TCM) hospitals in China (Cheng et al., 2023).

## **Discussion**

The growing trend in published articles indicates the importance of patient safety culture in hospital performance evaluation and efforts made to meet the need of hospitals to have a suitable model for evaluating their performance. Despite the extensive literature on Patient Safety Culture (PSC), Hospital Performance (HP), Patient Right to Know, and their theoretical underpinnings, several research gaps and areas for further investigation have been identified (Zhang et al., 2022). These gaps provide opportunities for future research to enhance our understanding of the complex relationships between these key concepts and contribute to the development of effective strategies for improving healthcare quality (Batbaatar et al., 2017).

**Limited Research on the Moderating Role of Patient Right to Know.** While there is empirical evidence supporting the moderating effect of Patient Right to Know on the relationship between Patient Safety Culture (PSC) and Hospital Performance (HP) (Zhang et al., 2022), further research is needed to validate these findings and explore the potential mechanisms underlying this moderating effect.

**Context-Specific Research on Patient Safety Culture (PSC).** Most existing literature on Patient Safety Culture (PSC) focuses on Western healthcare systems (Zhang et al., 2022). There is a need for more research on Patient Safety Culture (PSC) in non-Western contexts, such as Traditional Chinese Medicine (TCM) hospitals, to gain a more comprehensive understanding

of the unique challenges and opportunities associated with patient safety in these settings (Batbaatar et al., 2017).

Integration of multiple theoretical perspectives. The current literature primarily focuses on individual theories, such as High-Reliability Organisation (HRO) theory and Resource-Based View (RBV) theory, to explain the relationships between Patient Safety Culture (PSC), Hospital Performance (HP), and Patient Right to Know (Batbaatar et al., 2017). Future research could integrate multiple theoretical perspectives to provide a more holistic understanding of these complex relationships.

Longitudinal studies and intervention research. Most of the existing research on Patient Safety Culture (PSC) and Hospital Performance (HP) is cross-sectional, limiting our ability to infer causality and temporal relationships among key concepts (Batbaatar et al., 2017). Longitudinal studies and intervention research are needed to better understand the causal relationships between Patient Safety Culture (PSC), Hospital Performance (HP), and Patient Right to Know, as well as to identify effective interventions for improving healthcare quality (Zhang et al., 2022).

Exploration of additional moderators and mediators. The literature on Patient Safety Culture (PSC), Hospital Performance (HP), and Patient Right to Know has primarily focused on direct relationships among these variables (Batbaatar et al., 2017). Future research should explore additional moderators and mediators that may influence these relationships, such as organizational culture, leadership styles, and communication practices (Zhang et al., 2022).

By addressing these research gaps and further investigating the identified areas, future studies can contribute to the advancement of knowledge on Patient Safety Culture (PSC), Hospital Performance (HP), and Patient Right to Know, ultimately helping healthcare organisations develop and implement effective strategies for improving patient safety and healthcare quality (Zhang et al., 2022).

## **Conclusion**

Overall, evaluating the effect of patient safety culture on hospital performance has attracted increasing attention in recent years, and the trend of publishing articles in this area has been growing. The models used to evaluate hospital performance. A comprehensive literature review highlighted the importance of PSC in healthcare institutions, its critical role in shaping PSO, and its substantial impact on HP. Supervisor/manager expectations and actions, organizational learning–continuous improvement, teamwork within units, communication openness, feedback and communication about errors, and non-punitive response to error were elucidated as the dimensions of PSC. Furthermore, PSO was elucidated by considering two key dimensions. Overall perceptions of patient safety and frequency of event reporting.

Hospital performance (HP) as the study's dependent variable was explicated, focusing on Balanced Scorecard's four perspectives. Financial performance, customer satisfaction performance, internal operational process performance, and learning and growth performance. Meanwhile, PRK was identified as a potential moderator, elucidating the rights of patients to access information about their health, treatments, and safety in hospitals.

## Declarations

**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors without undue reservation.

**Ethics Statement:** Ethical review and approval were not required for the study on human participants in accordance with local legislation and institutional requirements.

**Consent for Publication:** Not applicable

**Availability of Data and Materials:** The data that support the findings of this study are available from the corresponding author upon reasonable request.

**Competing Interests:** The authors hereby affirm that they have no conflicts of interest.

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## **The Influence of Organizational Culture on Employee Intention to Leave: The Mediating Role of Job Satisfaction**

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### **Abstract**

Data shows that all countries around the world are facing a shortage of nursing staff. The U.S. Department of Health and Human Services predicts that by 2025, there will be a shortage of 260,000 nurses in the United States. The Canadian Nurses Association estimates that by 2022, Canada will have a shortage of 60,000 nurses. The European Commission also predicts that there will be a shortage of 590,000 nurses in Europe. In China, there is also an overall shortage of nursing personnel allocation resources. Additionally, the number of nurses allocated per 1,000 people is below international standards. The World Health Organization predicts that by the end of 2035, there will be a global nursing shortage of 7.2 billion. One important reason for this is nurse turnover. While many studies attempt to address nurse turnover issues, research on the central region of Henan Province in China is limited and there has been little focus on the turnover intention among grassroots nurses. Grassroots nurses make up a large proportion and face high work pressure with heavy tasks compared to mid-level and higher-level nurses. Furthermore, their attrition rate is higher than those at higher levels within healthcare institutions. The cost to train nurses is expensive; therefore losing them from the healthcare system undoubtedly results in significant loss. No hospital wants well-trained nurses to leave as it would signal an unfavourable future for nursing professionals. This study aims to understand the complex relationship between organizational culture, job satisfaction, and turnover intention among grassroots nurses in Henan Province's central region. To achieve this goal, four main objectives were investigated: firstly examining how organizational culture influences turnover intention among grassroots nurses; secondly exploring how organizational culture affects job satisfaction among grassroots nurses; thirdly investigating the impact job satisfaction has on both turnover intention and organizational culture; finally exploring whether job satisfaction mediates between organizational culture and turnover intention among these frontline healthcare professionals.

**Keywords:** intention to leave, organizational culture, nurse.

## **Introduction**

Employees are the primary resources of any organization. They work hard and help companies to increase sales and profits. Employee turnover is a serious problem for many organizations around the world. Indeed, the study of employee intention to leaves has long been a major concern in an organization's management (A. Belete; 2018). Turnover is a huge problem for organizations in today's intense global competition (Betsy Seah et al.,2022). Recently, found that the phenomenon of turnover is a permanent problem for organizations (Jeongdoo Park et al.,2020). That would negatively affect the performance and profitability of the organization. On the other hand, employee turnover increases the chances of losing good employees (Alireza Mirzaei et al.,2021). Therefore, retaining valuable skilled employees is very important to employers, as they are considered essential to the performance and success of an organization (Bora Yildiz et al.,2021). Thus, employee turnover has always been an important issue for managing an organization.

There are consequence costs associated with a turnover that would direct recruitment costs endured while looking for a replacement, lost labor between the time the individual quits and a replacement, lost productivity while departing employee and reduced productivity of the new hire while learning the job (Jiyeon Lee.,2021). However, high levels of unemployment make it difficult for people to find suitable work, which reduces productivity and innovation for both the individual and the organization, and this would hurt the economic development of the country (Low Chun Chiat et al.,2019). Thus, employee turnover is a major concern for governments and organizations.

## **Literature Review**

### **Nurse Resignation Situation**

Nurses are the largest professional group in the health sector and have immeasurable value in achieving universal health coverage and sustainable development goals. Since 2002, nurse shortages have become a global reality due to rapid socio-economic development, changes in population structure, and continued growth in demand for nursing services (L.J. Labrague et al., 2020). A survey conducted by Song Kuimeng (2014) of 69 countries and 105 nursing institutions showed that 86% of nursing institutions face a shortage of nurses. According to a survey conducted by the Chinese Nursing Association, only 16% and 35% of tertiary hospitals and secondary hospitals surveyed respectively met national requirements for bed-to-nurse ratios (Xu Yimin et al.,2016). The "2020 State of the World's Nursing Report" jointly released by the World Health Organization (WHO) and International Council of Nurses (ICN) pointed out that if no action is taken, there will be a global shortage of up to five million nurses by 2030. In recent years, China has attached great importance to the shortage of nurse human resources, issuing relevant policies and guarantee systems one after another with rapid growth in registered nurse numbers. According to a report released by China's National Health Commission (2022), as at the end of 2020, there were more than four million seven hundred thousand registered nurses nationwide - an increase of forty-five percent from 2015 - with three point three-five nurses per thousand people. However, compared with the growing demand for nursing services, China still faces significant "shortages" in its number of nurses which cannot

yet reach levels seen globally where there were on average three point six nine nurses per thousand people as at year-end-2018 according to WHO.

The primary reason for the shortage of nurses is a high turnover rate (Jeevan Jyoti et al., 2019). Gan Lu et al. (2020) analyzed data from 940 hospitals on the national nursing quality data platform and found that China has a problem with excessively high nurse turnover rates, with the highest rates among nurses who hold junior titles and have less than five years of work experience. Zheng dan et al.'s study in 2016 showed that contract nurses in tertiary hospitals had a tendency to leave at a rate of 78.9%, and public hospital nurse turnover rates were higher than those in private enterprises (Tang Xiaohong et al., 2019). This data illustrates the current situation of excessive nurse turnover rates. An increase in nurses' willingness to leave can lead to a series of problems, such as decreased patient satisfaction, increased nursing errors, and increased risk of patient death (Leodoro J. Labrague et al.,2020). Reducing nurse turnover has long been considered as a potential strategy for offsetting the shortage of nurses, improving healthcare service quality and patient safety, as well as an effective way to reduce medical institution costs (Seung Eun Lee et al., 2019).

### **The Resignation Situation and the Tendency of Chinese Nurses**

According to Gan Lu's report, the average nurse turnover rate in China in 2017 was 2.15%. The nurse turnover rates in some hospitals in eastern, western, and central parts of China were higher than the national average, with 29 hospitals having a turnover rate of over 10% (Gan Lu et al., 2020). Research by Li Meng indicated that the nurse turnover rate at tertiary pediatric hospitals in Nanjing fluctuated between 1.56% and 4.82% from 2016 to 2020, with nurses working for less than five years and those working in ICU and emergency departments being the main group leaving their positions (Li Meng et al., 2022). Zheng Li et al. conducted a survey on nurse turnover in eighteen hospitals across six provinces in China in 2018, revealing that 6.7% of newly graduated nurses reported high levels of intention to leave (Zheng Li et al.,2020). Feng Jiang et al. surveyed nurses' intentions to leave among thirty-two tertiary hospitals located within twenty-nine provincial capitals across China; results showed that approximately 20.2% of nurses expressed an intention to leave (Feng Jiang et al.,2019). Zhao Li et al.'s study conducted on low-experience nurses from five tertiary hospitals in Jinan City revealed a tendency towards leaving their positions at a rate of 38.4%(Zhao Li et al.,2020). Zhang Ru's report stated that there was a tendency for 57.6%of nurses to leave their positions at Lanzhou City's tertiary hospital (Zhang Ruet al.,2022). He Jingjing et al. (2022) reported the level of turnover intention among radiology nurses in 20 comprehensive hospitals in Sichuan Province, China. The overall score was 12.07±3.25, indicating a high level of turnover intention among the nurses. Song Shuguang et al. (2022) reported the resignation tendency among intensive care unit nurses (with less than 5 years of work experience) in four tertiary public hospitals in Henan Province, China. Among them, 57.92% had a high level of willingness to resign and 32.91% had a very high level of willingness to resign. Yang Tiantian (et al., 2020) reported the turnover intention level among nurses in some tertiary hospitals in Hubei Province, China, which was found to be at a rate of 46.40%.

### **Organizational Culture and Nurse Intention to Leave**

How to timely and accurately identify nurses' high turnover tendencies, actively intervene in the antecedent variables that cause turnover tendencies, and reduce nurses' turnover behavior is a problem that we urgently need to solve. According to the "China Health Statistics Yearbook" data in recent years, the new generation of 80s and 90s account for more than 70% of nursing labor market personnel. Compared with their parents' generation, they have higher education levels, diversified and personalized career thinking and values, as well as certain rebellious psychology (Yang-Chun Fang et al., 2020). Therefore, past research methods cannot be used to study problems under current social backgrounds. Many scholars have made many explorations in this field about nurses' willingness to leave their jobs in recent years and have also achieved many new findings. Several studies reported predictive factors affecting nurses' intention to quit; however, due to limited research on the impact and relationship between only a few variables without fully determining all factors influencing nurse's intention to quit (Claude Fernet et al., 2021; Fasbender et al., 2019; Sellers et al., 2019). Because there are very complex reasons for why nurses want or do not want to leave their jobs, we need to find key factors that affect their willingness or unwillingness.

Organizational culture is formed by shared values and beliefs from within an organization which influences members' thoughts and behaviors. It is an important environmental factor affecting nurse's work motivation (João Pedrosa et al., 2021). Nurses will be influenced by ideal organizational culture during entry stage where they understand the goals of the organization they belong to while acquiring necessary job knowledge & skills through supportive interaction with members so as to internalize organizational values and beliefs thus experiencing organizational socialization process and becoming a member of the organization (Kim, E.G., 2020). After being well-cultivated by organizational culture, if employees establish good relationships with their supervisors, recognize their own work values and generate organizational commitment etc (Sadaaki Fukui et al., 2019), they will have high job satisfaction and investment in problem-solving performance. Conversely, those nurses who do not fully recognize the organizational culture or believe that there is a large gap between expectations and reality may encounter negative results such as professional conflicts, reduced productivity, difficult interpersonal relationships and turnover (Jeong Sil Choi et al., 2020). Therefore, establishing positive organizational culture can maximize members' potential while achieving high work efficiency & human resource management effects thus promoting continuous development of nursing organizations (Juan Meng et al., 2019).

### **The Background of Zhengzhou and its Tertiary hospitals.**

Zhengzhou is the capital city of Henan Province in the People's Republic of China, and it is also a political, economic, cultural, and transportation centre of Henan Province. Zhengzhou is located in central China and in the middle reaches of the Yellow River region, making its geographic location very important. In recent years, Zhengzhou has rapidly developed into one of China's important cities. With the rise of China's economy, Zhengzhou has become an important transportation hub and logistics centre known as the "crossroads" of central China. The Xinzheng International Airport in Zhengzhou is one of China's major aviation hubs that connects many domestic and international cities. According to data from 2020, the population

of Zhengzhou City was approximately 12 million people. As an important city in mainland China, Zhengzhou's population continues to grow steadily due to its rapid economic development and industrialization process which attracts a large influx of people making it one among densely populated cities.

Figure 1. Map of HeNan Province



Source <http://www.chinafactours.com/photo/maps/map-of-henan-1.htm>

According to information released by the Zhengzhou Municipal Health Commission, as of 2022, there are a total of 6,112 medical institutions and 68,878 registered nurses in Zhengzhou. There are also 23 large hospitals with a level of three or above. As a large city in China, Zhengzhou has a developed medical system and first-class medical facilities. It has multiple high-level medical universities and hospitals that provide quality medical services for the city and surrounding areas. Its medical level enjoys a high reputation in China and attracts many patients to seek treatment here. The main purpose of this study is to understand the willingness of nurses at tertiary hospitals in Zhengzhou to resign and analyze the mechanism behind their voluntary resignation behavior in order to further enrich predictive research on nurse-initiated turnover. Figure 1 shows Location map of Henan Province. The highlighted part is Zhengzhou.

### **Problem Statement**

The medical system in Zhengzhou City holds an important position within the entire medical system of China. In recent years, the Zhengzhou Municipal Party Committee and Government have attached great importance to the construction of a healthy city, successively issuing policy

documents such as the "Healthy Zhengzhou Action Implementation Plan (2019-2030)", committed to improving residents' health levels. Currently, with an increased ageing population and life expectancy, there is a rapid increase in demand for nurses while nurse turnover rates remain high, resulting in a huge gap in nursing human supply that hinders the realization of national health (Hyeoneui Kim et al., 2021). There are numerous factors contributing to the shortage of nurses, among which the significant turnover rate of staff stands out as a paramount reason. Based on the study conducted by Wu Yino, which involved the fourth "Third-party Evaluation of the National Action Plan for Improving Medical Services" across 144 tertiary public hospitals in China, an investigation was carried out to assess the current state and influencing factors of nurses' intention to leave their positions. The findings revealed that 22.02% of nurses have recently experienced frequent thoughts of changing jobs. The proportion of nurses considering leaving their current positions within the coming year due to job dissatisfaction was found to be 70.80%. Moreover, 76.53% of nurses who decide to leave their positions opt not to pursue their current profession any further (Wu Yino et al., 2022). The occurrence of nurse turnover behaviors is often a process where resignation intention accumulates continuously. Resignation intention is a very important antecedent variable in resignation behavior and has a good predictive effect on resignation rate (Jing Cao et al., 2021). With an increasing number of chronic disease patients and enhanced public healthcare awareness in China, demand for nursing services is gradually increasing (Yang Jiao, 2020). High nurse intention to leaves are extremely detrimental to maintaining stability within our country's nursing workforce; some nurses may not leave their current job based on certain considerations after developing tendencies towards leaving but they often exhibit poor work enthusiasm and efficiency. Therefore, timely identification and reduction of nurse turnover tendencies are highly valuable (Hongying Chen et al., 2018).

Scholars believe that there is a correlation between organizational culture and nurses' intention to leave (Eunsook Lee et al., 2019). Organizational culture refers to the behavior, values, and moral norms that bind all members of an organization together during its long-term development process (Retno Sari Murtiningsih, 2019). After entering an organization, nursing staff must go through a process of adapting their values and personal abilities to the organizational culture. The higher the consistency between these factors, the lower the nurse's intention to leave (Jeong Sil Choi et al., 2020). Job satisfaction significantly showed a negative correlation with the intention to leave (Aliya Alam et al., 2019). Due to low salaries, heavy workloads, limited opportunities for promotion or participation in management decision-making processes etc., it can greatly affect nurses' motivation at work. It also makes it difficult for them to improve job satisfaction leading to negative consequences such as emotional instability, unstable thoughts, absenteeism or even resignation (Ilmari J. A. Puhakka et al., 2021). Job satisfaction plays a partial mediating role between organizational culture and intention to leave; good organizational culture directly reduces nurses' intention to leave partially by enhancing their job satisfaction indirectly reducing their intention to leave as well (Girma Taye Niguse, 2019). Job satisfaction refers to workers' subjective feelings about working conditions which satisfy both psychological and physiological aspects (Hosein Zahednezhad et al., 2020). According to incentive theory, good organizational culture such as supervisor support system value or commitment towards work will stimulate employees'

motivation at work (Ketut Setia SAPTA et al., 2021). Nurses have a stronger sense of belonging when they are part of a good organizational culture thus lowering their intention to leave (Eunsook Lee et al., 2019); on the other hand, if nurses recognize themselves within an organization's cultural context, then this will greatly enhance their job satisfaction ultimately reducing their intentions-to-leave as well (Retno Sari Murtiningsih, 2019).

Due to various factors such as personal, hospital, and societal influences, the intention to leave nurses varies in different countries and regions within the same country. Currently, no scholars have explored the main factors affecting the intention to leave nurses in the Zhengzhou region. Based on previous research, there is little research on current background content, especially since the outbreak of COVID-19 where employees face challenging work environments due to pandemic-related issues, economic downturns and social labor factors (Sakdiyakorn et al., 2021). After experiencing these challenges, especially during the pandemic, it is necessary to verify whether nurses have changed their views of their work and job values. This study introduces job satisfaction as a mediating variable to strengthen the relationship between organizational culture supervisor support, job value and organizational commitment with employee intention to leave. This article investigates the reasons for nurse turnover intention in tertiary hospitals in Zhengzhou city. In the current economic context, it aims to reduce nurses' intention to leave by enhancing organizational culture and further improving their job satisfaction.

### **Research Objectives**

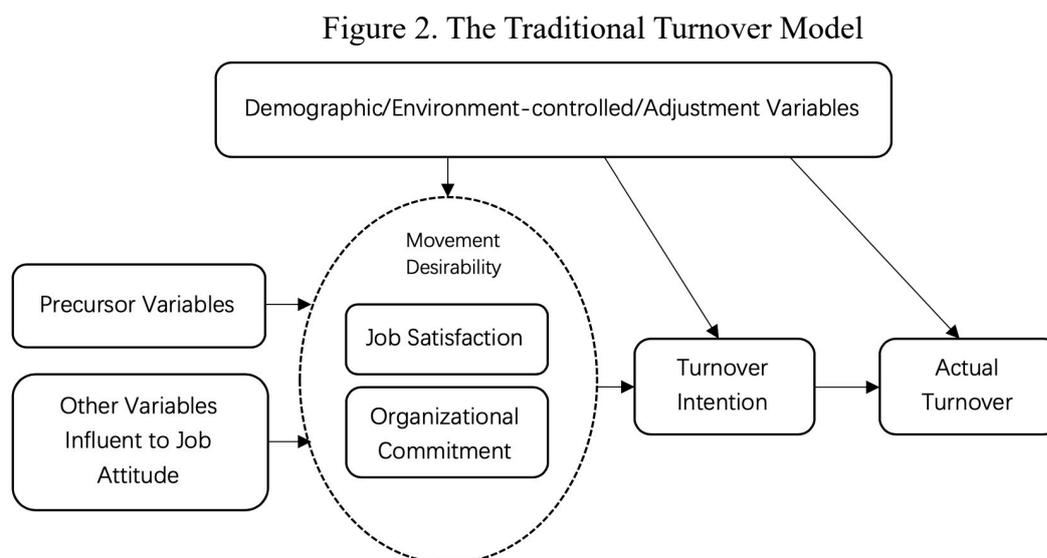
This study aims to examine the relationship between the following variables:

1. To examine the relationship between organizational culture (supervisory support, work value, organizational commitment, corporate social responsibility) and intention to leave.
2. To examine the relationship between organizational culture (supervisory support, work value, organizational commitment, corporate social responsibility) and job satisfaction.
3. To examine the relationship between job satisfaction and intention to leave.
4. To examine the mediating role of job satisfaction on the relationship between organizational culture (supervisory support, work value, organizational commitment, corporate social responsibility) and intention to leave.

### **Proposed Research Framework**

In the early 1970s, most of the core turnover models were proposed. Although many scholars have put forward some new retention theory models over time evolution, the core of the new turnover model is still the same as that of the original model. The new model only refines or extends on the basis of the original turnover theory model. Therefore, for scholars exploring turnover models, the initial theoretical model is special and many subsequent model creations are innovative based on it. The theoretical model proposed in this study will also be based on the original model. This study's theoretical model expands and innovates on Griffeth et al.'s (2000) original turnover model. By studying all employee intention to leaves published in classic management journals up to 2000, job satisfaction and organizational commitment are taken as core focuses of turnover theory in the original model. Below is a description of Griffeth et al.'s (2000) original turnover theory mode.

In the literature review of creating this model, there are 11 variables related to demographic predictive factors and 16 variables related to the structure of exercise accessibility, including factors such as job satisfaction and organizational commitment. Other variables that affect work attitude include six external environment-related variables, such as routine tasks, job scope, job involvement, alternative employment opportunities and comparison with current jobs.



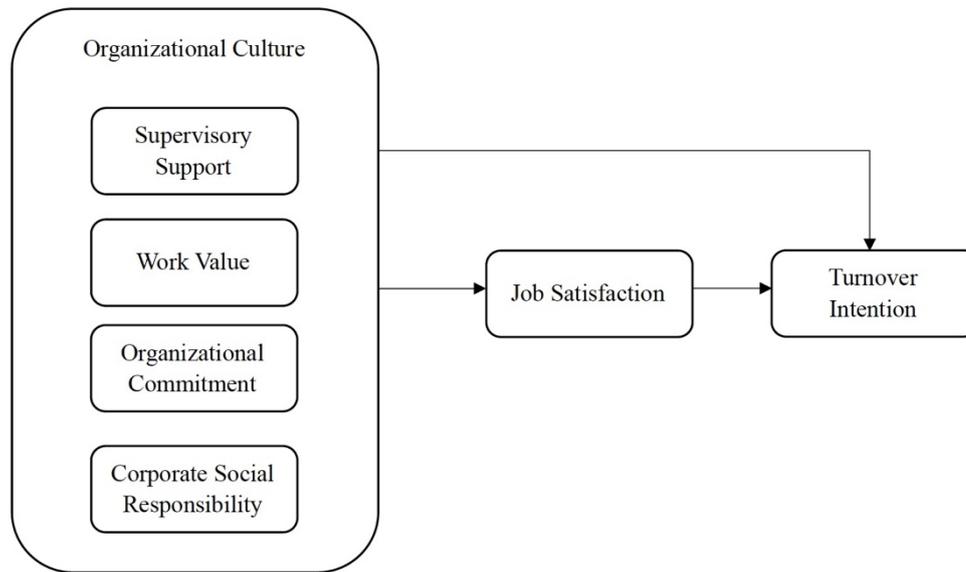
Source: Griffeth et al. (2000)

The precursor variables of the basic model include work pressure, negative emotions, fatigue, feelings of injustice and workplace violence. As mentioned earlier, the initial traditional turnover model was composed of mixed variables from many research papers. Therefore, it contains many variables that make testing the complete model and all original constructs and auxiliary variables challenging in a single study. This study aims to explore the key factors influencing the intention to leave of nurses in third-tier comprehensive public hospitals in Zhengzhou, Henan Province, which have their own professional characteristics, through a review of relevant research literature.

Based on the results of previous research and several recommendations regarding the research variables, this study has constructed the following research framework. The basic principle of this framework is quite simple. It aims to explain the expected relationships. The dependent variable in this study is employee intention to leave. The independent variables (IV) are organizational culture, including supervisor support, job values, organizational commitment, and corporate social responsibility, which reflect employees' recognition of the organizational culture within their company. Job satisfaction plays a mediating role in the relationship between organizational culture and employee intention to leave.

The assessment of existing literature enables researchers to discuss research gaps in this chapter. The subsequent sections of this chapter will present hypotheses while attempting to provide appropriate justifications for the variables under investigation that require empirical testing.

Figure 3. Research Framework



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# **A Study on The Motivational Factors of Employee Performance: The Mediating Role of Employee Engagement**

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## **Abstract**

Manufacturing industry is one of the main industries in China that contributed the most to the GDP of China. In Ganzhou, which is located in the central part of China, has produced the biggest amount of furniture products. This study concentrates on employee performance which are the major part of the manufacturing sector. This study is focusing on the background of the Ganzhou manufacturing industry, problems with employee performance and motivation and the research framework. Quantitative research methodology was applied in this study with a sample of 360 respondents. Analysis was done using the Statistical Package of Social Sciences (SPSS) and Smart PLS.

**Keywords:** employee engagement, employee performance, furniture manufacturing company, motivational factors, Ganzhou.

## **Introduction**

### **Background of Manufacturing Industry**

The global manufacturing landscape has experienced a significant downturn, as evidenced by the consecutive months of the global manufacturing Purchasing Management Index (PMI) falling below 50%, setting a record low (China Federation of Logistics & Purchasing, 2020). Concurrently, the influence of non-economic factors such as Sino-US trade frictions, the situation in Ukraine, and the new crown epidemic has risen rapidly, contributing to a noteworthy shortening of the global manufacturing supply chain. The once predominant global division of labor, under the leadership of the free market, has weakened. Moreover, the factors of production in the manufacturing industry have witnessed a dynamic ebb and flow of comparative advantages, exemplified by the concentration of global labor-intensive industries in the southeastern coastal areas of China in the 1980s, which has subsequently shifted to Southeast Asia in recent years (Ding, 2023).

The repercussions of these global shifts are evident in the economic statistics of China. In the first quarter of 2020, China's GDP experienced a significant decline of 6.8%, with the

manufacturing sector witnessing a drop of about 10 percentage points (National Bureau of Statistics of China, 2020). The impediments to progress for manufacturing firms were exacerbated by a lack of material supply and limited production starts, particularly impacting regional manufacturing enterprises (Geng & Fu, 2021). This is a stark reminder of the vulnerability of the manufacturing industry, the linchpin of the real economy, to external shocks.

The high-quality development of the manufacturing industry emerges as a crucial component of overall economic development (Geng, Fu, 2021). However, the Chinese manufacturing sector faces multifaceted challenges in the wake of an increasingly complex and changeable external environment. Technological revolution and industrial transformation are advancing rapidly, economic globalization is encountering headwinds, and the industry grapples with challenges related to its foundation, innovation capability, human resources, and market size (Li, 2022).

Despite the challenges, the scale of China's manufacturing industry reached an impressive 31.4 trillion yuan in 2021, constituting one-fourth of the GDP. The sector has exhibited rapid growth over the past few decades, fueled by factors such as the "demographic dividend," "policy preferential treatment," and "resource accumulation." However, from a global perspective, China's manufacturing industry still occupies a mid-to-low position in the global production value chain, with considerable distance from high-end manufacturing. The pace of technological progress is perceived as insufficient, and there is a need to further stimulate the vitality and creativity of enterprises (Mou, 2022).

Recent data from the Ministry of Industry and Information Technology of China reveals that the added value of China's manufacturing industry is projected to account for nearly 30% of the world's total in 2022. Impressively, the scale of China's manufacturing industry has secured the top global ranking for 13 consecutive years. This underscores the realization of a comprehensive global manufacturing industry chain layout in China, leveraging substantial advantages such as market size, industrial chain clusters, logistics supply chain, production technology, industrial workforce, and a supportive environment of policies (Huang, 2023).

Essentially, China has adeptly established itself as a prominent force in global manufacturing, where its enterprises not only cater to the domestic market but also demonstrate a keen focus on the international stage. The robust overall layout of the global manufacturing industry chain in China signifies a strategic and sustainable advantage, positioning the country as a central player in the evolving dynamics of the global economy. As the manufacturing sector navigates the complexities of the modern world, a delicate balance between addressing challenges and leveraging inherent strengths becomes crucial for sustaining and enhancing its pivotal role in the broader economic landscape.

### **Background of Ganzhou**

Ganzhou City, known as "Qian" and also referred to as Qiancheng and Gannan, stands as a prefecture-level city under the jurisdiction of Jiangxi Province. It holds the distinction of being a provincial sub-central city and a Type II large city. Geographically, Ganzhou is situated in the southern edge of the mid-subtropical zone, characterized by a subtropical hilly and mountainous humid monsoon climate. As of the end of 2021, Ganzhou boasts a significant population, with a registered population of 9.8402 million and a permanent population of 8.98

million, reflecting an increase of 19,200 from the end of 2020 (Ganzhou Population Statistics Bureau, 2021).

Ganzhou City is a crucial node city within the "Belt and Road" initiative, holding the status of a national comprehensive transportation hub. It serves as a regional modern central city at the crossroads of four provinces: Jiangxi, Guangdong, Fujian, and Hunan. The city boasts four national development zones and one comprehensive bonded zone. Rich in tungsten and rare earth resources, Ganzhou stands as a prominent rare metal industry base and advanced manufacturing base in China. Furthermore, it proudly holds the distinction of being the first pilot demonstration city of "Made in China 2025." Beyond its industrial significance, Ganzhou holds historical importance as an old revolutionary base area, a demonstration area for the revitalization and development of the former Central Soviet Area, a hub for red culture inheritance and innovation, and a metropolitan area focused on cultivation and development within Jiangxi Province. Recognizing its strategic importance, the State Council pledged support for the revitalization and development of Ganzhou as part of the national major regional strategy in 2021 (source: <https://baike.baidu.com>, 2021). The city's commitment to preserving revolutionary red culture and fostering a comfortable living environment has become a magnet, attracting college graduates from Ganzhou City and nearby areas to return to their hometowns for employment. Simultaneously, it draws individuals from other cities seeking employment opportunities (Zhu, Ye, 2022).

Ganzhou has emerged as a notable cluster for the furniture industry, navel orange production, and an e-commerce park. In recent years, significant strides have been made, particularly within the furniture industry cluster, attaining a substantial market position both domestically and internationally. This growth has contributed to an influx of migrant workers and has accelerated the overall economic development of Ganzhou (Luo, 2023).

Highlighted during a press conference themed "Jiangxi in the past ten years," Ganzhou's major economic indicators showcase robust growth, firmly placing the city in the "first phalanx" of Jiangxi Province. Its economic aggregate ranks 65th among China's top 100 cities, representing a significant advancement from its 43rd position. Ganzhou has entered a phase marked by the fastest economic and social development, notable transformations in urban and rural landscapes, and substantial benefits for the local populace. The city's industrial clusters under the "1 + 5 + N" framework have experienced rapid development, featuring four 100-billion-dollar industrial clusters. The number of enterprises with revenues exceeding 10 billion yuan has increased from zero to five, and the count of industrial enterprises above designated size has surged from 781 to 2,478 (People's Information, 2022).

In essence, Ganzhou City stands as a dynamic and strategically positioned hub, amalgamating its historical significance, industrial prowess, and commitment to innovation and development. Its role within national initiatives like the "Belt and Road," coupled with its diverse economic clusters, underscores Ganzhou's vital contribution to the economic landscape of Jiangxi Province and China as a whole. As the city continues its trajectory of growth and development, it remains a focal point for those seeking economic opportunities and a testament to the success of strategic regional planning.

### **Background of Ganzhou furniture manufacturing industry**

Performance management constitutes a crucial facet of effective human resource management, and the methodology employed for incentivizing performance holds paramount importance for organizational success (Liu, 2023).

In the context of Nankang, the burgeoning growth of the furniture industry stands as a testament to the efficacy of robust performance management strategies. According to research conducted by the Nankang District People's Government (2023), the number of furniture enterprises in Nankang witnessed a staggering increase from 1,439 in 2007 to a remarkable 11,000 in 2023. This growth was paralleled by an exponential rise in the number of employees, surging from 54,000 in 2007 to a formidable figure exceeding 400,000 in 2023, signaling a leapfrog development in the industry. In the first quarter of 2023, data from the Ganzhou Municipal Bureau of Statistics (2023) reveals a commendable 5.3% year-on-year increase in the city's industrial added value above designated size.

The state's continued support for manufacturing companies, exemplified by policies like the super deduction for R&D expenses, has played a pivotal role in fostering innovation and development. The Nankang District's R&D expenses deduction preferential policy, guided by tax cadres, has directly supported R&D investment, resulting in significant cost savings for enterprises. This has, in turn, propelled increased investment in scientific research and innovation. Notably, more than 170 enterprises in Nankang have benefited from this policy, with the deduction amount escalating from 104 million yuan in 2019 to an impressive 259 million yuan in 2021, reflecting an average annual growth rate of 58%. This underscores the substantial impact of national policies in propelling enterprise development (Chinanews.com, Jiangxi, 2023).

Furthermore, Nankang's status as the largest solid wood furniture manufacturing base in China is underscored by its strategic approach to resource procurement. With a significant reliance on forest wood, Nankang has harnessed the capabilities of the Ganzhou International Land Port to import substantial quantities of forest timber. The recent establishment of the Ganzhou International Timber Distribution Center has further solidified Nankang's position in the global timber trading market. By collaborating with high-quality timber suppliers from over 50 countries and regions worldwide, Nankang has not only boosted its local furniture industry but has also gained significant influence in timber pricing, particularly for ash wood, raw wood, and other timber varieties (Ganzhou Municipal People's Government, 2021).

In a strategic move to expand global market presence, Nankang's furniture industry made its debut at the Milan International Furniture Fair in Italy in April 2023. The Ganzhou Municipal Government orchestrated efforts to organize furniture companies, facilitating overseas orders and invigorating Nankang's furniture sector. The participation of 14 brand companies resulted in joint development agreements and supply orders totaling a substantial 14.4 million US dollars. This foray into international markets was not an isolated event, as exemplified by the Nankang District Furniture Association's agreement with the Malaysian Furniture Association to build a friendly partnership. This collaborative effort not only bolstered the confidence of Nankang's furniture enterprises in pursuing economic growth but also fostered a group of high-quality enterprises aligned with Nankang's vision for design, equipment manufacturing, exhibition and sales, hardware accessories, paint chemicals, and

product packaging. This concerted effort is anticipated to accelerate the development of Nankang's modern home furnishing industry, propelling it into a formidable cluster with an estimated worth of 500 billion yuan (Ganzhou Municipal People's Government, 2023).

In summation, Nankang's journey reflects the symbiotic relationship between strategic policy support, and international market expansion. The impressive growth of its furniture industry, coupled with strategic initiatives and global collaborations, positions Nankang as a thriving hub in the dynamic landscape of modern manufacturing. The confluence of performance incentives, supportive policies, and international engagement underscores Nankang's commitment to innovation, economic development, and global competitiveness.

### **Problem Statement**

In the wake of the sudden outbreak of the new crown epidemic, enterprises find themselves navigating an environment of heightened competition, marked by unprecedented challenges and uncertainties (Xu, 2023). This evolving landscape has prompted a reevaluation of strategies, particularly within the realm of human resources performance management, where motivation emerges as a linchpin for sustainable development (Mei, 2023).

The research conducted by Ma (2022), Zhang (2021), and Stone (2020) underscores the imperative for Chinese manufacturing firms to undergo a paradigm shift in response to labor shortages and mounting labor protests. The traditional reliance on low-skilled, underpaid, and overworked labor is proving unsustainable in the face of changing dynamics. The manufacturing industry is witnessing a rapid dissemination of employment information, coinciding with a pronounced increase in resignation rates. Job satisfaction languishes, and employees' sense of belonging often remains unfulfilled (Cai, Ji, and Yu, 2022). Despite concerted efforts to address these challenges through measures such as salary increases, improved working conditions, and enticing recruitment incentives, the manufacturing industry is grappling with limited success in talent retention (Li, 2022).

For enterprises to weather these challenges, active employee participation is not just desirable; it's imperative. Optimal employee performance is not only a key driver of organizational success but also a critical factor in the survival of enterprises in this dynamic environment (Ma, 2022). However, the crucible of intense competitive pressures and demanding work situations has been shown to erode motivation and diminish employee commitment to organizations (Mou, 2022).

Presently, enterprise performance management faces a myriad of incentive challenges, as highlighted by Tang Chun (2022) and Zhang (2022). These challenges include inadequate incentives linked to performance targets, a lack of motivation integrated into performance management, and the formalization of performance appraisals leading to constricted fair incentives. The timing of performance appraisals is also underscored as a factor detrimentally affecting employee motivation (Tang Chun, 2022). Cheng (2022) delves into the specific incentive dilemmas confronting the performance management of expatriate employees in Chinese multinational enterprises during the epidemic era. These include the absence of assessment subjects, contradictions between subjective and objective performance, resource exhaustion in the game of performance target identification, the virtualization of incentive

functions due to the lack of rationality in assessment tools, and ineffective incentives leading to brain drain.

Moreover, the manufacturing industry's economic significance is underscored by its substantial contribution to Ganzhou's GDP. Approximately one-third of the city's GDP emanates from the manufacturing sector. Tax payments from manufacturing enterprises constitute a significant portion, accounting for 65.92% of the total tax payment of the top 100 enterprises in Ganzhou (Jiangxi News, 2022). In 2020, Ganzhou City boasted 4.523 million employed persons, representing 20% of Jiangxi Province's total employed persons (Ganzhou Municipal Bureau of Statistics, 2020).

An expanding body of evidence suggests that employee engagement plays a pivotal role in influencing intrinsic motivation, job performance, turnover intentions, and various other job-related outcomes (Zeng, 2022; Mulang, 2022; Riyanto, 2021). Employing the Sobel test for calculation ([www.danielsoper.com](http://www.danielsoper.com)) illuminates the mediating role of work engagement between rewards and employee performance. Adequate rewards, encompassing salaries, bonuses, wages, and allowances, wield a positive impact on employees' commitment to delivering optimal service, thereby augmenting employee performance and overall task success (Zhao, 2022; Abdullah, 2021; Xie, 2021). In essence, this study, focused on manufacturing enterprises, categorizes motivation factors into intrinsic and extrinsic motivation, with employee engagement serving as a mediating variable to scrutinize the impact of motivational factors on employee performance.

In conclusion, the current business landscape, influenced by the new crown epidemic and heightened competition, necessitates a holistic reexamination of performance management strategies within the manufacturing sector. Recognizing the multifaceted nature of incentive challenges and acknowledging the critical role of employee engagement emerge as paramount considerations for fostering sustainable development and success in this dynamic environment. As manufacturing enterprises grapple with these challenges, it becomes evident that a nuanced and comprehensive approach, encompassing motivational factors and robust performance management, is essential for navigating the complex and evolving terrain of contemporary business.

### **Research Objectives**

This study takes performance management in human resource management in the context of the new development pattern, combines the connotation of employee performance motivation and establishes a model of employee performance motivation. The primary purposes are as follows:

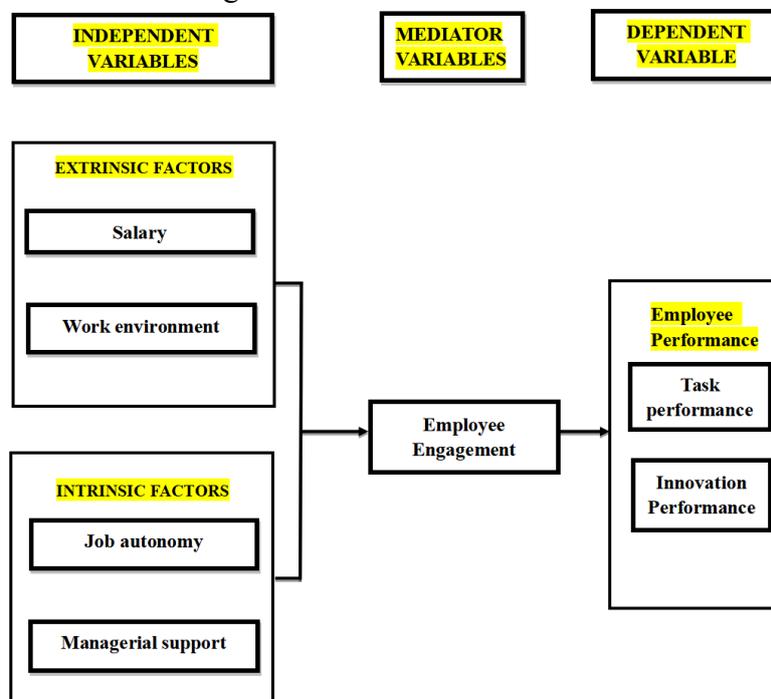
1. To evaluate the positively relationship between motivations (extrinsic, intrinsic) and employee performance in Ganzhou manufacturing companies.
2. To investigate the positively relationship between motivations (extrinsic, intrinsic) and employee engagement in Ganzhou manufacturing companies.
3. To assess the positively relationship between employee engagement and the performance of employees in Ganzhou manufacturing companies.

- To examine the mediating role of employee engagement in the relationship between motivations (extrinsic, intrinsic) and the performance of employees in Ganzhou manufacturing companies.

### Research Framework

This section describes the theoretical basis of this investigation based on the preceding discussion. Figure 1 depicts the framework. The framework is made up of seven construction blocks. Employee performance (DV) in manufacturing organizations is the dependent variable, while the independent variables (IV) are characteristics of extrinsic motivations (salary, work environment) and intrinsic motivations (work autonomy, managerial support). Furthermore, employee engagement is employed as mediator in this study to serve as a connection between IV and DV.

Figure 1. Research Framework



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# Enterprises Self-Management System Under the Background of Big Data Application

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## Abstract

The rapid development of big data has more and more influence on enterprises' production capacity and development prospects. Chinese enterprises are facing new development opportunities and new reform tests. How to effectively improve staff effectiveness and mobilize employees' lasting enthusiasm needs to change the management mechanism of enterprises. This paper starts from practice, through a brief overview of the self-management mode and the background of big data, studies and cooperates with an enterprise in our city, carries out management mode reform for 691 front-line production personnel, and concludes that the self-trust management system can effectively improve the enthusiasm of employees, improve the work efficiency of employees, and in essence enhance the productivity and influence of enterprises To achieve the result of increasing income.

**Keywords:** big data, management mode, production staff, self- management,

## Introduction

With the acceleration of the construction of a socialist market economic system and the deepening of market competition, the importance of management has become increasingly prominent. Since the birth of the first enterprise in the world, the enterprise has experienced more than 240 years of development, and the corresponding theory of enterprise management has also undergone tremendous changes <sup>[1]</sup>. Looking at the changes in management history over so many years, it can be summarized into three stages: experience management, scientific management, and cultural management. The success of an enterprise depends not only on strict system management, but also on giving full play to the participation consciousness and self-management level of all employees <sup>[2]</sup>. Autonomous management is to transfer the decision-making power to the lower level of the organization as much as possible, so that the lowest level has full autonomy and realizes the organic unity of responsibility and rights. Self-management provides a channel for each employee to participate in management. Employees will spontaneously combine their personal and organizational goals if the self-management mechanism can be provided for them. <sup>[3]</sup> The role of managers is to mobilize their subjective

initiative, stimulate their internal potential, and give full play to employees' creativity. Nowadays, in the era of rapid innovation in the knowledge economy, traditional passive management has been unable to adapt to the development of the times, and the implementation of self-management is the general trend<sup>[4]</sup>.

At present, China's information technology development level has been significantly improved. In the competition of many industries, the key to the competition is how to effectively use big data, which is also the case in enterprise management. Big data has good data resource integration ability, which can play a good role in promoting enterprise management. If big data technology is effectively applied to enterprise informatization construction, enterprise information management will be more detailed and targeted. Applying big data technology to information management, especially expanding the scope of information management, can make enterprise management more interactive and convenient from top to bottom<sup>[5-6]</sup>.

### **Related Concepts of Enterprise Self- Self-management under The Background of Big Data**

This chapter will summarize the related concepts of big data, autonomous management and the application of big data in autonomous management.

#### **Big Data Related Concepts**

In the 1990s, the concept of big data was put forward by some scholars, and the arrival of the era of big data development has also been predicted. At the same time, data has become a critical factor affecting various industries and fields, and data has also become an essential part of productivity. Big data emerged with the rapid development of computer and Internet technology. It can realize close contact with other industries through the Internet and related technologies, to promote the optimization and upgrading of the industry. Since the arrogant data was put forward, other industries have been looking for a combination point with big data and exploring the points that can be optimized and upgraded. There are more than ten concepts for defining "big data," of which several are more typical. However, as a new data information asset, big data relies on the continuous development of information data processing methods, which helps to improve decision-making ability and obtain asset insight<sup>[7]</sup>.

#### **Traditional Management Mode**

Traditional management focuses on giving full play to the role of managers. Managers make decisions to deploy and control the overall situation, while employees passively accept various tasks under the command of managers. Employees are all around the manager, not around the market.

Under the traditional management mode, managers pay attention to managing and controlling employees' behavior. On the surface, this approach seems to achieve "let employees do what they want." Although managers "control" employees' hands and feet, they "idle" their minds. At the same time, employees have no responsibility and responsibility due to the need for more autonomy. The traditional management purpose is to organize employees to work hard and forge ahead bravely following the strategic development of the enterprise and the decision-making and deployment of the managers, which promotes the growth and progress of

the enterprise but ignores the personal goals of the employees or the wishes of the employees [8].

### **Self-Management**

Self-management is a system that takes employees as the main body of management, takes cultural construction as the basis, takes the work objectives as the traction, and takes mechanism innovation as the main line to ensure that employees have the conditions, ability, and willingness to complete the work tasks independently, and is responsible for the results, to form bottom-up organizational productivity, combat effectiveness and vitality. Self-management regards employees as the main body of management, so that employees have certain decision-making power and autonomy, and promotes employees to turn around the market, and take the initiative to find problems, overcome difficulties, and achieve goals. The purpose of self-management is to pay attention to the balance and unity of the organization's will and individual's will, as well as the balance and unity of organizational goals and personal goals, to achieve the development and progress of enterprises and employees at the same time, that is, to achieve common development and progress of both sides [9].

### **Combination of Big Data and Self-Management**

In the context of big data, enterprises should pay more attention to the innovation of their own information management content, methods, and technology, and realize the update and breakthrough of big data technology, which is the only way to meet the needs of the development of the times. At the same time, a sharing mechanism should be established to strengthen the ability to sort out information. While selecting the innovation concept, we must implement the management concept and mode of "Internet Plus." The optimized link with the network platform strengthens the information management and big data analysis ability and improves the comprehensive capability of data applications. By combining big data applications and self-management, employees can effectively realize their value in the enterprise. Through realizing self-worth and pursuing self-goal, the employees' self-improvement in the enterprise can be learned, which can be transformed into the overall improvement of the company's value [10].

Under this mode, employees can find and manage the problems on their initiative. Its management effect is high-quality, efficient, and conducive to forming a community of common destiny between employees and enterprises.

### **Design Ideas of Enterprise Self-Management Under the Background of Big Data**

#### **Selection of Practical Objectives**

Based on social research, technical negotiation, and a practical agreement with an enterprise in our city, the company has been established for 11 years. Now, the company has total assets of 120 million yuan, covering an area of 30000 square meters, with more than 1000 employees. The distribution of the number of personnel is shown in Figure 1, including 691 front-line workers, 175 technical personnel, 69 management personnel, and the rest are auxiliary personnel 65. Nearly nine out of the front-line workers have graduated from technology, and 154 of them have a bachelor's degree or above. It can be seen that the proportion of front-line

employees accounts for nearly half of the whole company. However, the education level of these employees is low, their awareness of product quality needs to be stronger, and their sense of responsibility and initiative needs to be improved, which can be used as an adequate practice sample for this practice method. This study will change the management mode of the selected front-line manufacturing employees of the enterprise, bring the big data statistics platform into the management system, and compare the staff enthusiasm, employee performance statistics, and employee work efficiency after the management mode change.

Figure 1. Personnel Distribution of the Enterprise

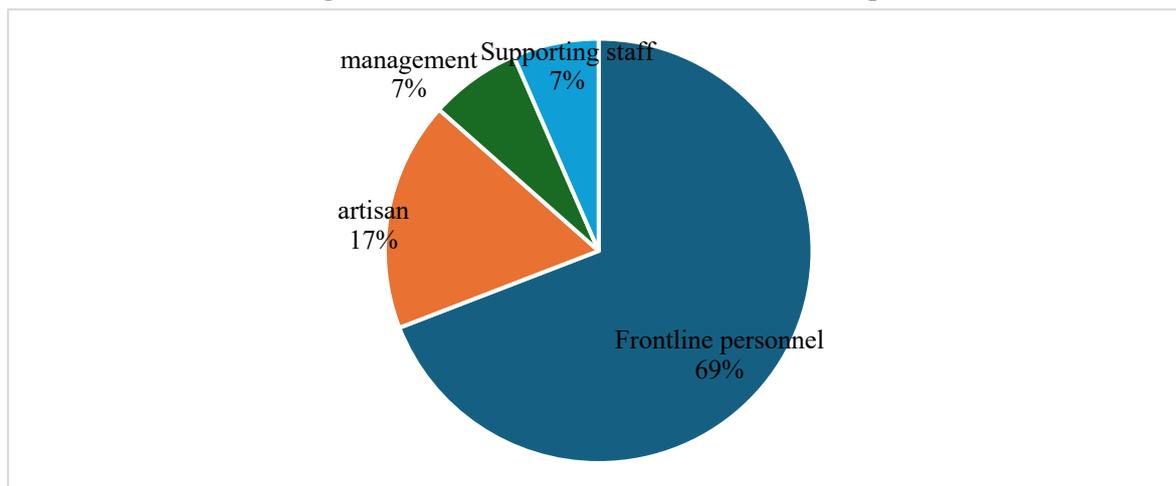


Table 1. Personnel Distribution of the Enterprise

	Frontline personnel	artisan	management	Supporting staff
Number of people	691	175	69	65

### Implementation Method of Practice Mode

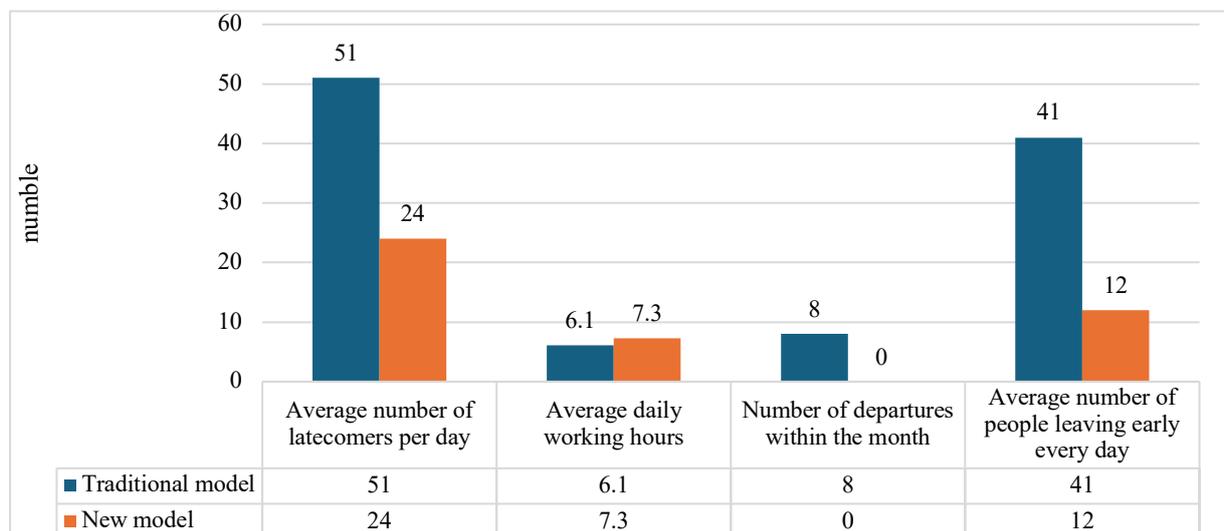
The enterprise is a traditional old-brand production enterprise with strict class stratification. It is a traditional production enterprise with a complex structure and clear division of labor. The enterprise's top-down direction of implementing hierarchical management of employees, in employees' work to adopt a strict system management mode. In this mode, the demands of front-line employees have yet to be realized, and they have no right to choose. They can only make decisions according to the requirements of leaders. When employees have better employment options or are dissatisfied with the status quo, they will choose to leave.

This practice's main implementation goal is for the enterprise's front-line employees. The big data platform is introduced into daily work management, and the upper and lower-class management mode is canceled. By strengthening the integrity concept of employees, the employees' self-management ability and mutual supervision are improved. Employees can query their and others' work efficiency and progress on the mobile terminal in real time according to the corresponding serial number. A bonus can be uploaded to the platform to share their work experience, the company's various requirements, and so on.

## Analysis of Practice Results of Self-Trust Management Mode Paragraph 1

### Employee Motivation Comparison

Figure 2. Performance Appraisal of Frontline Employees in the Current Month



Work enthusiasm is an active psychological state produced by the task at work. Under the condition of a particular ability, the stronger the work enthusiasm is, the better the performance will be, and the higher the work efficiency will be. In this study, the degree of employees' enthusiasm in the practice time will be judged by the employees' lateness and early leaving, the actual working hours, and the number of employees leaving the company, as shown in Figure 2.

By comparing the new model before and after the practice of the new model, the situation of employee turnover in the traditional mode, the average number of latecomers and early leavers is relatively large. After the new self-management mode issuance, the data was improved, and the number of latecomers and early leavers decreased. In this stage, no employees leave voluntarily, and the actual working hours increase on average. It shows that under this mode, employees can be physically and mentally relaxed and face working more actively to improve working time and efficiency.

### Employee Performance Results of the Month

Employee performance results from the efforts and contributions made by employees to the enterprise within a specified period. Performance appraisal is an overall evaluation of employees' performance in this stage from the aspects of work, attitude, and status, which affects the actual income of employees. Through the investigation of the performance statistics of employees after the implementation of the new model, we found that the performance appraisal scores of employees in the new mode are generally high, and only a small number of others do not meet the requirements, which undoubtedly reflects the improvement of employee productivity under the self-management mode.

Table 2. Performance Appraisal Results of the Month

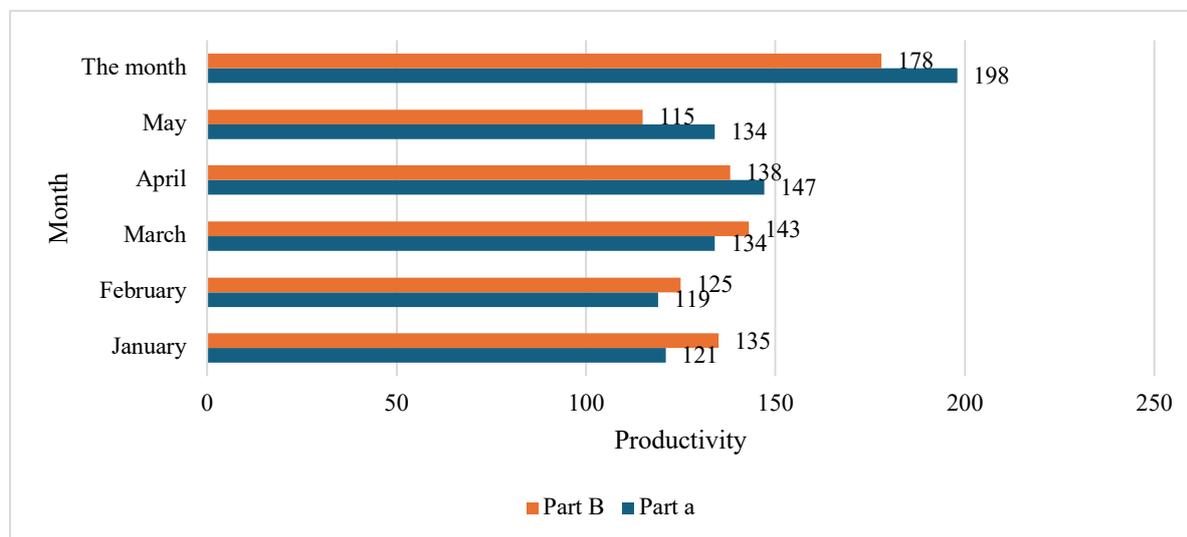
Assessment items	Number of people corresponding to assessment score				
	100-90	89-80	79-70	69-60	Below 60
Whether the work quality meets the requirements	296	241	78	74	2
Whether the work efficiency and workload meet the requirements	256	147	124	157	7
Is self-management of working hours reasonable	245	158	201	82	5
Can you take the initiative to complete the task	381	264	32	13	1
Can you help others finish their work	396	197	68	26	4

### Productivity Comparison with Previous Management Models

Enterprise productivity refers to all the assets that an enterprise participates in production within a specific time range, including the quantity of products, value, or the amount of raw materials that can be processed. This indicator reflects the production and processing capacity of the enterprise. It is very appropriate to remember employees' work efficiency under the traditional mode and the self-management mode through this index.

According to Figure 3, the productivity of the two types of parts is between 1.1 million and 1.5 million from January to May, while the productivity of this experiment is close to 2 million.

Figure 3. Monthly Comparison of Productivity



## **Conclusion**

In the new era, enterprises must carry out management innovation based on integrity. From the self-management perspective, this paper designs a company in our city to carry out employee self-management based on big data. Through the overview and function of self-management, the practice method and implementation of the self-management of the employees of the design company, and the analysis of the data of the enterprise in this experiment, the following conclusions are drawn: the application of big data technology makes human resource management more fair and fair. Also, it plays a positive role in improving the core competitiveness of enterprises. At the same time, big data technology also creates a more positive and healthy competitive working environment for enterprise employees, effectively solves the problem of considerable employee mobility, and dramatically improves employees' sense of trust, belonging, and loyalty to the enterprise. For modern enterprises, winning the loyalty of employees and overcoming the competitiveness of the market is of great practical significance for the long-term development of enterprises.

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# Prognosticating Employee Absenteeism Through Machine Learning Algorithms

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## Abstract

Employees' punctuality and adherence to designated work hours are essential for an organization's growth and success. Organizations often adhere to an eight-hour workday, or 240 hours a month, emphasizing maximum attendance. Frequent absenteeism poses a significant challenge to organizational productivity and revenue. Machine learning comes into play to assist management in effectively overseeing employees, offering predictive capabilities. Therefore, this study aims to predict employee absenteeism using machine learning models and identify the optimal model and the most correlated features. Eight supervised machine-learning algorithms — Naïve Bayes, Logistic Regression, Support Vector Machine, Random Forest, Decision Tree, K-Nearest Neighbor, Gradient Boosting, and Adaptive Boosting — were tested. Before constructing the models, the process included data cleaning, exploratory data analysis, and feature selection. The models were then evaluated based on accuracy, precision, recall and f1-score. This study's findings highlight Random Forest as the top-performing model, achieving an accuracy rate of 89.64%, a precision of 78.00% and an overall average score of 80.00%. Moreover, the paper recommends conducting a resampling approach to address the imbalanced dataset issue, and hybrid models can be built to prognosticate employee absenteeism.

**Keywords:** absenteeism prediction, employee absenteeism, organizational productivity, supervised machine learning.

## **Introduction**

Certainly, it's undeniable that an organization's growth and success are heavily reliant on its workforce. As a result, it is crucial for employees to maintain punctuality and meet the prescribed work hours established by their employers. In general, businesses adhere to a standard weekly work schedule ranging from 37 to 40 hours, commonly referred to as the "9-to-5 work schedule" on weekdays. These working hours can be distributed across five 8-hour days, four 10-hour days, or six 6.5-hour days, with some flexibility in the number of working days. What remains constant is the significance of the total working hours (16 Types of Work Schedules Every Manager Needs to Know, n.d.). Employers typically prefer their employees to make the most of their working hours, but unforeseen circumstances may necessitate various types of leave. In many countries, employees are entitled to a specific number of days off each month and are expected to use this allowance thoughtfully (Ali Shah et al., 2020).

Absenteeism, defined as the failure of a worker to attend work as scheduled, excludes absences resulting from strikes, lockouts, layoffs, regular breaks, or suspensions. It primarily underscores voluntary and personal reasons for being absent (Pavithra & Peter, 2017). Absenteeism is typically viewed as a significant indicator of poor performance and unprofessionalism. Furthermore, it holds a pivotal role in reducing organizational productivity and revenue, affecting both workforce and manufacturing productivity (Stafford, 2023). This trend is evident in numerous countries, including global leaders such as the United States and Europe. The U.S. Centers for Disease Control and Prevention estimate that absenteeism costs American companies approximately \$225.8 billion annually, equating to \$1,685 per employee. Meanwhile, research by the IZA Institute of Labour Economics indicates that a 1% increase in sick leave can lead to a 0.24% decline in productivity (Ebberts, 2020). Additionally, research from the European Foundation for the Improvement of Living and Working suggests that the economic burden of employee absenteeism in Europe could reach as high as 2.5% of GDP (Absence From Work, 2010). In the European Union alone, this translates to an absenteeism cost of \$470 billion, more than double that of the United States (Vulpen, n.d.).

Hence, it is imperative for organizations to anticipate employee behavior regarding their work schedules in order to assess their punctuality and presence in advance. This proactive approach helps minimize the costs and time expended in hiring or interviewing unprofessional employees (Ali Shah et al., 2020). To achieve this, machine learning has been introduced because it offers the advantage of more accurate and faster predictions compared to traditional methods. The machine learning process is a cycle that involves data acquisition, data exploration, data pre-processing, feature extraction, model development, and data analysis (Jian et al., 2022). In recent years, several studies have been published employing supervised machine learning techniques to forecast employee absenteeism and identify contributing factors (Ali Shah et al., 2020; Montano et al., 2020; Raman et al., 2020). Nevertheless, there has been limited exploration of the comparison between various supervised machine learning algorithms. In 2021, Al-Rasheed published a paper presenting seven classifiers for predicting employee punctuality behavior, including Naïve Bayes (NB), Logistic Regression (LR), Multilayer Perceptron, K-Nearest Neighbors (KNN), Bagging, J48, and Random Forest (RF). Among these, Bagging demonstrated superior performance (Al-Rasheed, 2021a). In the same year, a study compared the Multinomial Logistic Regression (MLR) model with Decision Tree

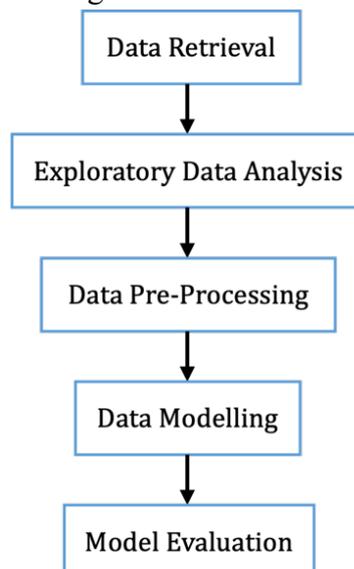
(DT) and KNN, with DT emerging as the top performer (Naganaidu et al., 2022). Meanwhile, Nath et al. suggested that among Support Vector Machine (SVM), MLR, Artificial Neural Network (ANN), and RF, RF stood out as the most effective model (Nath et al., 2022). This finding aligns with the most recent 2023 paper by Fosić et al., which identified RF as the leading model for detecting employee absenteeism alongside the application of DT, SVM, and KNN (Fosić et al., 2023).

The recent research papers predominantly feature the utilization of single machine learning models or ensemble models, mainly those employing bagging techniques. Boosting models like Gradient Boosting (GBoost) are comparatively less prevalent. As a result, this study seeks to create predictive models for employee absenteeism by incorporating both individual machine-learning algorithms and ensemble machine-learning techniques, particularly boosting and bagging. Furthermore, the study aims to pinpoint the most optimal model for predicting employee absenteeism and discerning the pivotal features that exert a significant influence on it. By identifying the champion model and crucial features, organizations can formulate effective strategies to mitigate employee absenteeism and, in turn, bolster workplace productivity.

## Methodology

This section offers an in-depth explanation of the research methodology, which was exclusively carried out using Python. Python enjoys widespread popularity in the field of machine learning thanks to its robust library ecosystem and its versatile capabilities, spanning from data analysis to the creation of machine learning models and the development of predictive analytics, among other tasks. Figure 1 illustrates the overarching framework presented in this paper.

Figure 1. Workflow



### Data Retrieval

This research utilizes a dataset pertaining to employee absenteeism obtained from a Brazilian courier company, which is accessible through both Kaggle and the UCI Machine Learning Repository. The dataset spans a three-year period and contains a total of 740 rows, featuring

one target variable and 20 distinct attributes. These attributes encompass a diverse range of categorical and numerical data, offering a comprehensive perspective on individual employees. Within the categorical category, the attributes include individual identification, reason for absence, month of absence, day of the week of absence, season, disciplinary history, education level, drinking habits, and smoking status. On the other hand, the numerical attributes comprise transportation expenses, distance from residence to workplace, service tenure, age, daily workload, achievement of targets, number of children, number of pets, weight, height, and body mass index. The dataset also incorporates the target variable, namely 'absenteeism time in hours,' making it a valuable resource for the analysis and modeling of employee absenteeism within a work setting (Martiniano & Ferreira, 2018).

### **Exploratory Data Analysis**

Exploratory data analysis (EDA) plays a crucial role in elucidating the connection between the study's features and the target variable. To illustrate these associations, bar charts are employed for categorical variables, while histograms are employed for numerical ones. Furthermore, a heatmap is generated to illustrate and grasp the correlation between the features and the target variable. This EDA procedure serves as a pivotal guide for feature selection endeavors.

### **Data Pre-Processing**

During this phase, various crucial data preparation procedures are executed for modelling. Initially, unnecessary columns are eliminated, and missing values are excluded from consideration. Following that, the numerical target variable is divided into three categories: "Present" for absenteeism hours equal to 0, "Late" for hours between 1 and 10, and "Very Late" for hours exceeding 10. This categorization facilitates the conversion of machine learning models into a multi-class classification framework. Additionally, categorical variables such as disciplinary failure, drinker status, and smoker status are assigned binary values.

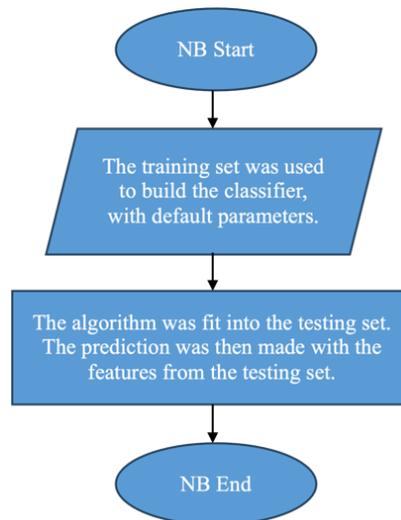
Subsequently, feature selection is performed based on the heatmap analysis results obtained during EDA as it is beneficial for better model building (Nandipati et al., n.d.). Afterward, the dataset is divided into a training set and a testing set in a 70:30 ratio. Furthermore, the EDA results indicate an imbalance in the target variable, leading to the application of the SMOTE method to address this issue.

### **Data Modeling**

Eight classification models are employed, including NB, LR, SVM, RF, DT, KNN, GBoost, and Adaptive Boosting (AdaBoost).

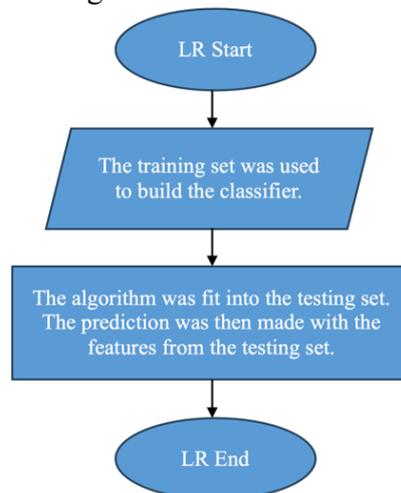
Utilizing Bayes' theorem and assuming predictor independence, the Naive Bayes (NB) classifier is renowned for its straightforward model construction. It avoids the need for intricate iterative parameter estimation when contrasted with alternative classification techniques (Jiang et al., 2012). In this research, we employ the Gaussian Naive Bayes classifier through the 'GaussianNB()' function available in the Scikit-learn library, employing default parameters, as depicted in Figure 2.

Figure 2. NB Workflow



LR was developed in the 1940s and is a statistical technique that exploits the mathematical relationship between independent and dependent variables to make predictions. It is a supervised machine-learning approach primarily employed for addressing classification problem (Sperandei, 2014). This method is especially well-suited when working with data that exhibits linear separability and when the output variable is either binary or categorical. In this work, we apply a classifier using the 'LogisticRegressionClassifier()' function from Scikit-learn, with the 'random\_state' parameter set to 101. This step is taken to ensure consistent output by utilizing a random number generator that produces the same values each time the function is executed.

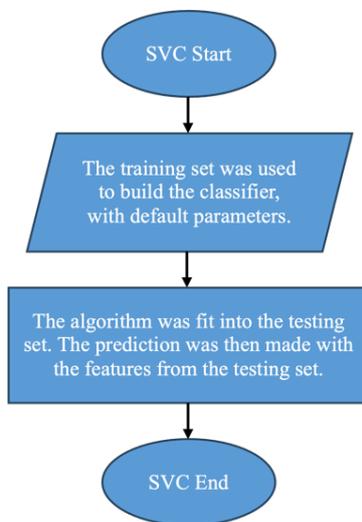
Figure 3. LR Workflow



The SVM model is constructed by partitioning target classes using the feature space plotted in n-dimensional space, generating a linear separator called a hyperplane. Points on one side of the hyperplane belong to the same class, while those on the opposite side belong to a different class (Abbad Ur Rehman et al., 2021). The primary objective of the model is to determine the optimal hyperplane that maximizes the distance between data points. In this work, we utilize

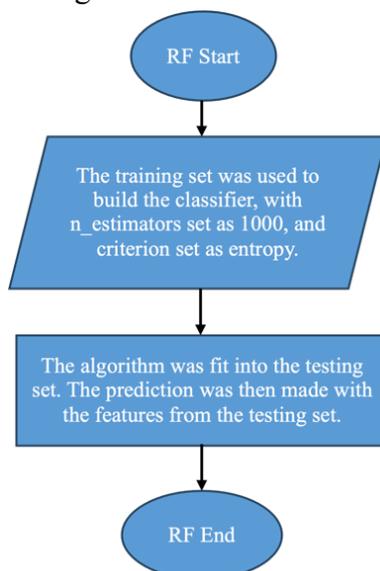
the 'SVC()' function to instantiate the SVM model.

Figure 4. SVM Workflow



RF utilizes a random feature selection procedure in each decision split, which diminishes correlations among individual trees, thereby enhancing predictive capacity and efficiency. This algorithm is particularly well-suited for modeling high-dimensional data, handling missing values, and accommodating various data types, including continuous, categorical, and binary data. To mitigate overfitting without employing pruning techniques, bootstrapping and ensemble methods are applied (Ali et al., 2012). In the context of this study, the 'RandomForestClassifier()' function is invoked to create the classifier. The 'n\_estimators' option governs the number of trees, with a default value of 1000. Simultaneously, the 'random\_state' parameter is set to 101 to ensure consistency in the random number generation process, while the 'criterion' parameter is configured as 'entropy'.

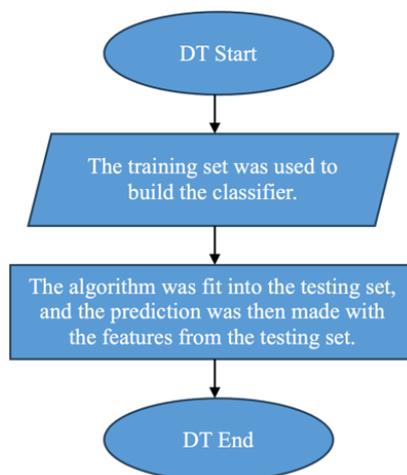
Figure 5. RF Workflow



The DT method, drawing inspiration from the tree's structure with its root, nodes, branches,

and leaves (Zhao & Zhang, 2008)], is a supervised classification approach. It constructs a tree using previously labeled data, pinpointing the most effective features for distinguishing the data and dividing data points into groups based on these feature values. This procedure repeats until all elements within a group share the same classification. In this study, we employ the 'DecisionTreeClassifier()' function to establish the classifier, selecting the default parameters.

Figure 6. DT Workflow



The KNN algorithm is renowned for its simplicity and effectiveness as a non-parametric classification method, operating without any assumptions about the underlying data. It makes use of a labeled training dataset to predict the class of unlabeled data points by identifying the majority class among the K nearest neighbors. In this research, we established the KNN classifier using the 'KNeighborsClassifier()' function. We conducted experiments with a range of K values spanning from 1 to 25 to identify the optimal value for accuracy, which was determined to be  $K = 10$ , as illustrated in Figure 7. Consequently, we configured the 'n\_neighbors' parameter for the function to be set at 10.

Figure 7. Line Graph of Accuracy versus K Values

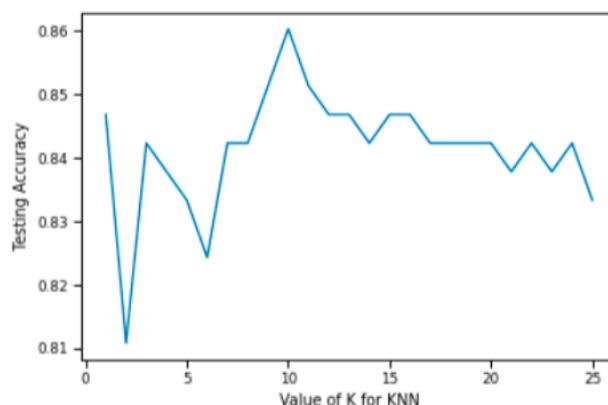
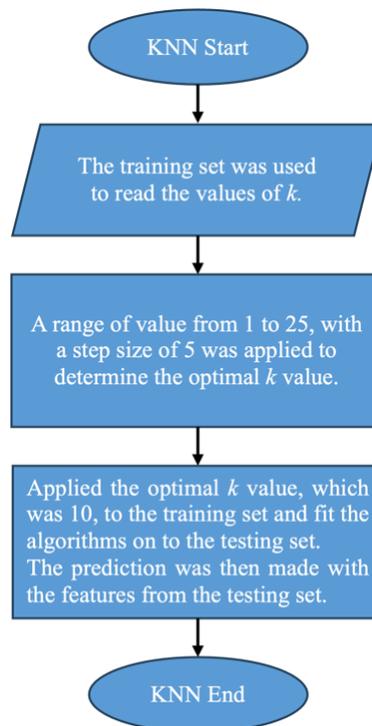
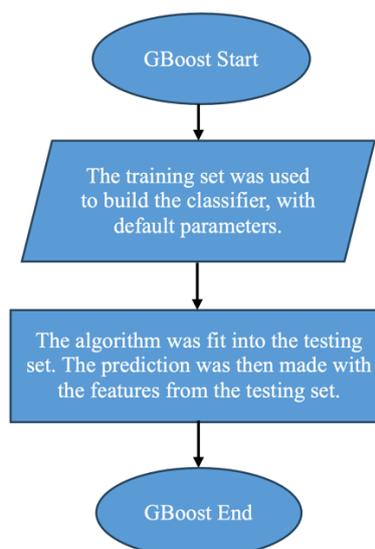


Figure 8. KNN Flowchart



GBoost, also known as gradient tree boosting, is a powerful ensemble machine-learning method for regression and classification tasks. It minimizes a loss function by iteratively adjusting the model in the opposite direction of the gradient (Gradient Boosting in ML, 2023). The GBoost classifier in this work is built using 'GradientBoostingClassifier()' function without passing any parameters, allowing it to use the default configuration.

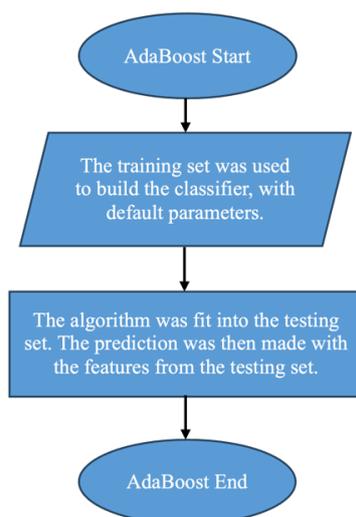
Figure 9. GBoost Flowchart



Adaboost is a meta-algorithm known for improving the effectiveness of diverse learning algorithms through its ability to adapt to incorrectly classified instances in consecutive

classifiers. Initially, it treats all training data instances with equal importance, employing a learning algorithm to construct a classifier. Subsequently, it fine-tunes the instance weights based on the classifier's outcomes. While Adaboost is known for its speed and user-friendliness, it does exhibit sensitivity to noisy data and outliers (Bahad & Saxena, 2020). Remarkably, this algorithm requires minimal parameter tuning, which is why we utilize the 'AdaBoostClassifier()' function from the Scikit-learn library without specifying additional parameters, relying on the default configuration for this study.

Figure 10. AdaBoost Flowchart



### Model Evaluation

The performance of each model is evaluated using a confusion matrix to determine the accuracy, precision, recall, and F1-Score.

The confusion matrix, sometimes referred to as the error matrix, serves as a statistical classification tool for depicting the performance of an algorithm. It presents both predicted and actual values in a tabular format, with rows signifying predicted values and columns signifying actual values (or vice versa). This matrix encompasses four distinct cells: True Positives (TP), True Negatives (TN), False Positives (FP), and False Negatives (FN). TP denotes accurate positive predictions, TN corresponds to accurate negative predictions, FP signifies erroneous positive predictions, and FN represents incorrect negative predictions. A robust classifier exhibits elevated TP and TN values while maintaining low FP and FN values.

Figure 11. Confusion Matrix

		Predicted Class	
		Positive	Negative
Actual Class	Positive	TP	FN
	Negative	FP	TN

Accuracy measures how often the classifier accurately predicts outcomes, calculated as the number of correct predictions divided by the total predictions. Nonetheless, it may not be suitable for imbalanced classes (Faisal Malik et al., 2022). Hence, other evaluation metrics are

also important. Precision evaluates the accuracy of positive predictions by comparing correctly classified positive instances to the total predicted positives. Recall, also known as sensitivity, gauges the classifier's ability to identify positive instances by calculating the proportion of correctly classified positives to the total actual positives. The F1-score balances precision and recall. The equations for each metric are as follows:

$$\text{Accuracy} = \frac{TP+TN}{TP+TN+FP+FN} \quad (1)$$

$$\text{Precision} = \frac{TP}{TP+FP} \quad (2)$$

$$\text{Recall} = \frac{TP}{TP+FN} \quad (3)$$

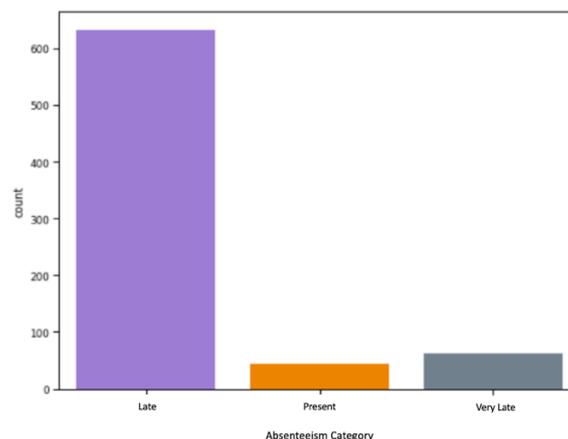
$$\text{F1 - Score} = 2 \times \frac{\text{recall} \times \text{precision}}{\text{recall} + \text{precision}} \quad (4)$$

## Findings

This section discusses noteworthy findings from the EDA, and the performance of the eight machine-learning models is explored.

During the visualization phase of the EDA, the class distribution of the target variable is revealed to be imbalanced, as shown in Figure 12. Therefore, the SMOTE resampling technique is implemented in the data pre-processing stage.

Figure 12. Class Distribution of the Target Variable



In addition, the heatmap generated during the EDA displays several significant correlations: "Age" and "Service time" exhibit a strong positive correlation with a coefficient of 0.67. At the same time, "Body mass index" shows a positive correlation with a coefficient of 0.50. "Distance from Residence to work" and "Drinker status" are positively correlated with a coefficient of 0.45, and "Month of absence" and "Seasons" display a correlation with a coefficient of 0.41. "Transportation expense" exhibits a positive correlation with a coefficient of 0.40, and

"Number of Pet" correlates with a coefficient of 0.40. Subsequently, features with coefficients lower than 0.4 are excluded, namely "Month of absence," "Day of the week," "Seasons," "Weight," "Height," and "Total hits target." This paper employs feature selection before data modelling and evaluation. Out of the initial 20 features, only nine have proven crucial for predicting the target variable. These essential factors are: 'Age', 'Service Time', 'Body Mass Index', 'Distance from Residence to Work', 'Drinker Status', 'Month of Absence', 'Seasons', 'Transportation Expense', and 'Number of Pets'.

Figure 13. Heatmap of This Work



Eight supervised machine-learning algorithms are implemented to predict employee absenteeism from work. As depicted in Table 1, among the eight machine learning models, RF achieved the highest accuracy of 89.64%, while NB performed the lowest with an accuracy of 82.43%. Meanwhile, when it comes to precision score, RF led as well, with the highest precision rate at 78%, while LR has the lowest precision score, at only 43%. Although RF outperforms in terms of accuracy and precision, DT performs the best in recall of 79%. The recall result reveals that all eight machine learning models achieved similar performance levels, ranging from 64% to 79%. LR and NB had the lowest recall values, both at 64%. Moreover, the F1-scores are analyzed. DT model scored the highest F1-score at 77%, while LR had the poorest performance at 49%.

Table 1. Results of Each Model

Algorithms	Accuracy (%)	Precision (%)	Recall (%)	F1-Score (%)	Average (%)
NB	82.4	54	64	56	64
LR	84.2	43	64	59	60
SVM	86.5	46	65	52	62
RF	89.6	78	75	76	80
DT	88.3	75	79	77	79
KNN	83.3	67	68	56	69
GBoost	89.5	74	74	74	78
AdaBoost	86.0	71	71	71	75

Eight classifiers were thoroughly evaluated using measures including accuracy, precision, recall, and F1-score, and RF came out on top with an accuracy and precision rate of 80%. The DT model ranked second with an average score of 79%, excelling in recall and F1-score.

Following closely was GBoost, with an average score of 78%, and AdaBoost, with 75%. In the meantime, KNN (69%), NB (64%), SVM (62%), and LR (60%) all produced average scores that were under 70%. In conclusion, RF outperforms NB, LR, SVM, DT, KNN, GBoost, and Ada Boost models when it comes to forecasting employee absenteeism from work.

### **Discussion**

The result of RF as the champion model bears a resemblance to the findings of a paper prepared in 2021 (Al-Rasheed, 2021b). In both studies, RF exhibited the highest accuracy, recording an impressive 91% accuracy rate, outperforming NB, LR, and KNN. Notably, this study stands apart in terms of precision, where K-Nearest Neighbor achieved the highest precision rate at 89%, and in recall, where Random Forest demonstrated the highest recall at 91%. Random Forest (RF) demonstrates exceptional performance in predicting employee absenteeism, owing to its ability to effectively manage noise and high dimensionality in the dataset. RF also shines when addressing imbalanced class distributions, making it a robust choice for such scenarios. Moreover, RF showcases its versatility as an algorithm capable of excelling in both regression and classification tasks, whether they involve binary or multi-class classification (Zhu, 2020).

### **Conclusion**

Employee absenteeism poses a significant financial burden on companies, impacting employee management and organizational structure. Given the diverse working environments, job types, and geographical locations of companies, pinpointing the root causes of absenteeism is vital to mitigating its adverse effects on a company's financial stability. This is where machine learning comes into play. An open-access dataset was utilized, carried out feature selection, scalability evaluation, cross-validation, and trained various machine learning models, such as Naive Bayes, Logistic Regression, Support Vector Machine, Random Forest, Decision Tree, K-Nearest Neighbour, Gradient Boost, and AdaBoost, to address these problems. Random Forest clearly surpasses the other models in terms of accuracy, precision, and overall performance after these models were compared using a variety of performance indicators. As a result, Random Forest is found to be the most effective algorithm for dealing with the prediction problem. However, this research has its limitations. Beyond the dataset being sourced from a single company, another significant limitation is the exclusion of all possible factors influencing employee absenteeism. It is plausible that other essential features do not present in the dataset could impact the classifier's performance. The dataset comprises only 21 features, with nine chosen for predicting employee absenteeism. This limited feature set could potentially impact classifier performance. Future research can introduce more information and more factors into the prediction. In addition, hybrid resampling methods and more advanced feature selection techniques can be employed. Additional metrics like ROC-AUC (Area Under the Receiver Operating Characteristic Curve) analysis can be incorporated to provide visual insights into model performance, particularly true positive and false positive rates. Lastly, the application of hybrid models can be introduced to forecast employee absenteeism as a promising avenue for future research.

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# **The Impact of Political Connections on Financial Performance During and After COVID 19: Empirical Evidence from Generalized Quantile Regression Technique (GQRT)**

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## **Abstract**

The study aimed at examining the relationship between political connection and firm performance during and after the COVID 19. The study employs the generalised quantile regression (GQR) method, utilizing the annual data of 39 Nigerian firms/banks (including politically connected and non-politically connected firms/banks) that were listed on the financial sector of the Nigerian Stock Exchange between 2019 to 2021. The study finds that, in the context of low-performing banks the degree of impact of political connection is significantly higher when compared to high-performing banks, trying to amass personal wealth at the expense of the company's resources, which will further deteriorate financial performance at the expense of minority shareholders, which is contrary to islamic principles of trust (amanah), justice (adl), equity (qist), and kindness (ihsan). The study use data for periods of pandemic and years immediately following it occurrence (during and after COVID 19). The current study employed the latest technique of generalised quantile regression (GQR) towards investigating the impact of political connection on banks financial performance through diverse quantiles.

**Keywords:** Covid 19, financial performance, generalized quantile regression, political connection.

## **Introduction**

Politicians are frequently well-known entrepreneurs and successful businessmen in many nations [1]. The benefits produced for both politicians and businesses have been used to explain this relationship between politics and business (financially ad otherwise). Previous research

indicates that politically connected firms (POCFs) exist almost everywhere in the world. According to Perez, et al. (2015), 50% of companies in Spain are PCFs, 33.45% of businesses in Singapore are connected to politics (Ang, et al. 2013), 40% of Chinese companies have ties to the government (Bao, et al. 2016). In Malaysia, the percentage of PCFs is approximately 13% (Fung, et al. 2015), whereas 29% of Pakistani firms have political ties (Saeed, at al. 2017). Businesses with political ties include those in the UAE (55%), Qatar (24%), Kuwait (21%), and Oman 26% (Halawi & Davidson, 2008), among others. However, in Nigeria about 60% of the listed firms are politically connected mostly with either Peoples Democratic Party (PDP) or All Progressive Congress (APC), which are the two main parties that have ruled Nigeria since 1999 (Tawiah et al. 2021). This increases the level of corruption and decreases the economic significance (Boubakri et al. 2008; Ojeka et al. 2019). Thus, political environment makes Nigeria a suitable setting for investigating the impact of political connection on firm performance.

The existing literature presents two distinct but opposing lines of evidence concerning the economic consequences of political connections (POCs). According to one line of research, POCs improve firm performance (Boubakri, et al. 2012; Cooper, et al. 2010; Herzog, Munir, et al. 2013). The resource-based view (RBV) supports the findings about the positive impact of POC on firm-level outcomes such as financial performance of firms (Barney, 1991) as well as the social capital theory. According to these theories, the social network of POC acts as social capital that aids the businesses by facilitating access to financing resources, grants, the use of contacts, and knowledge to gain favours when creating latest regulations or engaging in contracts with governmental agencies (Aggarwal, et al. 2012; Meschke and Yue, 2012; Dicko & Khemakhem, 2015). Furthermore, political connections help businesses get bank loans at lower interest rates (Ling, et al. 2016) and face less risk of expropriation (Batta, et al. 2014). Therefore, these advantages associated with political connections give POCFs a competitive advantage over non-POCFs and cause POCFs to perform better than non-POCFs.

On the other hand, agency theory (Jensen & Meckling, 1976) contends that political ties result in information asymmetry amongst the majority and minority shareholders, because businesses have a very low proclivity to disclose political expenditures. In this direction, Habib, et al. (2017) assert that, when POCFs want to conceal political contributions, there is little tendency to appoint Big 4 auditors. Although, Guedhami, et al. (2014) argues that public firms with political connections are more likely to appoint a Big 4 auditor. But, such appointment is to supports the intuition that insiders in these firms are eager to improve accounting transparency to convince outside investors that they refrain from exploiting their connections to divert corporate resources. But, spending on politics is done with the intention of gaining personal gain especially in developing countries where there is weak investor protection, and this goes against the maximization of shareholders' wealth. Consequently, companies with POC will face a decline in their performance.

However, COVID 19 pandemic impacted on the global economy significantly (Tee et. al 2022). Thus, to slow the spread of Covid-19 infections, governments around the world are being forced to impose strict economic restrictions and home quarantines. These drastic measures stifled economic activity, resulting in a liquidity crisis (De Vito and Gomez, 2020), huge failures of businesses (Park and Shin, 2021), increased unemployment (Hasan et al., 2021)

and spending by consumers declining (Heyden and Heyden, 2021). Therefore, companies' performance suddenly deteriorates as a result of declining sales, profitability, and cash flows. As a result, many businesses around the world have introduced emergency economic measures to alleviate the adverse effect of Covid-19 induced economic lockdowns. One of these measures is political connection. For example, businesses have been searching for the connections on how they can survive during and after the pandemic, such as connections with ruling government. Hence, businesses linked to the ruling elites are said to be exempt from economic sanctions (Gehrke and Hernandez-Morales, 2020; Wong, 2020). Moreover, Faccio, et al. (2006) documents that POCFs are more likely to be bailed out when faced with financial distress as compared to their POCFs peers, regardless of the negative effect that the connections might have caused on the accounting-based performance. Previous studies provide empirical evidence on the negative impact of POC across different locations both in advanced and growing economies such as, Cheema et al (2016) in Pakistan, Xie, et al. (2017) in China, Azmi, et al. (2020) in Malaysia. Recently, Shahzad et al (2021) confirm the negative correlation between political connectedness and performance.

In spite of the number of research conducted on the impact of POCs on firm performance both in developed and developing economies, but the correct relationship persists to be inconclusive. On one side, optimistic relationship exist among POCs and firm performance (see. Boubakri et al., 2012; Su & Fung, 2013; Ding et al. 2014; Saeed et al. 2015; et al, 2016; Bencheikh & Taktak 2017; Wong & Hooy, 2018; Wang & Kang, 2019; Eissa & Eliwa 2021), whereas on the other side adverse relationship was evidenced (see. Xie, et al. 2017; Azmi, et al. 2020; Shahzad et al 2021; Niazi et al. 2021). This led to absence of consensus among prior researchers and academicians, and that warrants additional research into the topic, since the nature of the association becomes diverse and inconclusive. It is worthy to note that, these diverse findings could be because of different contexts, performance measurements analysis approaches, environmental differences, among others. Therefore, following Shahzad et al., (2021) the current study employed the latest technique of generalised quantile regression (GQR) (Powell, 2020) towards investigating the impact of POCFs on firm/banks financial performance through diverse quantiles.

By using quantile regression rather than the more conservative ordinary least squares (OLS) method, this current study aims to offer a fresh viewpoint and further understandings into this problem. The study can analyse the distinct responses of POC at various quantiles of the performance distribution using the quantile regression approach. This is due to the fact that firm performance is a crucial factor in corporate decision-making (Kang & Liu, 2014). Thus, it is crucial to analyse the individual responses of POC. For this reason, the current study uses the recently developed GQR method to handle the endogeneity in the quantile regression method. GQR has several benefits, one of which is the ability to separate the explanatory variables into "treatment variables" and "control variables. The structural quantile function includes the treatment variables, and the control variables are employed to help identify the parameters Shahzad et al., (2021).

This study employs the data of Nigeria listed financial firms/banks over the periods 2019 to 2021 for two (2) main reasons. First, the study combined both quantile regression with OLS due to the skewed distribution of financial performance measures. This is because, it is

documented in the corporate governance literature that, the impact of predicting variables on the testing variables varies when the predictors changes within the distribution (Shahzad et al., 2021). The study anticipates that the influence of POC on firm performance will vary within the distribution. As a result, the current study uses a quantile regression approach to examine how POC affects various levels of firms/banks financial performance. Second, the study considers political networks in a country where Islam is practiced by the majority of the population. Nigeria is a closely populated country with over 177 million residents, of which over 50 per cent are Muslims (National Bureau of Statistics, 2012), and currently it is projected that in the forthcoming 2023 census the percentage will reach 60 per cent. The Islamic value system necessitates business transactions to be honest, just, and fair (Lewis, 2001). Political connections, on the other hand, that benefit a selected group at the expense of minority stakeholders violate Islamic business ethics. Therefore, in Nigeria with a dominant and larger number of Muslims, the Islamic injunction must influence their behaviour because they believe in the teaching of the Qur'an and Sunnah of the prophet Muhammad (S. A. W). Thus, their participation in companies' affairs depends on predominant practices in the Holy book, while dissemination of false information, betrayal, deception, and exploitation of others are all prohibited (Abu-Tapanjeh, 2009). Hence, the data from Nigeria suit the examination of the relationship between the political connections and firm performance.

The following are some ways that this study adds to the body of existing knowledge. First, the study uses panel data for Nigerian listed banks and firms to examine the impact of POC on firm performance using a quantile regression technique. Quantile regression has the benefit of examining the strength of the influence of POC on both high-performing and low-performing firms. Besides that, if the conditional distribution is abnormal, this technique still yields effective and reliable results. As a result, the further observed estimated coefficient vector is resistant to outliers because it minimizes the weighted sum of absolute residuals rather than the sum of squared residuals. This study is aware that the type of econometric model specification used is susceptible to producing inclined results due to the possibility of endogeneity. Despite the underlying presumption that having politically connected directors is exogenic, which is consistent with several earlier research (Saeed et al., 2017). Moreso, there is still a chance that the politically tied executives are chosen at random, and therefore, the possibility of having endogeneity remains. However, to deal with this issue of endogeneity, the current study employs Powell's (2020) GQR technique, which offers snuggling quantile regression (Koenker & Bassett Jr., 1978). This is because snuggling GQR permits researchers to operate the endogeneity crisis, hence the GQR estimator is created within the framework of instrumental variables, which account for the endogeneity issue.

Second, although, the current study is unable to provide empirical evidence regarding whether the level of political abuse differs with the managers' religious beliefs when conducting the transactions. However, the current study can demonstrate that powerful entities and individuals undermine religious value systems. This is one of the areas of challenge to all Muslim believers every time and particularly during and after COVID 19 where businesses are conducted online, as per Islamic values, all Islam followers are responsible for protecting the investment of shareholders based on Islamic teaching, with emphasises to the trust (amanah) given to them. In addition, managers need to guarantee that the firm conducts business only in

permissible (halal) activities, and that those business activities must be carried out in a transparent and ethical manner based on the principles of justice (adl), equity (qist), and benevolence (ihsan) (Hassan & Harahap, 2010). Therefore, using political connections to deceive minorities is a direct violation of this code (Habib, et al., 2018). Consequently, this study adds to the literature that, political connection push firms/banks in trying to amass personal wealth at the expense of the company's resources especially in low-performing firms/banks, and this will further deteriorate firms/banks' financial performance at the expense of minority shareholders, which are contrary to Islamic principles of trust (amanah), justice (adl), equity (qist), and kindness (ihsan).

The remaining article is organised as follows: section 2 reports the literature synthesis and direction of hypothesis, section 3 provides sampling procedure method of data analysis, section 4 provides results and discussions of findings, section 5 was the conclusion and finally, section 6 present recommendation for future studies.

## **Literature Review**

### **An Overview of COVID 19 in Nigeria**

The corona virus outbreak in December 2019 caught governments and my countries around the world off guard. The outbreak of corona virus disease, also known as COVID-19, has posed a significant health risk, worldwide economic, social, and political activities. But in Nigeria specifically and in light of the COVID 19 outbreak, the Nigerian government declared a 14-day lockdown in Lagos State, Ogun State, and the Federal Capital Territory (FCT) on March 30, 2020. Nigeria had 131 confirmed cases and two fatalities in 12 states as of that day. However, as at 13 April, 2020, Nigeria had 323 confirmed cases and ten fatalities. Because there were more people affected by the virus, the lockdown was extended for an additional two weeks, from April 13 to April 28, 2020. The lockdown has been extended for one week, from April 28th to May 4th, 2020. Following that, the lockdown was gradually eased.

As a result, and in order to slow the spread of the virus, most countries around the world, including Nigeria, have imposed restrictions that have resulted in total or partial economic closure. In the process, economies came to a halt, and jobs and livelihoods were lost on unprecedented scales. The impact is enormous and growing in low and middle-income countries, particularly in Nigeria, which has a population of over 211 million people (World Bank, 2022).

### **Direction of Hypothesis**

Political connection is motivated by number of reasons, such as privileged access to lenders, which reduces cost of debt or borrowing cost, import preferential treatment and other licences, as well as sinking the incidence of bankruptcy because of government bailouts, even when bankruptcy is generated by depraved management choices and decisions. More specifically, during and immediately after the periods of severe economic downturns and uncertainties, and these privileges will be crucial for the firm's performance and survival. During these periods, business survival is largely dependent on the government's economic policies and economic power (i.e., channelling economic resources) (Acemoglu et al., 2016; Duchin and Sosyura, 2012). These lead to severe agency problems for the companies (Al-Dhamari and Ismail, 2015;

Chaney et al., 2011; Faccio, 2010). Hence, Political pressures tend to divert managers from their fundamental objective of maximizing shareholders' wealth (Braam et al., 2015). Studies of (Braam et al., 2015; Al-Dhamari and Ismail, 2015; Jaffar and Abdul-Sukor 2016; Muhammad, et al, 2018) confirm the negative effect of political connectedness on firm performance. In view of this, the current study conjectured that:

H1: POC is accompanying with negative firms' financial performance.

Recently, Shahzad et al (2021) compared the performance of high performing with the low performing companies in Pakistan. The study confirms that, the magnitude of the adverse effect of political connectedness is greater in low-performing companies. In view of this, the current study further conjectured that:

H2: Negative effect of POC is higher on low performing Firms..

## **Methods**

### **Sampling Procedure**

The study's population consists of 49 publicly traded companies in the Nigerian stock exchange's (NSE) financial sector between 2019 and 2021, However, ten (10) firms/banks were removed due to insufficient information for measuring variables in the study. Based on the information that is currently available for the past three (3) years, the study ultimately considers 39 companies (during and post Covid 19 periods), providing a final sample of one hundred and seventeen (117) firm year observations.

Data on corporate governance were manually collected from these companies' annual reports, which are available on their websites. The study also collected information related to politicians' names (those contested in 2019 general election) and (those contesting in the forthcoming 2023 general election) from the website of the Independent National Electoral Commission (INEC). The choice of time frame for the study is driven from the rapid spread of Covid-19 infections, which lead governments around the world to impose stringent economic lockdowns and home quarantines. Therefore, these drastic measures curtail economic activities, which resulted in liquidity crunch, massive business failures, rising unemployment and decline in consumer spending, which made companies searching for connection with politician, so as to bail out the firm and safeguard it from failure. Therefore, these warrant Nigeria as the as the good setting for choosing post COVID 19 impacts.

### **Variables Measurement**

#### **Testing Variable: Accounting based Performance (BAP)**

Following Song et al. (2015); Proença et al. (2020) this study proxied financial performance as return on assets (REOA) and return on equity (REOE) to account for the accounting-based performance of firms. REOA is the ratio of net profit after tax to the total assets, while REOE is net profit after tax to the total equity.

#### **Independent Variable: Politically Connected Firm (PCF)**

To create a list of POCFs, so as to identify POCFs, the study compared the full names of the

board members to a list of politicians' names (Boubakri, El Ghouli, & Saffar, 2013; Faccio, 2006). If a board member's full name coincides with a politician's full name for a given year, the company is regarded as a POCF. A time varying POCF is represented by a dummy variable. This procedure yielded 51 POCFs. Therefore, the study selected the politicians serving on boards who have contested both the 2019 and now are contesting in the forthcoming the 2023 elections in our sample of politically affiliated firms. Following Guedhami, et al., (2014), Braam, et al., (2015), and, Shahzad et al (2021) in this current study if the majority shareholders and or board of directors are politicians, POCF takes value "1"; otherwise "0".

### **Control Variables**

Following Shahzad et al (2021), in this current study some important variables were control (Muttakin, et al., 2016). This is because, these variables could affect the association of firms' financial performance and political connections. Thus, the study control for, (1) firms age which is measured as date of incorporating firm or banks, (2) firms'/banks' size measured by the natural log of total assets, (3) firms'/banks' gearing which is measured by the ratio of total debt to total assets, and finally, (4) board size of the firm or bank measured as the number of board members.

### **Estimations Techniques**

The study tested two (2) equations. Thus; equation (1) and equation (2) by applying ordinary least square (OLS), and generalized quantile regression (GQR).

### **Ordinary Least Square (OLS)**

Ordinary least squares (OLS) are a generalized linear modelling technique. It is used for estimating all unknown parameters involved in a linear regression model, the goal of which is to minimize the sum of the squares of the difference of the observed variables and the explanatory variables. It is used in analysing two types of the relationships that may occur: thus, linear, and curvilinear. A linear relationship is a straight line that is drawn through the central tendency of the points, whereas a curvilinear relationship is a curved line. Associations between said variables are depicted by using a scatterplot. The relationship could be positive or negative, and result variation also differs in strength. However, OLS test statistics might be unreliable when the data is not normally distributed, and this warrant for the application of generalized quantile regression (GQR) in this study.

### **Generalized Quantile Regressions (GQR)**

This study's empirical approach uses generalized quantile regression (GQR) (Powell, 2020), which differs from the quantile regression used in many earlier studies in some ways. Traditional conditional quantile regression has the drawback of assuming a relationship between the testing and predicting variables based on an unobserved factor. As a result, the interpretation of the parameters changes considerably when the unobserved factors are made visible by the inclusion of covariates in the quantile model. Although, the testing variable can be conditioned on both the treatment and the control variables using the conventional quantile regression method (Koenker & Bassett Jr., 1978), but it fails to account for the possibility of endogeneity. Thereby, GQR is a straightforward method that aids in simulating the falsifiable

distributions for various treatment variable values. With the help of this GQR configuration, the study can manage the potential endogeneity issue.

### Research Model

Equation (1) and (2) were used in the study to examine if POC was related to lower firm performance. Su and Fung's (2013) model is used in this study. This model determines the relationship among corporate performance and political connections. This current study expects that, politically connected businesses will use their resources to fund politicians' political aspirations instead of corporate goals of wealth maximisation, resulting in subpar firm performance.

$$REOA_{it} = \alpha_0 + \beta_1(POCF_{it}) + \beta_2(FIMAG_{it}) + \beta_3(FIMSI_{it}) + \beta_4(FIMGR_{it}) + \beta_5(FIMGE_{it}) + \beta_6(BODSI_{it}) + \epsilon_{it} \quad (1)$$

$$REOE_{it} = \alpha_0 + \beta_1(POCF_{it}) + \beta_2(FIMAG_{it}) + \beta_3(FIMSI_{it}) + \beta_4(FIMGR_{it}) + \beta_5(FIMGE_{it}) + \beta_6(BODSI_{it}) + \epsilon_{it} \quad (2)$$

Where: REOA means return on asset. REOE means return on equity. POCF means firms'/banks' political connection. FIMAG means firms' age. FIMSI means firms' size. FIMGR mean firms' growth. FIMGE means firms' gearing. BODSI means the size of the board of directors.

The subscript i means firm i, and t means the financial year t, where t = 1, 2 and 3. The study predict the indication of the coefficient estimations on POC to be negative for both equation (1) and (2). This indicates that POCFs perform worse than NPOCFs. Where: NPOCFs means non-political connection firms/banks.

### Discussion of Findings

#### Descriptive Analysis

Table 1 present descriptive analysis, which describes the outline data of the variables under the study. The descriptive statistics where independently reported, the results were divided into three (3) diverse groupings. Thus, the full group (N = 39 firms/banks), PCFs group (N = 17 firms/banks), and NPCFs group (N = 22 firms/banks). The summary statistics comprise the minimum, maximum mean value, median and standard deviation for testing(dependent) predicting and control variables. The mean difference analysis is used in the study to determine the significance of mean differences between POCFs and NPOCFs.

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Table 1. Descriptive Statistics

Variable	Obs.	Mini.	Maxi.	Mean Value	Median	Std. Deviation
Full Sample (39 Firms)						
REOA	117	-0.28	0.13	0.02	0.03	0.06
REOE	117	-0.60	0.80	0.18	0.28	0.52
POC	117	0.00	1.00	0.43	0.00	0.50
FIRAG	117	10.00	101.00	41.43	35.00	19.86
FIRSI	117	8.00	25.00	17.53	17.34	2.27
FIRGE	117	0.00	5.60	0.80	0.61	0.84
BODSI	117	6.00	17.00	10.20	11.00	3.25
POCFs (17 Firms)						
REOA	51	-0.19	0.10	0.03	0.03	0.05
REOE	51	-0.60	0.80	0.44	0.70	0.40
FIRAG	51	10.00	101.00	43.84	42.00	19.81
FIRSI	51	11.00	25.00	17.62	17.34	2.21
FIRGE	51	0.00	5.25	0.85	0.70	0.91
BODSI	51	6.00	17.00	10.16	10.00	3.17
NPOCFs (22 Firms)						
REOA	66	-0.28	0.13	0.01	0.02	0.07
REOE	66	-0.60	0.80	-0.16	-0.50	0.47
FIRAG	66	10.00	101.00	38.20	32.00	19.66
FIRSI	66	8.00	23.00	17.40	17.49	2.35
FIRGE	66	0.00	5.60	0.74	0.60	0.75
BODSI	66	6.00	17.00	10.24	11.00	3.38

Note: REOA=returns on assets, REOE=returns on equity, POC=political connections, FIRAG=firm age, FIRSI=firm size, FIRGE=firm gearing, BODSI=board size, POCFs=politically connected firm, NPOCFs=non-politically connected firm.

However, after winsorizing all variables in this study to reduce the unfavourable influence of outliers, the analysis was focused on the key variables of interest, thus; financial performance measured with accounting based (i.e., REOA and REOE). The findings indicate that the performance of POCFs outperforms that of non-POCFs in both measures of firm/bank financial performance with (REOA = 0.03, REOE = 0.44) of POCFs which are higher than those of non-POCs with (REOA = 0.02, REOE = -0.50). This finding is consistent with the findings of Ding et al (2018) in China and Habib et al (2018) in Indonesia. Therefore, this serves as a signal that politically connected firms or banks reported higher performance during and after COVID 19, perhaps politically connected firms or banks have engaged in earnings management to convince their connectedness that they have performed well. This is because of the presence of high indebtedness (with 0.85) mean value compared to non- politically connected firms or banks (with 0.75) mean value. Moreover, on one hand possibly politically connected firms/banks borrow funds from their connectedness individual in order to remain active within the market despite COVID 19 destruction, as well as to lower the incidence of bankruptcy by ensuring government bailouts (Faccio et al 2006). While on the other hand, connectedness individual possibly used those firms/banks to hide their money because of measures put in place by the incumbent government in curbing the financial crimes across the country. Also, mean value of firms' age and size shows 43.84 and 17.62 for the POCFs respectively which higher than NPOCFs with 38.20 and 17.40 respectively. This is a signal that, political connectedness is more prevalent in older and larger banks/firms.

### Correlation Analysis

Table 2 presents correlation matrix among the predicting, testing and control variable. The shows negative and significant correlation between POC and both of performance measures (i.e., REOA, REOE). This serves as a signal of adverse consequence of POC on the financial performance.

Table 2. Correction Matrix

	REOA	REOE	POC	FIRAG	FIRSI	FIRGE	BODSI
REOA	1						
REOE	0.049	1					
POC	-0.1621*	-0.5701***	1				
FIRAG	-0.0846	0.2695***	-0.141	1			
FIRSI	0.0849	-0.1652*	-0.0504	-0.0698	1		
FIRGE	-0.7467***	0.1437	-0.0642	-0.0214	-0.2295**	1	
BODSI	0.0254	-0.1729*	0.0116	-0.1762*	0.0504	-0.1759*	1

\*, \*\*, \*\*\* represent significance at 10, 5 and 1 percent level respectively. All variables remain as previously defined.

The results also show 0.7467 as the highest correlation between REOA and FIRGE, this value does not exceed the limit of 0.8. Thus, it can be concluded that, the empirical analysis is free from issues of multicollinearity.

### Regressions Analysis

This present regression analysis using Ordinary Least Square (OLS) and Generalised Quantile Regression (GQR).

Table 3. Regression Result: Ordinary Least Square (OLS)

Variables	Model 1 (REOA)	Model 2 (REOE)
POCF	-4.26***	-7.46***
	(-0.03)	(-0.58)
FIRAG	-2.92***	2.14**
	(0.00)	(0.00)
FIRSI	-2.07***	-2.18**
	(0.00)	(-0.04)
FIRGE	-13.90***	0.69***
	(-0.06)	(0.03)
BODSI	-2.40***	-1.61***
	(0.00)	(-0.02)
Cons	5.60***	2.94***
	(0.18)	(1.08)
r <sup>2</sup>	0.65	0.41
Adj. r <sup>2</sup>	0.63	0.38
Hausman	0.99	0.25
LM	1.00	1.00
Obs.	117	117

\*, \*\*, \*\*\* represent significance at 10, 5 and 1 percent level respectively. All variables remain as previously defined.

Table 3 demonstrates the expected model of the causality between firm performance in POCFs and NPOCFs applying the OLS technique. Models 1 and 2 depict the predictors of REOA and REOE separately. According to the findings, POCFs perform worse than NPOCFs in terms of performance. The regressions results reported in Table 3 suggest that there is a negative and statistically significant relationship between political connection and financial performance. Consistent with H1, the result implies that firms with boards dominated by political connectedness members have superior performance. The results of the study are consistent with the resources dependency theory, which suggest firms prefer to appoint politicians as directors in the firms because directors are seen as resource to the firms. Therefore, firms can enjoy benefit if they appoint politicians as directors because directors can use their influence and can bring resources into the firms Azmi, et al., (2020). Thus, previous studies affirms that political connected firms can increase firm performance and value through official government contract (Chung et al., 2019; Sun, et al., 2016). This result is also in line with the argument that POC provide privileged access to lenders thereby reducing the cost of debt (Faccio, 2006; Boubakri, Cosset, et al., 2012; Boubakri, Guedhami, et al., 2012; Houston, Jiang, Lin, & Ma, 2014), and lower the incidence of bankruptcy by ensuring government bailouts (Faccio, et al., 2006), high rent-seeking activities (Faccio, 2006; Boubakri, Cosset, et al., 2012; Boubakri, Guedhami, et al., 2012).

The finding of the current study is consistent with the findings of Surachai, et al., (2019) in Thailand and Shahzad et al., (2021) in Pakistan, and therefore the study support H1.

Table 4 Generalised Quantile Regression

	Model 1 (REOA)	Model 2 (REOA)	Model 3 (REOA)	Model 4 (REOE)	Model 5 (REOE)	Model 6 (REOE)
	Q25	Q50	Q75	Q25	Q50	Q75
POCF	-4.19*** (-0.03)	-4.14*** (-0.03)	-1.84** (-0.02)	-7.28*** (-0.08)	-6.30*** (-0.61)	-4.81*** (-0.02)
FIRAG	-2.90** (0.00)	-1.93** (0.00)	-1.71** (0.00)	2.04*** (0.00)	1.87** (0.00)	1.05 (0.00)
FIRSI	-2.06*** (0.00)	-1.99** (0.00)	-0.74 (0.00)	-2.13*** (-0.04)	-1.53 (-0.03)	-0.69 (0.00)
FIRGE	-13.78*** (-0.06)	-11.56*** (-0.06)	-7.39*** (-0.06)	0.77 (0.07)	0.92 (0.05)	-0.36 (-0.06)
BODSI	-2.38*** (0.00)	-2.06*** (0.00)	-1.14 (0.00)	-1.70** (-0.02)	-1.30 (-0.02)	-1.62 (0.00)
Cons.	5.54*** (0.18)	4.85*** (0.19)	2.45*** (0.17)	2.91*** (1.09)	2.20*** (0.99)	1.52 (0.17)
r <sup>2</sup>	0.65	0.6806	0.5647	0.4072	0.4477	0.414
Adj. r <sup>2</sup>	0.63	0.6575	0.5152	0.38	0.4077	0.3474
Hausman	0.99	0.99	0.98	0.79	0.79	0.99
LM	1	1	1	1	1	1
Obs.	117	117	117	117	117	117

\*[0p;’o/1 , \*\*, \*\*\* represent significance at 10, 5 ad 1 percent level respectively. All variables remain

Table 4 presents the result of the Generalised Quantile Regression (GQR), it depicts the link between company performance and POCs in three quantiles. REOA is utilized as the testing variable in Models 1–3, whereas REOE is utilized in Models 4–6. In general, the results of

Models 1–6 reveal a negative association between POCs and financial performance in the three (3) quantiles for both REOA and REOE ( $\beta = -0.03$   $t = -4.19$ ,  $\beta = -0.03$   $t = -4.14$ ,  $\beta = -0.02$   $t = -1.84$ ,  $\beta = -0.08$   $t = -7.28$ ,  $\beta = -0.61$   $t = -6.30$ ,  $\beta = -0.02$   $t = -4.81$ ) respectively.

But the POC coefficient at the 25th, 50th, and 75th quantiles differ from one another. This suggests that the influence of political connectivity differs between quantiles. The results of Models 1–6 show that political connectivity has a more detrimental impact on low-performing enterprises than it does on higher-performing firms. Therefore, because of the threat factor, the board's decision-making process in low-performing firms differs significantly from that in high-performing firms.

Consistent with H2, the result implies that negative effect of political connectedness is higher on low performing firms. The results of the study are consistent with the agency theory (Jensen & Meckling, 1976) that suggests political connections with information asymmetry between the majority shareholders and the minority shareholders, since the tendency of firms to report political spending is very low. Therefore, it is deemed to be harmful to minority interests (Habib, et al., 2018), high leverage (Faccio, 2010), low dividend pay-out and profitability (Hassan, et al., 2012), and risk of tunnelling (Qian, Pan, & Yeung, 2011). This result is also in line with argument that political connections affect firm performance negatively through higher labour costs (Bertrand, et al., 2007; Du & Girma, 2010), decrease in firm profitability (Jackowicz et al., 2014), underperformance (Faccio, 2006), increasing risk of expropriating the firm's wealth for political purpose (Bertrand et al., 2007). Therefore, the political connections that benefit a select group at the expense of minority stakeholders goes against Islamic business ethics (Habib, et al., 2018), and it contravene the principles of Islamic trust (*amanah*), principles of Islamic Justice (*adl*), principles of Islamic equity (*qist*) and principles of Islamic kindness (*ihsan*) (Hassan & Harahap, 2010). This result is consistent with the findings of Shahzad et al., (2021) in Pakistan, and therefore the study support H2.

## **Conclusion**

This study used the recently created technique of generalized quantile regression to analyse the impact of a firm's political connections on its financial success in the Nigerian environment. This is due to the fact that, previous studies on this topic have produced conflicting results and because the standard OLS technique has several drawbacks. This study chose conditional quantile regression over ordinary least squares valuation to examine this issue using GQR. The study assessed the reaction of enterprises' financial performance metrics to their political connectivity at various quantiles of the sample data. With this method, the influence of the predicting variable (political connections on company financial performance) could change contingent on where the testing variable (firm performance) fell on the distribution. As a result, we were able to investigate the link between political connectivity and company performance for both high-performing and low-performing enterprises using this estimate technique. The findings showed that POC and companies' performance had a statistically significant negative connection. Furthermore, this negative link was more pronounced for low-performing enterprises than for high-performing enterprises.

The most interesting part of this findings is that the variation of the testing variable in the three (3) quantiles. It is our novelty to share with readers that, using the OLS estimation method,

this change in the testing variable throughout the distribution of the predicting variable cannot be obtained. Thus, in this current study, GQR analysis offered a well intuition of the association of POC and firms' financial performance, and this resolved the flaws in the previous studies that produced mixed findings. This could be due to the application of an inappropriate approach for the analysis, such as ordinary least square.

According to this study's findings, typically, in the case of the sample firms used in this study, political connectivity and firm financial performance are inversely correlated throughout all quantile levels. It's worth noting that, this inverse association is stronger for lower quantile enterprises, or firms with poorer financial performance. Meanwhile, businesses at higher quantiles experience a less pronounced inverse association, and mostly this are companies that reveal better financial performance. It's possible that there's one conceivable reason for these apparently special results. Thus, companies with poor financial performance face difficulty accessing funding due to their poor credit rating and they are under stringent auditing and supervision. Therefore, those companies are frequently rely on political connections to assist them get out of financial trouble and to prevent them from any fines imposed by the regulatory agencies. However, the current study hypothesizes that these political connections were made in exchange for favours given to the underperforming businesses, want to profit personally at the expense of the company's money, culminating in an increased financial performance decline, and that contravene the principles of Islamic trust, (amanah), Justice (adl), equity (qist) and kindness (ihsan). Conclusively, the findings of this study support the hypothesis that improved access to finance and more rent-seeking behaviours make POCF less viable.

However, regarding the implications of this findings, based on the above discussions, these findings have significance not only for academics but also for management, policymakers, and or regulators. First, from the management view, it is critical for management to prevent rent-seeking activities and to make investments that are profitable. Second, for the policymakers and or regulator's view, Nigerian policy makers and regulators such as financial reporting council (FRCN), security and exchange commission (SEC), Nigeria stock exchange (NSE) should establish robust monitoring procedures, particularly in relation to low-performing politically connected enterprises to protect the interests of minority shareholders. Last, for academics' view, it is critical to conduct the analysis using quantile regression rather than ordinary least square. This is because applying quantile regression offers more comprehensive understating of the impact of the predicting variable (political connections) on different levels of the testing variable (financial performance). Thereby, contribution to the existing body of knowledge especially in the areas of politics and finance.

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# The Impact of Organizational Status Perception on Employee Deviant Innovation

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## **Abstract**

In the face of rapidly changing market environments, the internal and external environments that companies face are more uncertain, and innovation is a weapon for companies to win competition. However, due to objective factors such as innovation resources and business risks, companies often do not recognize newly proposed innovative ideas. When superiors reject employees' innovative ideas, employees cannot achieve their ideas through formal channels, and some employees choose to achieve their innovative ideas through informal channels, which is called deviant innovation. With the continuous in-depth study of deviant innovation by domestic and foreign scholars, research on its antecedent variables mainly focuses on work performance, leadership power, innovation atmosphere, etc., and there are few studies on the role of organizational status in the workplace. This paper starts from the perception of organizational status and explores its impact on deviant innovation, the transmission role of innovative self-efficacy, and the boundary role of organizational innovation atmosphere. The empirical results show that: organizational status perception has a significant positive impact on deviant innovation, and innovative self-efficacy plays a partial mediating role in it. The organizational innovation atmosphere positively regulates the relationship between organizational status perception and innovative self-efficacy. This paper realizes the exploration of employee deviant innovation behavior from the perspective of organizational status, enriches and extends the research on the antecedent variables of deviant innovation, and provides a certain reference for organizations to stimulate employees to implement deviant innovation.

**Keywords:** deviant innovation, innovative self-efficacy, organizational status perception.

## **Introduction**

In the rapidly changing market environment, operational management of companies has greater risks, and innovative achievements have gradually become a weapon for companies to win business advantages. With the coverage of the third information revolution becoming more and

more extensive, the Internet is becoming more and more popular in people's daily applications. Social innovation is increasingly valued and has gradually become an important choice for enterprises to gain competitive advantages (Jiang Y et al, 2018). Therefore, companies use various forms to encourage employees to propose innovative ideas and put them into action, such as supporting innovative ideas proposed by employees, conducting performance rewards related to innovation, hoping to use a series of reward policies to improve employees' enthusiasm, promote the output of innovative ideas, and thus establish a good foundation for company operations. However, when the innovative views proposed by company employees are vetoed by superiors or cannot be carried out through formal channels, some people will turn to unconventional channels to realize innovative ideas, that is, through non-conventional means to innovate. Therefore, under this background, deviant Innovation has become more common.

According to relevant studies, deviant innovation has become one of the important ways for employees to participate in innovative activities. Some scholars believe that deviant behavior can significantly improve performance on the basis of promoting the healthy development of organizations (Shoaib S & Baruch Y, 2019). Therefore, people are paying more and more attention to exploring the mechanism and influencing factors of deviant innovation. At present, there are many influencing factors for deviant innovation activities, such as organizational support (Liu D et al, 2016) (Golden T D & Gajendran R S, 2018), leadership type (Guo Y et al, 2021) (Jia J & Liu Z, 2021), psychological safety (Sun P et al, 2021), etc. However, there are relatively few studies on the antecedents of deviant innovation, especially the role of status in the workplace.

According to Magee and Galinsky (2008), organizational status is defined as the degree to which an individual receives recognition and appreciation from other members of the organization. Chen et al. (2012) believe that organizational status is admiration and respect for a particular object, including prestige-based and dominance-based status (Chen, Y. R et al, 2012). Anderson et al. (2015) believe that organizational status is a personal judgment made on the basis of the social status of others, manifested as respect and admiration for others (Anderson C et al, 2015). Djurdjevic et al. (2017) summarize scholars' definitions of organizational status as the relative position of individuals in the organization, with respect, prestige, and reputation as the main characteristics (Djurdjevic E et al, 2017).

Scholars have classified status into different categories based on its nature. According to the source of status, it can be divided into formal and informal status. Formal status refers to titles and professional titles that organizations legally confer on employees; informal status refers to the identity or label that employees "project" after participating in social networks or interacting with others, which usually includes personal reputation, influence, respect, and success (Deng C et al, 2017) (Liu Z et al, 2015). Psychological theories of social class suggest that people with high informal status have higher social status, more resources, and fewer restrictions in society than those with low status (Anderson C et al, 2012). As employees' organizational status increases, those at the top of the organizational structure often have a better understanding of organizational goals and professional roles. They are more likely to combine personal goals and success with organizational goals and actions as a means of achieving these goals (Kennedy J A & Anderson C, 2017).

Innovation is essential for the development of enterprises in the current environment. It is an important topic in contemporary business organizations to effectively improve employees' innovation ability to adapt to the fierce competitive environment. Deviant innovation is a positive innovative behavior that has attracted widespread attention. Deviant innovation behavior is a double-edged sword, which can effectively enhance competitive advantages and improve innovative performance, but it can also bring corresponding risks. This study explores the influence mechanism of deviant innovation behavior by analyzing individuals' perception of organizational status, revealing its internal transmission mechanism and boundary conditions, and interpreting the role of individual perception of organizational status under specific conditions.

### **Literature Review**

“deviant innovation” refers to the behavior of individuals who persist in implementing their innovative ideas through non-formal channels after being rejected by their superiors (Huang W et al, 2017). It is a behavior that combines “deviance” and “innovation”, and is a hidden, spontaneous, informal, and illegal behavior, thus having duality. Barkow believes that perceived organizational status can influence employees' work attitudes and methods to some extent (Wang H et al, 2018). Research has shown that when employees have a higher perception of their organizational status, they tend to have higher personal status expectations and are more likely to engage in individual behaviors. This study believes that perceived organizational status can promote the occurrence of deviant innovative behavior among employees.

Firstly, high-status employees usually have strong confidence in their work and show it through their exquisite appearance and confident aura. Due to their high perceived organizational status, they dare to change the current situation that they do not recognize by innovative behavior and show unusual creativity at work (Deng C et al, 2017). At the same time, creativity is the driving force that motivates employees to engage in innovative behavior (Wang H et al, 2019). Therefore, employees with higher perceived organizational status are more willing to engage in some risky behaviors and even engage in deviant innovative behavior directly without going through their superiors (Yu W et al, 2016).

Secondly, employees with high perceived organizational status usually have better interpersonal relationships within the organization and are at the center of the organizational social network. This core position is more likely to trigger the occurrence of deviant innovative behavior. On the one hand, due to their status advantage, employees can communicate more with other people in the work team and quickly obtain information and knowledge that are beneficial to themselves (Anderson C et al, 2012). On the other hand, employees with status advantages often have strong influence in interpersonal communication (Bercovitz J & Feldman M, 2008). This indicates that when an individual's innovative ideas are rejected, they can achieve their innovative ideas by receiving affirmation and help from others.

Finally, the higher the employee's perceived organizational status, the more they expect to bring better performance to the organization. It is this pressure that makes employees pay more attention to innovation breakthroughs and make deviant innovative behaviors. Existing research has shown that although high-status individuals have a large amount of resources, they

also face greater pressure and threats (Marr J C, & Thau S, 2014), so they have strong intrinsic motivation in maintaining their status and show higher work enthusiasm (Lount R B et al, 2019). When regular work cannot meet employees' needs to maintain their status, their intrinsic motivation will increase significantly, which will give them the courage to break existing rules, that is, to maintain their status through deviant innovation. Moreover, the higher the employee's perceived organizational status, the stronger their ability to bear risks (Bandura A. & Adams N.E, 1977), which makes them more daring to engage in deviant innovative activities without approval from superiors under the influence of self-confidence or arrogance. Based on this, we propose a hypothesis:

H1: There is a positive correlation between perceived organizational status and employee deviant innovative behavior.

Self-efficacy is a psychological concept that refers to a positive psychological state in which individuals are constantly convinced and reflect on their behavior (Bandura A., & Adams N.E, 1977). Tierney and Farmer proposed the concept of innovative self-efficacy and applied it to the study of organizational behavior, defining it as people's confidence in their innovative ability to take action to achieve their innovation goals (Tierney P., & Farmer S.M., 2002).

The higher the employee's perceived organizational status, the more positive their work attitude (Fuller J. B et al, 2006). They can actively acquire new knowledge at work and persist in carrying out innovative activities when encountering setbacks, indicating that they have a higher level of innovative self-efficacy. Choi and Price (2005) pointed out that when employees have a higher degree of perceived status, they will be more confident in their personal abilities, believe more in their ability to overcome adverse factors to meet organizational needs, and make more contributions to the organization. People with lower perceived organizational status usually underestimate their contribution to work tasks and then hand over decision-making power to those with higher status (Driskell, J. E., & Salas, E, 1991). At the same time, people with lower organizational status are less willing to improve personal goals and tasks, feel less confident about whether they can overcome setbacks and make contributions to the organization, and may have lower innovative self-efficacy. Based on this, we propose a hypothesis:

H2: There is a positive correlation between perceived organizational status and innovative self-efficacy.

Innovative self-efficacy can affect an individual's innovative thinking and the choices and specific behaviors that act on it. Innovative self-efficacy helps employees overcome difficulties while affecting their behavioral choices (Yang, J et al, 2011). When employees face a shortage of organizational innovation resources or higher expectations from superiors, employees with high innovative self-efficacy are more likely to actively seek opportunities to change the status quo and achieve innovation goals in unconventional ways (Zhang H, 2010). Therefore, the level of employee innovative self-efficacy has an impact on their innovation motivation. Specifically, when employees have high innovative self-efficacy, they have strong confidence and are more likely to believe that they can achieve innovative results and contribute more to organizational innovation activities (Mainemelis C, 2010). When an employee's innovative ideas are rejected by superiors, the employee will engage in deviant innovative behavior to

prove their ability. Moreover, the strength of an individual's belief that they can obtain innovative results has a different degree of impact on their innovative behavior. If an individual has strong innovative self-efficacy, they have a strong belief in innovation motivation and stimulate long-term production of their innovative activities. Conversely, individuals who do not have high innovative self-efficacy will stand still because they lack faith in successful innovation and are afraid to try new ideas (Sun Y et al, 2012). Based on the above analysis, it is concluded that the higher the employee's innovative self-efficacy, the easier it is to achieve deviant innovative activities. Therefore, we propose a hypothesis:

H3: There is a positive correlation between innovative self-efficacy and employee deviant innovative behavior.

The perceived innovative self-efficacy of employees differs depending on the level of perceived organizational status, which leads to differences in deviant innovative behavior. From the perspective of status characteristics, perceived organizational status can reflect an employee's ability to control their own destiny and influence the surrounding environment or personnel (Sahib P.R., 2015). Fuller proposed that the higher an employee's perceived status in the organization, the stronger their sense of mission. They want to maximize their potential and are full of enthusiasm in their work. They are willing to actively acquire new knowledge and can persist in carrying out innovative activities when encountering setbacks, indicating that they have a higher level of innovative self-efficacy. Conversely, if an employee's perceived organizational status is low, they tend to be more passive at work and underestimate their contribution to work tasks, indicating that they have a lower level of innovative self-efficacy (Mainemelis C, 2010). Employees with high perceived organizational status often have high innovative self-efficacy, which prompts them to engage in deviant innovative activities. Therefore, it can be concluded that the innovative self-efficacy brought about by perceived organizational status has a promoting effect on employees' deviant innovative behavior. Based on this, we propose a hypothesis:

H4: Innovative self-efficacy plays a mediating role between employees' perceived organizational status and their deviant innovative behavior.

According to subjective descriptions of the creative characteristics of the organizational environment by members within the organization, an organizational innovation atmosphere is formed. It is a common and influential organizational atmosphere for members' innovative behavior (Gu, Y. & Peng, J., 2010). Based on social deviance theory (Zheng H.S, 2009), organizations with a strong innovation atmosphere tend to emphasize freedom and flexibility. In such an environment, on the one hand, people with a high perception of organizational status have higher self-confidence. They pay more attention to their own construction and improvement and believe that they have sufficient ability to change the status quo. On the other hand, people with higher perception of status are more likely to break free from external environmental restrictions and constraints, showing high enthusiasm and creativity in their work, that is, they have higher innovation self-efficacy (Deng C et al, 2017). Creativity and work initiative are the main factors that drive them to engage in deviant innovative activities (Wang H et al, 2019). Enterprises with lower organizational innovation atmosphere usually do not bring employees an innovative environment. They pay more attention to following past

successful experiences and norms. Employees' self-confidence is also lower, so it is more difficult to stimulate deviant entrepreneurial activities. Therefore, this study proposes a hypothesis:

H5: The organizational innovation atmosphere regulates the relationship between organizational status perception and its innovation self-efficacy.

## **Methods**

This study selected project teams from enterprises in Jiangsu, Gansu, Shanghai, Beijing, and other regions as research objects. The research objects were divided into team leaders and team members. To reduce the impact of homogeneity bias as much as possible, data was collected from multiple sources. Three days before the planned survey date, the researcher contacted each human resources specialist to communicate the basic requirements of the survey, determine the survey object and the approximate number of participants on the survey day. The questionnaire was conducted in a team leader-member pairing manner, including one team leader questionnaire and 3-8 team member questionnaires. In order to accurately match the data information of the team leader with the corresponding subordinate member, researchers adopted a method of numbering team and member names to improve matching accuracy during the survey.

The survey questionnaire was completed on-site by employees and included measurements of organizational innovation atmosphere, organizational status perception, innovative self-efficacy, and personal basic information. The leader completed an evaluation of employee deviant innovative behavior. After filling out the questionnaire, it was promptly collected by researchers. Finally, 349 valid paired questionnaires were obtained after screening out incomplete questions and surveys where team leaders and members could not be matched from 93 team leaders and 420 team members. The total effective rate of the questionnaire was 82.6%. From the sample surveyed, women accounted for 55% while men accounted for 45%. In terms of age distribution, those aged below 25 accounted for 11.17%, those aged between 25-35 accounted for 74.49%, those aged between 36-45 accounted for 10.6%, while those aged above 45 accounted for only 2.59%. The education level was mainly concentrated in undergraduate and graduate degrees accounting for 68.48%. In terms of work experience, those who worked less than a year accounted for 30.65%, those who worked between one to three years accounted for 38.11%, those who worked between four to six years accounted for 21.78%, those who worked between seven to ten years accounted for 7.16%, while those who worked more than ten years only accounted for 1.15%.

The survey questionnaire in this study was divided into five parts: organizational status perception, deviant innovation, innovative self-efficacy, organizational innovation atmosphere, and control variables. The measurement scales used in this study were sourced from authoritative foreign journals, and researchers from both China and abroad have conducted effective operational processing. The measurement methods are relatively mature. Except for basic information items such as gender, age, education level, department work experience, and job position, other research variable scales were measured using a Likert 6-point scale. The degree of agreement ranges from "completely disagree" to "completely agree". The specific content of the research variable measurement scale is as follows:

(1) Independent variable. Organizational status perception. This study used a single-dimensional informal status measurement scale developed by Spreitzer (1995) . The scale consists of 5 items, including “the organization values me very much” and “leaders often seek my opinion at work”. The Cronbach’s  $\alpha$  coefficient is 0.805.

(2) Dependent variable. Deviant innovation. This study used a deviant innovation behavior scale developed by Criscuolo and Salter (2014) . The scale consists of 5 items, including “I like to think about new ideas outside of my main work” and “I am working on some sub-projects that allow me to explore new areas”. The Cronbach’s  $\alpha$  coefficient is 0.711.

(3) Mediating variable. Innovative self-efficacy. This study used a 4-item scale revised by Tierney and Farmer . The items include “I feel good at coming up with novel ideas” and “I am good at finding new ways to solve problems”. The Cronbach’s  $\alpha$  coefficient is 0.814.

(4) Moderating variable. Organizational innovation atmosphere. This study used a measurement scale compiled by domestic scholars Liu Yun and Shi Jintao (2009) . The scale consists of 12 items, including “my supervisor is a good innovation model” and “the company advocates freedom, openness, and innovative change”. The Cronbach’s  $\alpha$  coefficient is 0.864.

(5) Measurement of control variables. Based on literature review and consideration of the research context, this study set gender, age, education level, department work experience, job position, and other control variables. Previous studies have shown that these variables can affect innovative self-efficacy and employee deviant innovative behavior.

## **Findings**

Common variance, also known as homologous deviation, is caused by a single data source. Generally, common method bias often makes the relationship between variables inaccurate and cannot reflect the actual relationship between variables, which leads to bias in empirical data analysis results. Whether there is a common method bias in data analysis needs to be judged by factor analysis. Therefore, the Harman single-factor test method was used to analyze the common method bias of the data by performing an unrotated factor analysis on all items of the key variables. From Table 5-1, it can be seen that among the six factors extracted in this study, the explanatory power of the first factor is 24.246%, which is lower than the standard of 50% recommended by Hair et al. Therefore, the common method bias problem of this study’s data is not serious.

SPSS25.0 software was used to analyze the mean, standard deviation, and correlation between variables. The results show that there is a significant positive correlation between employees’ organizational status perception and their deviant innovation ( $r=0.435$ ,  $p<0.01$ ), a positive correlation between employees’ organizational status perception and their innovative self-efficacy ( $r=0.220$ ,  $p<0.01$ ), and a significant positive correlation between employees’ innovative self-efficacy and their deviant innovation ( $r=0.400$ ,  $p<0.01$ ). The above analysis results preliminarily verify the relevant hypotheses. The correlation between these variables is below 0.7, which indicates that the conceptual division is reasonable and there is no significant multicollinearity problem. Further hypothesis testing can be performed on these data.

This study used SPSS25.0 software to conduct a hypothesis test through multiple linear regression analysis. According to the steps of mediation effect test proposed by Wen Zhonglin et al. (2004). According to the results of model 2, organizational status perception has a positive effect on employee deviant innovation ( $\beta=0.316, P<0.001$ ), thus supporting hypothesis H1. The results of model 5 show that there is a significant positive correlation between organizational status perception and innovative self-efficacy ( $\beta=0.168, P<0.001$ ), thus supporting hypothesis 2. In model 3, both organizational status perception and innovative self-efficacy were added, and the positive correlation between innovative self-efficacy and deviant innovation was significant ( $\beta=0.288, P<0.001$ ), thus verifying hypothesis 3. Although the coefficient of organizational status perception on deviant innovation decreased from 0.316 to 0.267, it is still significant ( $P<0.001$ ), indicating that innovative self-efficacy plays a partial mediating role between organizational status perception and employee deviant behavior, thus supporting hypothesis 4.

The moderation effect test examines the boundary effect of the relationship between two variables. The conventional method for testing adjustment effects is to test the effect of the interaction between the independent variable and the adjustment variable. Based on this, this study used this method to test the positive regulatory effect of organizational innovation atmosphere on the relationship between organizational status perception and innovative self-efficacy proposed in this paper. Since the above three indicators belong to the same level in this study's model, only SPSS25.0 software was used for testing. Before the formal test, to reduce the impact of multicollinearity, the independent variable and adjustment variable were centralized before regression to obtain the centralized organizational status perception (independent variable) and organizational innovation atmosphere (adjustment variable), and their interaction term (organizational status perception \* organizational innovation atmosphere) was added for moderation effect analysis in this study. Based on Model 1, a moderating variable (organizational innovation atmosphere) was added to Model 2, and an interaction term (organizational status perception \* organizational innovation atmosphere) was added to Model 3 based on Model 2. According to Table 5-4, the interaction term between organizational status perception and organizational innovation atmosphere is significantly positively correlated with innovative self-efficacy ( $\beta=0.119, P<0.01$ ), indicating that the effect of organizational status perception on innovative self-efficacy varies significantly at different levels of organizational innovation atmosphere. To better test the moderating effect of organizational innovation atmosphere, the positive and negative standard deviations of the moderating variable were taken separately and brought into the regression equation. Compared with a low level of organizational innovation atmosphere, the positive impact of individual's organizational status perception on their innovative self-efficacy is greater under a high level of organizational innovation atmosphere, which verifies Hypothesis 5.

## **Discussion**

Firstly, from this article, we can conclude that organizational status perception is an important factor that affects employee deviant innovation behavior. Therefore, we will focus on giving relevant suggestions to employees' organizational status perception. First, we should strengthen the value guidance for employees with high status perception, establish the correct behavior concept, and avoid incorrect deviant innovation behavior that affects normal business operations. Secondly, create a good innovation atmosphere within the company, formulate relevant innovative incentive systems, communicate with employees who have innovative ideas in a timely manner, and ensure that they are transformed into positive innovative performance.

Secondly, it is necessary to strengthen the company's innovation mechanism and manage employees elastically. In the internal governance of the enterprise, not every creative activity of each individual will be accepted by the enterprise. Some employees with high creativity and high performance will engage in deviant innovation behavior to realize their creative ideas. However, in fact, some ideas denied by managers can bring more innovative performance to the enterprise through this improper innovative behavior. Therefore, enterprises should start with improving the construction of the innovation system to prevent rigid management systems from stifling creativity, give employees more autonomy, encourage employees to exercise creative thinking during flexible working hours, and better balance the proportion between conventional and unconventional innovation. Secondly, flexible judgment should be made on employees' deviant innovation behavior, and objective evaluation should be carried out to promote reasonable deviant innovation plans.

Thirdly, it is necessary to increase tolerance for employee innovation behavior. The structural tension of organizational innovation resources is an important factor leading to corporate deviant innovation behavior. When facing a shortage of innovative resources and managers strictly following company guidelines, enterprises will suppress employees' innovative motivation, thereby causing great harm to the creativity of the entire enterprise. Research has found that deviant innovation activities can bring more creative products to enterprises and achieve greater benefits for enterprises.

## **Conclusion**

This article mainly studies the relationship between employees' perception of organizational status and their deviant innovative behavior in the organization, explores the mediating effect of innovative self-efficacy between the two from the perspective of social deviance theory (Zheng H.S, 2009), and investigates the boundary effect of organizational innovation atmosphere from the perspective of cognitive theory (Chen C, 2005). Through a series of empirical data analyses, the following conclusions are drawn: (1) There is a positive correlation between organizational status perception and employee deviant innovation. (2) Innovative self-efficacy plays a mediating role between employees' organizational status perception and their deviant innovation. (3) Organizational innovation atmosphere has a positive regulatory effect on the relationship between employees' organizational status perception and their innovative self-efficacy.

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## **Examining Consumer Brand Engagement and Brand Loyalty in Live Streaming Commerce – A Conceptual Framework**

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### **Abstract**

This research aims to explore consumer brand engagement in the context of live streaming commerce by understanding the various gratifications that drive consumers to engage with brands through LSC and the relationship between consumer brand engagement and brand loyalty. Existing literature on live streaming commerce, consumer brand engagement, and brand loyalty were reviewed to develop a conceptual framework. This research proposes that information seeking, social presence and perceived enjoyment positively impact consumer brand engagement in the context of LSC and that consumer brand engagement is beneficial for brand loyalty. It is recommended that relevant empirical studies be conducted in the future using this proposed conceptual framework.

**Keywords:** brand loyalty, consumer brand engagement, live streaming commerce.

### **Introduction**

The dramatic competition, increasing costs of marketing and constantly involving technology drive researchers and business practitioners to better understanding the marketing efforts that can cultivate consumer loyalty (Kamboj, 2019). According to relationship marketing, consumer engagement is portrayed as an approach to create, build, and improve consumer relationships (Brodie et al., 2013). Consumer engagement is a critical term in the marketing area and Marketing Science Institute declared customer engagement as the key research priority in the research priority list of 2010-2012 and 2014-2016 (Islam & Rahman, 2016a). In recent years, consumer brand engagement (CBE) has emerged as popular construct among the marketing studies, due to its potential to intertwine the consumer behaviour in making purchase decision (Dwivedi, 2015). Consistent with the service domain logic, consumer brand engagement emphasizes interactivity during long-term adoption and impact on consumer loyalty.

The introduction of live streaming into the commerce industry has paved the way for a more sociable online transactional environment and many commercial retailers have used live streaming commerce (LSC) as a marketing tool to improve sales performance; Meanwhile, the

unique characteristic and popularity of LSC attract many brands to use it to reach their consumers (Ren, 2021), such as Estee Lauder, Zara, Nike and Adidas. According to the 50th China Internet Development Statistic Report, the number of LSC users in China has reached 469 million and the increase rate of gross merchandise value of LSC has reached 83.77% in 2022. The LSC is without doubt becoming an important marketing option for brands. However, current research exploring how does the LSC marketing impact brands performance is limited.

Existing research about LSC is mainly focus on consumer purchase intention, impulsive purchase and consumer engagement with the LSC channels, while ignoring the importance role of brands and how would LSC reshape the marketing strategy of brands. Thus, this research explores the research gap in the literature by examine the gratifications in the LSC context, which facilitate consumer brand engagement in LSC and its behavioral outcomes.

### **Problem Statement**

LSC has emerged as a popular method of commerce in recent years and has garnered a substantial following, especially in the wake of the Covid-19 pandemic. Notably, LSC has contributed significantly to the economy. According to Statista (2022), the number of online streaming users in China has surged from 344.31 million in 2016 to a staggering 727.89 million in 2022. Moreover, the gross merchandise volume produced by LSC within China constituted 10.2% of the overall gross merchandise volume for online shopping in 2020. The statistic shows the LSC has become a popular marketing channel, which is not only benefit sales but also enable consumers to better understanding brands and relevant information (Wang et al., 2021). Therefore, more and more brands build their own official live streaming channels, for example, Nike, adidas and puma all have official LSC channels on both Tiktok and Taobao Live.

However, very few research explore how does LSC impact brands themselves, for example, what kinds of gratifications would drive consumers to engage with the focal brands and how would the consumer brand engagement on LSC impact brand loyalty. Previous research explored the consumer brand engagement and brand performance on brand community or social media brand page (Florenthal, 2019; Lim & Rasul, 2022; Pansari & Kumar, 2017), however, as for the LSC, the emerging new commerce method, consumer brand engagement is still underexamined.

### **Purpose of Study**

This research aims to explore what are the various gratifications obtained in the context of live streaming commerce and the relationship between those gratifications and consumer brand engagement in LSC brand channel. Meanwhile, this research investigates the relationship between consumer brand engagement and brand loyalty in the context of LSC.

### **Research Questions**

RQ1: What are the various gratifications obtained in terms of live streaming commerce and do they impact consumer brand engagement in the live streaming commerce?

RQ2: Does consumer brand engagement affect brand loyalty in terms of live streaming commerce?

## **Literature Review**

### **Live streaming commerce**

E-commerce development is constantly evolving and various emerging novel applications are adopted to expand the opportunities to attract consumers and assist merchants to achieve better economic value (Huang & Benyoucef, 2013). Live streaming commerce (LSC) stands for the delivery of e-commerce activities through live streaming technology. With the benefits of live streaming technology, consumers can interact with streamers and conduct two way communication, meanwhile, the guidance shopping of the LSC can improve consumers' information seeking and provide customized shopping advice (Chen et al., 2020)

Previous research explored various aspects of LSC, for example, Wongkitrungrueng and Assarut (2020) suggest that consumers can have a better understanding of the target products, since LSC enables real-time interaction and streamers can provide more detailed information. Chen et al. (2022) used the elaboration likelihood model and trust transfer theory to prove consumer trust in streamers would increase trust toward a product and then improve the purchase intention. Consumer engagement is a critical topic in terms of live streaming commerce, Guo et al. (2021) proved both utilitarian value and hedonic value increase customer engagement in LSC through the mediation of consumer trust. Liu et al. (2022) proved value perception affects consumer engagement in terms of LSC through mediation of satisfaction. In this research, consumer engagement behaviour can be reflected in two ways: gifting number and gifting amount. Kang et al. (2021) proved responsiveness and personalization lead to customer engagement behaviour on LSC. However, current research ignores understanding the effect of LSC on brands and very few articles explore consumer brand engagement in terms of LSC.

### **Theoretical Underpinning**

The use and gratification theory (U&G theory) is the foundation of developing the research model of consumer brand engagement in LSC brand channel. U&G theory was originally developed in the field of mass communication and has been used to explain how individuals are driven to use certain media by psychological and social motives (Katz et al., 1973). According to Katz et al. (1973), consumers may have different motivations to consume the same media. U&G theory has been applied by various researchers to understanding users' motivation of social media (Dhir et al., 2015), instant messaging (Lo & Leung, 2009). Researchers have further used U&G theory to understand individual's motives for using specific features of new media, such as photo sharing (Dhir et al., 2015). Previous research used U&G in the context of LSC, for example, Kim & Kim (2020) used U&G theory explored user use intention in terms of LSC. Hou et al. (2019) use U&G theory to explore the viewing intention in live streaming. Ma (2021) stressed that U&G theory can be viewed as a foundation for understanding live streaming shopping motivation.

### **Consumer Brand Engagement and Customer Loyalty**

With the constant technological development and consumers easier to get information, companies need to engage their customers to maintain their long-term relationship with consumers (Islam & Rahman, 2016b). According to Brodie et al. (2013), customer engagement

can be viewed as a method to create, build, and improve customer relationships and it has proved to be a strategic imperative to build a sustainable competitive advantage. Customer engagement has been an important term in marketing literature since 2005 and has emerged as an influential research stream (Islam & Rahman, 2016a).

According to the relationship marketing theory and service-dominant (S-D) logic, consumers are not just passive receivers of brand-related clues rather they are believed to be proactive contributors to brand interactions (Vargo & Lusch, 2008). The majority of the definitions consider consumer brand engagement as a multi-dimensional concept, and this research adopts the definition of Hollebeek (2014) as CBE is comprised of three dimensions, which as cognitive, affective and activation.

Brand loyalty has been viewed as an important outcome of consumer brand engagement in the services industry since loyal consumers tend to conduct repeat purchases (Leckie et al., 2016). Current literature suggests that stronger brand loyalty can be achieved through forming bonds and relationships with customers (Hong & Cho, 2011). However, current research about LSC is mainly focused on exploring consumer loyalty toward live streaming commerce method, rather than focusing on the loyalty toward relative brands.

## **Research Propositions**

### **Uses and Gratifications in LSC**

U&G theory has been used by many researchers to understand new media and technologies, such as websites (Eighmey & McCord, 1998), online communities (Dholakia et al., 2004), within the current ten years, researchers often use U&G theory to explore the emerging social network sites, for example, Facebook (Malik et al., 2016) and Youtube (Khan, 2017). As U&G theory is frequently applied in media-related research, it addresses the topic of why individuals choose specific media. This theory delves into the socio-psychological needs of media consumers, shedding light on the reasons and mechanisms behind their media preferences. (Ha et al., 2015). In terms of LSC, Chen et al. (2022) used U&G theory to explore what kinds of gratification of LSC would lead to consumer purchase intention and gifting behavior. Hou et al. (2019) used U&G theory to explore what kinds of factors affect LSC users' continue watching and consumption intention. Accordingly, previous research prove U&G theory can be applied to study LSC and consumer brand engagement.

This research covers utilitarian, hedonic and social aspects of gratifications, by exploring information seeking, perceived enjoyment and social presence.

### **Perceived Enjoyment and Consumer Brand Engagement**

Enjoyment is an important factor that motivates consumers to engage the LSC activities, when live streaming commerce contains some substance that makes consumers perceive enjoyment, such as gamification and humor illustration about the brand and products, consumers' attention can be attracted and thus leads to brand-related thinking and elaboration (Qing & Haiying, 2021). Meanwhile, consumers perceive enjoyment during the live streaming commerce about certain brands, they would generate positive emotions toward the brand and positive emotions contribute to the shopping experience and then lead to better brand engagement. Accordingly, this research proposed:

P1: Perceived enjoyment positively impacts consumer brand engagement in terms of live streaming commerce.

### **Social Presence and Consumer Brand Engagement**

The LSC enables consumers and streamers to conduct real-time interaction, which was proven to enhance social presence (Guo et al., 2021). Social presence can provide more information to consumers, especially in the LSC, consumers can get more customized information and provide consumers a sense of engagement. Users can meet other same-interest consumers in the brand LSC channel meanwhile, they can see the streamers, which serve as the brand sellers at the same time. Therefore, the social presence in LSC can improve the degree of intimacy between the brand and consumers. Normally, consumers in the same brand LSC channel share similar interests towards the same brand, the interaction among similar mind people will contribute to user willingness to learn more about the brand and generate a positive attitude toward the brand. Therefore, this research proposed:

P2: Social presence positively impacts consumer brand engagement in terms of live streaming commerce.

### **Information Seeking and Consumer Brand Engagement**

Users commonly use media and technologies to satisfy their need and one of the most critical needs is information (Qing & Haiying, 2021). Previous research has suggested that information seeking is an important rationale for usage intention (Cyr et al., 2007). Once consumers receive enough information provided through brand LSC, that information can assist consumers to better understand the brand and acquire knowledge about the brand and products. Therefore, consumers can have motivation to learn more about the brand. Meanwhile, information improves brand knowledge and lets consumers acquire more positive sides of the brand and its products, thus contributing to their positive attitude toward the brand. Therefore, this research proposed:

P3: Information seeking positively impacts consumer brand engagement in terms of live streaming commerce.

### **Consumer Brand Engagement and Brand Loyalty**

Brand loyalty refers to the degree of attachment the consumers have toward specific brands (Liu et al., 2012); Brand loyalty is one of the most important outcomes for brands and researchers in marketing often view it as a critical dependent variable, since loyal consumers tend to give positive word of mouth about the brand and conduct repeat purchase. Previous marketing literature discussed how brand loyalty can be predicted by the role of CBE (Brodie et al., 2013; Hollebeek et al., 2019; Hong & Cho, 2011), however, this relationship has not been explored in the context of live streaming commerce. Therefore, to fill the gap in the LSC marketing area, this research proposed:

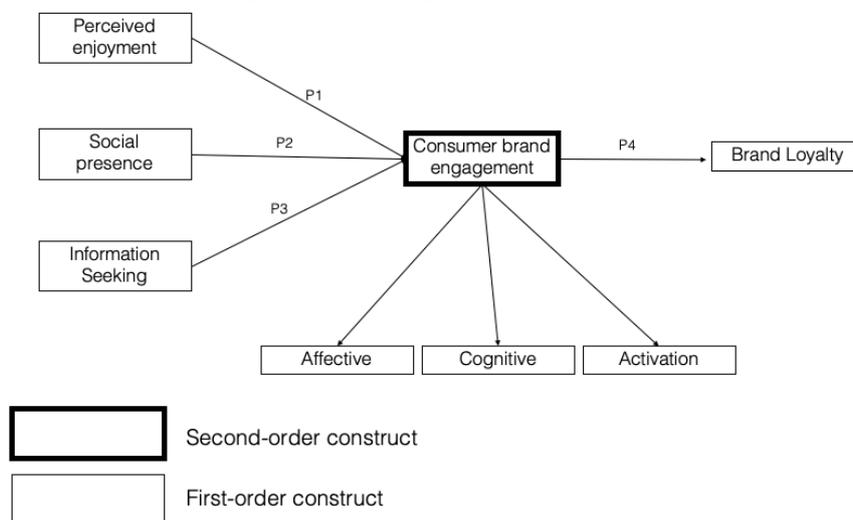
P4: Consumer brand engagement positively impacts brand loyalty in terms of live streaming commerce.

### **Conceptual Framework**

Perceived enjoyment, social presence and information seeking are explored as the main

gratifications of the LSC, and the consumer brand engagement is a second-order construct, which is comprised of affective, cognitive and activation.

Figure 1. Conceptual Framework



## Methodology

This research mainly chooses Chinese consumers, since China is the leading country in terms of live streaming commerce development (Chen et al., 2020b). Therefore, this research focuses on the Chinese LSC market. The target population is adult Chinese consumers who have experienced the apparel brand LSC shopping. This study can use the online survey as the main data collection method, since this method can save time and be more efficient. The questionnaire can be collected through online survey platforms, such as Wenjuanxing and Tecent Wenjuan. Because of the difficulty of explicitly define the population of LSC users in China, this research can use no-probability and purposive sampling. All questionnaire items will adopt items from the existing validated measurements and modifications will be made to fit the LSC industry.

## Implications

This research will provide a theoretical framework to illustrate the gratifications of live streaming commerce and the relationship between those gratifications and consumer brand engagement in terms of LSC. This research will fill the research gap by understanding consumer brand engagement in the context of LSC and investigate the relationship between consumer brand engagement and brand loyalty in the LSC industry.

As for the practical value, this research can assist brands in identifying what kinds of factors would improve consumer brand engagement through live streaming commerce channels, therefore, brands can improve their LSC performance accordingly, for example, they can provide more information through LSC or train their streamers to be more humor to increase viewers' perception of enjoyment.

## Conclusion

This research has built a theoretical framework that can be used for future research to understand consumer brand engagement in the LSC industry. This research not only identifies various gratification of the LSC and examines the relationship between gratifications and consumer brand engagement in terms of LSC, but also test the relationship between consumer brand engagement and brand loyalty. Current research about LSC ignores the antecedents and outcomes of consumer brand engagement, which leaves an academic gap, therefore, this research can fill the gap by providing the framework, but empirical data is required to prove these connections. The limitation of the study is that since this research is a conceptual paper, there is no empirical data collected and analyzed, future research should conduct an empirical study to explore consumer brand engagement in terms of live streaming commerce and understanding whether using LSC can be beneficial to brands and how would the LSC marketing is beneficial to brands.

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## **Effects of Leadership Styles on Employee Performance during Crisis: A Case of COVID-19 in China**

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### **Abstract**

Covid-19 pandemic has had a profound impact on various industries on a global scale. The disruptions have severely affected employee performance in the organization, leading to a series chain reaction such as factory closures, disrupted supply chains, and financial strain, etc. In the content of this situation, leadership styles which considers as one of the important factor that could contributed to the employee performance in the organization. It has intensified the need for novel leadership strategies to address the pressing performance-related challenges that the organizations faced. Therefore, the main objective of this study is to investigate the impact of leadership styles (autocratic leadership, democratic leadership, transactional leadership and transformational leadership) on employee performance during crisis situation. Besides that, this study has enriched the existing literature on leadership styles and employee performance. It also provides support for the policy makers and practitioners in to improve their efforts in enhancing employee performance, as well as provides new ideas for organizations on how to manage employee performance in times of crisis.

**Keywords:** crisis, leadership, leadership styles, employee performance.

### **Introduction**

To achieve goals of an organization in time with growth, a leader and employee must coordinate activities in such a way that the output is maximized. For manufacturing oriented business it is crucial to motivate employees in order to avoid gaps in production and efficiency. An unhappy employee may lead to dissatisfied customer and a long term loss of revenue for any organization. Hence an effective leadership style must be selected by leaders to exercise control over employees. An employee works for his own aspirations instead of an ultimate goal of an organization, thus it is a leader's responsibility to mould the thinking of an employee in

such a way that gets the work done in both organizational and employee's favour. According to Maxwell (2002) the leader of 21<sup>st</sup> century should empower his sub-ordinates to become leaders as well. In today's times a manager and supervisor should be well aware of the challenges, benefits and techniques of leadership style and qualities. Both an employee and a leader must work collusively to create a successful relationship for the well being of both individuals and the organization (Burns, 1978).

In recent years, the global industry faces significant challenges, particularly the Covid-19 global issue (Okur & Ercan, 2022). This global crisis led to worldwide shutdown, triggering a ripple effect in the industry (Tarigan, 2022). It caused many disruptions which led to delays and uncertainties that compromised operational efficiency and timely product delivery (Okur & Ercan, 2022). These challenges have introduced an environment of uncertainty, complicating decision-making and long-term planning for the industry. Thus, it is currently navigating a complex landscape of environmental and economic uncertainties that pose significant risks to its stability and future development.

The COVID-19 pandemic has had a profound impact on various industries in China. Initial lockdowns in Hubei province in 2020 set the stage for ongoing disruptions through regional and city-wide lockdowns in subsequent years. These disruptions have severely affected production and employee performance, leading to factory closures, disrupted supply chains, and financial strain. (Song, 2021). After these disruptions, the zero-COVID policy enacted by China's central government in 2022 further strained the cloth manufacturing industry. Based on this environment, it has intensified the need for novel leadership strategies to address the pressing performance-related challenges that the industry faced.

China, a vital part of the global economy, is experiencing acute challenges that necessitate a reevaluation of its leadership paradigms (Kumar et al., 2020). A significant decline in employee performance warrants an urgent inquiry into the role of leadership in mitigating these challenges, and improving performance (Chamas & Hernandez, 2019). While various leadership styles have been examined, their impact on employee performance in a labor-intensive industry like textiles remains a pressing concern. The current crisis, exacerbated by the COVID-19 pandemic, has further highlighted the need for effective leadership (Lu, 2021). Moreover, the COVID-19 pandemic has also tested the resilience and adaptability of this sector, which has faced considerable challenges but has also found new opportunities for innovation (Zheng, 2020). This rich, dynamic, and challenging context provides a fascinating field of study, particularly in exploring how various factors, such as leadership styles, impact employee performance during times of crisis (Lu, 2021).

### **Literature Review**

Employee performance is important for organizational success and longevity (Li et al., 2023). Various factors, both individual and organizational, shape it. Raveendran & Gamage (2019) emphasized understanding the different dimensions of performance, such as job role, career role, innovator role, team role, and organizational behavior, for a comprehensive evaluation. Performance is central to business sustainability, affecting smooth operations and growth (Likdanawati et al., 2022). Performance metrics vary, from tangible outcomes like task completion to softer metrics like teamwork (Kattner et al., 2016). High-performing employees

are valuable, consistently delivering quality and showcasing innovation and self-directedness (Falaster et al., 2021). Such employees alleviate managerial burdens, allowing strategic focus and granting a competitive edge (Mushthofa & Handoyo, 2023).

On the other hand, understanding employee performance during times of crisis requires a global perspective that considers diverse sectors, cultures, and types of crises. Various studies have aimed to explore this intricate topic, each offering unique insights that can inform both theory and practice. A European study by Karneli (2023) examined employee performance during the 2008 economic crisis. The research found that the crisis had a double-edged effect: On one hand, the threat of job loss led to a decrease in "organizational citizenship behaviors," activities that go beyond the call of duty. On the other hand, core job performance, which is directly related to job descriptions and tasks, remained stable or even improved slightly. This suggests that while employees might withdraw from extra-role behaviors during a crisis, they often maintain or improve their performance on essential job tasks, possibly as a survival mechanism. A study conducted in the aftermath of the Fukushima disaster in Japan by Alshoaibi (2020) investigated how a natural catastrophe could impact the workplace. Interestingly, they found that post-disaster social support in the form of psychological first aid and clear crisis communication contributed positively to employee well-being and subsequently to increased performance. Employees who received adequate social support reported fewer health complaints and higher productivity, suggesting the importance of crisis management efforts aimed at maintaining employee well-being.

Focusing into the effects of the COVID-19 pandemic on employee performance in China, several studies offer a detailed view. Bi et al. (2020) studied the manufacturing sectors where their research has identified a pronounced drop in productivity during the Covid-19 pandemic in China. Industries requiring substantial human interaction and physical presence, often a feature of the clothing industry, were hit hardest. The lack of direct research on the clothing sector notwithstanding, the findings from this study can serve as a useful proxy. The similarities in structure between various manufacturing sectors provide a valuable point of reference for gauging the likely impacts on employee performance within the clothing industry, particularly during crisis periods. A study by Seidu et al. (2023) examined the textile industry, revealing that supply chain disruptions during the pandemic led to increased stress among employees, subsequently decreasing performance. Given the tight interplay between the textile and clothing industries especially in terms of supply chain mechanics where the study offers valuable insights. Supply chain issues not only affect material availability but also induce job-related stress, contributing to emotional exhaustion and affecting overall employee performance negatively. The findings from this study could very well map onto the clothing industry, given their operational and structural similarities.

Based on employee performance, the three indicators for measuring employee performance such as absenteeism, productivity, and quality of work are being determine based on past research. For absenteeism, three authors have focused on this metric as an indicator of performance. Siddiqui et al. (2019) revealed the indirect effects of elements such as company size, ownership, sector, job conditions, and mental health on performance via absenteeism rates. Similarly, demonstrated the impact of absenteeism on the performance of healthcare workers and overall morale. Finally, Hartanto (2022) considered absenteeism along with target

realization and projects as independent variables influencing performance; productivity was explored as a performance indicator by four authors. Groen et al. (2017) investigated the dynamics between performance metrics, appraisal systems, and employee productivity. Shah et al. (2022) then assessed the effects of performance appraisal systems on productivity in the PTCL context. Hartono et al. (2023) explored the role of TQM, reward systems, and performance measurement systems in shaping productivity. Lastly, a subsequent study by Shaban et al. (2022) confirmed the significant impact of performance appraisal systems on productivity; in terms of quality of work, three authors highlighted its importance in performance measurement. Ramawickrama et al. (2017) defined quality of work and discussed its strong positive correlation with performance. Khan et al. (2020) found that high-quality work contributes to the achievement of team and organizational goals. Osborne & Hammoud (2017) emphasized the role of interventions aimed at improving employee skills, knowledge, and motivation in enhancing work quality.

Leadership is one of the most important in our social life to enhance the performance (Afsar et al., 2019). Leaders are the key person in the organization who stimulate, recognize and motivate their followers to achieve the desired results. Leadership is one of the most popular research topics in the management field, organizational behavior and organizational psychology field, and the evidence demonstrated with millions of literature churned out since its inception. Another obvious evident is the fact that all organizations have multiple individuals playing leadership roles who are determining the direction and future of the organization. However, despite the huge number of literature, the research focus is circling four general leadership theory paradigms, namely, the behavioral leadership theory, the trait theory, the contingency leadership theory and the integrative leadership theory (Cakir, 2020). These theories are the core foundation used by researchers to understand better, explain and envisage the various aspects of leadership.

Autocratic leadership is a framework where the leader holds all decision-making power, providing clear and direct instructions to their subordinates without inviting feedback or collaboration (Pounder, 2022). This leadership style has notable merits, particularly in situations that require swift and decisive actions. One of its most significant advantages is the expedited decision-making process. When time-sensitive situations, such as a crisis, arise, this leadership style allows organizations to respond promptly and efficiently, thereby minimizing potential risks or losses. The strength of autocratic leadership in crisis situations is further evidenced by its effectiveness in providing streamlined communication and coordination. When faced with urgent or complex scenarios, the need for a single point of authority becomes paramount in executing strategies effectively. This unifying element of autocratic leadership can be crucial in maintaining team focus and coherence during tumultuous periods, ensuring that everyone is aligned with the central action plan. In a crisis, autocratic leadership offers the benefit of centralized decision-making that can be pivotal for organizations grappling with uncertainty. Duan et al. (2022) endorses the use of autocratic leadership as a tool for fostering high-performance work dynamics in such challenging situations. During crisis periods marked by turbulence and rapid changes, the clear and unambiguous directions set forth by an autocratic leader serve as a stable guiding light. This clarity can be particularly helpful for employees navigating the murky waters of a crisis, providing the certainty and direction they

need to perform their roles effectively. Contrary to focusing on the potential negative outcomes, it's valuable to recognize the merits of an autocratic style in specific contexts. While Jiang et al. (2017) highlight some disadvantages of this leadership style, it is worth mentioning that in circumstances where immediate, uncompromised action is required, the autocratic leader's ability to make quick decisions without the need for group consensus can be invaluable. Such rapid decision-making can prove to be a vital asset in high-stakes, fast-moving crisis scenarios.

In the context of crisis management, transformational leadership emerges as an especially effective style, adept at mobilizing teams and organizations towards extraordinary outcomes. According to Burns (2021), transformational leaders excel at uplifting followers beyond their self-interests and inspiring them to achieve remarkable goals. These leaders not only offer a compelling vision of the future but also succeed in making it relatable and aspirational for their followers. This vision serves as an emotional anchor, offering stability and direction during tumultuous times, ultimately empowering employees to rise to challenges with resilience and adaptability. In a crisis situation, the unique capability of transformational leaders to foster a culture of critical and innovative thinking becomes a cornerstone for problem-solving and adaptability. Musa et al. (2018) confirmed the strong correlation between transformational leadership and enhanced employee performance, positioning it as a particularly appropriate leadership model for modern organizations. The power of transformational leaders to instill confidence and enthusiasm among their teams not only stimulates proactive behavior but also nurtures an environment primed for learning and creativity. The transformational leader, therefore, serves as a catalyst in navigating the team through crisis by engaging deeply with employees, offering much-needed emotional support, and encouraging innovative solutions to unprecedented challenges (Musa et al., 2018). This leadership style thus offers a multifaceted approach to crisis management, effectively leading the organization towards resilience and long-term success. In the context of crisis management, transformational leadership has been shown to positively influence employee performance and behavior, offering a nuanced approach that goes beyond transactional leadership methods. According to Nasra & Arar (2020), transformational leadership has a unique impact on how employees perceive their roles and responsibilities, both as workers and as corporate citizens. Their research indicates that employees are more likely to excel in their jobs when they perceive their leadership to be transformational, emphasizing the leadership style's indirect but potent influence on corporate citizenship behavior through shaping occupational perspectives. Similarly, Crede et al. (2019) provide a comprehensive meta-analysis that examines how cultural values and practices intersect with transformational leadership to influence worker performance. Surveying data from approximately 57,000 individuals across 34 countries, the authors found that cultural practices could moderate the relationship between transformational leadership and employee performance. Notably, in cultures less inherently aligned with transformational leadership, the positive impact of such a leadership style on worker performance was found to be even more significant. These findings bolster the argument for the adaptive and universal applicability of transformational leadership, particularly in times of crisis when effective leadership becomes critically important for navigating challenges and maintaining organizational stability.

During times of crisis, the democratic leadership style offers a robust framework for fostering collaboration, equality, and active participation among team members. According to

Johnson et al. (2019), this leadership style significantly encourages employees to engage in decision-making processes, thereby positively impacting their performance. One of the most salient advantages of democratic leadership in crisis scenarios is the sense of ownership and accountability it imbues within the workforce. This heightened sense of responsibility leads to an intrinsic motivation to contribute constructively toward overcoming the crisis, resulting in augmented levels of employee engagement and output. Research by Wijayati et al. (2020) further substantiates that democratic leadership is particularly efficacious in bolstering creativity and innovation, critical attributes for problem-solving in crisis situations. By promoting an environment where ideas are freely shared and discussed, democratic leaders cultivate fertile ground for novel solutions to emerge. Consequently, organizations led by democratic leaders often demonstrate heightened adaptability and resilience, crucial for navigating the complexities and uncertainties introduced by crises. Overall, democratic leadership emerges as an invaluable asset in times of crisis, serving to elevate employee performance, engagement, and creative problem-solving. Democratic leadership proves to be a potent model for enhancing organizational performance, particularly when synergized with contingent incentives. According to Hilton et al. (2021), there exists a significant positive correlation between democratic leadership and worker productivity, which is further amplified when coupled with contingent incentives. These incentives, whether financial or otherwise, serve as powerful catalysts that magnify the effects of democratic leadership on organizational effectiveness. Moreover, democratic leadership is highly conducive to fostering organizational citizenship behavior (OCB) among employees, as stated by Abdullahi et al. (2020). The research specifies that democratic leadership positively impacts OCB in small and medium enterprises (SMEs), especially when the leader displays high emotional intelligence. Though transformational leadership may exert a stronger influence on OCB, democratic leadership is not to be overlooked where its influence is significant and becomes more potent when the leader's emotional intelligence is high. Hence, in the face of crisis, democratic leadership, supplemented by contingent incentives and high emotional intelligence, can significantly boost both organizational effectiveness and citizenship behavior, creating a resilient and adaptive work environment.

Transactional leadership, as defined by D'Souza et al. (2022), is a structured management approach that prioritizes adherence to established rules and procedures while maintaining the status quo. This leadership style emphasizes setting clear performance and objective standards. When these standards are met, employees are recognized and rewarded, but failure to meet them results in penalties. Such leadership is particularly beneficial in settings that require strict hierarchies and clear directives, like industrial setups and military environments. The success of transactional leadership hinges on setting explicit expectations and reinforcing them through a system of rewards and consequences. For example, a proficient transactional leader might delineate precise productivity levels and, upon achievement, reward employees with promotions or raises. Conversely, those falling short may face repercussions such as pay cuts or demotions. One of the significant advantages of transactional leadership is its potential to motivate team members effectively. By aligning rewards and penalties with specific actions and their outcomes, employees become more driven to achieve set objectives and optimize their performance (Turunc et al., 2018). This direct correlation can lead to heightened

productivity and efficiency, coupled with an overall enhancement in job quality. However, while the structured nature of transactional leadership can prove beneficial in many scenarios, it's essential to discern its appropriateness for every organization or employee. In times of crisis, the transactional leadership style presents a robust framework for ensuring stability and control, backed by empirical findings. Hidayat et al. (2017) demonstrated that transactional leadership is predominantly utilized in government institutions in Bahrain. Their study accounted for diverse demographics, highlighting its widespread adaptability and applicability irrespective of age or years of experience in the workforce. These findings underscore the efficacy of transactional leadership in structured, high-stakes environments, where quick, error-free decisions are paramount, especially during a crisis.

### **Methods**

After review the literatures, most of the researches were fundamentally correlational, which meant they sought to examine the relationships between the study's key variables as per the theoretical framework established (Cooper & Schindler, 2008). In particular, past studies prefer to adopted quantitative research design, which is advantageous in providing measurable, numerical data that can be statistically analyzed for patterns and trends. The main purpose was to investigate the relationship between the predictor variable such as leadership styles and outcome variable employee performance.

Some of the researches were executed in a non-contrived setting, which refers to the employees' actual work environment. This setting choice was crucial to ensure the minimal influence of the researcher on the participants' behaviors, thereby yielding more natural and authentic data reflecting real-world interactions of the variables under study. By conducting the research in such an environment, the findings of the study are expected to exhibit high external validity, meaning that they can be generalized to other similar environments or situations.

The reason for using a quantitative research method in the study is that it allows for the collection of large amounts of numerical data that can be analyzed using statistical techniques. According to Creswell (2014), quantitative research is often used when the aim is to “measure variables, test hypotheses, and examine cause-and-effect relationships”. Another reason for using a quantitative research method is that it provides a standardized approach to data collection and analysis. This can help to ensure the validity and reliability of the study’s findings. According to Babbie (2016), quantitative research methods involve “standardized instruments, structured data collection procedures, and statistical analysis”. This approach can help to minimize bias and increase the accuracy of the study’s results.

### **Discussion of Findings**

By reviewing the past studies, they examined the impact of leadership styles on employee performance during crisis situation. Some studies found that organizations with autocratic leadership had lower rates of unscheduled leaves and lead to increased productivity due to streamlined decision-making (Williams et al. 2022). Transformational leaders often succeed in creating an engaged and committed workforce, which directly enhanced employee performance (Lee et al. 2020). Various studies suggest that democratic leadership has a considerable impact on the quality of work. Democratic leaders who encourage employee

participation generally see an increase in the quality of work, due to greater employee investment in outcomes. They found that democratic leadership leads to higher levels of job satisfaction, which is a significant predictor of performance (Bennett et al. 2019). Moreover, Anderson et al. (2019) suggest that the transactional approach, characterized by its reward and punishment system, can be effective in improving employee performance. Employees are often motivated by tangible benefits, thus ensuring their consistent performance.

However, most of the studies indicated that each leadership style (autocratic, democratic, transformational and transactional) has positive impact on employee performance during crisis situation, but there are some researchers have different views on this issue. For example, a study by Rodriguez et al. (2021) suggested that while autocratic leadership might produce high-quality results in the short term, it could hamper innovation and adaptability, which are crucial for sustaining quality in rapidly evolving industries. Similarly, Lewis et al. (2022) highlighted that the quality of work can suffer in complex problem solving scenarios where autocratic leaders may not have the necessary breadth of expertise to make informed decisions. These divergent views suggest that the relationship between autocratic leadership and quality of work is complex and may vary depending on the context. Lee et al. (2021) noting that in high-stakes or fast-paced environments, democratic decision-making could slow down processes. Abdullahi et al. (2020) suggests that the positive impacts of democratic leadership on work quality could be negated in settings where quick, authoritative decisions are required for maintaining work quality. Moreover, Akhigbe et al. (2014) suggest that the transactional style, while potentially boosting immediate productivity, might not support sustained long-term productivity, as it does not inherently focus on employee growth or innovation.

### **Conclusion**

The main purpose of this study is to explore the influence of leadership styles on the relationship between employee performance during crisis situation. In most cases, the findings show that each leadership style (autocratic, democratic, transformational, transactional) had a positive influence in affecting employee performance. The results make contributions to the literature on leadership styles such as autocratic leadership style, democratic leadership style, transformational leadership style and transactional leadership style.

This study has contributed by prompting the importance of each leadership style that would be an advantage for companies to enhance employees performance during crisis situation. The implications of study findings are helpful for organization and leaders. It is suggested that based on findings organization and leaders may reconsider their human resource plan in order to obtain maximum positive performance from employees. Therefore, it serves as reference for all stakeholders to have deeper knowledge on leadership and its relevance that constitutes fundamental framework for organizational prosperity. As such, it is hoped that this study may give a preliminary insight and understanding about the importance of leadership styles towards employee performance in organizations during crisis situation.

To sum up, the research has enriched the literature, and explained the impact of different types of leadership on employee job performance during crisis situation. In the practical aspect, this research provided recommendation that could help management and policymaker to design leadership development program, company policy, and human resources governance which

build a strong foundation for the employees to achieve high task performance. Further more, it also provides new ideas for organizations on how to manage employee performance in times of crisis. In conclusion, this research could benefit the society, business, as well as the country's economy from both academic and practical perspectives, by providing a good understanding on how leadership style effect employee performance.

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# **The Impact of Business Environment on Chinese Private Firm Profitability: The Mediation Effect of Corporate Innovation**

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## **Abstract**

The purpose of this research is to examine the impact of business environment on private firm profitability and the mediation role of corporate innovation between them. The panel evaluates 3,512 private listed companies from 2012 to 2021. In addition, a heterogeneity analysis is conducted to understand whether there is a relatively significant difference in the impact of business environment on firm profitability between the East and the Midwest. Finally, the robustness estimation is tested using the two-stage least squares method. It discovers that business environment is positively related to firm profitability, and that corporate innovation mediates this relationship positively. Each sub-environment of business environment has different impacts on private enterprise profitability in the East and the Center-West. Besides, it provides a solid foundation for the application of transaction cost theory and resource base theory. Private enterprises benefit from improved public administration, a well-developed legal construction, convenient foreign trade, and good financial service. This research looks at private enterprises and the multifaceted aspects of business environment. Besides, unlike most of the previous literature on state-owned companies, this paper analyses the effects of business environment on firm profitability in terms of private firms.

**Keywords:** business environment, corporate innovation, firm profitability, mediation effect.

## **Introduction**

As of 2020, the World Bank's "Doing Business" has been published for 18 consecutive years and has had a profound impact on the attraction of investment, institutional optimization, macroeconomics and enterprise development in various countries (World Bank, 2020). Different countries are starting to pay attention to business environment in order to benchmark the report and boost investment in their own countries. China's business environment has an overall score of 77.9, ranking 31st in the world, up 15 places from the previous year, according to the World Bank's "Global Business Environment Report 2020" (World Bank, 2020). Despite being the world's largest developing country, it ranks lower in terms of overall business

environment than developed countries (Zhao & Jiao, 2022).

Private enterprises can create favourable conditions for high-quality development by continuously improving the external development environment and growing in a superior business environment (Wei et al., 2022). China is currently in a critical period of transition between old and new kinetic energy. Private enterprises can generate significant amounts of energy for the conversion of this energy (Matuszak & Kabaciski, 2021). From a macro perspective, according to the national statistical yearbook in recent years, the proportion of private economy to GDP has increased from 60.65% in 2018 to 66.4% in 2022, and the proportion has continued to increase, especially in 2022, which is 4.13% higher than in 2021 (Wang et al., 2023; Zhang, 2020). Accordingly, maintaining a focus on private enterprise development helps to boost economic growth's natural engine, remove roadblocks and support the expansion of private firms, and increase businesses' competitive edge (Hu et al., 2023).

However, private firm profitability has been impacted by the global economic downturn as a result of the recent hit from the new crown epidemic and the impact of rising world trade protectionism. There has been a concerning decline in private enterprise performance in recent years (Li et al., 2023). Therefore, private enterprises in China have faced many challenges and pressures in the process of high-quality development due to the dual influence of China's domestic and international environments. In order to understand these occurrences, scientists need to zero in on the underlying causes (Chetty et al., 2020).

Corporate innovation is becoming more and more important in increasing business production. Private firms today have to make significant investments in corporate innovation and research and development to stay ahead of the competition in the market and secure their own long-term success (Zhu et al., 2021). Corporate innovation may also be enhanced by a supportive company environment (Brødsgaard & Beck, 2023). This shows that the impact of private enterprises' profitability may be mediated by corporate innovation.

Therefore, this study aims to investigate (i) the relationship between business environment and private firm profitability in China; (ii) whether corporate innovation as a mediating variable mediates the impact of business environment on firm profitability; (iii) whether there is any heterogeneity in the impact of the various sub-environments of the business environment on the profitability of private firms in the east versus the central and western parts of the country.

This study contributes to the body of existing information in three ways. First, by offering a thorough examination of the impact on company profitability from multiple business environment viewpoints, this research presents a theoretical foundation for optimising the business environment. Second, this study offers a fresh viewpoint on the subject by examining the mediating function of corporate innovation in the connection between the business environment and corporate profitability. Moreover, resource-based and transaction-cost models are enhanced.

## **Literature Review**

### **Firm Profitability**

Profitability is the evaluation and analysis of success in reaching objectives and completing tasks by an individual, group, or system (Bakar & Ahmad, 2010). Organizations that are

successful generate outcomes because their members carry out their missions in an ethical and role-appropriate manner (Husaini et al., 2023). The last ten years have seen a sharp rise in scholarly interest in financial profitability (Balon et al., 2022). More recent studies have examined the variables influencing profitability, such as corporate governance (Belyayeva et al., 2019; Maali et al., 2021), leadership capability (Lisdiono et al., 2022; Ren et al., 2020), human capital (Aman-Ullah et al., 2022; Ghi et al., 2022; Melo & Velasquez, 2022).

In an effort to support the stabilisation of private firm profitability, this study looks at the effects of private financial profitability in China. For instance, Daryanto et al. (2018) contend that a company's ability to remain competitive and pursue sustainable development is closely correlated with its level of corporate profitability, which they claim is essential to an organisation. For managers, creditors, investors, and other stakeholders in a company, financial profitability is crucial because it offers vital information about the company's operational effectiveness and overall health (Al Amosh et al., 2023).

### **Business Environment**

A review of the pertinent literature shows that several research define business environment differently. Eifert et al. (2005) argue that business environment is a complex fusion of laws, institutions, rules, and other elements, with a significant reliance on the implementation of governmental policies, dominating business activities and influencing business operations. This is in light of the institutional economics perspective on the issue of economic development in Africa. According to Song and He (2018), China's business environment is a natural amalgam of the nation's political, economic, legal, international, and other surroundings. The country's emphasis on this environment is intended to encourage exports and strengthen the nation's economy.

Researchers' interest in business environment has been growing as a result of the recent emphasis on business environment in many different nations. Business environment has a significant impact on a number of angles, including the income gap between urban and rural areas (Zhao & Jiao, 2022), economic growth (Dong et al., 2012), total factor productivity (Wei et al., 2017), innovative technology (Acemoglu et al., 2007), foreign direct investment (Contractor et al., 2020), high-quality development (Du et al., 2022; Zhong & Chen, 2023), and so forth. Business environment is primarily divided into four categories in this paper: financial services, legal construction, public administration, and foreign trade. The fundamental reason for this is that, based on Xiong (2021), Gong and Jin (2023), and Yuan and Yang (2021), this study finds that these four factors are of enormous significance to the sustainable growth of enterprises and are the main focus of scholars and emerge more frequently.

### **Corporate Innovation**

As Zhou (2021) puts it, innovation is what actually propels progress and serves as the foundation for a more sophisticated economic system. Resource base theory supports its uniqueness, rarity, value, and irreplaceability (Hami et al., 2015). According to Dai et al. (2020), private firms will increase their efforts in corporate innovation since they understand that it is innovation that propels economic expansion. Zhou (2021) makes a similar argument, claiming that innovation is a tactical aid in the development of China's modernised economic structure.

Previously, some researchers have used corporate innovation as a mediating variable to examine the relationship between the market environment and business profitability (Jin & Lee, 2020; Qian et al., 2022). Jian and Hongxia (2023) discover that, from the standpoint of the business model, corporate innovation mediates the association between innovation profitability and business model using multiple regression analysis on a sample of 489 Chinese high-tech service enterprises. In the end, it is determined that China's high-tech service companies may apply useful tactics to increase the profitability of their innovations and gain important insights from the success of companies in developing nations. Corporate innovation is essential to a company's ability to grow sustainably in today's competitive and dynamic market, which is claimed by Farida and Setiawan (2022). If private companies regularly adopt new technology, they can enhance their earnings, better adapt to changing market conditions, and support sustainable growth.

## **Hypothesis Development**

### **Business Environment and Firm Profitability**

Transaction cost theory indicates that the Chinese business environment may be particularly difficult in terms of firm profitability (Cheng et al., 2023; Huang, 2022). This is because transaction cost theory looks into how transaction costs affect the preferences of consumers and sellers for various transaction modes and market configurations (Masten, 1993). First, Tan and Zhao (2021) discover, based on the transaction cost theory, that a high level of government service efficiency can help businesses face fewer constraints and pressures from the government as they expand their operations. It can also lessen the cost burden on businesses, freeing them up to focus more of their time and resources on increasing productivity and increasing their profitability. Second, according to He et al. (2020), a strong legal construction environment can better protect an enterprise's property rights, which are difficult to infringe upon or lose. This kind of protection can raise the enterprise's asset value, lower the risk of asset loss, and ultimately encourage the improvement of financial profitability.

Third, using sample data from Vietnamese real estate firms for the years 2013 to 2017, Bui (2020) employs GMM to examine the financial services environment. The study's findings indicated a positive correlation between the growth of financial services and the profitability of Vietnamese companies. Thus, by cutting transaction costs, financial institutions may better meet the financing needs of private firms, and by cutting transaction costs, private businesses can become more competitive in the market, which boosts financial profitability. First, from the standpoint of market expansion and growth prospects, Liang et al. (2012) state that the internationalised environment in terms of foreign commerce offers private firms a larger market space, which aids in the expansion of their business scope and market share. Expanding into new overseas markets can increase sales prospects and foster the expansion and development of a company.

This study investigates the relationship between China's public administration, legal construction, foreign trade, financial service, and private firm profitability based on previous research. In addition, the following hypotheses are advanced:

H1a: Public administration is positively related to the profitability of private corporates.

H1b: Legal construction is positively related to the profitability of private corporates.

H1c: Financial service is positively related to the profitability of private corporates.

H1d: Foreign trade is positively related to the profitability of private corporates.

### **Corporate Innovation as a Mediating Variable**

According to the theories of Baron and Kenny (1986) and Anning-Dorson (1990), a mediator variable can be introduced between an explanatory variable and an explained variable if the explanatory variable has an effect on the explained variable, the third variable, which is not the explained variable, also has an effect on the explained variable (2018). This investigation thus examines the potential mediating role of corporate innovation between the business environment and the financial success of corporations in light of their ideas. Moreover, the impact of the business environment on firm profitability was examined in the first section of this study, and the remaining two associations (between business environment and corporate innovation and between corporate innovation and firm profitability) are estimated here.

### **Business Environment and Corporate Innovation**

The purpose of resource base theory is to shed light on the means by which firms in a cutthroat market environment manage to sustain a leading position (Grant, 1991). The theory provides a more complete picture of the factors that influence the rate and extent to which businesses adopt new technologies. In particular, Ren et al. (2022) argue from the vantage point of the government governance environment that the government's management of market information and competition has an effect on the technical innovation of private firms. Higher levels of intellectual property protection can decrease the likelihood that corporate innovations will be copied, increase the drive for corporates R&D, draw significant amounts of outside funding into the process, and lessen spillover losses in the enterprise R&D process, according to Xiang et al. (2023)'s perspective on the legal construction environment. The private firms receive the capital it needs to innovate, according to Sanga and Aziakpono (2022), who examine this issue from the perspective of the financial services ecosystem. Many R&D projects undertaken by private companies would not be possible without substantial investment. The funding gap can be filled in part by the financing services offered by financial institutions. Pandey et al. (2022) suggest that private firms can obtain access to abroad sophisticated technology, specialist expertise, modern management experience, and market trends by taking advantage of the international trade environment. Such events provide private companies with invaluable chances to learn about cutting-edge innovations, fill in any technological gaps, and stimulate further innovation and development.

### **Corporate Innovation and Firm Profitability**

Corporate innovation can increase firm profitability and competitive advantage, according to resource-based theory (Lukovszki et al., 2021). Opoku-Mensah et al. (2021), who came at their study from the angle of resource integration, reached the same conclusion: corporate innovation requires substantial investment in research and development, highly trained individuals, and state-of-the-art equipment. Besides, Opoku-Mensah et al. (2021) explores the economic value provided to an organisation by spending in research and development, and how that value added rises exponentially with the company's success. This article uses corporate innovation as a mediating factor to analyse the connections between public administration, legal

construction, international trade, financial services, and the success of private Chinese firms. And the following is proposed:

H2a: There is a positive mediation effect of corporate innovation on the relationship between public administration and firm profitability.

H2b: There is a positive mediation effect of corporate innovation on the relationship between legal construction and firm profitability.

H2c: There is a positive mediation effect of corporate innovation on the relationship between foreign trade and firm profitability.

H2d: There is a positive mediation effect of corporate innovation on the relationship between financial service and firm profitability.

## **Methods**

### **Sample Selection and Data Source**

This paper examines the impact of business environment on the profitability of private corporations using a research sample of A-share private companies listed in Shanghai and Shenzhen from 2012 to 2021. This study's sample is handled as follows. First, SOEs and other non-private corporate samples are excluded based on whether the corporate's ultimate controller is private capital or not. Second, listed companies labelled with ST are excluded; Third, companies for which relevant financial data are unavailable are excluded. Fourth, delisted corporates are excluded. Fifth, financial industry sample data are excluded. Following the aforementioned screening, a final data sample of 3512 private corporations for a ten-year period totalling 20,646 observations was obtained. The China Statistical Yearbook, Wang Xiaolu's Comprehensive Evaluation Index of Business Environment, and provincial statistical yearbooks were used to compile the data on business environment. CSMAR database is used to obtain private corporate data. To work with sample data, Stata17 was used.

### **Variable Design and Measurement**

In this study, the relationship between variables is first evaluated using static panel regression. The return on assets (ROA), calculated by dividing net profit by total assets, is another indicator of a company's profitability. Outside of that context, empirical research was where it saw the most action. This is so because it is an all-encompassing indicator of the company's operational profitability as a whole. Profitability is measured by Return on Assets (ROA), and a higher ROA indicates greater profitability over a certain time period (Wu & Huang, 2022).

Second, this study includes four independent variables: public administration (GOV), legal construction (LAW), foreign trade (TRADE), and financial services (FIN). First, the natural logarithm of local finance's general budget expenditure is used as a proxy variable for public administration. This indicator reflects the government's public management's quality and effectiveness, which may have an impact on firm profitability (Sun & Liu, 2006). Second, the development of market intermediary organisations and the legal environment as a legal construction measure. This indicator reflects the region's level of legal system construction as well as social justice (Abel, 2018). Third, as a measure of foreign trade, the natural logarithm of total import and export trade. It is the sum of a region's imports and exports of goods and services over a specific time period (Qu et al., 2019). Forth, as a measure of financial services,

the natural logarithm of the total amount of all RMB loans made by financial institutions. It measures, to some extent, financial institutions' support for corporations (Yonghong et al., 2019).

Furthermore, corporate innovation (PAT) is used as a mediating variable in this study, as measured by the natural logarithm of the number of patents granted for corporate innovation plus one. This is due to the time lag of patents as well as the existence of a zero value for the number of patents granted. As a result, Wang and Hagedoorn (2014) recommend a one-period lag.

Aside from that, the control variables in this study are corporate size, leverage, revenue growth rate, number of directors, proportion of independent directors, and corporate age. This study selects control variables with corporate characteristics based on corporate risk and behaviour. The role of control variables is to reduce the influence on the dependent variable caused by factors other than the independent variables. (1) As a measure of corporate size, the natural logarithm of total corporate assets (Gong & Jin, 2023). (2) The leverage is calculated by dividing total liabilities by total assets (Dong & Zhang, 2022). (3) As a proxy variable for operating income growth rate, the value of current operating income minus one period's operating income divided by the previous period's operating income was used (Sun & Wang, 2022). (4) Board size is indicated by the natural logarithm of the number of board members (Poletti-Hughes & Briano-Turrent, 2019). (5) As a director of the proportion of independent directors, divide the number of independent directors by the number of board members (Kao et al., 2019). (6) The age of the corporate was calculated by taking the natural logarithm of the value of the reporting period minus the year of its establishment (Qi et al., 2022).

## Findings

### Regression Model

This paper utilises the panel regression model to estimate and analyse data in order to verify hypothesis one. Using Equation 1, the study analyses how business environment affects the profitability of privately listed companies.

$$ROA_{it} = \alpha_0 + \alpha_1 BE_{it} + \sum(\varphi CV_{it}) + \sum year + \sum ind + \varepsilon_{it} \quad (1)$$

$i$  is the  $i$ th corporate.  $t$  is the  $t$ th year.  $ROA_{it}$  is profitability of the  $i$ th corporate in year  $t$ .  $BE_{it}$  means business environment, and includes  $GOV_{it}$ ,  $LAW_{it}$ ,  $FIN_{it}$ ,  $TRADE_{it}$ .  $\alpha_i$  is the coefficient of business environment.  $\varepsilon_{it}$  represents the error term. Where CV represents the control variables chosen in this paper, including  $SIZE_{it}$ ,  $LEV_{it}$ ,  $GROWNT_{it}$ ,  $BOARD_{it}$ ,  $INDEP_{it}$ , and  $AGE_{it}$ .  $ind$  represents industry fixed effects, and  $year$  represents year fixed effects.

This study expands upon this analysis to focus on the mediating influence. The first phase in the stepwise regression approach proposed by Baron and Kenny (1986) is to investigate the impact of business environment on firm profitability. Equation 1 above has been used to confirm this link. This study presents the following formula as Equation 2 to verify hypothesis two, which includes the effect of business environment on corporate innovation.

$$PAT_{it} = \beta_0 + \beta_1 BE_{it} + \sum(\varphi CV_{it}) + \sum year + \sum ind + \varepsilon_{it} \quad (2)$$

$PAT_{it}$  is the number of patents granted of the  $i$ th company in the year  $t$ . If this coefficient is significant, it means that it is very likely that the mediating effect exists. The third step is to analyse business environment, corporate innovation and firm profitability by putting them into the same model, and also to verify hypothesis two. Besides, the formula of equation three is as follows.  $\theta_i$  is the coefficient.

$$ROA_{it} = \theta_0 + \theta_1 BE_{it} + \theta_2 PAT_{it} + \sum(\varphi CV_{it}) + \sum year + \sum ind + \varepsilon_{it} \quad (3)$$

### Descriptive Statistics

According to Table I, the descriptive statistics finds that the number of samples for the values of each variable is 20,646. The mean value of ROA is 0.0471, which represents 4.7% of the total assets of the sample corporates generated profits. The std for ROA is 0.0717, and the max and min value are 0.2327 and -0.2751 respectively, which shows a large volatile for the interval fluctuation. The mean is 8.9685, the minimum is 7.3296, and the maximum is 9.8118. The mean value is found to be skewed to the minimum value, indicating that the logarithm data reduces the volatility between the data. LAW has a mean of 11.1046, a minimum of 2.7100, and a maximum of 17.1389. They demonstrate that the data mean is skewed toward the maximum value. The fluctuations of both TRADE and FIN are modest, with standard deviations much smaller than the mean. The mean value of PAT is 1.6184, which is skewed towards the minimum value. The mean value of 0.8135 for FLEV documents that publicly listed Chinese companies mostly have high leverage with liabilities counting 81.35% of total assets.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	20646	0.0471	0.0717	-0.2751	0.2327
GOV	20646	8.9685	0.5009	7.3296	9.8118
LAW	20646	11.1046	2.9963	2.7100	17.1389
TRADE	20646	9.7586	1.2946	5.7865	11.3212
FIN	20646	11.1243	0.7301	8.7736	12.3115
PAT	20646	1.6184	1.4740	0.0000	5.4681
SIZE	20646	21.8370	1.0877	19.7351	25.3504
LEV	20646	0.3740	0.1940	0.0482	0.8590
GROWTH	20646	0.1921	0.4174	-0.5721	2.6010
BOARD	20646	2.0818	0.1872	1.6094	2.4849
INDEP	20646	0.3789	0.0526	0.3333	0.5714
AGE	20646	2.8644	0.3280	1.9459	3.4965

Notes: \*\*\*, \*\*, and \* indicate significant correlations at the 0.01, 0.05, and 0.1 significance levels, respectively.

### Correlation Analysis

Pearson correlation analysis is used to investigate the relationship between various variables. Furthermore, the correlation analysis does not have to include the effects of additional variables. As a result, only an initial assessment of the variables' relationship can be made, not a final result. The correlation coefficient between GOV and ROA is 0.0160 as a result of the

correlation analysis results in Table 2, which passes the correlation test at the significance level of 5%, indicating that there is a significant positive correlation between the public administration environment and the profitability of private enterprises. LAW, TRADE, FIN, and ROA have correlation coefficients of 0.0293, 0.0326, and 0.0327, indicating a significant positive correlation between the construction of law, foreign trade, and financial services, all of which are related to firm profitability.

Table 2 Correlation Analysis

Variables	ROA	GOV	LAW	TRADE	FIN	PAT	SIZE	LEV	GROWTH	BOARD	INDEP	AGE
ROA	1											
GOV	0.0160**	1										
LAW	0.0293***	0.5804***	1									
TRADE	0.0326***	0.7555***	0.6708***	1								
FIN	0.0327***	0.9043***	0.7658***	0.8979***	1							
PAT	0.1235***	0.2159***	0.1818***	0.1789***	0.2253***	1						
SIZE	0.0016	0.0371***	0.0287***	-0.0426***	0.0196***	0.0543***	1					
LEV	-0.3602***	0.0013	-0.0315***	-0.0375***	-0.0188***	-0.0519***	0.4838***	1				
GROWTH	0.2517***	0.0012	-0.0066	0.0038	0.0019	0.0025	0.0845***	0.0479***	1			
BOARD	0.0203***	-0.0955***	-0.0904***	-0.0866***	-0.0927***	0.0039	0.1934***	0.0936***	0.002	1		
INDEP	-0.0189***	0.0424***	0.0431***	0.0500***	0.0409***	0.0044	-0.0704***	-0.0231***	-0.0002	-0.6426***	1	
AGE	-0.0979***	0.1134***	0.1348***	-0.0323***	0.0868***	-0.1125***	0.1757***	0.1668***	-0.0383***	0.0342***	0.0006	1

Note: \*\*\*, \*\*, and \* indicate significant correlations at the 0.01, 0.05, and 0.1 significance levels, respectively.

### Regression Results

The analysis results of benchmark regression in Table 3 shows that model (1) has an adjusted R-squared of 0.2516, with a goodness of fit of 25.16%. This is due to the volatility of private company profitability data, so the fit is low, so it is acceptable. The F-test value is 211.3499, indicating that the entire model passed the significance test at 1% probability. At this time, the impact coefficient of GOV is 0.0036, which has passed the coefficient's significance test at the 1% significance level. It demonstrates that every 1% increase in government budget expenditure results in a 0.0036 % increase in ROA. SIZE, LEV, GROWTH, BOARD, and AGE are all significant control variables that influence the presence of ROA. Furthermore, LEV and AGE all have a significant negative effect on ROA. ROA is significantly influenced by SIZE, GROWTH, and BOARD.

Similarly, the results of model (2) show that the LAW coefficient is 0.0009 and is significant at the 1% level, indicating that LAW has a significant positive impact on ROA. TRADE and FIN have impact coefficients of 0.0014 and 0.0037, respectively, in models (3) and (4), and all have a significant contribution to the existence of ROA. As a result, all sub-dimensions of business environment have a positive and significant impact on firm profitability, as demonstrated by Cui et al. (2022), Wang et al. (2023), and Xiong (2021). This also suggests that the better business environment is optimised, the higher the private firm profitability, confirming hypothesis from 1a to 1b.

Table 3. Model Estimates

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0036*** (3.5293)			
LAW		0.0009*** (4.8527)		
TRADE			0.0014*** (4.0456)	
FIN				0.0037*** (5.3464)
SIZE	0.0143*** (29.8764)	0.0143*** (29.9306)	0.0143*** (29.9064)	0.0143*** (29.9416)
LEV	-0.1767*** (-66.3091)	-0.1763*** (-66.1911)	-0.1765*** (-66.2596)	-0.1766*** (-66.3344)
GROWTH	0.0438*** (41.4449)	0.0438*** (41.4461)	0.0438*** (41.4343)	0.0438*** (41.4531)
BOARD	0.0074** (2.3785)	0.0073** (2.3558)	0.0074** (2.3970)	0.0075** (2.4273)
INDEP	0.0033 (0.3110)	0.0032 (0.3013)	0.0029 (0.2700)	0.0035 (0.3225)
AGE	-0.0083*** (-5.6883)	-0.0081*** (-5.5729)	-0.0082*** (-5.5806)	-0.0080*** (-5.4909)
Constant	-0.2409*** (-14.6156)	-0.2188*** (-15.7103)	-0.2245*** (-15.6933)	-0.2503*** (-15.8470)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2528	0.2532	0.2530	0.2534
r2 a	0.2516	0.2520	0.2518	0.2522
F	211.3499***	211.7995***	211.5084***	212.0036***

Note: \*\*\* means that the effect is significant at the 1% level of significance, \*\* means that the effect is significant at the 5% level of significance, and \* means that the effect is significant at the 10% level of significance. The t-values are in parentheses.

### Analysis of Mediation Effects

The test for the mediation effect consists of three stages. The initial phase of the mediating impact has been included in the regression of the standard model to further verify the mediating effect of business innovation. Then, hypotheses 2a-2d are put to the test using the mediation effect analysis's second and third stages. Following this, we examine how the external context for business environment affects corporate innovation within corporations and find the following.

Table 4. The Second Step of the Mediated Effect Test

VARIABLES	(1) PAT	(2) PAT	(3) PAT	(4) PAT
GOV	0.4822*** (22.7466)			
LAW		0.0623*** (15.1452)		
TRADE			0.1541*** (21.1029)	
FIN				0.3366*** (23.2105)
SIZE	0.1838*** (18.3208)	0.1825*** (18.0717)	0.1844*** (18.3454)	0.1844*** (18.3926)
LEV	-0.1827*** (-3.2632)	-0.1378** (-2.4448)	-0.1530*** (-2.7279)	-0.1671*** (-2.9870)
GROWTH	-0.0281 (-1.2654)	-0.0284 (-1.2703)	-0.0296 (-1.3305)	-0.0286 (-1.2893)
BOARD	0.3222*** (4.9330)	0.2828*** (4.3027)	0.3158*** (4.8257)	0.3138*** (4.8067)
INDEP	0.9482*** (4.1917)	0.9165*** (4.0237)	0.8905*** (3.9300)	0.9436*** (4.1732)
AGE	-0.5872*** (-19.1260)	-0.5942*** (-19.2132)	-0.5775*** (-18.7571)	-0.5729*** (-18.6498)
Constant	-6.7288*** (-19.4241)	-3.0578*** (-10.3710)	-4.1060*** (-13.6345)	-6.1711*** (-18.5961)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2184	0.2076	0.2158	0.2192
r2 a	0.2172	0.2064	0.2145	0.2180
F	174.5756***	163.6814***	171.8495***	175.3821***

Note: \*\*\* means that the effect is significant at the 1% level of significance, \*\* means that the effect is significant at the 5% level of significance, and \* means that the effect is significant at the 10% level of significance. The t-values are in parentheses.

It is clear from Table 4 that GOV has a beneficial impact on PAT, i.e., that the public administration environment will lead to longer-lasting corporate innovations. The mediation effect has made it through the second stage when the coefficients for the effects of LAW, TRADE, and FIN on PAT are 0.0623, 0.1541, and 0.3366, respectively, at the 1% level of significance. As a whole, this proves that a flourishing economy is essential to the success of private companies' efforts to innovate. The findings of Xiong (2021) and Wang et al. (2023) are identical.

Table 5. The Third Step of The Mediated Effect Test

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(4) ROA
GOV	0.0017* (1.6920)			
LAW		0.0007*** (3.6345)		
TRADE			0.0008** (2.3459)	
FIN				0.0024*** (3.5004)
PAT	0.0038*** (11.5347)	0.0038*** (11.5025)	0.0038*** (11.4793)	0.0037*** (11.2376)
SIZE	0.0136*** (28.2707)	0.0136*** (28.3541)	0.0136*** (28.3041)	0.0136*** (28.3611)
LEV	-0.1760*** (-66.2419)	-0.1758*** (-66.1962)	-0.1759*** (-66.2394)	-0.1760*** (-66.2875)
GROWTH	0.0439*** (41.6775)	0.0439*** (41.6780)	0.0439*** (41.6701)	0.0439*** (41.6782)
BOARD	0.0062** (1.9886)	0.0062** (2.0177)	0.0063** (2.0176)	0.0064** (2.0572)
INDEP	-0.0003 (-0.0248)	-0.0002 (-0.0201)	-0.0005 (-0.0434)	-0.0000 (-0.0032)
AGE	-0.0061*** (-4.1333)	-0.0059*** (-4.0155)	-0.0060*** (-4.0639)	-0.0059*** (-4.0140)
Constant	-0.2153*** (-12.9834)	-0.2073*** (-14.8906)	-0.2089*** (-14.5872)	-0.2273*** (-14.3199)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646
R-squared	0.2576	0.2580	0.2577	0.2580
r2 a	0.2564	0.2568	0.2565	0.2567
F	210.3612***	210.7710***	210.4658***	210.7331***

Note: \*\*\* means that the effect is significant at the 1% level of significance, \*\* means that the effect is significant at the 5% level of significance, and \* means that the effect is significant at the 10% level of significance. The t-values are in parentheses.

In Table 5, the results of the third step of the mediation effect analysis show that both the different dimensions of business environment and corporate innovation are significant at the 1%, 5%, or 10% level of significance, indicating that the third step of the mediation effect test is passed. Consequently, corporate innovation has a mediating effect. In other words, the company's corporate innovation mediates the impact of business environment on corporate innovation, and hypotheses 2a-2d were found to be true.

### Robustness Test

The instrumental variables are then evaluated using the two-stage least squares estimation method (2SLS) to prevent endogeneity from influencing the model. Table 6 shows that when endogeneity is considered and the model results are stable, the effects of the explanatory variables on the explained variables are all significant at the 1% level of significance. All three robustness tests demonstrated that the impact of business environment on the profitability of private corporations is positive and active.

Table 6. Robustness Test

VARIABLES	(1)	(2)	(3)	(4)
	ROA	ROA	ROA	ROA
GOV	0.0028**			
	(2.4616)			
LAW		0.0011***		
		(4.8223)		
TRADE			0.0014***	
			(3.5099)	
FIN				0.0036***
				(4.6866)
	(32.2933)	(32.3947)	(32.3473)	(32.3786)
LEV	-0.1741***	-0.1738***	-0.1740***	-0.1742***
	(-58.5641)	(-58.5180)	(-58.5739)	(-58.6342)
GROWTH	0.0445***	0.0444***	0.0444***	0.0444***
	(38.4500)	(38.4401)	(38.4413)	(38.4465)
BOARD	0.0121***	0.0123***	0.0123***	0.0124***
	(3.4989)	(3.5546)	(3.5496)	(3.5761)
INDEP	0.0123	0.0125	0.0120	0.0126
	(1.0294)	(1.0495)	(1.0082)	(1.0608)
AGE	-0.0043**	-0.0040**	-0.0041**	-0.0040**
	(-2.5374)	(-2.3656)	(-2.4155)	(-2.3312)
Constant	-0.3326***	-0.3244***	-0.3220***	-0.3504***
	(-17.4389)	(-20.1420)	(-19.7448)	(-19.1379)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	16,996	16,996	16,996	16,996
R-squared	0.2498	0.2503	0.2501	0.2505
r <sup>2</sup> a	0.2484	0.2489	0.2486	0.2490

Note: \*\*\* means that the effect is significant at the 1% level of significance, \*\* means that the effect is significant at the 5% level of significance, and \* means that the effect is significant at the 10% level of significance. The t-values are in parentheses.

### Heterogeneity Analysis

China is a vast country. Due to geographic differences, the economic development of each region varies, so this study divides China into eastern and central-western regions. This is because the eastern is usually located in the coastal belt of China and has more developed coastal cities and ports, which are favourable for international trade and economic development. The central and western are located inland, with limited transportation, relatively few natural resources, and relatively poor geographic conditions. To further understand whether there is a relatively significant difference in the impact of business environment on the profitability of private corporates in eastern, central and western China, this section conducts a heterogeneity analysis. It is shown in Table 7.

Table 7. Heterogeneity Analysis (Regional Groupings)

	East	Midwest	East	Midwest	East	Midwest	East	Midwest
VARIABLES	ROA							
GOV	0.0031** (2.4580)	0.0051** (2.1196)						
LAW			0.0013*** (4.4919)	0.0005 (1.0734)				
TRADE					0.0025*** (3.5808)	0.0032*** (2.7674)		
FIN							0.0066*** (5.6647)	0.0043** (2.2303)
SIZE	0.0141*** (25.3618)	0.0150*** (16.0047)	0.0142*** (25.3856)	0.0150*** (15.9911)	0.0142*** (25.4231)	0.0150*** (16.0093)	0.0142*** (25.4287)	0.0150*** (16.0269)
LEV	-0.1784*** (-57.8113)	-0.1726*** (-32.4212)	-0.1777*** (-57.6624)	-0.1731*** (-32.4928)	-0.1783*** (-57.8441)	-0.1726*** (-32.4471)	-0.1787*** (-57.9901)	-0.1727*** (-32.4527)
GROWTH	0.0471*** (37.5949)	0.0357*** (18.1227)	0.0470*** (37.5961)	0.0357*** (18.1393)	0.0470*** (37.5718)	0.0356*** (18.0893)	0.0471*** (37.6415)	0.0356*** (18.1001)
BOARD	0.0061* (1.7116)	0.0108* (1.7245)	0.0060* (1.6785)	0.0104* (1.6602)	0.0063* (1.7466)	0.0115* (1.8335)	0.0064* (1.7847)	0.0108* (1.7232)
INDEP	0.0040 (0.3252)	0.0021 (0.0916)	0.0038 (0.3064)	0.0008 (0.0349)	0.0036 (0.2917)	0.0046 (0.2045)	0.0046 (0.3758)	0.0029 (0.1287)
AGE	-0.0064*** (-3.8523)	-0.0122*** (-3.9753)	-0.0064*** (-3.8518)	-0.0122*** (-3.9914)	-0.0064*** (-3.8202)	-0.0123*** (-4.0218)	-0.0062*** (-3.7326)	-0.0122*** (-4.0020)
Constant	-0.2459*** (-12.5114)	-0.2461*** (-7.2202)	-0.2298*** (-13.9713)	-0.2063*** (-7.6278)	-0.2440*** (-13.7646)	-0.2303*** (-8.0526)	-0.2897*** (-14.1175)	-0.2460*** (-7.3641)
Year effect	Yes							
Industry effect	Yes							
Observations	15,820	4,826	15,820	4,826	15,820	4,826	15,820	4,826
R-squared	0.2543	0.2604	0.2549	0.2599	0.2546	0.2609	0.2555	0.2605
r <sup>2</sup> a	0.2527	0.2555	0.2534	0.2550	0.2530	0.2560	0.2539	0.2556
F	163.1071	52.7419	163.6812	52.6009	163.3825	52.8755	164.1651	52.7622

Note: \*\*\* means that the effect is significant at the 1% level of significance, \*\* means that the effect is significant at the 5% level of significance, and \* means that the effect is significant at the 10% level of significance. The t-values are in parentheses.

In Table 7, the coefficient of GOV in the East is 0.0031, and the impact coefficient of GOV in the Midwest is 0.0051, which are both significant at 5% level of significance, and the impact is stronger in the Midwest. That is to say, the influence of the public administration (GOV) on the improvement of the profitability of private corporates is stronger in the Midwest. The impact coefficient of law construction (LAW) in the east is 0.0013, which is significant at 1% level of significance, while LAW in the west is insignificant, and the positive impact of LAW on ROA is higher in the east. This shows that in the east, China's legal construction has a greater influence on the improvement of private corporate profitability. Whereas the influence of foreign trade (TRADE) and financial service (FIN) is significant as well as positive in the East as well as in the Midwest, the impact of TRADE on ROA is higher in the Midwest and the impact of FIN on ROA is higher in the East. This indicates that the foreign trade environment

and the financial service in the Midwest and the East are more favourable to the profitability of private corporates.

### **Discussion**

The first central thesis of this study is that business environment has a considerable and beneficial effect on the success of private businesses. The results of the analysis are in agreement with the hypothesis after applying regression to the fixed effect model. Private enterprises need to face the public administration environment, the rule of legal construction environment, the financial service environment, and the foreign trade environment in the process of participating in market competition, and these environments have different degrees of influence on the profitability of private enterprises. The second hypothesis of this study is that the impact of business environment on the profitability of private firms is moderated by the degree to which corporate innovation has been implemented within those corporates. The findings are consistent with the hypothesis after further stepwise regression of the mediating effect. Each environment has a unique effect on the eastern, central, and western sections of the United States.

### **Conclusion**

In conclusion, a conducive business environment is a reliable assurance of the flourishing development of independent firms. It might be argued that the business environment serves as a crucial stepping stone for the expansion of private companies. Thus, the enterprise's fundamental competitiveness is developed or enhanced over a specific time period, with the express goal of achieving more financial success. The end goal is to ensure the company's long-term viability.

Through supporting evidence for the integration of transaction cost theory and resource base theory, this research contributes to the advancement of literature and the expansion of knowledge. In addition, it seeks to fill a void in the literature by analysing the connection between firms' operating contexts and their bottom lines. To better understand the challenges surrounding the business environment and the financial profitability of private firms in China, it is important to grasp the findings of this study. This work examines the profitability of private enterprises, whereas earlier research has focused on the profitability of all firms in a country. The conclusions of this paper are therefore more relevant to the literature on the profitability of private firms.

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## **The Influential Role of Local Supplier Development in Improving Supply Chain Operational Performance in Manufacturing Firms**

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### **Abstract**

In a modern manufacturing environment, supplier development is gaining more significance due to the uncertainty and complexity associated with global supply chain. This paper aims to review the influential role of local supplier development in improving supply chain operational performance in manufacturing firms. Supplier development programs are vital to enhance suppliers' capabilities and improve operational performance of buying firms. Therefore, buying firms are inclined to develop the potential of their suppliers to ensure they can meet short- and long-term needs. Alternatively, buying firms should adopt programs and initiatives to develop local suppliers because local suppliers can be supportive in fulfilling the demands of buying firms, especially at times of increasing uncertainty. This paper concludes that local supplier development can mitigate global supply chain risks and enhance buying firms' operational performance.

**Keywords:** local supplier development, manufacturing firms, operational performance, supply chain.

### **Introduction**

In a business context, decision-making could make or break a firm's success; therefore, businesses make decisions to ensure their ability to fulfil the demands of the customers. Firms are well set to produce standardized items, but the risk of securing raw materials is still imminent. As a result, depending on suppliers to provide the required raw material at the right time and quantity is critical. Failure to get raw materials accurately will make the manufacturing firms unable to meet customers' demands and incapable of managing the supply chain; therefore, selecting qualified suppliers is crucial to reduce supply chain disruptions and promote efficiency and integration.

Efficient supply chain entails integration of different stakeholders throughout supply chain pipeline. Supply chain stakeholders can be internal within firms' operations or external represented by suppliers and other networks. Integration between internal and external

stakeholders is a demanding issue in modern supply chain to ensure efficient flow among supply chain networks. So, if one supply chain stakeholder encounters challenges, this will affect the performance of other supply chain partners. In contrast, the more supply chain partners are cooperative, the more supply chain operational performance will be. Hence, suppliers are critical stakeholders within any supply chain, in which their performance can make or break manufacturing operations. For this reason, buying firms should work extensively to maximize their supply base to avoid dependence on a few suppliers.

## **Literature Review**

### **Supplier Development**

Supplier development refers to any activity performed by buying firms to enhance supplier performance and capabilities to meet buying firms' short-term and long-term supply needs (Nath et al., 2022). Suppliers' development aims to lower inventory levels, reduce product costs, solve quality issues, and enhance sustainable performance (Shafiq, Johnson, and Klassen, 2022). Moreover, supplier management, known as supplier development, refers to any efforts made by buying firms to enhance the performance or capacity of current suppliers to fulfil buying firms' supply requirements (Finger and Lima-Junior, 2022). Furthermore, supplier development is an initiative by buying firms to increase the performance of their viable suppliers (Hoque, 2022). Therefore, the main objective of enhancing supplier performance capacity is to be able to meet buying firms' short- and long-term supply needs.

Supplier development is crucial for long-term competitive advantage, especially in the manufacturing business context, in which buying organizations rely on their suppliers due to outsourcing initiatives and environmental pressure (Bai and Satir, 2020). Moreover, according to Ofori-Boadu et al., (2020), developing high-performing supplying partners through effective development practices is critical for businesses' competitive advantage and success in developed and developing countries. Adopted supplier strategies could contribute to improving supplier capabilities. Supplier range of capabilities, including quality management, capacity management, lead time reduction, and product design, will be enhanced by supplier development initiatives (Jorgensen, Ellegaard, and Kraph, 2023). Besides, supplier development is integral because it is initiated by assessing suppliers' performance toward achieving respective requirements before selecting the best activities for implementation (Adesanya et al., 2020). In line with the mentioned studies, Singagerda, Fauzanb, and Desfiandic, (2022) found that supplier development has a significant relationship with performance. Based on the above discussion, supplier development is critical to improving buying firms' operation performance.

### **Buyer-Supplier Relationship**

Maintaining good relationships with suppliers is critical for buying firms' operational continuity. In the reviewed literature, a buyer-supplier relationship is crucial for supply chain operational performance. According to Schmelzle and Mukandwal, (2022), suppliers can enhance operational efficiency with buying firms by establishing well-rooted relationships rather than shallow ones. Moreover, according to Benton Jr, Prahinski, and Fan, (2020), communication, cooperation, and commitment are critical aspects of the buyer-supplier relationship. The study defined the three aspects as communication as communicating

performance assessment to the supplier by the buying organizations. Cooperation is buying firm suppliers' emphasis on developing cooperative relationships with critical suppliers. In addition, commitment is an explicit or implicit promise to preserve relational continuity between two business partners. As a result, interaction, coordination, and cooperation affect the relationship between buyers and suppliers (Schmidta et al., 2023). Besides, collaboration helps in supplier development initiatives, especially with principal suppliers and current supplier development programs (Costa et al., 2022).

### **Supplier Development Practices**

In the literature, the widely used alternatives to supplier development are supplier engagement, collaboration, and supplier management (Jia, Stevenson, and Hendry, 2023). According to Abdullah, Widiaty, and Abdullah, (2019) literature review study, there are eight supplier development practices summarized, including training and education, on-site consultation, employee exchanges, evaluating supplier performance, offering future business incentives, promoting collaboration among suppliers, competition simulation, and providing investment and financial support. Similarly, Huma, Ahmed, and Najmi, (2020) mentioned six supplier development practices, including evaluation and assessment, education and training, feedback communication, competitive environment creation, certification, and site visits. Suppliers' development programs will contribute to solve quality risks that are imminent in the sourcing activities context (Khan, Haleem, and Khan, 2021). For example, Honda's supplier development program has increased supplier productivity levels and quality performance by 50% and 30%, respectively, and supplier cost savings are shared with Honda as well. Furthermore, supplier development practices are critical to improve product quality (Tse et al., 2019). Hence, supplier development practices are significant to improve the operational performance of the buying firms.

### **Malaysian Manufacturing Industry: An Overview**

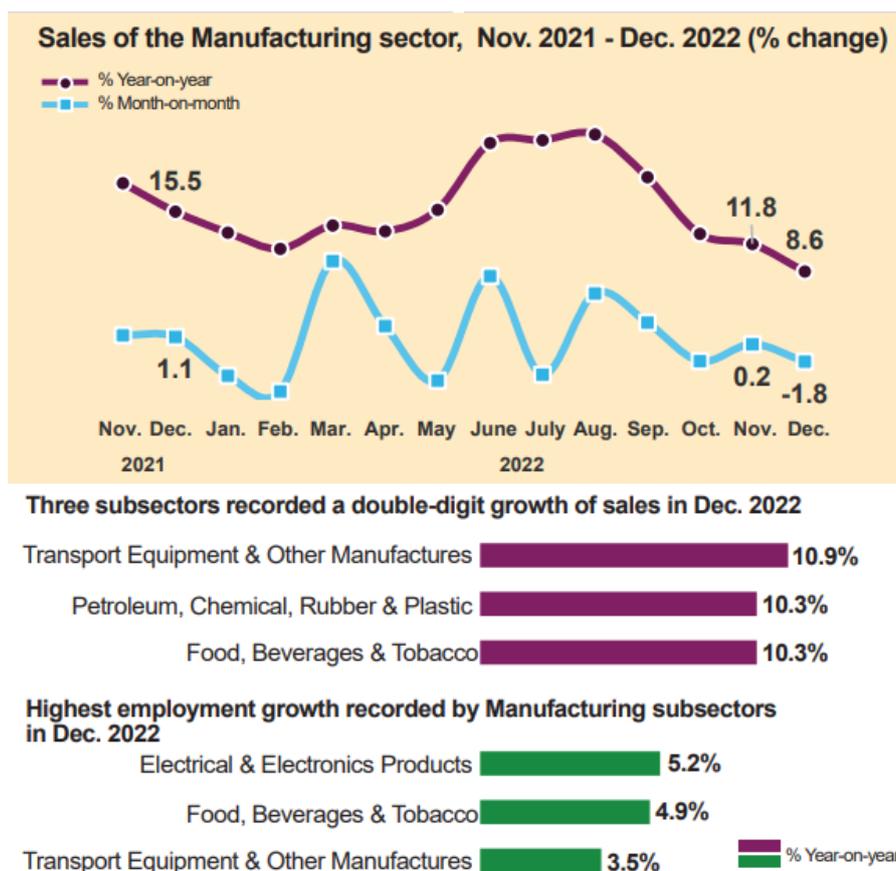
The manufacturing sector is crucial to global economic growth (Baig and Yadegaridehkord, 2023). It plays a vital role in Malaysian economic flourish because of its contribution to the national export revenue and the country's growth despite global uncertainties (Malaysian Investment Development Authority, 2023). As a fundamental contributor to the Malaysian economy, the manufacturing industry grew steadily at an average annual growth rate of 14.8% from RM4.84 billion in 1987 to RM310.2 billion in 2017 (Zhang and Mia, 2023). Moreover, according to the findings of Abdul-Rashid et al., (2017), the manufacturing phase in the overall production process has the most impact on sustainable performance improvement; therefore, Malaysian manufacturing companies focus on production when implementing sustainable manufacturing practices.

Malaysian manufacturing sector is diverse and categorized into several scopes. These scopes include automotive, biotechnology, building materials, chemical and chemical products, computer hardware/software, electrical & electronics, engineering support, iron and steel industries, machinery and equipment, medical equipment, metal (basic and fabricated), paper and paper products, rubber products, shipbuilding and repair, and industrial textiles. However, the three contributing industries in 2021 were rubber products, chemicals and chemical products, and electric and electronics.

According to Malaysian Investment Development Authority MIDA, 2023, direct domestic investment (DDI) in 2021 worth RM15.5 billion across three key industries. MIDA report added that the three manufacturing industries that attracted direct domestic investment were rubber products at RM4.9 billion, chemicals and chemical products at RM2.3 billion, and electric and electronics at RM1.7 billion. The three mentioned industries made up 57.4 percent of total approved DDI. These three manufacturing industries were followed by food manufacturing, fabricated metal products, transport equipment, machinery and equipment, plastic products, papers, printing, and publishing, non-metallic mineral products, basic metal products, and furniture and fixture industries (MIDA, 2023).

The sales value of Malaysian manufacturing sectors steadily continues to grow as per December 2022 statistics. According to the Ministry of Economy Department and Statistics Malaysia report issued in December 2022, sales value of the manufacturing sector expanded by 8.6 percent in December 2022 record RM156.3 billion. The expansion of sales value growth in December 2022 was supported by transport equipment and other manufacturing subsectors, petroleum, chemicals, rubber and plastic products, and food, beverages, and tobacco products (refer to figure 1).

Figure 1. Sales of The Manufacturing sector, Nov 2021-Dec 2022 (% Change)



Source: DOSM Portal, 2023

With rapid technological advancement in modern technology, Malaysian manufacturing industry faces many challenges utilizing these technologies. Among these challenges is investment high cost in information technology (IT), infrastructure, machine parts, cost of technical training, and IT personnel (Abdulaziz et al., 2023). Similarly, Tay, Alipal, and Lee, (2021) found that data management integration and personnel re-education were the main operational challenges among Malaysian manufacturing firms as per the seven surveyed firms. These claims were supported by the findings of Abdul-Hameed et al., (2021) study in which lack of automation system visualization, unclear return on investment, lack of process design, unstable connectivity among firms, and employment disruptions were identified as critical challenges in manufacturing firms to utilize emerging technologies. Therefore, to reduce the intensity of these challenges, firms could overcome these challenges by building and maintaining integration with local suppliers to increase manufacturing firms' operational performance.

### **Local Supplier Development (LSD)**

Building and enhancing buyer-supplier relationships is demanding in manufacturing industrial operations. Moreover, supplier management is a critical part of supply chain operations that needs careful improvement since the supplier is the first foundation of the chain process (Halili and Fernando, 2019). LSD can be conducted by embracing several practices, such as providing sufficient technical assistance, encouraging local suppliers to improve their production process, offering the necessary training, and sharing vision and supply chain policy with important suppliers (Molinario et al., 2022). Hence, buyers' operational performance concerning quality, delivery, flexibility, and cost is inextricably linked to supplier development.

Manufacturing industries will maintain a competitive advantage if customers get high-quality products and services. According to Tong, Wang, and Pu, (2022), cost, delivery, and quality are the traditional assessment criteria of suppliers' performance. Moreover, suppliers play a critical role because they ensure whether raw materials are available with the required quantity and quality to fulfil production requirements with reasonable cost and short lead time; therefore, managing suppliers to meet the delivery schedules of buying organizations is crucial to promote competitiveness in the market and continue to achieve high performance (Wang et al., 2019). Supply chain flexibility and responsiveness are achieved when buyers integrate with suppliers because investment with suppliers through integrations can provide higher operational performance than investing and integrating with customers (Purwantoa and Julianaa, 2022). Supply chain integration could be improved further to be conducted through information sharing.

Scholars considered supplier development activities crucial for buying firms' performance. Moradlou, Roscoe & Ghadge, (2022), claimed that firms should implement development strategies with prime suppliers to promote operational performance measurements, such as quality, delivery, and technological standards. Moreover, according to Lawson, Krause & Potter (2015), supplier development activities significantly impact performance outcomes contributing eventually to supply chain competitiveness, efficiency, and responsiveness (Hanekom et al., 2022). Additionally, supplier development will assist suppliers in uplifting their performance concerning potential risk avoidance and supplier capability to

meet buying firms' strategic goals (Silva et al., 2020). Besides, Modi and Mabert, (2007) stated that supplier development entails long-term collaborative efforts between buying firms and suppliers to improve suppliers technical, quality, and cost capabilities. Accordingly, the reviewed literature supports the argument that supplier development has a crucial role in buying firms' operational performance regarding quality, delivery, flexibility, and cost reduction.

With the advancement of information technology, information sharing with integral suppliers become more accessible than ever before. Information sharing among supply chain partners, especially key suppliers, contributes to avoiding delivery disruption to the end customers. According to Asamoah et al., (2021), firms can get greater visibility into prime suppliers' stock levels through inter-organizational systems, not only to ensure accurate and timely transfer of customer demand information across the supply chain but also to minimize supply chain disruption and enhance overall operational performance. Theoretically, Dyer and Singh (1998), in the Relational Resource-Based View (RRBV), argue that good bonds among supply chain partners improve information sharing, lower opportunity cost, enhance value-adding initiatives, which may lower costs, and improve the performance of supply chain network (Chowdhury, Quaddus, and Agarwal;2019). Supplier integration through information sharing has a crucial role in boosting firms' operational performance regarding flexibility, cost, delivery, and quality performance (Chienwattanasook and Jermstittiparsert, 2018). So, it can be concluded that supplier development through information sharing could help manufacturing firms enhance their operational performance.

### **Supplier Development Practices**

Buying organizations can assist in improving the performance of their suppliers through several activities. For example, sharing information on production schedules with suppliers will contribute to just-in-time materials delivery and stock rationing. Besides, developing suppliers concerning efficient production procedures will reduce overall production costs. Additionally, providing technical assistance will help suppliers to improve their product quality. Supplier development has four processes: supplier assessment, direct involvement, competitive pressure, and incentives (Shukla et al., 2023). Ayres et al., (2021) performed a literature review study from 1999 to 2018 on supplier development practices. They found the most performed supplier development activities include assessment and supplier qualification, supplier support activities, teamwork, training and education, communication and information, feedback, knowledge transfer, awards and recognition, and site visits.

### **Supply Chain Operational Performance and Local Suppliers**

Local supplier development can potentially reduce uncertainty associated with extended global supply chains. Covid-19 global crisis prove localized systems are more robust and resilient than global supply chain; therefore, local manufacturing suppliers can be more responsive to local needs (Sarkis 2020). Moreover, in the event of global supply chain disruption, the need for local, responsive, and rapid manufacturing suppliers to meet the local demand is increasing (Kantaros et al., 2021). Due to the significant delay in material delivery, especially from overseas, firms began to adopt procedures to find alternative sources to reduce excepted disruption risks; therefore, buyers drawn attention to local suppliers where the possibility of short delivery time was higher (Alsharef et al., 2021). Following global pandemic, firms

continue to increase their domestic sourcing to have business relationships with ready and available local suppliers when global supply chains are uncertain (Free and Hecimovic, 2020). Besides, shortening supply chains by strategies such as near-shoring and local manufacturing suppliers could enhance supply chain sustainability and resilience (Moosavi, Fathollahi-Fard, and Dulebenets, 2022), ultimately leading to operational performance and firms' competitive advantage. Equally important, extant literature emphasized the role of supplier performance in improving buying firms' performance; therefore, managing suppliers and buyers from the perspective of stakeholders' resource-based view is crucial to promoting buying firms with a competitive advantage over others (Mani, Jabbour, and Mani, 2020). Hence, buying firms can improve their operational performance through developing and engaging with local suppliers.

### **Reflection**

Manufacturing firms could maintain their competitiveness and agility to meet customers' demands by localizing sourcing activities; therefore, local supplier development is crucial to augment suppliers in bolstering performance. Manufacturing firms can promote sourcing localization and social responsibility in their operations through developing suppliers. In countries that support local manufacturing sectors, such as Malaysia, the government plays a profound role in incentivizing buying companies to engage in supplier development activities with their suppliers. Developing with suppliers in activities such as information sharing, providing technical assistance, skilled personnel exchange, performance evaluation, assessment feedback, performance recognition, and site visits proved to be helpful to suppliers to boost their performance. Furthermore, buying firms should send evaluation reports to the suppliers to take corrective measurements and improve performance. Also, buying firms are supposed to visit suppliers' workplaces to assess the level of performance based on the given development activities. Hence, these activities will empower local suppliers and support steady relationship with suppliers and lower global supply chain risks.

Global extended supply chains are overwhelmed with uncertainties and fluctuations that could negatively affect buying firms' performance. Therefore, maintaining a long-term and prosperous relationship between buying firms and their suppliers is crucial for supply chain operational performance. Firms embrace strategies like near-shoring and sourcing localization in extended supply chains to reduce disruptions. Local suppliers may not meet the buying firms' expectations; therefore, buyer-supplier engagement may entail supplier development practices. To ensure that supplier development achieves its goal, it is advantageous that the supplier and buyer agree on supplier development outcomes.

### **Conclusion**

Due to uncertain and rapid changes in the marketplace, manufacturing firms are supposed to accommodate and align with current uncertainties. Manufacturing firms cannot exhibit responsiveness and agility without the assistance of their supplier. Therefore, building a robust relationship with key suppliers is crucial to encounter supply chain challenges. Supply chain uncertainties could be more complicated if the supply networks extend globally. So, developing and engaging with a local supplier to develop their performance to the expectation of buying firms is an effective way to mitigate global supply chain risks. Local suppliers can be supportive in facing demand surges and global supply chain disruptions.

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## China's Talent Competitiveness of Intelligent Industry: A Comparative Study

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### **Abstract**

The intelligent industry has become an important direction of economic development, constantly reshaping the global industrial layout. Meanwhile, the importance of talent is increasingly prominent, and talent competitiveness plays a crucial role in industrial development. China is the world's second largest economy, with rapid development of its intelligent industry. China and the United States are the top two economies in the world, and their development of intelligent industries is also leading the world. The intelligent industries of the two countries have their characteristics, and their talent competitiveness also shows significant differences. By comparing the competitiveness of intelligent industry talents between two countries, it can help China find directions to enhance the talent competitiveness of intelligent industry, which has practical significance. This study uses qualitative research and interpretivism paradigm to compare the talent competitiveness of the intelligent industry between the United States and China from five aspects. China's talent competitiveness in the intelligent industry has continuously improved. However, compared to the United States, there is still a significant gap in the dimensions of talent resource, talent contribution, talent investment, talent development support, and talent environment. It is urgent to enhance China's talent competitiveness of intelligent industry to promote the industrial development.

**Keywords:** China, talent competitiveness, talent competitiveness of intelligent industry, The United States.

### **Introduction**

The intelligent industry belongs to an emerging industry, including industries produced with artificial intelligence (AI) and big data technology and those based on related technologies for intelligent product design and manufacturing (Xu, Qi, & Song, 2021). AI storms have swept

the world in the past ten years, and the intelligent industry developed very fast (Blackman, 2017). The intelligent industry has become an important direction of economic development in many countries, constantly reshaping the global industrial layout. It not only develops rapidly but also is the development direction of future industries.

In the era of the knowledge economy, global talent competition has intensified, and the role of talent strategies is further prominent. As the most active factor in industrial innovation activities, talent is becoming increasingly important. Talent competitiveness has become the core competitiveness of the country (Teagarden, 2020), playing a crucial role in industrial development. Under the new situation, the direction of sustainable economic development is in the intelligent industry, focusing on improving its talent competitiveness.

The United States and China are the top two economies in the world, and their development of intelligent industries is also leading the world. The intelligent industry in the United States started early, with a complete industrial system and a first mover advantage. China's intelligent industry started relatively late, but the market demand is large, the development speed is fast, and it has development potential. The intelligent industries of the two countries have their characteristics, and their talent competitiveness also shows significant differences. By comparing the competitiveness of intelligent industry talents between two countries, it can help China find directions to enhance the talent competitiveness of intelligent industry, which has practical significance.

### **Research Design**

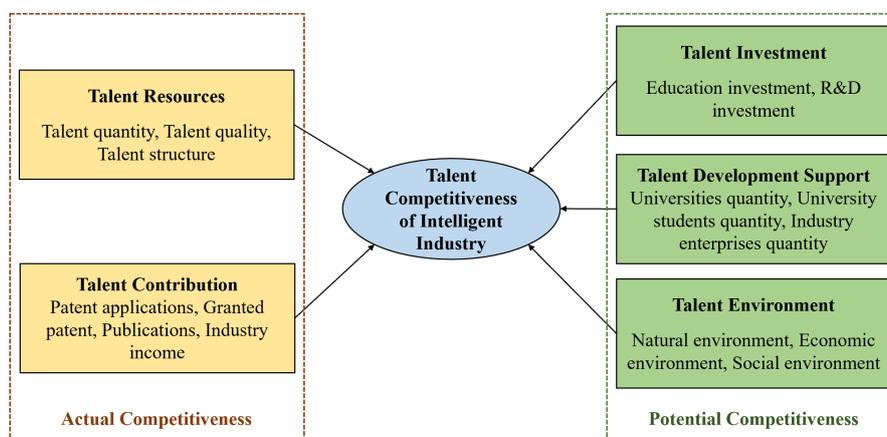
The purpose of this study is to compare the talent competitiveness of the intelligent industry between China and the United States. The focus is not to verify, but to explain the differences between the two, which needs to be revealed through qualitative research. Therefore, using qualitative research for exploration in this study is feasible and suitable for achieving research objectives. The paradigm used in this study is interpretivism, which helps to clarify the differences in talent competitiveness in the intelligent industry between China and the United States.

The data for this study is sourced from second-hand data. Secondary data sources can be books, journals, magazines, newspapers, electronic resources, websites, reports, government records, census data, and demographics (Kabir, 2016). To ensure the representativeness and typicality of the collected data, the data for this study not only comes from journals and books but also statistical data published by relevant government departments in China and the United States, as well as research reports from authoritative institutions. After collecting data, this study used text analysis methods for data analysis.

### **Comparative Study**

According to the talent competitiveness model proposed by Xu, Arshad, and Mahmood (2021), the talent competitiveness of the intelligent industry mainly includes five aspects: talent resources, talent contribution, talent investment, talent development support, and talent environment (see **Error! Reference source not found.**). This study will compare the talent competitiveness of the intelligent industry between the United States and China from these five aspects.

Figure 1. Conceptual Framework of Talent Competitiveness Model and Evaluation Index (TCMEI) of Intelligent Industry



Source: Adopted from Xu, Arshad, & Mahmood (2021)

### Talent Resources

Talent resources refer to the portion of people with higher quality levels in human resources (Kravariti & Johnston, 2020), emphasizing the quality of human resources (Elarabi & Johari, 2014), and reflect the quantity, quality, and structure of talents (Henriksen, Stambulova, & Roessler, 2010; He, 2015). With the development of China's intelligent industry, the demand for talent in the industry is rapidly increasing. The high demand has made industry talent a huge shortage. Taking the two core industries of the intelligent industry as examples, in 2020, the talent gap in the artificial intelligence industry was 5 million, and it is expected to exceed 10 million by 2025, indicating a long-term talent shortage (Research Team of the Chinese Academy of Science and Education Strategy at Zhejiang University, 2022); In 2020, the talent gap in the Information and Communication Technology industry was close to 11 million, and this gap continues to widen (CAICT, 2021). Moreover, according to the AI Research Institute of Tsinghua University, among the scholars selected for "The World's Most Influential AI Scholar (AI 2000)" in 2022, the United States had 1,146 entries, accounting for 57.3% of the world; China had 232 entries, accounting for 11.6% (AITR Tsinghua, 2022). The number of scholars from the United States is five times that of China, indicating a significant gap between China and the United States in terms of high-level talent in the intelligent industry. It is evident that the rapid development of China's intelligent industry coexists with a massive talent shortage, and there is still a significant gap with the United States in high-level talent. It is urgent to increase the talent quantity and quality of intelligent industry to enhance its talent competitiveness.

### Talent Contribution

Talent contribution refers to the value and impact that an individual or team brings to an organization through their skills, knowledge, creativity, and work efficiency (Beechler & Woodward, 2009; Chen, Lee, & Ahlstrom, 2021). It reflects the contribution of talents to the industry and reflects the knowledge output and innovation achievements of talents. The intelligent industry usually involves advanced technology and is a typical high-tech industry. Patents and publications are manifestations of technological and knowledge assets and the

crucial indicators for evaluating talent contribution. According to the "The AI Index 2022 Annual Report" released by Stanford University, in 2021, the patent applications and granted patents for AI in China were 87343 and 1407, respectively. China's patent application accounts for 51.69% of the world, higher than the United States (16.92%) and the European Union plus the United Kingdom (3.89%). However, China's granted patents only account for 5.80% of the world, lower than the United States (39.59%) and the European Union plus the United Kingdom (7.56%). From the perspective of AI publications, China has ranked first in terms of quantity in the world. However, the United States still dominates in the number of AI conference and repository citations, accounting for 29.52% and 38.60%, respectively. The European Union plus the United Kingdom also account for 23.32% and 20.13%, respectively. They are both higher than China's 15.32% and 16.44% (Clark & Perrault, 2022). It can be seen that although China ranks first in the world in terms of AI publications and patent applications, its relatively low citation and patent granted number reveal a gap between China and developed countries in terms of research quality and international influence in the field of intelligence. This means that although talent innovation activities in China's intelligent industry are active, the quality of output still needs to be improved to enhance its talent competitiveness.

### **Talent Investment**

Talent investment refers to the process of investing in the talents and skills of individuals or teams (Schiemann, 2014; Kesenne, 2015). It reflects the comprehensive investment in industrial talents, especially investment in education and R&D. Education investment and R&D investment provide talent guarantee and technical support for the industry, and are two important indicators for evaluating the talent investment, which are directly related to the talent competitiveness of intelligent industry. According to data from the World Bank, in 2020, China's government expenditure on education as a share of GDP was 3.57%, lower than that of the world (4.33%) and the United States (6.05%) (The World Bank, 2022a). China's education expenditure as a share of government expenditure is 10.53%, lower than the world (12.65%) and the United States (12.65%) (The World Bank, 2022b), China's government expenditure on R&D as a share of GDP is 2.40%, lower than the world (2.63%) and the United States (3.45%) (The World Bank, 2022c). It can be seen that China has insufficient investment in education and research and development, which will affect high-quality talent supply and industrial technology innovation, thereby affecting the talent competitiveness of the intelligent industry.

### **Talent Development Support**

Talent development support refers to the process of supporting and promoting talent development through a series of strategies, procedures, and practices (Salas et al., 2012; Tlaiss, 2021; Ramaditya et al., 2022). It is mainly reflected in two aspects: talent cultivation and industrial development foundation. The United States is the center of global higher education, with a large number of high-level universities, laying the foundation for cultivating industrial talents. According to the QS World University Rankings 2024, 199 universities in the United States have entered the rankings, of which 27 have entered the top 100. Compared to the United States, only 71 universities in China have entered the rankings, and only 5 have entered the top 100 (QS Quacquarelli Symonds Limited, 2023). According to Element AI, the United States

universities have cultivated 44% of global AI doctoral students, far higher than China (11%), which largely shapes the advantages of the United States in AI talents. In terms of industrial foundation, according to CB Insights data, there were over 11,000 AI enterprises worldwide in 2021. Among them, the United States and China have 4,171 and 1,275 AI related enterprises, respectively. The number of AI companies in the United States ranks first in the world, 3.27 times that of China (Shangpu Institute, 2022). According to Stanford University, in 2021, there were 299 and 119 new investment AI enterprises in the United States and China, respectively. The United States ranks first in the world, 2.51 times that of China (Clark & Perrault, 2022). It can be seen that there is still a significant gap between China and the United States in terms of intelligent talent cultivation and industrial development foundation, which will affect the talent competitiveness of intelligent industry.

### **Talent Environment**

Talent environment refers to the living and working environment that affect talent attraction, development, and retention, including natural environment, economic, and social conditions (Latukha & Soyiri, 2018; Hu et al., 2020; Niemi et al., 2021). A high-quality talent environment has become the core factor for attracting talent and the key to realizing the accumulation of talent resources and is closely related to the development of talent potential. Two indexes released by world institutions reflect some of the conditions of China's talent environment. According to the United Nations, China's World Happiness Index ranked 72nd (with a score of 5.585) in 2021, which is a significant improvement compared to 86th (with a score of 5.246) in 2018 (United Nations, 2023). According to Yale University, China's Environmental Performance Index (EPI) ranked 160th (with a score of 28.40) in 2022, which is a decrease compared to 120th (with a score of 50.74) in 2018 (Wolf et al., 2022). It can be seen that compared to China's economy and international status, these ranking are not high, and there is still significant room for improvement in the talent environment of China. In addition, some data also show the gap between China and the United States in terms of living environment. In 2022, China's per capita GDP was US\$12,814, while that of the United States was US\$76,348 (IMF, 2023); China's average annual salary in the non-private sector was 114029 yuan (approx. US\$ 16456) and in the private sector was 65,237 yuan (approx. US\$ 9420) (Xinhua, 2023), while that of the United States was US \$ 77463 (OECD, 2023); China's annual average PM2.5 concentration was 30.6  $\mu\text{g}/\text{m}^3$ , while that of the United States was 8.9  $\mu\text{g}/\text{m}^3$  (IQAir, 2023).

### **Conclusion**

In recent years, China's talent competitiveness of intelligent industry has continuously improved. However, compared to the United States, there is still a significant gap. From the dimension of talent resources, there are relatively few high-level talents of intelligent industry in China. It is urgent to increase the talent quantity and quality of intelligent industry. From the dimension of talent contribution, China ranks first in the world in terms of AI publications and patent applications, but its citation and patent granted number relatively low means that although talent innovation activities in China's intelligent industry are active, the quality of output still needs to be improved. From the dimension of talent investment, China has insufficient investment in education and research and development, which will affect high-quality talent supply and industrial technology innovation. From the dimension of talent

development support, there is still a significant gap between China and the United States in terms of intelligent talent cultivation and industrial development foundation. From the dimension of talent environment, there is still significant room for improvement in the talent environment of China, including the natural environment, economic environment, and social environment. Therefore, it is urgent to enhance talent competitiveness, only by continuously improving talent competitiveness can China further promote the development of the intelligent industry.

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# Study on The Strategy of Promoting Transformation and Upgrading through Digital Trade: A Perspective of Dongguan, China

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## **Abstract**

Digital trade has emerged as a pivotal component of Dongguan's foreign trade development, leveraging its potential market size, transactional efficiency, retail possibilities, and flexible nature. Dongguan, being a prominent hub for manufacturing and foreign trade, this article first delves into the current state of its foreign trade scenario. Subsequently, it examines the opportunities and challenges associated with the development of digital trade in Dongguan. Furthermore, it rationalizes the impact of digital trade on the transformation and upgrading of Dongguan's foreign trade from multiple facets. Finally, it proposes the introduction of digital trade electronic platforms, encourages enterprises to strengthen technological innovation and development of independent brands, builds a digital trade electronic policy dividend system, establishes a personnel training system, and seizes the opportunity to develop the extension of digital trade electronics. This approach promotes Dongguan's foreign trade from the traditional processing and manufacturing industry towards independent research and development for industrial transformation and upgrading.

**Keywords:** digital trade, Dongguan city, transformation and upgrading.

## **Introduction**

### **Research Background**

Against the background of the rising risk of global economic recession and the continuous slowdown of external demand growth, the overall world economic growth has shown a slowing trend. Influenced by global political factors, environmental factors and epidemic factors, the trade among countries in the world has been affected by more risks, the international trade situation continues to fluctuate, Dongguan's foreign trade has also been greatly affected, and the traditional growth of foreign trade has been affected by great resistance. With the gradual liberalization of epidemic prevention and control in China, the rise of electronic digital trade

has made an important contribution to the growth of Dongguan's total foreign trade, and played a major role in promoting the stable development of Dongguan's foreign trade. In the past ten years, China's foreign trade in Dongguan has developed new forms, and new business models have been emerging. The electronic industry of digital trade in Dongguan has been growing continuously, and the overall scale of electronic digital trade has also been developing and expanding accordingly. The Dongguan municipal government has successively issued a series of preferential policies related to digital trade, aiming to expand the space of foreign trade in Dongguan, help the transformation of Dongguan's foreign trade, promote the rapid growth of the electronic scale of Dongguan's digital trade, and make it an important force to promote the prosperity of Dongguan's foreign trade.

### **Study Significance**

With the advent of the Internet information age, people's demand for shopping is not only satisfied with the traditional physical market, so digital trade is able to flourish and become an indispensable part of the global economy. In recent years, although a small number of foreign trade enterprises in Dongguan have made some achievements in the process of foreign trade transformation and upgrading by virtue of their own advantages, the transformation and upgrading of most foreign trade enterprises in Dongguan is still in the preliminary exploration stage and still face many problems to be overcome. Based on the trade data of Dongguan in the past decade on the official website of Huangpu Customs, this paper hopes to explain the problems existing in Dongguan's foreign trade through the analysis of the current situation of foreign trade in Dongguan. At the same time, according to the data report of digital trade electronic market of the Network Economic and Social E-commerce Research Center, the opportunities and challenges facing the development of Dongguan and digital trade are analyzed, and the five impacts of digital trade on the transformation and upgrading of foreign trade are specifically analyzed. On this basis, this paper puts forward the strategic suggestion of using digital trade to empower the transformation and upgrading of foreign trade so as to move to the world. This paper hopes that through the research on the transformation and upgrading of foreign trade in Dongguan, summarize the strategy of accelerating the transformation and upgrading of foreign trade enterprises in Dongguan, and provide effective strategic suggestions for the breakthrough of the initial exploration stage and the transformation and upgrading.

### **Current Situation and Existing Problems of Foreign Trade in Dongguan**

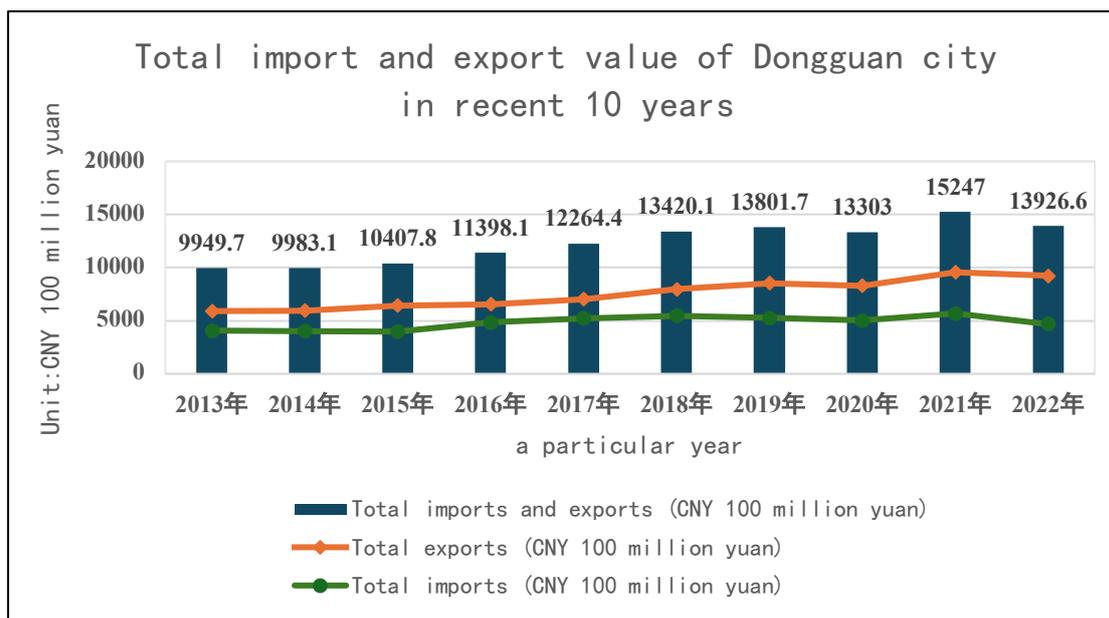
#### **Current Situation of Foreign Trade in Dongguan City**

At present, the background of Dongguan's foreign trade is the external demand. The growth is slowing down, the growth rate of global trade in goods is falling, the demand in Europe and the United States is declining, the foreign trade orders are decreasing, and the "residential economy" caused by the epidemic leads to the unstable situation of foreign trade in Dongguan.

According to the statistics of Huangpu Customs, in 2022, the total foreign trade volume of Dongguan reached 1.39 trillion yuan, accounting for 16.8% of the total import and export value of Guangdong Province in the same period, ranking the second in the overall scale of Guangdong Province.<sup>01</sup> As shown in Figure 2.1, the foreign trade scale of Dongguan in the

past decade has exceeded, reaching 900 billion yuan. In 2020, due to the impact of the global novel coronavirus, the annual import and export volume of Dongguan first dropped to 1 trillion yuan, then rose to 1.2 trillion yuan, and then dropped to 1 trillion yuan in 2022. In general, under the background of rising risk of global economic recession and continuous slowdown of external demand growth, the total import and export volume of Dongguan increased from 0.99 trillion yuan in 2013 to 1.39 trillion yuan in 2022. The annual import and export trade volume fluctuated, and the overall development of foreign trade in Dongguan was good.

01Figure 1. Table of The Total Import and Export Value of Dongguan City in The Recent Ten Years



Source: Huangpu Customs, China

According to the import and export data of Dongguan trading partners, we can see that Dongguan trading partners are more concentrated than in previous years, facing the good development of some emerging markets such as Colombia, Brazil and Chile. According to the statistics of Huangpu Customs, in 2022, the import and export of Dongguan to ASEAN and Japan reached 221.27 billion yuan and 101.54 billion yuan respectively, increasing by 5.9% and 1.4% respectively. During the same period, imports and exports to the United States, Hong Kong, the European Union, Taiwan and South Korea fell by 5.4%, 7.9%, 11.4%, 8.9% and 36.4%, respectively. Dongguan's total import and export volume to the top seven trading partners accounted for 74.8%, up 0.7 percentage points. As can be obtained from the data of the main trade products in Dongguan, the trade products in Dongguan have changed in the past. The export of integrated circuits and labor-intensive products has increased against the trend, while the export of mechanical and electrical products has declined. The export volume of labor-intensive products in Dongguan reached 177.4 billion yuan, up by 4.6%, among which the export of plastic products, toys, shoes and bags increased by 12.7%, 3.7%, 31.9% and 22.2% respectively. From the data of Dongguan international logistics, the total trade of water transport and air transport in Dongguan has increased compared with previous years, while road transport has decreased. At present, more than half of the foreign trade enterprises in

Dongguan are private import and export enterprises, and the proportion of foreign-invested enterprises has also increased.

In Dongguan foreign trade, Dongguan traditional foreign trade enterprises as the intermediary between import and export business, in the whole foreign trade process, middleman, role, both in the import process agent domestic enterprises to buy foreign products or agent foreign customers in domestic sales products, and in the export process agent domestic enterprises selling domestic products or agent foreign enterprises looking for domestic processing and manufacturing enterprises. In the two business processes of import and export, although these enterprises are profitable, but due to the simplicity of the business model, low entry threshold, there will be a large number of competitors flock to seize this role, resulting in the fierce competition leads to low profit space of foreign trade enterprises, there is no cost to maintain the operation of the enterprises. Therefore, the traditional foreign trade enterprises in Dongguan need to accelerate the pace of transformation and upgrading, and become the foreign trade enterprises with brand advantages and independent production of products, so as to survive in the foreign trade market.

### **Main Types of Foreign Trade in Dongguan**

The trade structure of Dongguan has been further optimized. The total import and export volume of general trade, processing trade and bonded logistics shows a downward trend compared with last year, and the export of market procurement has increased significantly. However, the foreign trade in Dongguan is mainly general trade, followed by processing trade. According to the statistics of Huangpu Customs, in 2022, the total import and export volume of Dongguan general trade was CNY 593.05 billion Yuan, accounting for 42.6% of the total value of Dongguan foreign trade in the same period, the total import and export volume of processing trade was CNY 428.07 billion Yuan, and the total import and export volume of bonded logistics was CNY 297.66 billion Yuan. During the same period, the total export of market procurement reached CNY 72.51 billion Yuan, raising the overall growth rate of foreign trade in Dongguan by 1.1% in the same period. According to the above data, it can be seen that although the trade mode of Dongguan has been optimized, the general trade still has an absolute advantage, and the trade mode needs to be balanced and optimized.

### **Problems Existing in Foreign Trade in Dongguan City**

Under the influence of economic factors of the rising risk of global economic recession, political factors of trade friction between China and the United States, geographical and environmental factors of ecological protection, and the world COVID-19 epidemic, the international economic growth has slowed down and the market demand has declined. The growth rate of China's foreign trade export declined, and the total import and export trade in Dongguan also decreased. Because of the influence of many factors, more and more foreign trade enterprises in Dongguan are facing closure or have to develop new sales channels.

From the analysis of international political factors, in 2022, the situation between Russia and Ukraine was tense, and the price of crude oil and chemical products both rose, which increased the operating cost pressure of crude oil and chemical industry related enterprises in Dongguan, resulting in limited profit space. From the domestic geographical environment analysis, Dongguan is located in the pearl river delta region, the foreign trade industry is

relatively prosperous, labor costs and tax is relatively high, and many cities in Yangtze river delta region in order to attract related industrial chain, provides a very preferential tax policy, lead to a lot of Dongguan factory attracted to the Yangtze river delta region, the Dongguan foreign trade lost local supply advantage. From the analysis of the epidemic factors and the international transportation situation, since the outbreak of the global epidemic, the orders of the textile and medical industries in Dongguan have increased, exceeding the supply, the industrial chain cannot form a closed loop, the container flow speed has slowed down, and the logistics cost has increased. Because the terminal processing fee, document fee, release fee is the perennial cost, and the unstable shipping period leads to the warehouse rent, container rent, automobile ballast, container ballast fee and other export miscellaneous costs skyrocketing, long-term storage has become a huge cost. At the same time, container delays can also cost freight companies an extra cost. These problems will eventually lead to the delay of a large number of foreign trade orders in Dongguan, and some foreign trade enterprises will produce the default cost caused by the delay of delivery. The end result would be an increase in international shipping costs and a significant reduction in overseas orders. Dongguan's foreign trade urgently needs to be transformed and upgraded in terms of product production, policy system, logistics timeliness and business model innovation. A series of problems, such as the unpredictable international situation, high product cost, lagging international logistics, and so on, are placed in front of the development of foreign trade in Dongguan.

## **Opportunities and Challenges of The Electronic Development of Digital Trade**

### **Opportunities for The Development of Digital Trade in Dongguan**

China has obvious advantages in the scale of digital trade, cross-border e-commerce retail export ranks first in the world, and the scale of service trade that can be digitally delivered continues to grow. At the same time, new consumption, new retail, new manufacturing, and new services are vibrant, and the digital trade ecosystem is rich and improved. According to the data of e-commerce Research Center, the scale of China's digital trade reached 15.7 trillion yuan in 2022, a year-on-year increase of 10.6% compared with 2021, as shown in Table 3.1. **Error! Reference source not found.** In 2022, the electronic transaction volume of digital trade accounted for 37.3% of the total value of the import and export of goods, and the electronic import and export structure of digital trade was relatively stable. In 2022, in the electronic trading mode of digital trade, digital trade electronic B2B transactions accounted for 75.6%, and digital trade electronic B2C transactions of digital trade accounted for 24.4%.

Table 1. The Transaction Scale and Growth Rate of China's Electronic Digital Trade Industry in The Past Ten Years

A particular year	Transaction size (CNY 100 million)	Rate of rise
2013	32000	50.0%
2014	42000	33.3%
2015	54000	28.6%
2016	67000	24.1%
2017	81000	20.3%
2018	90000	11.7%
2019	105000	16.7%
2020	125000	19.0%
2021	142000	13.6%
2022	157000	10.6%

Source: Network economy and Society E-commerce Research Center

According to the data of Dongguan Bureau of Commerce, since Dongguan was approved as the electronic digital trade in 2018, the total import and export volume of digital trade has reached 189.986 billion yuan, ranking among the top in China, as shown in Table 3.2.01 Dongguan electronic digital trade electrification started in 2013. After years of development, there are more than 10,000 electronic digital trade enterprises in the city. As one of the major cities in the Guangdong-Hong Kong-Macao Greater Bay Area, Dongguan is surrounded by three international cities, namely Shenzhen, Hong Kong and Guangzhou, which provides a good foundation for the development of cross-border e-commerce in Dongguan. Dongguan is known as the "famous manufacturing city" and "the world factory". Compared with other electronic digital trade cities, Dongguan's main advantage is its developed manufacturing industry and complete product categories, which is one of the most important domestic and international sources of goods. Dongguan is an important manufacturing and foreign trade city. Due to its advantages in resources, location, policies and other aspects, the development prospect of electronic digital trade is very good. First of all, the electronic supervision policy of digital trade in Dongguan is being constantly improved. The comprehensive pilot zone of the electronic digital trade has been slightly effective, and the cluster effect of the electronic digital trade park has also been shown. Secondly, digital technologies represented by big data, cloud computing, artificial intelligence and blockchain have fully penetrated into every link of the electronic digital trade in Dongguan, and become an important driving force to promote model innovation and efficiency reform. The electronic digital trade in Dongguan has ushered in new development opportunities. The Dongguan municipal government has actively promoted the development of new business models, and opened the cross-border e-commerce export business together with the Dongguan International Mail Exchange Bureau, which has greatly increased the export business of foreign trade and alleviated the negative impact of the epidemic.

01Table 2. Transaction Scale and Growth Rate of The Electronic Digital Trade Industry in Dongguan in The Past Five Years

A particular year	Transaction size (CNY 10 million)	Rate of rise
2018	3701	158.8%
2019	4192	13.3%
2020	3806	-9.4%
2021	7300	91.8%
2022	8186	12.1%

Source: Dongguan Commerce Bureau

With the implementation of national strategies such as the construction of "Belt and Road" and the construction of the Guangdong-Hong Kong-Macao Greater Bay Area, the electronic digital trade in Dongguan has been further developed under the favorable conditions of policies and markets, and has become a new growth point of Dongguan's foreign trade. In the face of the impact and challenges of the epidemic, the electronic platforms and service providers of digital trade are playing a positive role in contributing to the development of foreign trade in Dongguan. Digital trade electronic policy, as the Dongguan digital trade electronic trade mechanism gradually improve, the international logistics network, digital trade electronic channels to speed up the broadening, more and more market main body through in digital trade electronic platform this channel to realize "buy global, sell global", digital trade electronic market steady become stable Dongguan foreign trade economy. Since 2022, Internet giants TEMU& Pinduoduo, Alibaba, SHEIN and other companies have been increasing their overseas electricity and business layout, stimulating the trend of electronic digital trade. In 2022, the electronic digital trade in Dongguan will maintain a steady growth, and the development of the electronic digital trade in Dongguan will drive the change of the whole industrial chain, which will bring a far-reaching impact on the traditional foreign trade and industry in Dongguan.

### **Challenges of The Electronic Development of Digital Trade in Dongguan**

Dongguan is a world-famous manufacturing city with sufficient supply of goods, complete industrial chain, geographical advantages, and natural soil for the development of cross-border e-commerce. In the past ten years, the development trend of electronic digital trade market in Dongguan is very good, but there are still many foreign trade enterprises, lack of competitive advantages, high logistics costs and operation difficulties. These problems have become the main resistance to the development of electronic digital trade in Dongguan. As the source of national e-commerce, Dongguan wants to seize the new blue ocean of cross-border e-commerce, and it first lacks professionals engaged in cross-border e-commerce. Cross-border e-commerce talents are compound talents who should have excellent foreign language reading and writing skills, electronic operation of digital trade, operation ability of the platform, marketing planning ability of festival activities in various countries, and the innovation ability to optimize products and explore new products according to the needs of overseas customers. However, foreign trade enterprises lack willingness for newly graduated foreign trade talents. Undergraduate and foreign trade graduates from universities also plan to enter college and change careers due to their interest and salary, so there is a huge gap of electronic talents for digital trade. Followed by the lack of Dongguan foreign trade enterprise independent brand, now in digital trade electronic competition increasingly fierce, have business shop mode of

digital trade electronic merchants, also have cross-border businesses of independent brands, when foreign consumers open digital trade electronic platform, priority, of course, has patents, brand guarantee of cross-border businesses. However, nowadays, the enterprises of digital trade in Dongguan still stay in the digital trade electronic platform of choosing the operation mode. The homogenization in the digital trade electronic market is becoming more and more serious, which gradually leads to fierce competition in the sales price of merchants lacking their own brands. Similar to Gresham's rule, low-priced products will squeeze them out of the digital trade electronic market. In order to make profits, quality problems will inevitably occur in product manufacturing and transportation. In this way, the development of electronic digital trade in Dongguan will be hindered by the bad comments of overseas consumers, which is one of the challenges in the development of electronic digital trade in Dongguan.

## **Findings**

### **The Electronic Development of Digital Trade Promotes The Surge of Dongguan's Total Foreign Trade**

With its security, convenience and global characteristics, the electronic digital trade enables the transformation and upgrading of Dongguan's foreign trade, and promotes the surge of its total foreign trade. From the security analysis, it is precisely because of the rules of the digital trade electronic platform, the security of transactions between buyers and sellers has been greatly improved compared with the traditional foreign trade. From the analysis of convenience, the development of electronic digital trade in Dongguan has reduced the number of trade links and upgraded the foreign trade and process in Dongguan. Foreign consumers and foreign trade enterprises in Dongguan can communicate and trade more effectively through the electronic digital trade platform. The traditional mode of foreign trade in Dongguan is mainly the trade between enterprises, while the electronization of digital trade breaks the traditional mode of foreign trade operation.

The development of electronic digital trade is convenient for foreign trade enterprises in Dongguan to be directly trade with consumers, reduces the complexity of import and export process, optimizes the time cost of both sides, and improves the transaction efficiency. From a global perspective, countries all over the world have corresponding electronic digital trade platforms. Through the big data reflected by the electronic digital trade, foreign trade enterprises in Dongguan can understand the differences in shopping needs of different countries and provide more accurate services for overseas consumers. As a world-renowned manufacturing city and manufacturing base, in today's developed Internet, the development of digital trade can more directly and widely empower the transformation and upgrading of Dongguan's foreign trade, promote Dongguan products to the international market, and promote the surge of Dongguan's total foreign trade.

### **The Electronic Development of Digital Trade Stimulates The Innovation of The Foreign Trade Market in Dongguan**

Nowadays, the number of digital trade enterprises in Dongguan is increasing year by year. The development of digital trade is conducive to stimulating the innovation of Dongguan's foreign trade market, so that the foreign trade enterprises in Dongguan will develop in the direction of

brand, diversification and refinement in the future. The development of electronic retail of digital trade can meet the personalized needs of overseas consumers, thus promoting the upgrading of trade products. The development of electronic digital trade shortens the intermediate links of trade for both parties, saves trade costs and improves the added value of trade. Foreign trade enterprises in Dongguan can focus more on product brand building and their own product development, to achieve high quality improvement of trade products.

There are more and more participants in the electronic market of digital trade in Dongguan. For some conventional categories of products, when every enterprise factory has the ability to produce, the main products are serious homogenization, and the pricing on the electronic platform of digital trade will stage a "price war". Although the development of electronic digital trade in Dongguan will produce short-term profit-seeking phenomenon, intensifying the competition in the foreign trade market in Dongguan, it can also stimulate the potential of independent research and development of foreign trade enterprises in Dongguan, and have the advantageous patent products with exclusive implementation right in independent innovation.

Secondly, on the basis of the brand innovation, digital trade electronic platform data for Dongguan foreign trade enterprises provide sales data support, compared with the traditional foreign trade, digital trade electronic data can export analysis, for Dongguan foreign trade transformation and upgrading to diversified innovation has laid a certain foundation. Digital trade can accurately obtain keywords and search volume of overseas consumers, and predict the sales trend of products based on this. From the data of digital trade electronic platform, the development of digital trade electronic is beneficial to improve the Dongguan foreign trade sales and foreign consumers purchase satisfaction, promote Dongguan foreign trade precision supply and demand, the Dongguan foreign trade enterprises to better understand the target market, for target customers to provide more marketable products, improve consumer purchase satisfaction. It is precisely because of the promotion and support of Internet big data in the electronic digital trade, coupled with the unique advantages of supply and manufacturing technology of Dongguan foreign trade enterprises, which help Dongguan foreign trade enterprises to step forward step by step to fine innovation.

### **Electronic Development of Digital Trade Alleviates The Pressure of Foreign Trade Logistics in Dongguan**

The electronic development of digital trade in Dongguan depends on the direct transactions between consumers of various countries and Dongguan manufacturers, so there will be a normal situation that the number of orders is very large, and the number of products in a single order is very small. The goods of digital trade electronic logistics are characterized by many varieties, fewer batches, many batches and short cycle, and the promotion and festival activities of major e-commerce platforms are relatively frequent. Therefore, the one-time inventory and cycle of digital trade electronic sellers in Dongguan will show the characteristics of less quantity and short cycle compared with traditional foreign trade. Electronic sellers of digital trade in Dongguan still need to take into account the factors such as inventory backlog, types of goods for promotional activities, and cost optimization with different logistics channels. Digital trade electronic merchants can freely choose the delivery mode, or choose the overseas

warehouse mode, with strong flexibility and many strain methods. Compared with the traditional foreign trade logistics in Dongguan, the development of electronic digital trade will virtually relieve the pressure of foreign trade logistics in Dongguan and promote the development of foreign trade enterprises in Dongguan. It is precisely because of this logistics service that can quickly reach the hands of consumers, bringing more and more electronic orders for digital trade to foreign trade enterprises in Dongguan.

### **Electronic Development of Digital Trade to Expand The Demand for Foreign Trade Talents in Dongguan**

Dongguan's trade objects are mainly concentrated in the United States, the European Union, Hong Kong, ASEAN, Japan, Latin America and other countries and regions. Electronic digital trade provides opportunities for Dongguan to enter the global market, and also provides opportunities for Dongguan to make better use of global high-quality resources to sell its products to the world. The development of electronic digital trade promotes the increase of the demand for foreign trade talents in Dongguan enterprises. With the In-depth development of Dongguan's foreign trade, the electronic digital trade in Dongguan is in short supply of foreign trade talents. First of all, it is right, the demand of talent selection, the flow is not to, the selection of products first, only when the choice of products suitable for foreign consumers, to meet the shopping needs of foreign consumers, digital trade electronic orders have the opportunity to achieve. Secondly, the demand for operational talents, familiar with the rules of the electronic platform for digital trade, can study the product title, key words, the main map, and release new products on the shelves, so as to achieve successful orders. Because the electronic digital trade in Dongguan is oriented to the whole world, the languages and platforms used by each country or region are completely different. Therefore, the development of electronic digital trade will expand the demand for talents in foreign trade in Dongguan, especially the demand for small language talents will be increasing. Finally, the demand for customer service talents. The process of digital trade electronic customer service runs through the whole process, from pre-sales service, to in-sale service, and then to after-sales service, every link is inseparable from customer service talents. Customer service talents must understand and translate customer problems and needs, and then give answers to the needs of consumers. The development of electronic digital trade enables the two sides of the transaction subject to communicate product and order details more efficiently with the electronic digital trade platform, and at the same time increases the demand for various talents in Dongguan foreign trade.

### **The Electronic Development of Digital Trade Has Injected New Vitality into Dongguan's Foreign Trade**

Compared with the traditional foreign trade, the electronic development of digital trade can reduce the sales cost, shorten the customs clearance time, improve the transaction efficiency, and inject new vitality into the foreign trade in Dongguan. The globalization and paperless of digital trade make the information flow obtained by both parties more detailed, making it easier for Dongguan manufacturers to communicate with consumers. Dongguan foreign trade can provide customized products according to the needs of consumers. The electronic development of digital trade in Dongguan has the advantages of large market, easy operation, great potential,

small investment and high profit, which provides foreign trade enterprises in Dongguan with the advantages to reduce transaction costs, reduce transaction processing time and improve the utilization rate of capital and transaction efficiency. Small and medium-sized foreign trade enterprises in Dongguan have problems such as small scale, insufficient capital and lack of competitiveness. Thanks to the rapid development of electronic digital trade, more and more enterprises see long-term interests from the electronic digital trade, and have more and more confidence in entering the electronic field of digital trade.

## **Discussion**

### **Introduce The Electronic Platform for Digital Trade to Provide Quality Foreign Trade Services**

Under the influence of the global epidemic, the development of many foreign trade enterprises in Dongguan has been hit hard. Digital trade is electronic. The platform is the breaking choice for many foreign trade enterprises in Dongguan to explore overseas markets. As a new form of foreign trade in Dongguan, electronic digital trade has become an important force to boost the transformation and upgrading of Dongguan's foreign trade. First of all, the government should ensure the security of digital trade electronic trading network, on the basis of vigorously support digital trade electronic, development, speed up the introduction of mainstream digital trade electronic platform, help Dongguan foreign trade enterprises to achieve transformation and upgrading, good quality local products sold overseas, promote the Dongguan foreign trade import and export growth. The Dongguan government should also introduce the well-known large-scale digital trade electronic enterprises, lead the foreign trade enterprises in Dongguan to enter the cross-border e-commerce platform and give policy support, so as to drive the local enterprises in Dongguan to participate in the electronic development of digital trade. Dongguan city is located in the "Golden Inner Bay", 100 kilometers around the Pearl River Estuary, with unique geographical advantages, and most of the foreign trade enterprises in Dongguan have their own complete manufacturing factories, sufficient supply. First, accelerate the construction of electronic platforms for digital trade, select Amazon, AliExpress and other well-known electronic platforms for digital trade with high safety factor, fast access speed and many overseas sites, and select PayPal and PingPong, such compliant cross-border payment service providers. Second, encourage foreign trade enterprises in Dongguan to cooperate with cross-border logistics service providers, establish overseas warehouses in major trading countries, and improve the efficiency of commodity transportation. Third, we will establish electronic industrial parks for digital trade, promote the integration of cross-border payment, logistics, customs declaration and other services, and provide quality foreign trade services.

### **Encourage Enterprises to Innovate Independently and Promote The Upgrading of Foreign Trade Products**

Nowadays, technological innovation is becoming saturated and saturated, product homogenization is serious, and differentiated services can bring significant added value to commodities. Therefore, foreign trade enterprises in Dongguan can use technical means to strengthen pre-sale and after-sales service, improve the service system, increase the investment in technology research and development, and improve the scientific and technological strength.

In the future, the competition of digital trade in Dongguan will be more fierce, and the mode of digital trade will be concentrated on the leading enterprises with key competitive barriers. Brand strength, channel strength and operation strength will become the main indicators to measure the competitiveness of electronic digital trade sellers in Dongguan. The Dongguan government should encourage foreign trade enterprises to create and develop their own brands, improve brand awareness, encourage enterprises to participate in international economic competition, establish international marketing channels for products, so that local brands can truly go to the world. To guide processing enterprises in Dongguan to transform into production enterprises with their own brands, implement the "green channel" of export customs clearance for enterprises with independent export brands, promote the globalization of Dongguan brands, and reward enterprises that use their own brands for export and service.

### **Build A Policy Dividend System to Realize Trade Convenience in Dongguan**

At present, there are still many non-standard phenomena in the electronic development of digital trade in Dongguan. It is necessary to improve the supervision system and ensure the fair competition in the electronic market of digital trade. Dongguan city government departments should pay attention to the development of digital trade electronic to promote the importance of transformation and upgrading of foreign trade, through financial support, tax incentives, financial subsidies to support and encourage Dongguan foreign trade enterprise transformation into digital trade electronic field, and by providing platform guarantee, tax breaks, gather optimization of resource integration, for foreign trade enterprises to carry out digital trade electronic business provide convenience and preferential conditions, attract more large high-quality digital trade electronic enterprises in Dongguan, To promote the rapid development of local digital trade. For small and medium-sized foreign trade enterprises, the Dongguan government should increase the policy support of digital trade electronization, ensure the timely implementation of subsidy policies, alleviate the capital needs of small and medium-sized foreign trade enterprises, encourage them to carry out technological innovation, improve the level of production technology, and stimulate the enthusiasm of foreign trade enterprises for independent innovation. The policy dividend should not only benefit enterprises, but also benefit the employees of digital trade, realize the trade convenience in Dongguan and promote the transformation and upgrading of Dongguan's foreign trade.

### **Optimize The School-enterprise Cooperation Platform**

With the acceleration of the transformation and upgrading of foreign trade in Dongguan and the further development of digital trade, more and more enterprises will enter the field of digital trade, and the demand for complex digital trade talents who understand both e-commerce and international trade is also increasing. Therefore, Dongguan should make full use of the resources of colleges and universities, actively build a university-enterprise cooperation platform, and strengthen the training of electronic talents for digital trade, especially the electronic digital trade talents for some small languages, so as to meet the needs of the electronic development of digital trade. At the same time, we should also pay attention to the transformation and training of traditional foreign trade enterprise talents.

Dongguan has many advantages in cultivating digital trade talents. Firstly, it allows foreign trade enterprises to provide customized services to customers based on their unique

characteristics and needs. This ensures that businesses extend their reach beyond mere sales transactions and deepen their engagement with customers by providing comprehensive after-sales services. Secondly, this effort adds significant value to the industrial value chain by infusing professional services that enhance the overall customer experience. As an emerging industry, the Dongguan government must craft foolproof support policies for small and medium-sized enterprises. These policies should provide the necessary assistance in areas such as capital, talent acquisition, and logistics infrastructure. Creating a positive market atmosphere is key to fostering the growth of electronic digital trade in Dongguan.

### **Reasonable Digital Transformation and Upgrading**

Dongguan boasts a remarkable geographical advantage and holds immense potential for the advancement of electronic digital trade. It is crucial to seize the chance of this emerging trend, align it with the distinctive industrial features of Dongguan, and expedite the development of "electronic digital trade Plus". This calls for a spirited push towards integrating and innovating the development of electronic digital trade with manufacturing, retail, logistics, finance, tourism, and other industries. By capitalizing on its geographical advantage, Dongguan has the potential to emerge as a leading center for electronic digital trade. By seizing the opportunity, aligning with its industrial features, and fostering integration and innovation with other key sectors, the city can unlock its full potential and chart a brighter future for its citizens.

First, on the basis of fully understanding the history, culture, customs and other specific information of the world, Dongguan foreign trade enterprises should make use of digital trade to provide specialized, differentiated, personalized and professional services, so as to promote Dongguan brands to go overseas and enhance the international influence of Dongguan brands. Second, represented by famous enterprises such as VIVO, OPPO, Hsu Fu Chi, Nine Dragons Paper and so on, encourage enterprises to upgrade their products again, promote the development of "electronic digital trade +" mode, and lead more foreign trade enterprises to join them. Third, we will accelerate the construction of transport infrastructure, improve import and export supervision and control services, and improve the efficiency of goods customs clearance. Fourth, improve the electronic laws, regulations and policy system of digital trade, provide a fair and just operation atmosphere, and promote the construction of credit system and network security. Seize the electronic development opportunities of digital trade, and enable the transformation and upgrading of Dongguan's foreign trade.

### **Conclusion**

Based on electronic digital trade as a crucial pillar in the development of Dongguan's foreign trade, this paper delves into the transformation and upgrading strategy of the city's foreign trade through electronic digital trade. We explore how the development of electronic digital trade impacts Dongguan's foreign trade in terms of platform, products, logistics, talent, and development opportunities. The introduction of an electronic digital trade platform can provide quality foreign trade services, which encourages enterprises to strengthen technological innovation in order to develop their own brands.

Moreover, the dividend system of electronic digital trade policies should be built and improved to further support the development of electronic digital trade in Dongguan. Establishing a platform for school-enterprise cooperation is also essential to cultivate talents

and to seize the opportunity to develop the Electronic digital trade Plus. Targeted measures should be taken to promote the development of electronic digital trade in Dongguan and facilitate the transition of the city's foreign trade from traditional processing and manufacturing to independent research and development and innovation.

By analyzing the impact of the electronic development of digital trade on the transformation and upgrading of foreign trade in Dongguan, we can draw several conclusions. Firstly, the electronic platform plays a crucial role in enabling foreign trade transactions. It provides a user-friendly interface that allows enterprises to connect with potential buyers and suppliers around the world. By leveraging technology, this platform streamlines the process of matching supply and demand, reducing transaction costs and time.

Secondly, the development of digital trade has transformed the traditional methods of conducting foreign trade transactions. The use of blockchain technology, for example, has provided secure and transparent record-keeping systems that eliminate the need for time-consuming and error-prone paperwork. This has opened up new opportunities for small and medium-sized enterprises (SMEs) to participate in global trade, as they can now compete on a more level playing field.

Thirdly, digital trade has allowed Dongguan's exporters to access new markets and customers. Through e-commerce platforms, they can directly reach out to consumers worldwide, expanding their customer base and sales channels. This has led to an increase in demand for high-quality products, providing stimulate for enterprises to improve product quality and differentiate themselves through unique designs and features.

Finally, the growth of digital trade has also led to the development of new business models and revenue streams. Enterprises are leveraging digital technologies to create value-added services such as customization, after-sales support, and data analysis. These services not only enhance customer satisfaction but also generate additional income streams for companies.

The transformation and upgrading of Dongguan's foreign trade through electronic digital trade has opened up new opportunities for growth and innovation. By leveraging technology, enterprises can access global markets, improve product quality, and generate additional income streams. The development of electronic digital trade policies and platforms provides an enabling environment for small and medium-sized enterprises to participate in global trade and compete effectively.

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## Cracking the Code for Success in China: Making Expatriate

### Assignments Work

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#### **Abstract**

Global trade forces multinational corporations (MNCs) to operate in diverse regions, with talent mobility as a key factor in international competitiveness. The job performance of expatriates significantly impacts MNCs, as expatriate failure rates lead to substantial financial losses. This study delves into the reasons behind expatriate assignment failures and explores strategies to enhance their job performance. Leveraging the cross-cultural adjustment theory, this research reviews existing literature on how expatriate management practices influence job performance, with cross-cultural adjustment serving as a mediating factor. A new dimension, “Guanxi,” emerges as a critical influencer of expatriate acculturation in China, enriching the research framework. This analysis comprises responses from 110 participants representing 40 countries. SPSS is utilized for data screening, while SmartPLS, using the Partial Least Squares (PLS) technique, assesses the measurement and structural models, including construct validity and hypothesis testing. This study contributes to a deeper understanding of expatriate job performance, offering valuable insights for future investigations.

**Keywords:** cross-cultural adjustment, expatriates, Guanxi, job performance, MNCs.

#### **Introduction**

As companies grow, their employment mode maybe shifts to geocentric, and they will need to hire more expatriates who are sent to live and work in a foreign country. Employing expatriate managers is a popular method for MNCs to successfully incorporate a foreign subsidiary into the organization's operational network (Guo et al., 2018). Since the late 1990s, the international movement of expatriates has been increasing as a result of the increasing globalization of economic activity. Managing human resources on a global scale is one of the biggest issues facing corporations as they seek for commercial prospects in the current era of rapid globalisation (Erogul & Rahman, 2017).

Expatriates play a vital role in MNCs by managing overseas subsidiaries, liaising with parent companies, and contributing to the success of businesses in the global marketplace. They must adapt to the political, economic, linguistic, cultural, and social norms different from those

in their home countries to overcome culture shock and ensure the success of their assignments. International assignments require skills and abilities specific to operating in diverse cultural contexts. Therefore, expatriates must adapt their norms and values to the cross-cultural environment to thrive. One particularly challenging skill for Western managers is relationship building, or Guanxi development, which is crucial in China.

The number of foreigners working in China has significantly increased since the country's reform and opening in 1978. According to National Bureau of Statistics (2021), the number of foreigners working or living in Chinese cities surpassed 845,000 by 2020, with a significant proportion engaged in business or employment purposes. Most foreigners reside in China's developed coastal region and top-tier cities (e.g., Beijing, Shanghai and Guangdong). In terms of professions, 85% of expatriates work for multinational corporations, with the top three professions being sales and marketing (30%), banking and finance (25%) and engineering (15%) (Qian & Elsinga, 2015). The process and management of expatriation remains a key challenge in international human resource management (Saheem et al., 2019). Expatriation obviously experienced elevated failure rates, incompetence, and higher cost. China's unique cultural environment makes it particularly challenging for Western business expatriates. As expatriates are assigned specific job roles, their work outcomes and job performance become crucial considerations.

### **Current Situation of Expatriates in China**

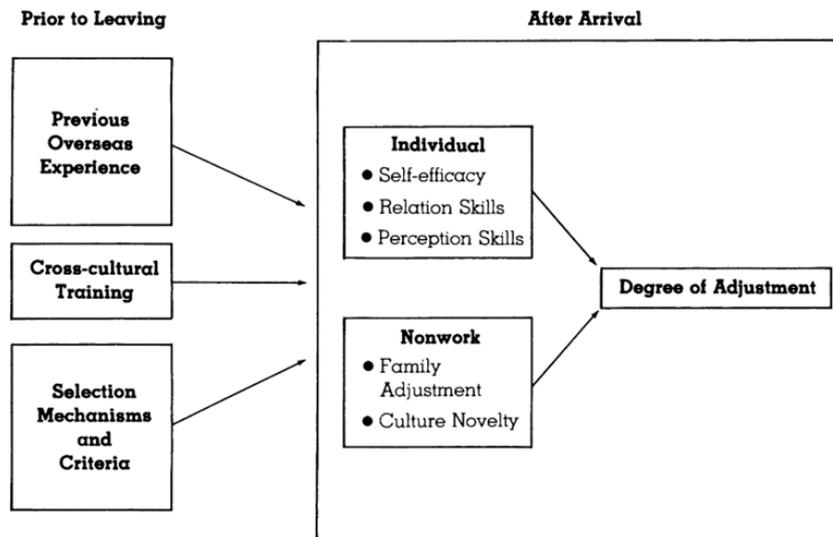
The research problem addressed in this study is the impact of Guanxi on the performance of expatriates. Expatriates face challenges in adapting to cross-cultural environments, and their failure rates often have cultural roots (Erogul & Rahman, 2017). Cross-cultural adjustment is crucial for the global success of multinational corporations (MNCs). If the cross-cultural adjustment of expatriates is ignored, it may lead to poor performance (Akhil & Liu, 2019). In China, which presents unique challenges for expatriates (Guo et al., 2018), the role of Guanxi in facilitating international assignments and adjustment is particularly important. However, the specific influence of Guanxi on expatriate performance remains unclear. Therefore, this study aims to examine the relationship between Guanxi and expatriate performance, contributing to a better understanding of the role of Guanxi in expatriate management.

### **Theory**

There are three main kinds of factors impacting the level of cross-cultural adjustment: individual, organizational, and contextual. During an international adjustment, both the work and nonwork environments typically change. In addition to unique variables, it also appears possible that various correlations between the variables may exist. Black et al. (1991) compile and integrate research on both domestic and international (or cross-cultural) adjustment, and identify five dimensions (or themes) that emerge as essential to the cross-cultural adjustment process: (1) prior overseas experience (Black, 1988); (2) pre-departure training; (3) organizational selection mechanisms; and (4) individual skills divided into three sub-dimensions: self-dimension; relationship dimension; and perception dimension. and (5) nonwork factors categorized into cultural novelty (also referred to as cultural toughness or cultural distance and family adjustment (Black & Stephens, 1989; Mendenhall & Oddou, 1985). The first three dimensions address pre-departure issues, while the latter two dimensions

concern post-arrival challenges (Black et al., 1991). Black and Mendenhall (1990) also suggests that there are at least three specific facets of international adjustment: (1) adjustment to work; (2) adjustment to interacting with host nationals; and (3) adjustment to the general environment. It is mainly used in the field of international human resource management.

Figure 1. Cross-Cultural Adjustment Theory



Source: Adopted from Black et al. (1991)

### Research Gap

The literature review identifies two research gaps. Firstly, there is limited research on the effects of Guanxi (a Chinese concept of interpersonal relationships) on expatriates' job performance, particularly when considering cross-cultural adjustment as a mediating factor. Existing studies have mainly focused on Guanxi's impact on organizational performance rather than individual performance. Secondly, most research has been conducted in developed countries, neglecting the management practices of expatriates in developing countries like China. While a few scholars have studied expatriates in China, there is still a lack of practical publications on this topic.

### Research Objectives

The main goals of this study are: (1) to investigate the positive impact of Guanxi on expatriates' job performance; (2) to examine the positive effect of cross-cultural training on expatriates' job performance; (3) to investigate the mediating effect of adjustment on the relationship between Guanxi, cross-cultural training, and expatriates' job performance.

### The Main Variables in This Study

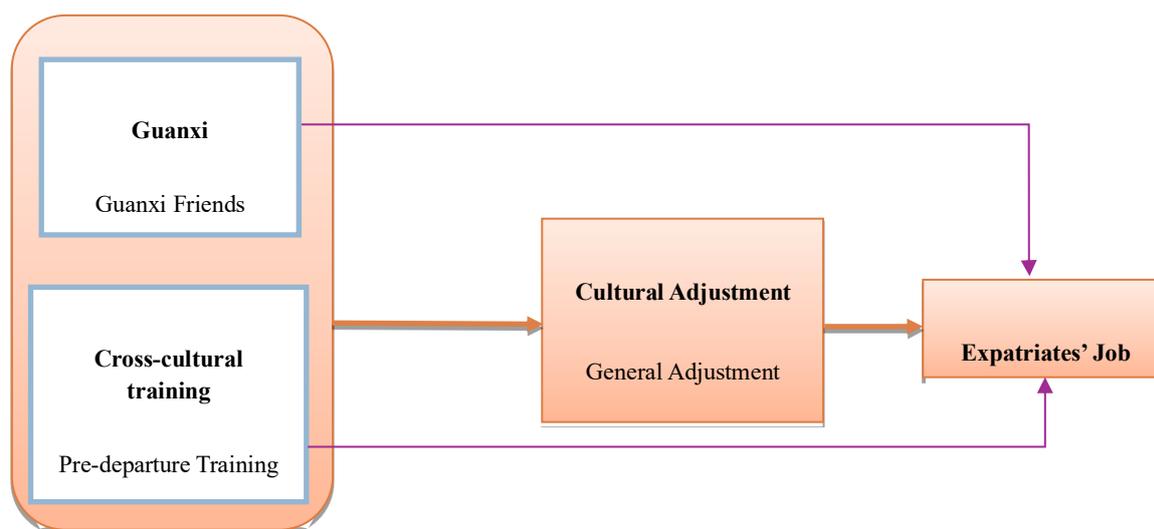
In discussing the expatriate adjustment, the present research takes job performance, Guanxi, individual factors and cross-cultural training as the main variables.

## Job Performance

Job performance refers to the value the set of employee behaviours that contribute, either positively or negatively, to organizational goal accomplishment (Williams & Anderson, 1991). Managers in the globalized context face challenges in employee performance management, including low task acceptance and limited integration with expatriates, leading to unsatisfactory productivity and performance levels (Reddy & Kota, 2019). Linder (2015) emphasizes that the adaptability of expatriates to different cultural norms is a critical factor in determining their performance level because expatriates with strong cross-cultural adaptability can handle new problems more readily in theory. Successful CCA enhances performance by easing expatriates' stress (Jyoti & Kour, 2017b). Cognitive adjustment and psychological capital have a substantial impact on job performance, higher CCA levels help reduce stress for expatriates, which improves job performance (Tsegaye et al., 2019).

## Theoretical Framework

Figure 2. Theoretical framework



The performance and adjustment of expatriates have also been found to be impacted by a wide range of factors. Cultural intelligence's impact on performance can be mediated by cross-cultural adjustment (Jyoti & Kour, 2017a). Self-efficacy has been shown to significantly influence job performance (Çetin & Aşkun, 2018). Interpersonal skills are also linked to job performance. Language proficiency in the host country has implications for expatriates' interactions, social support, and work and non-work adjustment (Zhang & Peltokorpi, 2016). Cross-cultural training, especially pre-departure training, is crucial for expatriates' adaptation and performance in China (Seak & Enderwick, 2008).

## Guanxi

The Chinese word "Guanxi" is a particular kind of relationship that actively incorporates the reciprocity norm, which is essential to maintaining the Guanxi between people (Gabrenya & Hwang, 1996). Luo (1997b) defines the concept of Guanxi with a larger focus on its concrete

obligations and its effects on Chinese networks. In business context, Guanxi refers to a network of middlemen that aids in day-to-day business operations and utilizes close friends and associates when utilized in a business environment (Yeung & Tung, 1996). Pearce and Robinson (2017) concluded that the way of business operation in China and the West is completely different. If the role of cultural preference and understanding of Guanxi is not emphasized, the relationship may be damaged (Yen et al., 2011).

China is a very collectivist and relationship-oriented culture with a distinct institutional structure that has been impacted by both its history and political ideology, in contrast to the cultural orientation that is widespread in the West. Guanxi rooted in exclusive business networks or Guanxi ties (Yen et al., 2011). The usage of networks and Guanxi is still quite essential in such a setting (Guo et al., 2018). In this collectivist-oriented society, business relationships rely heavily on direct interpersonal interactions to cultivate trust and favors (Wang, 2007). Guanxi, a pervasive aspect of the Chinese business world for centuries, remains an integral part of conducting business in China and is seen by Western expatriates as an informal system aiding their successful integration into the local business environment (Guo et al., 2018).

The relationship between Guanxi and performance has been the subject of various theories, including social capital theory, resource-based theory, social network theory, relational governance theory, structural hole theory, etc. Each of these theories offers a crucial justification for comprehending the mechanism underlying the link between relationships and performance (Luo et al., 2012). The Chinese business system focuses first on Guanxi building and then shifts to working with established business partners (Guo et al., 2018). In Chinese culture, personal Guanxi is regarded as valuable since it can determine whether a person or a business entity survives (Tsai et al., 2013). Guanxi continue to play a key role in economic transactions in China, even in Hongkong and Taiwan (Yang, 2011). Western suppliers are advised to concentrate on these Chinese relationship constructs in order to build strong business ties with their Chinese counterparts (Yen et al., 2011). In this case, no company can go further unless it has a wide network of Guanxi. Luo et al. (2012) estimate that the overall effect size of the Guanxi-performance relationship is positive and significant, thus supporting the argument that Guanxi (including business and government) do improve organizational performance (including economic and operational). Many joint ventures also illustrate the importance of Guanxi (Peng et al., 2008; Yen et al., 2011). For good corporate performance, Guanxi is necessary but not enough; market-based capabilities are more likely to drive corporate performance significantly. While Guanxi may have a positive impact on business performance and economic efficiency, others may help individual firms secure their place in the market, but harm institutional processes (Yen et al., 2011). Based on the discussion and evidence above, the following are offered:

H1: Guanxi have positive effect on expatriates' job performance.

H2: Cross-cultural adjustment mediates the relationship between Guanxi and expatriates' job performance.

### **Cross-cultural Training**

Cross-cultural training has multiple benefits for expatriates working abroad. Cross-cultural training would reduce anxiety and culture shock due to the following cultural familiarity and

enhanced cross-cultural understanding, facilitating adjustment (Black & Mendenhall, 1990; Nas, 2011). According to Erogul and Rahman (2017), receiving enough cross-cultural training that includes social learning as a component is a crucial success element for expatriates and their families. They recommend comprehensive training before and after departure to gain cultural literacy and adapt effectively in a foreign society. Incorporates language training as a requirement to promote expatriates' adaptation. Language issues present particular difficulties for foreigners stationed in Asian nations (Puck et al., 2008). Programs for cross-cultural training raise awareness and knowledge of culture and business, which helps employees perform better in unfamiliar settings. The interaction and job adjustment of expatriates play a partial mediating role between training and job performance and have a significant impact on job performance (Wang & Tran, 2012). Based on the discussion, the study proposes below hypotheses:

H3: Cross-cultural training has positive effects on expatriates' job performance.

H4: Cross-cultural adjustment mediates the relationship between language ability and expatriates' job performance.

### **Cross-Cultural Adjustment**

Cross-cultural adjustment is defined by Black (1988) as a psychological outcome associated with adaptation, which suggests how comfortable one feels in his new role and how well-adjusted one is to the demands of the role one is playing. It includes general adjustment (i.e., general living conditions), work adjustment (i.e., work environment) and interaction adjustment (i.e., interactions with locals). Expatriates who are culturally adapted to their new workplace are more likely to perform well on international assignments than those who are not (Lee & Kartika, 2014). When an expatriate is thoroughly acclimated to the host country, they are eager and dedicated to their work, which results in greater job performance (Zhu et al., 2018 ). If the cross-cultural adjustment of expatriates is ignored, it may lead to poor performance (Akhil & Liu, 2019). Thus, this the study proposes below hypotheses:

H5: Cross-cultural adjustment has positive effect on expatriates' job performance.

### **Method**

This study adheres to a positivist philosophy and employs a quantitative research design, involving cross-sectional data collection through a structured questionnaire. To ensure relevance, a purposive sampling technique was employed, specifically targeting white-collar expatriates within China's MNCs, spanning from regular employees to managerial positions.

### **Sample**

The sample consisted of expatriates working in Multinational Corporations (MNCs) in China, specifically in Beijing, Shanghai, Sichuan, and Guangdong. Respondents completed self-reported questionnaires. This targeted approach was chosen to ensure that the sample represents the specific group of interest, rather than encompassing all expatriates residing in China. A total of 234 surveys were distributed and a total of 110 responses (47%) were received. 110 responses from 40 countries were used in this analysis. Based on the respondents' demographic profile, most of the respondents were male accounted for 71% of the total population. On the

basis of age majority of the respondents lies between the age group of 20-30 years with a percentage of 71. As per the expatriate's experience, 57 % respondents had only once experience. Most of the respondents were non-management with 42.9%. Lastly, 34% of the participants demonstrated a strong proficiency in the local language.

### Measures

Data collection is achieved through a questionnaire with 50 items plus 8 demographic questions designed for this study. The questionnaire incorporates adapted measurement instruments to assess variables of reliably and validly. Job performances were initially assessed with 5 items using a perceptual self-report approach employing a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). However, during our analysis using SmartPLS, we observed significantly low loadings for one of the items, leading to its removal. CCA is consisted by 3 dimensions and measured by a 7-point Likert scale (1 = very unadjusted; 7 = very adjusted). CCT and Guanxi are measured by a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Including a marker variable in questionnaires is a valuable strategy to address CMV and establish discriminant validity. The marker variable should be theoretically unrelated to the research variables but measured in a similar manner (Miller & Simmering, 2022). Thus, this study uses attitude toward the color blue as marker variable measured by a 7-point Likert scale. The Cronbach's alphas of all instruments were greater than 0.7; as a result, the questionnaire is reliable and can be used in the actual survey, according to Hulland et al. (2018) general guideline. A more detailed description of the measures can be found in Table 1.

Table 1. Summary of Construct Validity and Reliability

Variable Name	Items	Cronbach's Alpha	Sources
Job Performance	5	0.93	Nam & Park (2019)
Cross-cultural Adjustment	14	0.97	Black & Stephens (1989)
Cross-cultural Training	14	0.834	Wang & Tran (2012)
Guanxi	15	0.86	Taormina & Gao, (2010)
Attitude Toward the Color Blue	7	0.993	Miller and Simmering (2022)

### Data Analysis

This study uses SPSS and SmartPLS software. SPSS is utilized for descriptive analysis, correlation analysis, and data screening, while Smart PLS, using the Partial Least Squares (PLS) technique, assesses the measurement and structural models, including construct validity, data quality, and hypothesis testing. The measurement model examines hypothesized links between indicators and latent constructs, whereas the structural model estimates hypothesized paths between exogenous (independent) and endogenous (dependent) latent constructs.

### Result

The statistical tool employed for the examination of the measurement and structural model is the SmartPLS 4 version, based on partial least squares (PLS) modeling. A notable advantage of PLS modeling is its capacity to operate without reliance on the normality assumption, making it particularly suitable for survey research data, which often deviates from a normal distribution (Chin et al., 2003). In consideration of the data's single-source origin, a comprehensive assessment was conducted to address the potential issue of Common Method

Bias (Kock, 2015; Kock & Lynn, 2012) Specifically, full collinearity was examined by regressing all variables against a common variable. The results indicated that the Variance Inflation Factor (VIF) for all variables was less than or equal to 5, signifying the absence of significant bias stemming from single-source data. Thus, the data is not significantly affected by single-source bias.

Table 2. Full Collinearity Testing

Variable	CCT	Guanxi	CCA
VIF	3.000	2.483	2.472

Note: CCT = Cross-cultural Training, CCA = Cross-cultural Adjustment

### Measurement Model

The suggestions of Anderson and Gerbing, (1988) were adhered to in testing the model, employing a 2-step approach. Initially, the measurement model underwent evaluation to ascertain the validity and reliability of the instruments used, in line with the guidelines of Hair et al. (2019) and (Ramayah et al. (2018). Subsequently, the structural model was executed to examine the developed hypotheses.

Within the measurement model, an assessment was conducted on the loadings, average variance extracted (AVE), and composite reliability (CR). It was required that the loadings  $\geq 0.708$ , the AVE  $\geq 0.5$ , and the CR  $\geq 0.7$ . As observed in Table 2, all AVE values exceeded 0.5, and CR values surpassed 0.7. The loadings were also deemed acceptable (Hair et al., 2019). This article has 3 constructs which are second order namely 1. Guanxi, 2. Cross-cultural Training, 3. Cross-cultural Adjustment. An evaluation of the validity and reliability of these second-order constructs is presented in Table 4, affirming their soundness.

In step 2, the discriminant validity was examined using the HTMT criterion, as proposed by Henseler et al. (2015) and updated by Franke and Sarstedt (2019). To meet the stricter criterion, the HTMT values should not exceed  $\leq 0.85$ , while the more lenient criterion suggests they should not surpass  $\leq 0.90$ . As displayed in Table 4, all HTMT values fell below the stricter criterion threshold of  $\leq 0.85$ . Thus, it can be concluded that the respondents clearly distinguished the 3 constructs from one another. Collectively, these validity tests have demonstrated the reliability and validity of the measurement items.

Table 3. Measurement Model for the First Order Constructs

First Order Constructs	AVE	CR
Guanxi Friends	0.782	0.947
Guanxi Work	0.797	0.952
Pre-departure Training	0.758	0.940
Post-arrival Training	0.712	0.937
Language Training	0.840	0.940
General Adjustment	0.733	0.95
Interaction Adjustment	0.869	0.964
Work Adjustment	0.858	0.948
Job Performance	0.871	0.964

Table 4. Measurement Model for the Second Order Constructs

Second Order Constructs	Indicator	Loadings	AVE	CR
Guanxi Cross-cultural Training (CCT)	Guanxi friends	0.954	0.719	0.962
	Guanxi work	0.955		
	PDT	0.930		
	PAT	0.953		
	LT	0.907		
Cross-cultural Adjustment (CCA)	GA	0.962	0.703	0.971
	IA			

Note: PDT = Pre-departure Training; PAT = Post-arrival Training; LT = Language Training; GA = General Adjustment; IA = Interaction Adjustment; WA = Work Adjustment

Table 5. Discriminant Validity (HTMT)

	1	2	3	4
1. Cross-cultural Adjustment				
2. Cross-cultural Training	0.763			
3. Guanxi	0.705	0.666		
4. Job Performance	0.731	0.561	0.823	

### Structural Model

Following the recommendations of Hair et al. (2017) and Cain et al., (2017), multivariate skewness and kurtosis were evaluated. Results revealed non-multivariate normality, with Mardia's multivariate skewness ( $\beta = 39.034$ ,  $p < 0.01$ ) and Mardia's multivariate kurtosis ( $\beta = 198.171$ ,  $p < 0.01$ ). Subsequently, in line with Hair et al. (2019) suggestions, we utilized a 10,000-sample re-sample bootstrapping approach (Ramayah et al., 2018) to report path coefficients, standard errors, t-values, and p-values for the structural model. Considering Hahn and Ang (2017) critique of p-values and their suggestion to employ a combination of criteria including p-values, confidence intervals, and effect sizes, Table 5 summarizes the criteria used to test the developed hypotheses.

First, the impact of the three predictors on job performance was examined, resulting in an  $R^2$  value of 0.685 ( $Q^2 = 0.584$ ). This finding indicates that the three predictors collectively accounted for 68.5% of the variance in job performance. Guanxi ( $\beta = 0.512$ ,  $p < 0.01$ ) and Cross-cultural Adjustment ( $\beta = 0.274$ ,  $p < 0.01$ ) demonstrated positive associations with job performance, providing support for H1 and H5. However, Cross-cultural Training ( $\beta = -0.187$ ,  $p < 0.05$ ) exhibited a significant but negative relationship with job performance. Consequently, H3 is not supported.

Table 6. Hypothesis Testing Direct Effects

Hypotheses	Relationship	Std. Beta	Std. Error	T-value	P-value	BCI LL	BCI UL	f2
H1	Guanxi → JP	0.512	0.092	5.580	P<.001	0.358	0.660	0.437
H3	CCT → JP	-0.187	0.100	1.875	0.030	-0.355	-0.025	0.053
H5	CCA → JP	0.274	0.082	3.335	P<.001	0.140	0.410	0.096

Note: CCA = Cross-cultural Adjustment; CCT = Cross-cultural Training; JP = Job Performance

To examine the mediation hypotheses, the methodology suggested by Preacher and Hayes (2004; 2008) was employed, involving the bootstrapping technique to assess the indirect effect. If the confidence interval does not encompass 0, it indicates significant mediation. As illustrated in Table 6, the paths Guanxi → CCA → JP ( $\beta = 0.137$ ,  $p < 0.05$ ), and CCT → CCA → JP ( $\beta = 0.214$ ,  $p < 0.01$ ) were both found to be significant. The bias-corrected 95% confidence intervals also revealed no intervals spanning 0, confirming our findings. Consequently, support was provided for H2 and H4.

Table 7. Hypothesis Testing Indirect Effects

Hypotheses	Relationship	Std Beta	Std Dev	T-value	P-value	BCA LL	BCA UL
H2	Guanxi -> CCA -> JP	0.137	0.048	2.893	0.002	0.073	0.230
H4	CCT -> CCA -> JP	0.214	0.058	3.689	$p < .001$	0.136	0.330

Note: CCA = Cross-cultural Adjustment; CCT = Cross-cultural Training; JP = Job Performance

Further to that as suggested by Shmueli et al. (2019) proposed PLSpredict, a holdout sample-based procedure that generates case-level predictions on an item or a construct level using the PLS-Predict with a 10-fold procedure to check for predictive relevance. Shmueli et al. (2019) suggested that if all the item differences (PLS-LM) were lower than there is strong predictive power, if all are higher than predictive relevance is not confirmed while if the majority is lower than there is moderate predictive power and if minority then there is low predictive power. Based on Table 7, all the errors of the PLS model were lower than the LM model thus we can conclude that our model has a strong predictive power.

Table 8. PLS-Predict

	Q <sup>2</sup> predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM
JP1	0.426	1.297	1.420	-0.123
JP2	0.420	1.233	1.351	-0.118
JP3	0.386	1.273	1.422	-0.149
JP4	0.377	1.228	1.189	0.039

Note: JP = Job Performance

Following the recommendation of Shmueli et al. (2019), PLSpredict was implemented as a holdout sample-based procedure for generating case-level predictions at the item or construct level. The PLS-Predict method, employing a 5-fold procedure, was utilized to assess predictive relevance. Shmueli et al. (2019) proposed that if all the item differences (PLS-LM) were lower than there is strong predictive power, if all are higher than predictive relevance is not confirmed while if the majority is lower than there is moderate predictive power and if minority then there is low predictive power. As observed in Table 7, all errors of the PLS model were lower than those of the LM model, thus we can conclude that our model has a strong predictive power.

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# **Determinants of Capital Structure of Deposit Money Banks in Nigeria, Mediating Role of Corporate Governance: A Conceptual Framework**

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## **Abstract**

The aim of this study is to explore the variables affecting Nigerian deposit money banks' corporate governance (CG) and capital structure (CS). It is commonly known that several deposit money banks listed on the Nigerian Stock Exchange have demonstrated weak CG over time, which has resulted in several undesirable results among which is excessive debt portfolio. Using the historical record of the CG of Nigerian banks, this study seeks present a framework on potential links between political influence, financial malfeasance, capitalization base and uncertainty avoidance on the bank's CS through the CG and to fill gaps in the literature. Evidence from the literature suggests that the issues with the banks are institutional issues that comprise of cultural, political and unethical business behavior, coupled with the inefficiency in part of the regulatory bodies. The framework developed in line with institutional theory and agency theory will be of help to address the persistent challenges with the Nigerian banks. The originality and value created by this study is the consideration of banks capitalization base within the fold of the regulatory pillar of institutional theory. The study also advances knowledge by institutionalizing the determinants variables. In contrast to using CS as just a consequence of CG, the study presents the mediating role of CG between CS determinants and CS. In this work, a crucial research context is presented in which the determinants of CG and CS can be examined from the standpoint of a particular Nigeria's unique characteristics.

**Keywords:** agency theory, capital structure, corporate governance, deposit money banks, Institutional theory, Nigeria.

## **Background of The Study**

With the ultimate goal of achieving long-term shareholder value while taking into account the interests of other stakeholders, corporate governance is described as the method and structure utilized to direct and manage the business and affairs of firms (Khatib et al., 2022). The foundation for the company's goals, including the strategies for achieving them and gauging

performance, is also established by corporate governance. In order for management and the board of directors to achieve objectives that are in the best interests of the shareholders and the company, effective corporate governance must create the right incentives (Almashhadani & Almashhadani, 2022). Recent corporate scandals indicate that poor corporate governance makes institutions brittle and leaves them vulnerable to major catastrophes (Al Amosh & Khatib, 2022; Hazaea et al., 2021).

Weak legal and regulatory systems are generally seen as a concern in emerging nations. While developed countries often have more complex and sophisticated regulatory frameworks, less developed countries frequently have legal and regulatory systems that are less effective (Lin, 2000). It was stated further that instability and lack of adequate stock market regulation is another factor that may be seen as largely exacerbating the issue in developing nations. This is a result of these economies' slow rate of market development. It is challenging to enforce contracts when the legal and regulatory environment is faulty (Melyoki, 2005). The boards' inability to appropriately monitor company operations has resulted in numerous fraud claims and subsequent corporate bankruptcies that have gone unreported (Aliero & Ache, 2017; Tricker, 2000)

The Nigerian banking sector has recently been under fire due to problems with failures and possible bank crises, which are mostly the result of governance failure. Any modern economy is supported by its banking sector, which also encourages economic growth and serves as a channel for the communication of monetary policy (Marshal, 2017). This is because banks advance the objectives of public policy, which gives the government a reason to control and monitor them. The risks and vulnerabilities that banks encounter as a result of their fundamental design and intended purpose serve as another basis for the government's active control of banking activity. A few of the financial and non-financial companies in Nigeria that have failed during the past 20 years as a result of bad corporate governance include Oceanic Bank, Intercontinental Bank, Nitel, and Vodafone. Nigeria's corporate failures have boosted interest in studies of Nigerian corporate governance. The numerous corporate governance studies that have focused on Nigeria as well as the variety of corporate governance regulations inside the frail institutional system plagued by corruption are what particularly make the argument for the country persuasive. There are numerous locations where specific codes contradict, which could affect how Nigerian public enterprises adhere to regulatory regulations. Kirkpatrick (2009) and Kumar and Singh (2013) pointed out that the system had a few flaws that were fundamentally flawed. Widespread corporate governance failure was one of the main contributors to the financial and economic crisis (Almashhadani & Almashhadani, 2022).

### **Problem Statement**

It is significant to highlight that nearly no area of the economy has been immune to the negative impacts of poor corporate governance practices. The deposit money banks in Nigeria are not exceptional because they can have engaged in unethical and dishonest business activities (Ozili, 2020; Sanusi, 2010). The corporate governance failure with Deposit money banks in Nigeria has had a detrimental effect on the economy in several ways, including the liquidation of numerous banks, loss of funds by the government as a way to bailout the failing banks, an excessive debt portfolio, a loss of investor confidence, a negative impact on the capital market,

and job losses, among other consequences. The Central Bank of Nigeria classified eight out of 24 Nigerian banks as distressed, with a total of 32.8 percent in nonperforming loans (Alabede, 2012). Banks in Nigeria owned risky assets worth about \$10 billion (Alawiye-Adams & Afolabi, 2014). The CBN removed the bank's CEO and directors due to corporate financial malfeasance and provided 4.1 billion in rescue funds for the affected banks (Ezeoha, 2011). The CBN fired business executives due to bad governance, excessive risk-taking, and corporate financial malfeasance (Adegbite & Nakajima, 2011; Akande, 2016). The general business problem was that inadequate corporate governance in banks increased regulators' concerns about safeguarding the funds of banking consumers (Adegbite, 2012). The specific business issue at hand was how little certain firm financial leaders used corporate governance tools to ensure legal compliance and enhance organizational financial success (Akande, 2016). Additionally, from 3756 in 2013 to 26182 in 2017, the aggregate number of financial misconduct cases climbed gradually. According to the NDIC Annual Report, 2013-2017, various types of financial misbehavior caused actual sustained losses of N5.757 billion, N6.193 billion, N3.173 billion, N2.446 billion, and N2.372 billion, respectively (Omankhanlen et al., 2021). However, (Tayo-Tiwo, 2020) pointed out that even after the merger and consolidation of the banks in 2006 by the CBN, roughly nine commercial banks in Nigeria liquidated, indicating that the problems with the financial sector of the Nigerian economy are far from being resolved. It was further stated that the massive debt portfolio that rendered the banks insolvent was the main reason for the liquidation.

The vivid examination of the challenges portrays that political influences, financial malpractices, bank capitalization base, and uncertainty avoidance may potentially have an impact on the strength of corporate governance and capital structure of the banks withing the folds of institutional and agency theories.

### **Corporate Governance**

Corporate governance refers to the rules and policies that take into account the needs of the company's stakeholders (Stanwick & Stanwick, 2005). The process of creating and continually improving the policies, procedures, and practices that govern how organizations operate is known as corporate governance (N. Pandey et al., 2023). This ensures that stakeholder and manager interests are aligned and that shareholder rights are upheld. Accountability, compliance, and openness are all part of the control portion of corporate governance (MacMillan et al., 2004). In order to attract investment, raise capital, and increase critical business performance elements (Grofcikova, 2016; Valaskova et al., 2018), a company must have an effective business management system (Rodriguez-Fernandez, 2016). Additionally, effective corporate governance improves the company's financial stability and resistance to potential financial issues as well as decision-making processes (Musa et al., 2014). The principles and fundamentals of corporate governance started to recur in all major economies (Suwaidan et al., 2021).

According to the communitarian point of view, a company is obligated to more than simply its owners. In this strategy, stakeholders come in many different forms, with shareholders being one of them. The organization's goals, which are under the control of managers and shift in reaction to these various perspectives (Bradley et al., 1999). In

discussions on corporate governance, the two points of view are essential. Corporate governance practices, which are crucial to the problem of social conflict, express these ideas (Roe, 2003). Adjustments to corporate governance are undertaken to deal with incentive issues brought on by the division of ownership and management. (Turnbull, 2019). The development of corporate governance is influenced by two viewpoints. Corporate governance changes to safeguard shareholder interests since the Anglo-Saxon mentality supports a conflict perspective (Cernat, 2009). Melyoki (2005) asserted that given the diversity of viewpoints, it is crucial to comprehend the one that is most common in a certain situation in order to comprehend corporate governance in that context.

Effective capital management, this keeps investor confidence, improved patience, and the attraction of long-term capital are all made possible by good governance structures. It enhances strategic focus, encourages community and market support, and is a key driver of business competitive advantage (Ho, 2005). Good corporate governance in a corporate setting aid in maximizing the value of the shareholders in a way that is ethical, moral, and sustainable while ensuring equity and transparency for all stakeholders, including the company's clients, employees, vendor partners, investors, the government, and the community (Murthy, 2006). Businesses follow good corporate governance standards for a number of reasons, according to Dhingra and Dwivedi (2023) and Tomsic (2013). While some companies follow good corporate governance because of legislative requirements, others do so because of pressure from globalization to help them compete successfully in the global market because external stakeholders value transparency and ethical standards. The third objective is to improve stakeholder trust. The fourth and most important justification, however, pertains to businesses that think they will benefit from implementing effective governance practices. These businesses go above and beyond the letter of the law to maintain the highest standards of corporate governance. This fourth reason helps any firm improve its overall corporate governance standards.

### **Capital Structure**

Capital structure is the combination of equity finance and debt finance that a firm employed to finance its short and long-term operations (Cekrezi, 2013). The termed capital structure as the combination of many securities using in financing business investment. Rao et al. (2007) opined that firms issue various securities, but the best combination will be the one that maximize the firms' market value. Capital structure can also be viewed as components of debt fund and equity fund that are employed as sources of business financing (El-Maude et al., 2016).

Also, Chomba (2013) presented that firms capital structure include debt and equity components used in financing the business operations. While equity finance comes from those that acquired the share capital of firms, debt capital comes from loan component. The equity holders have stakes in the firms dominated by the number of shares. The shareholders of the firm share the risk involved in carrying out the business and also entitled to a share of the business profit. Hence, Pandey (2002) stated that firms capital structure decisions have an effect on the entity's value by changing expected earning or the cost of capital. Pandey (2002) submitted that there could be optimal capital structure with combination of equity finance and debt finance that maximize the firms' value. Therefore, studies have established that firms' way

of governance determines the capital structure decisions, and evidence from trade off theory revealed that a certain level of debt maximizes firms' profitability.

### **Corporate Governance in Nigeria and Banks Failure**

Over the past 20 years, various financial and non-financial organizations in Nigeria have failed due to poor corporate governance, including Oceanic Bank, Intercontinental Bank, Nitel, and Vodafone (Ozili, 2020). There is an increase in corporate governance studies as a result of these firm failures in Nigeria. The case for Nigeria is made particularly compelling by the various CG studies that have focused on the country and the range of corporate governance rules under the flimsy institutional system plagued by corruption. There are already groups in Nigeria that regulate how businesses conduct themselves, but they have little to no enforcement capacity to hold offenders accountable (Ahunwan, 2002; Ozili, 2020). Corporate governance norms are frequently disregarded by businesses, especially those whose boards of directors include well-known politicians (Nakpodia & Adegbite, 2018) Leaders of firms that flout the law frequently also have political ties to senior government officials, and they may pay an institutional regulator or supervisor to avoid punishment (Adegbite, 2012).

Similar to this, Oyejide and Soyibo (2001) assessed Nigeria's corporate governance situation and contend that, despite the country's existence of the institutions and legal framework required for sound corporate governance, compliance and/or enforcement are either ineffective or nonexistent in Nigeria. Another issue is the various constraints that make Nigeria's current corporate governance laws difficult to implement as well as the various ways in which those laws are interpreted (Osemeke & Adegbite, 2016). This has been a persistent problem since different parties, such as managers, attorneys, and the courts, have differing interpretations that influence corporate governance standards in Nigeria (Adekoya, 2011). show that the main causes of corporate governance failures in Nigeria are deep-seated corruption, political favoritism, and a refusal on the part of government agencies to enforce and monitor compliance. Another reason for the failure of corporate governance is corruption in the hostile business environment (Letza, 2017).

According to Sanusi (2010), "What is certain is that among those who promote themselves as role models in contemporary society are those who gained from failed banks. owners and managers who become senators and governors. Multibillionaires who stole the money from those destitute, deceased people and never returned it are considered bad debtors. The institutional, economic, and political causes were mostly to blame for Nigeria's frequent bank failures (Marshal, 2017). However, institutional problems will be considered as a factor in bank collapse because of their importance to the study's objectives and the research topic. This is so since it is essentially the banks' responsibility to own and manage these issues. However, every bank collapse in Nigeria can be linked to institutional issues, such as poor corporate governance, insider loan abuses, and poor asset risk management.

Marshal (2017) did a thorough analysis of the CBN's role as a prudential supervisor and regulator of the country's banking system in regard to the waves of bank collapses when it comes to the regulatory bodies' involvement. It was decided that the CBN should be held liable for her regular duties as the regulator and watchdog of the banking sector. It was troubling that the CBN was unable to identify the fraudulent activities occurring at various banks operating

in the nation, not just because of a shortage of people but also of those who are skilled and gifted. Along with this difficulty, the deregulation of the banking industry in the 1980s resulted in a large number of banks finishing their accounting periods without being on-site examined by the CBN, despite the fact that occasionally the supervisor and regulator of the nation's banking sector conducted on-site examinations every two to three years (Ogunleye, 2010). Of course, this contributed to the recent bank failures the industry has had because the issues with the banks were discovered much too late and led to their downfall.

## **Empirical Literature and Gaps from Literature Review**

### **Corporate Governance Determinants and Corporate Governance**

There is a tone of literature in the field of corporate governance. However, because these elements are greatly influenced by the nature of the firms, the nation or environment, cultural norms, and the researcher's area of interest, examining aspects that determine corporate governance strength continues to be of interest. As a result, it was impossible to come to an agreement on what makes corporate governance strong.

The study by Sharma et al. (2020) into the elements affecting a company's disclosure of environmental, social, and corporate governance information was centered on Indian enterprises. A content analysis of the sample companies' annual and sustainability reports was performed to evaluate their ESG performance. The study's data sources were the companies' annual reports and sustainability reports. After statistically adjusting for the effects of a firm's size and industry, the Ordinary Least Square method was used to examine the relationship between the ESG disclosure index and the independent variables, including the financial performance, market performance, FIIs stake, and leverage. Results from the created model demonstrated a positive and significant correlation between the level of ESG and financial and market performance. Arantes et al. (2020) investigated the cultural determinants of corporate governance in the context of companies listed in Brazil, Mexico, Argentina, Colombia, Peru, Chile, and the US in 2016. Regression analysis was used in this study to relate the firm's EM practices to several aspects of culture. The findings demonstrated a favorable correlation between EM and both power distance and uncertainty avoidance. However, the data indicated a conflict between EM and personality as well as between EM and long-term orientation. Overall, our research indicates that culture affects how companies manage their revenues.

In their research, Qintharah and Utami (2023) examined the variables influencing environmental disclosure using integrated corporate governance as a moderator. Purposeful sampling is linked with a non-probabilistic sampling technique. To independently examine this, use a sample criterion firm that is appropriate for the industry and release a report on any potential financial resources obtained between 2018 and 2021. The test's findings demonstrate that international corporate governance can strengthen the link between environmental costs and environmental disclosure, whereas industry sensitivity and worldwide environmental certification have little impact on it. Environmental revelations are taken seriously by industry.

Arslan and Alqatan (2020) examined how institutions in the system of corporate governance function in a rising economy. Theorizing corporate governance practices and structures as institutionally resolved and directed, this study examines the key institutional determinants of excellent corporate governance practices in a developing economy. It does so

by drawing on the theoretical underpinnings of institutional theory. The study, which employs a qualitative methodology, pinpoints eight important precursors of successful corporate governance practices in situations with inadequate institutional frameworks (Pakistan). The study is concerned with the effects of numerous underlying formal and informal institutional elements on corporate governance, including audits, politics, law, the board, shareholder awareness, voting, culture, and values. In order to address specific corporate governance concerns, this study argues that each of these predecessors must be explicitly expressed, transmitted implicitly, and connected. However, this study was lucky to be able to qualitatively identify the relevant and environmental challenges associated with the actual reality of corporate governance in firms at the time. But there is no empirical backing for the findings.

Praditha et al. (2022) looked into what makes for good corporate governance in companies listed on the IDX (2022) This inquiry is quantitative in character. Following three years of observation from 17 of the 45 businesses that are indexed LQ45 on the Indonesia Stock Exchange, the 51 samples for the study were gathered using the Purposive Sampling technique. The findings demonstrate that leverage, company size, and ownership concentration all have substantial impacts. The test results indicate a positive and considerable impact on the use of corporate governance, simultaneously for all elements and partially for each variable. The study's findings indicate that because implementing corporate governance is essential for increasing the value of the company, the organization focuses on researching the elements that influence the enhancement of its implementation.

Mumtaz (2021) studied the correlation between Shariah compliance status and firm life cycles as determinants of corporate governance in Pakistani firms. Utilizing secondary data gathered from the companies, the research was quantitatively done. The data were analyzed using regression analysis with panel data. The findings are based on 84 businesses that were listed between 2015 and 2019 at the Pakistan Stock Exchange. Panel data analysis was employed in this study to examine the correlation between the dependent and independent variables. The findings of this study show that neither a company's stage in the life cycle nor its adherence to the Islamic faith significantly and favorably influence corporate governance. The study's conclusions help managers, investors, managers, and regulators understand how shariah compliance and a firm's stage of development affect corporate governance. Additionally, corporate governance and national governance were studied empirically by Khan and Rehman (2020) as determinants affecting the effectiveness of Pakistani firms. Using secondary data, the empirical analyses are divided into two sections. Data Envelopment Analysis (DEA) is used to measure early firm efficiencies across a ten-year period, from 2008 to 2017, including overall technical efficiency, pure technical efficiency, and scale efficiency. The outcomes are consistent with the conceptual reasoning that robust corporate governance and regulatory structure assures disclosures. These disclosures serve to safeguard investors by enhancing the accuracy of accounting data while concurrently lowering agency costs. The empirical results show that, with the exception of the board index, there are statistically significant and positive connections among each governance indicator, firm size, investment prospects, intangible assets, and ownership of directors and officers. Institutional ownership and the need for outside investment are strongly connected with each governance aspect that

is taken into consideration. However, the amount of governance is not greatly influenced by growth prospects or performance.

### **Corporate Governance and Capital Structure**

Wen et al. (2002) studied the relationship between corporate governance and capital structure of Chinese listed firms. Taking board size, board composition, tenure of CEO, CEO fixed compensation as independent variables and leverage as the dependent variable, the study use ordinary least square to revealed that strong corporate governance result to lower leverage. Company size and return on assets are taken as the control variables. From the research outcome, it was studied that board compensation and CEO tenure are significant to leverage while board size and CEO compensation are not significant. Butt and Hasan (2009) evaluated the impact of ownership structure and corporate governance on the capital structure decisions of firms in Parksitan. Board size, board composition, CEO duality, managerial shareholding, and institutional shareholding proxy for corporate governance as the independent variables while debt equity ratio proxy for capital structure as the dependent variable. The control variables used are firms' size and profitability. It was revealed that board size and managerial shareholding are significant negative predictors of debt equity ratio of the firms. Board composition and CEO duality are significantly related to the debt equity ratio. It was discovered that profitability and firms' size have a significant effect on the debt equity ratio of the firms. They stressed the importance of ownership structure and managerial ownership in financing mixed decisions.

Further, Rehman et al. (2010) examined the effect of corporate governance on capital structure of banks in Parkistan and discovered that there is no relationship between corporate governance and capital structure of banks in Parkistan. Ownership concentration, board independent, board size, managerial ownership, and numbers of meeting during the year served as the corporate governance variables. The study showed that all the variables are positively related to capital structure except ownership concentration with a negative effect. However, the overall effect of the capital structure is not significant. On the contrary, the study of the effect of corporate governance compliance on capital structure of firms in Malaysia by Saad (2010) revealed that corporate governance compliance has significant effect on capital structure of Malaysian firms. The study used board size, board of directors, dual leadership, and board meeting as the proxies for corporate governance and debt ratio, interest coverage and debt to equity ratio as proxies for capital structure.

Ganiyu and Abiodun (2012) evaluated the impact of corporate governance on the Nigerian firms' capital structure decision (using food and beverages as a case study). Using regression analysis, the study presented that CEO duality, board size, board skill and profitability are substantial determinants of capital structure. But board skill among the variables has negative effect on capital structure. The study recommended research on corporate governance and capital structure on other sectors of Nigerian economy. Additionally, Uwuigbe (2014) researched the effect of corporate governance on the capital structure of listed firms in Nigeria. Board size, CEO duality, board composition and managerial ownership served as independent variables. While capital structure was measured as debt-to-equity ratio. The study stated that 65% of the firms' capital structure decision is explained by their corporate

governance practices. While managerial ownership, board size and board composition have a negative relationship with capital structure, CEO duality has a positive relationship. The student recommended the inclusion of other governance variables.

Accordingly to Shahar et al. (2016), firms' capital structure helps in judging the corporate governance practices of firms. The study examined the relationship between firms' specific characteristics, ownership concentration and capital structure of public listed firms in Malaysia. It was revealed that firms' size and asset tangibility are positively related to capital structure while ownership concentration is negatively related. Vijayakumaran and Vijayakumaran (2019) studied the effect of corporate governance on capital structure decision of listed Chinese companies. It was discovered that state ownership and foreign investors have a significant negative relationship with total debt to total asset while managerial ownership was a significant positive relationship with total debt to total asset. The study presented that board size and board composition have no effect on the capital structure. Also, Javaid et al. (2021) researched the relationship between corporate governance and capital structure of firms in Pakistan, mediating the cost of capital. The study showed that institutional ownership, managerial ownership, and CEO duality have significant indirect influence on capital structure. The study discovered other determinants of capital structure to include firms' size, asset structure, profitability, business risk and growth.

However, only briefly acknowledged, and without a clear explanation of how this connects to the corporate governance aspects of the banks, was the impact of politics on the corporate governance of Nigeria's deposit money institutions. Corporate governance of Nigerian banks has been impacted by the issue of unethical behavior coupled with financial malpractices, which is essentially becoming the norm in Nigeria. Thus, this hasn't been independently tested to support its logic. The efficiency of the CBN's division of Nigeria's deposit money banks into international, national, and regional banks in terms of the banks' corporate governance is also not studied. Capitalization was created to support financial institutions (such as banks) in their efforts to practice sound governance in the industries in which they excel. The issue of uncertainty avoidance is not yet addressed especially in the Nigerian economy saddled with a lot of uncertainties in various section of the economy. Finally, looking at capital structure just as a consequence of corporate governance may not address the institutional issues with corporate governance.

## **Theoretical Literature and Hypotheses Development**

### **Institutional Theory**

Historically, institutional theory has concentrated on how different groups and organizations can more effectively protect their positions and legitimacy by abiding by the rules and norms of the institutional context (Bruton et al., 2010; Scott, 2008b). In general, the term "institution" refers to the explicit rule sets (North, 2019), ex ante agreements (Bruton et al., 2010), less formal shared interaction sequences (Jepperson, 1991), and presumptions (Meyer & Rowan, 1977) that organizations and individuals are expected to follow. Laws, rules, political organizations, court rulings, professions, scripts, and other social and cultural standards that force people to conform are sources of these (DiMaggio & Powell, 2000). It was argued that these institutions set standards for behavior that organizations must follow. The institutional

context, according to Bruton et al. (2010), significantly affects both the admission rates and future trajectories of entrepreneurial endeavors.

Organizations and its members are required to behave in a desirable or appropriate manner within a socially constructed system or face repercussions for deviating from the accepted standards (Schein, 2015; Suchman, 1995). The three institutional pillars are each seen as being particularly important and having an impact on corporate legitimacy when it comes to understanding organizations in emerging nations (Peng & Zhou, 2005). In order to account for the normative, cognitive, and regulatory elements that are anticipated to have an impact on levels of entrepreneurship across national and cultural boundaries, Busenitz et al. present a three-dimensional measure of country institutional profiles. Therefore, this theory will clearly elucidate the issues with the deposit money banks in the Nigerian context because the challenges are more of institutional and environmental issues.

### **Agency Theory**

It is generally understood that any discussion of corporate governance and its elements starts with agency theory. Berle and Means (1991) highlighted the agency problem as an illustration of the divide of ownership from management of firms. The agency problem is principally founded in the division of control between managers and shareholders. Because owners often do not actively participate in the operations of organizations, modern businesses engage managers to manage the firm's resources on their behalf. This issue emerges when managers fail to consider the interests of their principals (shareholders), put their own interests first, and pursue personal gain by building enormous empires, taking advantage of perks, and gaining financial advantages by fabricating accounting records (Afza & Nazir, 2014). This imbalance between agents' behavior and principals' interests leads to agency problems (Shleifer & Vishny, 1997). The dilemma that arises now is: How can managerial obligations be consistent with those of the shareholders? One way to address this issue is to provide managers with enough and appropriate incentives that are linked to their performance in providing their principals with the best service possible. These include bonding expenses suffered by the agent and residual losses brought on by the interest rate difference between the owner and agency. Monitoring costs incurred by the owners include audits, budgeting, control mechanisms, incentive and reward systems, and audit fees (Jensen & Meckling, 2019). A company's value will increase if it successfully resolves the agency issue (Hart, 1995). In addition to the discussion above, Jensen and Meckling (2019) offered a comprehensive description of the principal-agent relationship. A two-party contract in which owners (principals) select managers (agents) to carry out particular duties or responsibilities on their behalf is what they meant by an agency relationship. Theoretically, the capital structure you choose could reduce these agency costs. According to the agency costs hypothesis, having a high leverage ratio or a low equity/asset ratio lowers the agency costs of outside equity and boosts company value by pressuring or incentivizing managers to act more in the best interests of shareholders (Berger & Di Patti, 2006).

### **Conceptual Framework**

Institutional theory provides a counterbalance to analyses based on objectivist ontology, which frequently results in a mathematical study of objectivated results, by paying attention to the

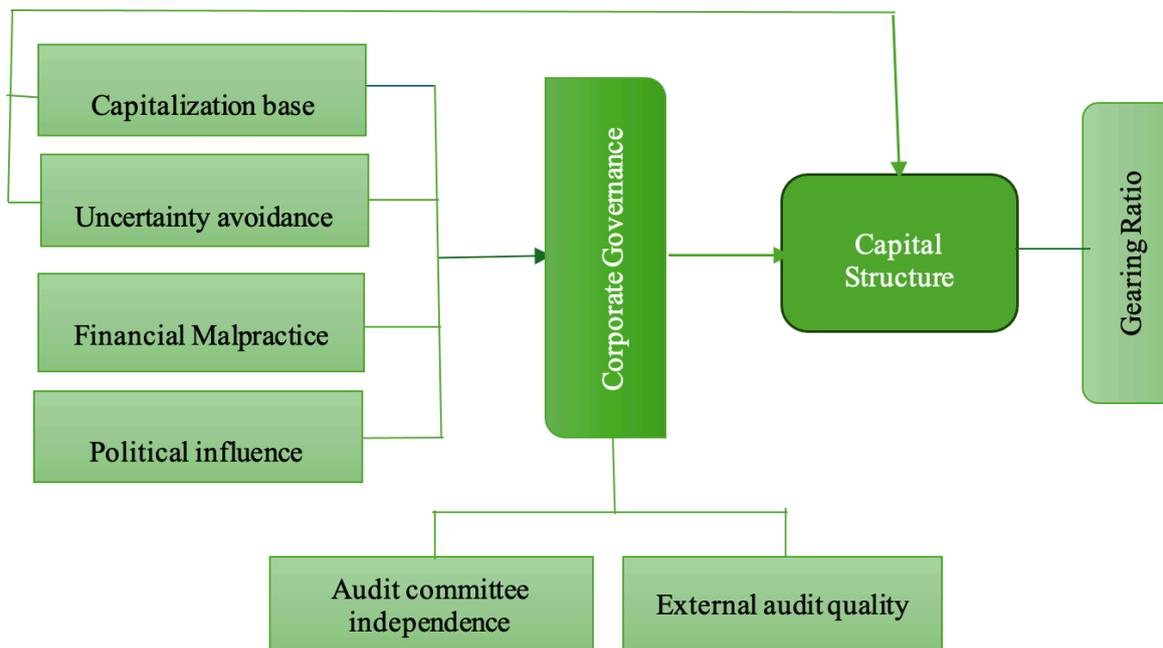
social embeddedness of action (Lawson, 2013; Willmott, 2015). Further, Willmott (2015) stated that According to institutional theory, knowledge that is organized into meaning complexes is vital in shaping the social environment.. The three institutional pillars of regulatory, normative, and cognitive institutions are each seen as being particularly important and having an impact on the legitimacy of business in emerging nations (Bruton et al., 2010; Peng & Zhou, 2005). The regulatory institutional pillars are made up of rules, regulations, and their enforcement (Scott, 2008a). The regulatory pillar of institutional theory will be taken as the operating strengths of the banks that are based on the CBN laws and regulations relevant to the banks capitalization strength to qualify as being international, national, and regional banks.

The normative pillar refers to the expected norms of conduct and business practices of numerous occupations, professions, and organizational domains; it stands for the behaviors that businesses and individuals should display (Suchman, 1995). Therefore, uncertainty avoidance falls under the purview of the normative pillar of the theory because every establishment develops its risk appetite in dealing with the problems posed by uncertainties as part of their standards of behavior. The cognitive institutional pillar includes the scripts, schemas, and taken-for-granted elements that have an effect on people in a particular sociocultural milieu. How effectively a company fits into its cultural setting is taken into account while determining its legitimacy cognitively (J. Meyer & Scott, 1983). Therefore, the cognitive pillar could be used to explain the political influence and financial malpractices that are nearly a standard in Nigerian society.

Furthermore, specific institutional factors may collaborate with specific firm-level corporate governance procedures to affect outcomes solely in that specific environment (Aguilera et al., 2012; Filatotchev, 2008; Kogut, 2012). According to Tipurić et al. (2014), three criteria—performance, compliance, and accountability—are used to gauge how effective good corporate governance is. The main reasons for failure included accounting figure manipulation, dishonest management, failures of the internal and external audit, unethical management, and inept senior management. The annual reports and financial statements of businesses in the knowledge sector hold greater interest for the majority of business owners and other stakeholders. This is because annual reports and financial statements of firms reveal a great deal about the state of the businesses to all stakeholders and the general public which is the central focus of the stakeholder theory. Corporate governance is improved by internal audits, and the availability of governance standards also influences how successful internal audits are (Abor, 2005). Corporate function predicts the integrity, or lack thereof, of these firms' health reports.

In light of the nature of the problem with the corporate governance of deposit money banks in Nigeria and the CBN 2006 and 2014 code of corporate governance, the study will measure corporate governance via Audit committee independence and External audit quality, while the capital structure will be approximated by gearing ratio. Thus, the suggested conceptual framework is as presented in Figure 1.

Figure 1. Conceptual Framework



## Hypotheses Development

In line with institutional theory and agency theory, proposed research hypotheses are presented in three main sub-headings such as hypotheses on the determinants of CG and corporate governance, CS determinants and CS, and the mediating role of CG.

### Determinants of CG and Corporate Governance

The dimensions of corporate governance employed by this study are audit committee independence and external audit quality. Corporate governance is strengthened by the presence of governance rules and internal audits within the company, which demand the engagement of the audit committee (Josh, 2022). However, how audit committees operate in less developed countries may be different from how they do so in more developed ones (Kipkoech & Rono, 2016). Kalbers and Fogarty (1998) proposed the concept of using institutional theory to improve our comprehension of the audit committee's function as a monitoring tool. It was stated that control systems that are both economically sound and effective can satisfy the requirements for managing and monitoring management's operations. Therefore, Beasley (1996) reached the conclusion that an audit committee's capacity to effectively carry out its oversight duties is not guaranteed by the committee's bare existence. This is because it's likely that a variety of elements influence how effectively and efficiently it fulfils its duties.

According to institutional theory, an organization's greater institutional framework is made up of its cultural, social, and symbolic components (DiMaggio & Powell, 2000). The institutional theory is founded on the idea that companies adopt behaviors that are regarded as the right organizational decisions by society and adapt to pressures from their institutional surroundings (Bookey & Soobaroyen, 2017; Carpenter & Feroz, 2001; Haapamäki, 2022).

These contributions and the theory's stance show how internal and external forces, both good and negative, may support or damage the independence and excellence of the external audits conducted by the audit committee, which decides how successful corporate governance is. Therefore, the study hypothesis will be composed of sub-hypotheses as presented:

H1a: Uncertainty avoidance is positively related to corporate governance of deposit money banks in Nigeria.

H1b: Capitalization base is positively related to corporate governance of deposit money banks in Nigeria.

H1c: Political influence is negatively related to corporate governance of deposit money banks in Nigeria.

H1d: Financial malpractices is negatively related to corporate governance of deposit money banks in Nigeria.

### **Uncertainty Avoidance, Capitalization Base, and Capital Structure**

An industry can be viewed as being constantly subject to opposing pressures for homogeneity (as firms aim to acquire legitimacy) and heterogenization (as firms strive to create competitive difference) (Deephouse, 1996; Noda & Collis, 2001). Homogenization wins when isomorphic pressures are high, as they appear to have been in the time before DiMaggio and Powel. When such pressures lessen, as we think happened in the 20 years following DiMaggio and Powel, differentiation and deviance are allowed to develop (Oliver, 1991), and heterogeneity is more pronounced. Therefore, a lack of isomorphism does not immediately result in interindustry diversity; rather, it merely makes it possible (Mizruchi & Stearns, 1988), contending that businesses create narratives about their deeds in accordance with what they believe powerful parties want to hear (Hambrick et al., 2004). Organizations embrace methods and characteristics that might or might not be functionally effective because they want to be taken seriously, but they do so because they believe their main resource providers will find them acceptable. (DiMaggio and Powell (1983) expanded on this idea by stating that the homogeneity of forms in an organizational field is the product of pressures from societal institutions and from collective rationality among organizational actors. This implies that the financial decisions by firms as well adapt to some societal pressure and it capital based capacity. Therefore, the hypotheses are as presented:

H2a: Uncertainty avoidance is positively associated with the capital structure of deposit money banks in Nigeria.

H2b: Capitalization base is positively associated with the capital structure of deposit money banks in Nigeria.

### **Corporate Governance, CG Determinants, and Capital Structure**

According to agency theory, selecting a capital structure could reduce these agency costs. According to the agency costs hypothesis, having high leverage or a low equity/asset ratio lowers the agency costs of outside equity and boosts company value by pressuring or

incentivizing managers to act more in the best interests of shareholders (Berger & Di Patti, 2006). Through the threat of liquidation, which results in personal losses to managers in terms of salaries, reputation, perks, etc. (Grossman & Hart, 1982; Williams, 1987), and through pressure to generate cash flow to cover interest expenses, greater financial leverage may have an impact on managers and reduce agency costs (Jensen & Meckling, 2019). Conflicts over the selection of investments between shareholders and managers may be lessened by more leverage (Myers, 2001). This implies that the board of directors will pursue that level of capital structure that will guarantee the survival of the firms thereby mitigating any internal or external (institutional) factors that could affect the capital structure in an unfavorable manner. This is an indication that the management will pursue high leverage to maximize the value of the firms.

H3: Corporate governance positively mediate between CG determinants and capital structure of the deposit money banks in Nigeria.

### **Contribution of The Study**

By institutionalizing the probable drivers of corporate governance and capital structure of banks in Nigeria in accordance with the normative, cognitive, and regulatory pillars of institutional theory, the study theoretically contributes to knowledge. The study demonstrates how bank concerns may be assessed taking into consideration essential institutional quirks to address local corporate governance and capital structure issues. By concentrating on the nation's social and political climate and the legislative options for resolving the ongoing challenges with Nigeria's deposit money banks and the fundamental role of the board of directors as stipulated by the agency theorists, this study contributes to the institutional theory and agency theory of good corporate governance. The study contributes to institutional theorizing by integrating capitalization base in the variables because it is legally defined by regulatory benchmarking for classifying the banks as regional, national, and international banks. According to the corporate governance guideline for banks in Nigeria, these classifications rely on the organizations' capitalization strength. Further, in contrast to the general approach of evaluating capital structure as consequences of the corporate governance, this study rather considers what drives corporate governance in resulting to the capital structure decision, thereby taking corporate governance as a mediating variable. This study provides a vital research background to assess corporate governance and capital structure determinants and dimensions from the perspective of a country's distinctive characteristics.

### **Conclusion**

This article's goal is to review and assess the factors that affect deposit money banks' corporate governance and capital structure in Nigeria. The factors and potential moderators of corporate governance of deposit money banks in Nigeria are described and presented in this paper. A theoretical framework has been created and presented based on the literature review. In the subsequent article, additional empirical research will be conducted, and the findings will be presented, to test, validate, and improve the model.

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# Research Conceptual Framework of Electrical Energy Project Financing Strategy Through Public-Private Partnerships in Indonesia

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## Abstract

This research is motivated by financing problems with the Public, Private Partnerships (PPPs) scheme for electricity infrastructure projects. It is not easy to achieve successful PPPs. Based on this background, this study aims to determine the determinants of the success of PPPs, namely benefits & enablers, recommended Strategies, barriers to entry and Enhancing Factors. This paper also analyzes the implications of PPPs for the Sustainable Development Goals. The research method in obtaining a conceptual framework for this study is using the systematic literature review (SLR) method. The results of the research are the formulation of a research conceptual framework for the success of PPPs will be used as the base for dissertation. In the dissertation, the research approach is using a mixed-methods approach, quantitative and qualitative, explanatory sequential design. The research location is in Indonesia, for the year 2023. The technique of collecting primary data for research is carried out by surveys and in-depth interviews. The structural equation modeling (SEM)-partial least squares (PLS) analysis has been selected to analyze the data, while SWOT analysis will provide additional perspective on recommending strategies for the success of PPPs. The SWOT method used is Magnitude, Importance and Total Rating (M.I.R).

**Keywords:** barrier, electrical infrastructure, public private partnerships, SDG, strategy.

## **Introduction**

Indonesia is one of the countries that is actively building electrical energy infrastructure to catch up so far. Regarding national infrastructure development in the last decade, there are three phenomena that stand out. The first phenomena are: (1) the launch of a 35,000 megawatt power generation infrastructure megaproject program; (2) launch of the New and Renewable Energy (EBT) mix. Then as a consequence of the first and second phenomena, a third phenomenon emerged, namely (3) financing problems that lead to public and private partnerships (PPPs).

The problem is that financing is relatively heavy, so the completion time for the 35,000 megawatt power generation infrastructure megaproject has been repeatedly delayed. This EBT program also has significant financing consequences.

Therefore, since the launch of the 35,540 megawatt megaproject in 2015, the government has become increasingly active in encouraging the role of the private sector to participate in efforts to provide electricity through various cooperation schemes. One of the financing schemes which is a collaboration between the government and the private sector is the Public Private Partnership (PPP) scheme (Ministry of Energy and Mineral Resources, 2015). Due to the highly anticipated role of the private sector in supporting the financing of electricity generation infrastructure, it is important to examine the factors that influence the success of PPPs.

This article aims to formulate a framework as a basis for conducting further research on the factors that influence the success of PPPs.

Research regarding the factors that influence PPPs, the implications of PPPs for Sustainable Development Goals (SDGs), as well as strategies to increase the success of PPPs is significant and provides a number of benefits. This is because the success of PPPs means that they have solved the financing problem in electrical energy infrastructure projects.

The theoretical studies that support the research conceptual framework are theories regarding PPPs, as well as theories regarding the variables that influence the success of PPPs. These theories are expected to support testing of variables that influence PPPs.

## **Literature Review**

The characteristics of public and private partnerships (PPPs) are generally explained by Cruz (2012). These characteristics include: (1) form, namely in the form of contracts, cooperation, agreements, legally binding contracts, extensive relationships. (2) objectives, namely in the form of assets/infrastructure and/or public services; financing, construction, renovation, management, maintenance of infrastructure or services; (3) time period, namely long term; (4) stakeholders, namely public and private entities; (5) distribution of risks, rewards, resources and responsibilities, namely in the form of distribution of responsibilities, risks, income and costs; and (6) critical success factors, such as private sector involvement, focus on specific goals, and goal alignment.

The PPP scheme is more fully recapitulated by Zhang (2022). There are at least 12 PPP schemes, namely: (1) Management contract, (2) Leasing, (3) Rehabilitation, operate and transfer (ROT), (4) Rehabilitation, lease/lease and transfer (RLRT), (5) Merchant , (6) Build, rehabilitate, operate and transfer (BROT), (7) Build, own and transfer (BOT), (8) Build, own, operate and transfer (BOOT), (9) Build, lease and own ( BLO), (10) Build, own and operate

(BOO), (11) Partial privatization, and (12) Full privatization. The 12 schemes are differentiated into six characteristics, namely (1) Mode of entry, (2) Operation and Maintenance, (3) Investment, (4) Ownership, (5) Risk assumption, and (6) Duration (Zhang, 2022 ).

Both PPP and hybrid-PPP schemes, especially during the energy transition, have a number of challenges. Cruz (2022) identifies the main challenges for PPPs and hybrid-PPPs in six editions. (1) form, there is no complete alignment of KPS and hybrid KPS. Legitimacy and institutional alignment are key challenges. In hybrid PPPs, the main challenge is to guarantee reciprocity and commitment, especially in voluntary schemes (2) objectives, there is no clear space in PPPs that are not fully linked to infrastructure and related services. Strategies for compiling information related to sector-specific practices in PPPs and hybrid PPPs are relevant for more successful implementation (3) time frame, durability of hybrid PPPs is a challenge considering the financial constraints of new business models in hybrid PPPs. (4) stakeholders, there is no clear space for the participation of different social actors in PPPs. Defining representative authority in hybrid PPPs when activities are not fully regulated is a key challenge. (5) distribution of risks, rewards, resources, and responsibilities. PPP risk management approaches can be limiting when dealing with technological innovation and/or multiple PPP stakeholders. In hybrid PPPs, the main challenge is to achieve a balanced risk allocation with the current institutional framework. (6) determining success factors. Building trust in hybrid PPPs is a challenge, especially in voluntary schemes.

Even though the PPP scheme or in Indonesia known as Public Private Partnerships (PPPs) has long been launched by the Government for several priority and non-priority infrastructure activities, it seems that not many private sectors are interested in joining the scheme. This condition is predicted to be due to several obstacles/problems in PPP projects, such as: 1) adequacy of project financing from investors and banks; 2) warranty issues; 3) fulfillment of financing requirements; 4) land acquisition; up to 5) institutional capacity and cooperation (Rifai, 2016).

Previous research examined PPP and was related to electricity, or energy, or infrastructure. In this table, there are 10 research locations with publication year 2022 and the quality of articles based on SJR is Q1. The ten previous studies are Jayasena et al (2022), Cao et al (2022), Zhou et al (2022), Othman & Khallaf (2022), Zhang (2022), Mazher et al (2022), Luo et al (2022) , Jiang et al (2022), Rasheed (2022), Cruz et al (2022).

Issues regarding PPPs in electricity, or energy, or in public infrastructure from previous research are as follows: Results of research by Jayasena et al (2022). shows that legal factors and political factors influence private sector satisfaction, and end user satisfaction. Meanwhile, social barriers significantly influence public sector satisfaction. The research results of Cao et al (2022) found 10 risks in managing WTE PPPs. The 10 risks are rural appearance, payment risk, local employment, local economic development, local government succession, operating cost overruns, waste supply, construction cost overruns, revenue risk, and price change risk. Research by Zhou et al (2022) proves the influence of government credit on PPP performance. Othman Research & Khallaf (2022) points out that political and regulatory barriers are key risks globally. Zhang's research (2022) found a sociopolitical perspective on the diffusion of liberalization reforms throughout the world in the infrastructure industry with PPP types (ROT, RLRT, BROT, BOT, BOOT, BLO, BOO).

Research by Mazher et al (2022) found all identified actions were important, distributed across the project life cycle and demonstrated a multi-organizational focus. Researchers Luo et al (2022) found that the analysis results showed that attitudes towards behavior, subjective norms, perceived risk and perceived behavioral control were four significant driving factors for public participation in PPPs projects, while perceived benefits had limited impact. Research by Jiang et al (2022) found that Findings reveal that the industry does not have a systematic list of operational risk factors, while the impact of risks is rarely considered when allocating operational risk factors, and moreover that research on the selection and efficacy of operational risk management strategies is still underdeveloped.

Rasheed's (2022) research found that This study found that the focus of research on PPPs has shifted from an overall risk identification and assessment approach to individual risk analysis. Research by Cruz et al (2022) found that PPPs and critical challenges for advancing the energy transition and sustainable development. The contribution of this research can help policy makers to design appropriate tools to incorporate hybrid PPPs in climate change policies and institutional frameworks.

## **Methods**

The research method to obtain a conceptual framework for studies for successful PPPs is through the systematic literature review (SLR) method.

This literature review regarding PPPs was carried out using SLR method. Based on Kitchenham's (2004) framework, which includes six sub-sections. The six sub-sections are (i) scope, (ii) research questions, (iii) search process, (iv) inclusion and exclusion criteria; (v) data extraction; and (vi) analysis of the results.

The scope of this SLR focuses on the PPPs theme, especially those related to financing electrical energy projects. The research question is what is the research framework for PPPs models in electrical energy projects.

The search process uses the keys: public private partnerships (PPPs), electric power projects, to search for articles. These keywords are then used by a number of managers/publishers or academic search engines for international journals, namely Google Scholar ([scholar.google.co.id](http://scholar.google.co.id)), Emerald Publishing Limited ([www.emerald.com](http://www.emerald.com)) and Elsevier ([www.journals.elsevier.com](http://www.journals.elsevier.com)), JSTOR ([www.jstor.org](http://www.jstor.org)). Springer (<https://link.springer.com/>) Tanfonline (<https://www.tandfonline.com/>), Sciencedirect (<http://sciencedirect.com/>), Wiley (<https://onlinelibrary.wiley.com/>), and Sagepub (<https://journals.sagepub.com/>),

The criteria for selecting journal articles are: (i) Score is SJR Score, (ii) Q1 ranking, (iii) Publication year 2022. (iv) Publication type: journals, conference & proceedings. (v) Search string: public private partnerships (PPPs), electric power projects. (vi) Inclusion criteria: Studies on PPPs, financing of electrical energy projects, financing management. (vii) Exclusion criteria: Not financial accounting management studies, and studies that are not in English.

## **Data Collection**

There are 300 journal that been retrieved from Publish Perish about infrastructure project. Out of 300 papers, theres is only 55 papers that dscussed about electrical energy and only 10 papers focused on PPP.

Data collection resulted in 10 journals that met the criteria. Data extraction or characteristics of these journals are summarized in Table 1.

Table 1. Selected Journal Articles Reviewed

Author	Year of Publication	Quartile Ranking	Theme	Research Sites	Publisher
Cao et al	2022	Q1	PPPs	China	<i>Sustainability</i> , vol. 14 (8205), pp. 1–19.
Cruz et al	2022	Q1	PPPs	Finland	<i>Sustainable Development</i> , vol. 30, pp. 1370-1386.
Jayasena et al	2022	Q1	PPPs	China	<i>Sustainability</i> , vol. 14 (6421), pp. 1–25.
Jiang et al	2022	Q1	PPPs	The globe	<i>Buildings</i> , vol 12 (1905), pp. 1-19
Luo et al	2022	Q1	PPPs	China	<i>International Journal of Environmental Research and Public Health</i> , vol. 19 (5192), pp. 1-20.
Mazher et al	2022	Q1	PPPs	Developing countries	<i>Sustainability</i> , vol. 14 (14149), pp. 1–19.
Othman & Khallaf	2022	Q1	PPPs	The globe	<i>Buildings</i> , vol 12 (1511), pp. 1-34
Rasheed	2022	Q1	PPPs	The globe	<i>Buildings</i> , vol 12 (1109), pp. 1-19
Zhang	2022	Q1	PPPs	China	<i>Journal of Public Policy</i> , vol. 35, pp. 329-354.
Zhou et al	2022	Q1	PPPs	China	<i>Sustainability</i> , vol. 14 (14149), pp. 1–19.

## Result and Discussion

### Research Gap and State of the Art

Based on the results of the literature review, it is known that the ten selected journals have the same theme, namely regarding public private partnerships (PPPs). The ten journals are Jayasena et al (2022); Cao et al (2022); Zhou et al (2022); Uthman & Khallaf (2022); Zhang (2022); Mazher et al (2022); Luo et al (2022); Jiang et al (2022); Rasheed (2022); and Cruz et al (2022). These ten journals have something in common, namely that they both research PPPs in electricity or energy projects or public construction in general.

The difference in research between them is regarding research sub-themes. For example, PPP research with the ERM subtheme was conducted by Mazher et al (2022). PPP research with sub-themes benefits, barriers was conducted by Jayasena et al (2022) and Othman & Khallaf (2022). There are other PPP studies that review previous PPP research such as the research of Rasheed (2022) and Jiang et al (2022). A more detailed study of sub-schemes regarding PPP was carried out by Zhang (2022). PPP research with analysis techniques using Theory Planned Behavior (TPB) is research by Luo et al (2022). Research on hybrid schemes in PPP was conducted by Cruz et al (2022). PPP research from a risk analysis perspective was carried out by Cao et al (2022). PPP research with the sub-theme of government credit using the wuli-shli and renly system theory was carried out by Zhou et al (2022).

Referring to previous research, it is interesting to examine what has been researched by Jayasena et al (2022) and Othman & Khallaf (2022) regarding the sub-theme of benefits,

barriers. If we compare the research of Jayasena et al (2022) and Othman & Khallaf (2022), the research of Jayasena et al (2022) is more complete, because there is a recommended strategy. However, the strategy recommended in Jayasena et al (2022) was obtained through a quantitative approach with the PLS-SEM method.

There are several research gaps in previous research. Jayasena et al.'s research (2022) has not added the implication variable of the Success of Public-Private Partnerships (PPPs) variable. This research fills this gap by adding implication variables caused by the PPPs variable. In this case, the implication variable Sustainable Development Goals (SDGs) is the implication of the PPP variable. The addition of SDGs implication variables is the first state of the art (SOTA) proposed research.

The second SOTA concerns the formulation of strategies to make PPPs a success. Previous studies did not specifically formulate strategies for the success of PPPs. Considering that strategy recommendations are more commonly based on the results of a qualitative approach, the author considers that there is a research gap that researchers using a qualitative approach will fill when preparing strategy recommendations, using the SWOT method. This means that if Jayasena et al (2022) in their research only used PLSEM, then the research would also use PLS-SEM, but added SWOT analysis when compiling and recommending strategies for the success of PPPs. The SWOT method used is Magnitude, Importance and Total Rating (M.I.R) from Ferrell & Hartline (2017).

Another research gap is regarding research locations where none of the 10 previous studies chose Indonesia as a research location. This research was conducted in Finland (Cruz et al, 2022), China (Cao et al, 2020; Jayasena et al, 2022; Luo et al, 2022; Zhang, 2022; and Zhou et al, 2022), developing countries (Mazher et al, 2022). al, 2022), and the globe (Jiang et al, 2022; Othman & Khallaf, 2022; and Rasheed, 2022).

Research that refers to the research of Jayasena et al (2022) with the addition of the implication variables of PPPs, namely SDGs, and the addition of strategy formulation to increase the success of PPPs is important to carry out. If this research is successfully carried out, it will produce input for the development of management science, especially regarding financing in PPP schemes. More specifically, this theoretical benefit mainly concerns the partial and simultaneous influence of Construct for Benefits and Enablers, Construct for Barriers, and Recommended and Enhancing factors on the Success of PPPs, as well as the implications of the Success of PPPs on Sustainable Financing. Another theoretical benefit is regarding how to model the formulation of PPPs strategies through SWOT analysis using the Magnitude, Importance, and Total Rating (M.I.R) method (Ferrel & Hartline, 2016).

Empirically, the benefits of this research for stakeholders are as follows: (1) The results of this research will be input for regulators in preparing PPPs schemes to be more successful in implementing electricity infrastructure projects in Indonesia (2) The results of this research can be input for investors who want to participate in the PPPs scheme in electricity infrastructure projects in Indonesia. (3) For future researchers, the results of this study can be compared with any of the previous studies.

### Mixed-Methods Approach

Starting from the SOTA above, this research framework uses a mix-methods approach. According to Creswell & Creswell (2018: 300) there are three core mixed-method designs, namely convergent design (as a one-phase design), explanatory sequential design (as a two-phase design), and exploratory sequential design (as a three-phase design). This proposed research uses an explanatory sequential design (as a two-phase design).

Figure 1. Explanatory Sequential Design



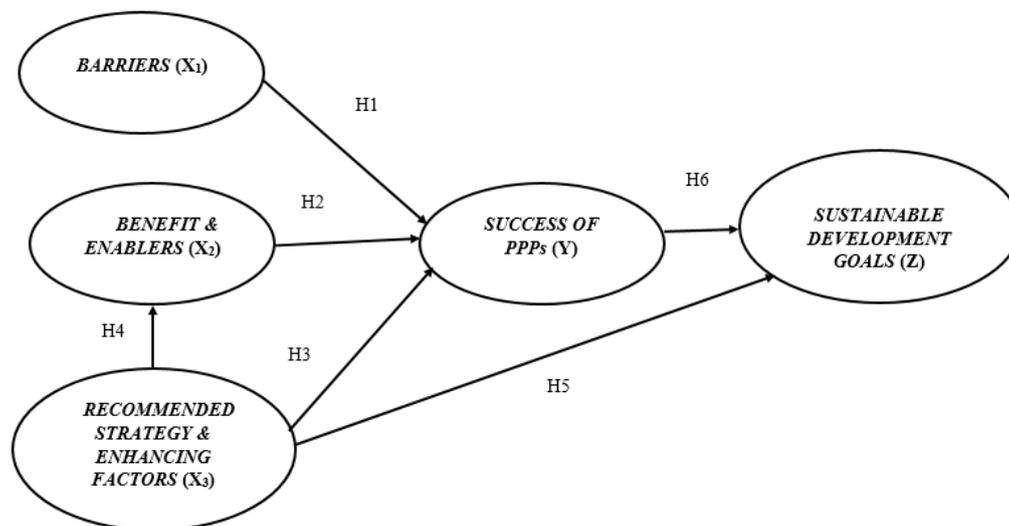
Source: Creswell & Crewsell (2018: 300)

Through the combination method of explanatory sequential design, this means that there are two phases in this research. The first phase begins with carrying out quantitative research, by collecting and analyzing quantitative data. Based on the results of quantitative research, the research results will be followed up in the next research approach using a qualitative research approach. In the second stage of research, qualitative data collection and analysis techniques were carried out. Based on the results of qualitative research, the results obtained show how the results of qualitative research explain the results of quantitative research (Creswell & Creswell, 2018: 300).

### The Proposed Quantitative Approach

In the first stage, quantitative research, causal studies are used, namely a study method based on the concept of cause. More specifically, the characteristic of causal studies in this research is asymmetrical relationship, which means changes in the independent variables can change other variables or the dependent variable, but not in the opposite direction (Cooper & Schindler, 2014: 138). This research examines the influence of three independent variables, namely Barriers (X1), Benefits & Enablers (X2), and Recommended Strategy & Enhancing Factors (X3) on the dependent variable (Success of Public-Private Partnerships) (Y), and the implications of Success of Public Private Partnership (Y) towards Sustainable Development Goals (Z).

Figure 2. Conceptual Framework



Source: Modification of the model Jayasena et al, (2022)

The research hypothesis is as follows:

- H-1: Barriers negatively and significantly influence the Success of Public-Private Partnerships (PPPs).
- H-2: Benefits & Enablers positively and significantly influence the Success of Public-Private Partnerships (PPPs).
- H-3: Recommended Strategies and Enhancing Factors positively and significantly influence the Success of Public-Private Partnerships (PPPs).
- H-4: Recommended Strategies and Enhancing Factors positively and significantly influences Benefits & Enablers in infrastructure projects electricity.
- H-5: Recommended Strategies and Enhancing Factors positively and significantly influences the Sustainable Development Goals.
- H-6: The success of Public-Private Partnerships (PPPs) has positive and significant implications for Sustainable Development Goals.

The operationalization of four of the five research variables, namely Barriers (X1), Benefits & Enablers (X2), and Recommended Strategy & Enhancing Factors (X3), and Success of Public-Private Partnerships (Y) refers to Jayasena et al (2022). Meanwhile, for the operationalization of the Sustainable Development Goals (Z) variable, it refers to the UN (2015) (Ameli et al, 2023) which uses 17 SDGs indicators. The operationalization of these variables is attached to this journal article.

This quantitative approach data collection technique uses survey techniques, namely the technique of distributing questionnaires. The research instrument for this survey is a questionnaire. Questionnaires (questionare) via personal and non-personal channels (such as

via online channels) must be filled out by respondents (Cooper & Schindler, 2014: 664). Meanwhile, the secondary data collection technique in this study uses the study desk method, namely literature study through available materials using printed materials (books, journals, documents, news, etc.) as well as digital materials via the internet medium (Sugiyono, 2013) .

This research uses descriptive analysis techniques and structural equation modeling (SEM)-partial least squares (PLS) analysis (Hair et al., 2014). SEM-PLS evaluation includes evaluation of the outer model, inner model, and hypothesis testing (Widarjono, 2015).

### **The Proposed Quantitative Approach**

The qualitative approach uses strengths, weaknesses, opportunities and threats (SWOT) analysis techniques. The SWOT analysis technique is intended to answer the second research question. The SWOT analysis in this research uses the magnitude, importance, and total rating (MIR) model from Ferrell and Hartline (2014). Magnitude refers to each element influencing an organization or a group. Importance (I) refers to the rating of how important the element is. Meanwhile the total rating (R) is the product of M and I. The analysis begins by determining the magnitude for each element in the SWOT matrix, using a scale of 1 (low magnitude), 2 (medium magnitude), and 3 (high magnitude) which applies to strength. and opportunities. Meanwhile, for weaknesses and threats, negative scores are used, namely -1 (low magnitude), -2 (medium magnitude), and -3 (high magnitude). Next, give an importance score (I) for all matrix elements, using a scale of 1 (weak importance), 2 (average importance), and 3 (major importance).

After that, multiply each magnitude score (M) by each importance score (I); so that a total rating or total rating (R) is obtained for each element. The ranking or strategy priority is determined by the R value. Table 2 shows the SWOT analysis of the MIR model.

Table 2. SWOT Analysis Matrix M.I.R Model

Strengths	M	I	R
(element 1)	3	3	9
(element 2)	2	1	2
Etc			
Weaknesses	M	I	R
(element 1)	-2	3	-6
(element 2)	-3	3	-9
Etc			
Opportunities	M	I	R
(element 1)	2	2	4
(element 2)	3	1	3
Etc			
Threats	M	I	R
(element 1)	-3	2	=6
(element 2)	-1	2	-2
Etc			

Source: Ferrell & Hartline (2014).

Note: SWOT = strengths, weaknesses, opportunities, threats; MIR = magnitude, importance, total rating.

Indicators that have the highest R value will be used as part of the strategy formulation to increase the success of PPPs. The strategy consists of four variations, namely the S-O strategy (using strengths to obtain opportunities), the S-T strategy (using strengths to avoid threats), the W-O strategy (strengthening weaknesses in an effort to obtain opportunities), and the W-T strategy (strengthening weaknesses while avoiding threats) (Ferrel and Hartline, 2014).

### **Conclusion**

This research produces a framework for use in research. The research theme is Public Private Partnerships (PPPs). We have found 10 Q1 journal articles specifically for 2022 about PPPs. One of the articles, namely Jayasena et al (2022) was used as a reference in the research framework. State of the Art (SOTA) research is to include a new variable, namely Sustainable Development Goals (SDGs), as an implication of the Success PPPs variable. Another SOTA, this research adds strategy development to increase the success of PPPs through SWOT analysis using the magnitude, importance and total rating (M.I.R) method.

The theoretical implications of this research are as input for strengthening theories related to PPPs. Meanwhile, the practical implication is that stakeholders in PPPs can consider the variables that influence the success of PPPs. Research limitation is the preparation of a research conceptual framework that is based more on the systematic literature review (SLR) method. Future research to obtain a better research conceptual framework should be structured not only on the basis of the SLR method, but also based on empirical methods.

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# The Healing Effect of Travelling Experience on College Student's Pressure Reduction

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## **Abstract**

College students face multiple pressures stemming from academics, interpersonal relationships, future employment, financial pressures, and other sources of stress that may have a negative impact on their physical and mental health. To examine the healing effect of travelling experience on college student's pressure reduction through sense of well-being, the research framework was obtained through literature reading. But there are limitations to this article. This paper only studies the college student group; the sample range is limited; the follow-up can broaden the scope of the study; this paper only begins with stress, but the health dimensions are diverse, and diversified research from the perspective of general health can be conducted in the future; this paper begins with the Oriental cultural background, and the differences between different cultural backgrounds can be considered later. Providing new perspectives for travel agents and destinations to developing and marketing tourism products. Building out the experimental theoretical framework to test the healing effect of travelling experience; expanding the time scale of the healing effects of tourism from both then and now time perspectives.

**Keywords:** happiness, rural tourism, sense of well-being; stress reduction; travel experience

## **Introduction**

Goal 3 of the SDGs is to ensure healthy lifestyles and promote the well-being of people of all ages. According to the World Economic Forum(2022), the pandemic has made people more concerned about their health.

According to the WHO constitution, "health is a complete state of physical, mental, and social well-being, not merely the absence of disease or infirmity." This definition implies that mental health is more than just the absence of mental disorders or disabilities. Mental health is an integral and necessary component of overall health.

According to Harvard Public Health (2023), 2023 is the year of mental health and well-being. According to the White Paper on the Mental Health of China's Urban Residents (2018), the current survey on the mental health status of China's urban residents shows that 73.6% of

China's people are in a state of mental sub-health, 16.1% of people have varying degrees of psychological problems, and only 10.3% of people are mentally healthy, indicating that China's urban citizens' psychological state is pessimistic.

According to Barbayannis (2022), the psychological well-being of college students has become a significant issue due to the increasing demands of the academic and social environment, with college academic stress and mental health strongly related. Given the increasing levels of stress among this population, it is critical to employ novel approaches to effectively address this issue.

Individuals have an increasing strong desire for tourism experiences in the social context of the coordinated development of material and spiritual civilisation, as well as the prevalence of people's physical and mental health problems, expecting to use tourism as an opportunity to enrich the spiritual home through the stage-by-stage change of lifestyle, and to promote the alleviation of physical and mental stress and the realisation of the healing function (Levi, Dolev, Collins-Kreiner, & Zilcha-Mano, 2018).

According to the Chinese Consumer 2023 report, people require time to heal their minds, reconnect with the outside world, and regain confidence in their lives. In 2023, their desire for healing could be a growth driver. Domestic travel has returned to the top of consumers' life goals for 2023, according to research.

According to WHO(2021), continued urbanisation is expected to result in cities becoming disease transmission epicentres. According to People's Daily(2022), rural tourism in China has seen a significant increase in the proportion of young people born between 1990 and 2000 in its tourist group, with the number of post-2000s travellers increasing 17 percent year on year. According to data from the online Chinese travel agency LY.com (2021), weekend mini-vacations in the countryside have become an important choice for urban residents in provincial-level regions such as Beijing, Shanghai, Jiangsu, Zhejiang, and Guangdong.

### **Literature Review**

In the field of tourism and well-being research, the relationship between tourism and well-being is a hot topic. Wellness tourism is associated with important aspects of life (such as health) and has a significant impact on human, social, and economic well-being (Kazakov & Oyner, 2021). The distinction between tourism and daily life is no longer merely temporal and spatial; tourism has evolved into a one-of-a-kind medium for individuals to discover the beauty of the present moment, feel the value of life, complete self-transformation, and realise the benefits of healing (Pung, Gnoth, & Del Chiappa, 2020). The profound impact and long-term significance of travel on individuals has become an important factor that the academic community should investigate.

### **Sense of Well-being**

Tourism can have a very positive impact on individuals(Filep ,2013), the contrast between tourism activities and everyday life makes people happy (Pearce ,2011). Tourist happiness can increase tourists' willingness to return (Kim ,2015), contribute to the formation of word-of-mouth effects in tourist destinations and increase tourist loyalty (Su et al.,2016).Scholars studied sense of well-being in different contexts. However, previous studies mainly focused on the hedonism of sense of well-being ,and borrowed the definition of sense of well-being

from other fields, there was a lack of definition and scientific measurement of tourist happiness (Tuo, 2020).

In this regard, scholars have begun to abandon the happiness measurement tools of psychology and other fields and have started to adopt scientific research methods based on the systematic theories of tourism to accurately grasp and define the connotation of tourists' happiness, and explore and construct a real sense of what constitutes tourists' happiness model (Zhang et al., 2020; Tuo et al., 2020; Smith & Diekmann, 2017; Zhang et al., 2014). Furthermore, Lyu et al. (2018) suggest that there are different temporal effects and different levels of influence on the well-being of tourists, Du et al. (2020) explored the temporal dynamics and spatial characteristics of tourists' well-being before and after travelling to Tibet.

As a result, tourism destination managers are also aware of the implications of traveller well-being and are using it as a development strategy to enhance economic benefits and social well-being (Pyke, 2016). Combined with the research of these scholars, this paper selects "happiness" and "meaning" as the constituent dimensions of college students' happiness.

### **Stress Reduction**

Tourism experience has a healing function based on the concepts of travel therapy, prescribing tourism, and tourism non-pharmaceutical intervention, which emphasise tourism experience as a complementary and alternative therapy. (The restorative benefits and healing function of tourism experience are based on the concepts of travel therapy, prescribing tourism, and tourism non-pharmaceutical intervention, which emphasize tourism experience as a complementary and alternative therapy for individuals with varying degrees of physical and mental problems (Hunter-Jones, 2005). The healing function of tourism experience is reflected not only in specific forms of tourism, but also in the overall healing value of general tourism activities and tourism in the physical, psychological, and social aspects.

It has been shown that restorative environments can reduce our stress levels, leading to a healthy balance of body, mind and spirit, in addition to providing a pleasurable and satisfying consumer experience that enhances personal well-being (Backman et al., 2023). Pollution and traffic can make it dangerous for many city dwellers to exercise and travel (Tainio et al., 2021). For example, walking in forested areas produces a short-term physiological and psychological relaxation effect on young people living in urban areas, according to the study. Participants felt more comfortable, natural, relaxed, less anxious, and showed higher levels of positive emotions and lower levels of negative emotions (Joung et al., 2020). The countryside provides a wealth of sensory stimuli with its rich and diverse natural and cultural resources, (Kastenholz & Marques & Carneiro, 2020) and is an ideal location for unique multisensory tourism experiences (Agapito & Mendes & Pinto & et al., 2016) that influence tourists' positive emotions, local sentiments, and consumption behaviour (Kastenholz & Marques & Carneiro, 2020; Meacci & Liberatore, 2018).

Scholars are increasingly interested in studying college students' stress and the relationship between stress and mental health. Yao used meta-analysis to demonstrate that exposure to nature reduces stress and, as a result, improves health (Yao et al., 2020). Huang carried out a randomized controlled trial to test the effect of various vegetation in the natural environment on stress reduction (Huang et al., 2019). College stress questionnaires and scales

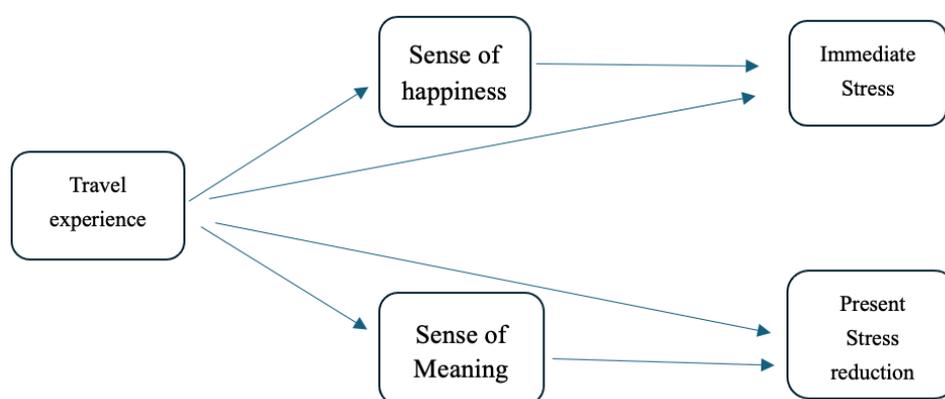
are essential tools for assessing college stress. There are a variety of college stress questionnaires and scales available. The following are the most used stress questionnaires and scales: The "Daily Disturbance Scale for College Students" was developed by Blankstein et al. (1991), and Dobson et al. The "College Student Stress Questionnaire" developed by Dobson and Metcalfe (1983) and the "Uncontrollable Negative Life Events Questionnaire" developed by Ge et al. (1994). The above scales are mainly from Western scholars. Although there are commonalities between Chinese university students and those in many Western countries, the pressure faced by Chinese university students and many Western countries, the pressure faced by Chinese university students should also have its own special characteristics. So, Li Hong & Mei Jinrong (2002) compiled Stress Test Scale for Chinese College Students. The stress test scale required for this study will be formed based on the above scale.

### Recollection of Tourism

Memory of tourism experience refers to the tourism experience that can be positively remembered by the traveller after the tourism activity (Kim, 2014). Scholars have proposed that the essence of unforgettable tourism experience is to combine tourism experience and memory, and emphasise the influence of presence and memory of tourism experience. Tung and Ritchie (2011) pointed out that the memory of tourism experience actually refers to the stored "tourism stories", including the typical sequences of storytelling, such as time, place, and events. Coelho et al. (2018) suggest that memories of tourism experiences depend on at least two factors: a specific spatio-temporal tourism experience, and the process of generating memories related to the experience.

Although the importance of tourism experience memory is becoming more and more obvious, there are few studies on tourism experience memory, because it is an emerging research topic. Xu Chunxiao and Cheng Jin (2017) argued that tourism experience memory is the tourism experience that creates a flash memory that is different from the general event, Ma Jianyu (2015) proposed that experience design needs to be implanted in memory to make it unforgettable. Kim et al. (2021) proposed that the recollection of travel experiences is a determinant of tourists' future behaviour and decision-making in choosing destinations and developed the Travel Memory Characteristics Scale (TMCS).

Figure 1. Framework



## Methods

Experiment 1: examines the healing effect and mechanism of action of recalling past travelling experiences on college students' stress reduction. On this basis, a control group was set up, in which only daily conversations were held with the college students, to compare the healing effect of reminiscence therapy with daily conversations, a commonly used psychological intervention in nursing. On the one hand, we compare the therapeutic effect of reminiscence therapy with daily conversation, which is a common psychological intervention in the nursing field, to ensure the rationality of the therapeutic means. On the other hand, we excluded the possible influence of the guiding style of the conversation during the recall process on the results of the experiment.

Therefore, a one-way between-groups experimental design was used for Experiment 1 (intervention: general chatting vs. travelling memories). The initial levels of each variable were measured by a pre-test questionnaire before the intervention, including the college students' sense of happiness, sense of meaning, reduction of stress at that time, and reduction of stress at present. Afterwards, the intervention will be implemented at an interval of 1 day.

In the chatting group, there was no fixed topic for chatting, discussing the recent life status of the college students, their daily pastime (watching movies, shopping et al.) and other topics, without recalling tourism behaviours. The other contents were consistent with those of the recalling group. In the reminiscence group, college students were guided to recall and recount a memorable travelling experience through chatting. The duration of the intervention was about 25 minutes.

To ensure the effectiveness of the intervention, a maintenance programme will be conducted. To ensure the effectiveness of the intervention and to maintain the consistency between the groups, the contents of the chatting and reminiscing were all positive themes and did not involve the sad and sensitive experiences of the college student. The content of the chat and reminiscence will be positive and will not involve any sad or sensitive experiences or daily events of the college students. At the end of the intervention, a post-test questionnaire will be conducted and the levels of each variable will be measured again.

The questionnaire contained 4 items for measuring sense of happiness, 3 items for measuring sense of meaning. All items were rated on a 5-point scale (1=very non-conforming, 5=very conforming). The stress scale was based on a 4-point scale (0 = no stress; 1 = mild stress).

Table 1. Questionnaire Measurement Items

Variables	Items	References
Sense of happiness	1.This experience has amused me 2.The experience was enjoyable 3.I feel relaxed by this experience 4.This experience has been enjoyable	Chang(2020)
Sense of meaning	1.This experience taught me a lot 2.I never regret the time and money I spent on this experience. 3.It made my life worth living	Tuo et al.(2020)
Present stress reduction	1.Learning pressure 2.Personal Disturbance 3.Negative Life Events	Li Hong &Mei Jinrong (2002)

Experiment 2: A unique healing mechanism for recalling past rural tourism experiences. In Experiment 2, a one-way between-groups experimental design will be used (recall: urban travel experiences vs. rural travel experiences) to test whether rural travel experiences have a better healing effect on college students' stress reduction than urban travel experiences, and to further clarify the mechanism of different travel experiences on stress reduction.

This will further clarify the mechanism of different travelling experiences on stress reduction and enhance the robustness of the findings of Experiment 1. The experiment will be conducted in the form of chatting and guiding college students to recall their travelling experiences. For the healing purpose of the experiment, all the memories will be positive experiences. In the urban travel experience group, the college students will be guided to recall a city travel experience that they felt good about in their past memories, with no fixed theme. The rural travel experience group college students will be guided to recall a memorable rural tourism travel experience. The duration of the interventions will be about 25 minutes, and the questionnaire will be completed at the end of the intervention. At the end of the intervention, a questionnaire will be filled out. The questionnaires will be the same way in Experiment 1.

### **Limitations and Suggestions for Future Research**

This article focuses on the healing function of travel from the perspective of college students, and follow-up studies from other groups could be conducted; this article focuses on the effects of stress reduction, and follow-up studies from the perspective of general health could be conducted to study the effects of other health aspects. This article focuses on Chinese college students from the Eastern culture, and future research can consider a comparative study of the Eastern and Western cultures.

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## **The Implication of ChiNext on Main Board Stock Market**

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### **Abstract**

This study presents a Autoregressive Distributed Lag (ARDL) approach to ascertain the implication of ChiNext stock on main board stock market. The empirical data cover 12 years period, from 2010 to 2021, in daily basis. ARDL method is used in this study to estimate the short run and long run relationship between ChiNext stock index and main board stock index. The main board stock index is the dependent variable and ChiNext stock index and volume transaction as the independent variables. Among other, correlation analysis, Augmented Dickey unit root test, cointegration test, error correction model (ECM) and Long-run Equation test are carried out in this study. Long run results show that have negative relationship between ChiNext stock index and Main Board Stock Market Index. This paper uses ChiNext index and ChiNext trading volume to make two models for analysis. Recommendations for future research are to use more other stock index to analysis and to include other factors that may affect Main board Stock Price in China.

**Keywords:** *cross-cultural adjustment, expatriates, Guanxi, job performance, MNCs.*

### **Introduction**

There are various stock exchanges around the world, but only approximately 50 stock exchanges are active (Long, 2014). They are roughly classified as: well-developed markets, such as NASDAQ America, New York Stock Exchange, London Stock Exchange, Singapore Stock Exchange; and developing markets, including Shanghai and Shenzhen Stock Exchanges in China, Brazil Stock Exchange, National Stock Exchange of India, Moscow Exchange in Russia (Claessens & Schmukler, 2007). Caglio et al. (2011) argue that some developed markets are losing their leading role, but some developing markets are growing into global listing venues. The Chinese market is one of the fast-growing markets (Padmanabhan, Sinha, Venkataraman, Ravi, & Joshi, 2015). With many years of consecutive economy growth, since 2010 China has become the second largest economy community in terms of GDP in the world (Long, 2014). Meanwhile, China's stock market has become considerably active in aspects of both issuing amount and share number since then.

China's stock market is divided into the main board and the Growth Enterprise Market, the main board of China by the Shanghai Stock Exchange and the Shenzhen Stock Exchange. On December 1, 1990, Shenzhen Stock Exchange opened on a trial basis. The Shanghai Stock Exchange was established on November 26, 1990, and officially opened on December 29, 1990.

China's Growth Enterprise Market (GEM or ChiNext) was launched on October 23, 2009. On October 30, 2009, China's Growth Enterprise Market was officially listed. On August 24, 2020, the first batch of enterprises registered on ChiNext were listed.

Compared with the main board market, the listing requirements of the Growth Enterprise Market are often more relaxed, mainly reflected in the requirements of establishment time, capital scale, medium- and long-term performance, etc. Companies listed on the ChiNext market have high growth potential, but they are usually established for a short time and have a small scale, and their performance is not outstanding, but they have a great room for growth. It can be said that the ChiNext is a stock market with low threshold and high risk and strict supervision, and it is also a cradle for incubating entrepreneurial small and medium-sized enterprises.

By 1990s, majority of developed stock markets have their second listing venue. Like second boards in other markets, the China ChiNext Board aims to provide a platform where smaller companies with growth potentials which cannot fulfill the full listing requirement of the Main board of the China stock market, can obtain financing through public offerings. A typical example of GEM is the NASDAQ in the US whose original composition was mainly high-tech companies and pharmaceutical companies that had a need for external financing but that was not fulfilling the entire requirement to be listed in the Main board, NYSE. One question arising from the introduction of GEM in China is whether it is established at the expense of the Main board. Because of the lucrative potential of an alternative high growth market, China investors might divert their funds and attention from the Main board to the ChiNext board. Trading activity in the Main board might thus diminish and the market quality in the Main board might also be undermined. In the literature, the potential trade-off between having GEM for high growth firms and second-rate market with poor quality stocks and low standard of listing requirements is still understudied especially in emerging markets. Unlike that of NASDAQ and NYSE which have different market designs, the China ChiNext board and the Main board essentially share a same trading mechanism. Both boards in China are organized as pure order-driven markets. All orders are submitted through a computerized system and are matched with price-time precedence.

To that the type of firms listed, and investors participated in China ChiNext board and the Main board could be vastly different for three reasons below. Firstly, firms listed in the Main board must satisfy a series of more strict requirements to go public and hence are relatively less risky. However, the listing requirements of China ChiNext board are less stringent. Secondly, the China Securities Regulatory Commission (CSRC) requires the ChiNext board open only to investors who have at least two years of trading experience before they can trade ChiNext stocks. The third difference, albeit implicit, is the industry coverage in each of the board. Firms listed in the Main board cover most industries in China. However, the ChiNext board, like the NASDAQ, covers only a fraction of industry codes and this is especially so at the outset of the establishment of ChiNext Board.

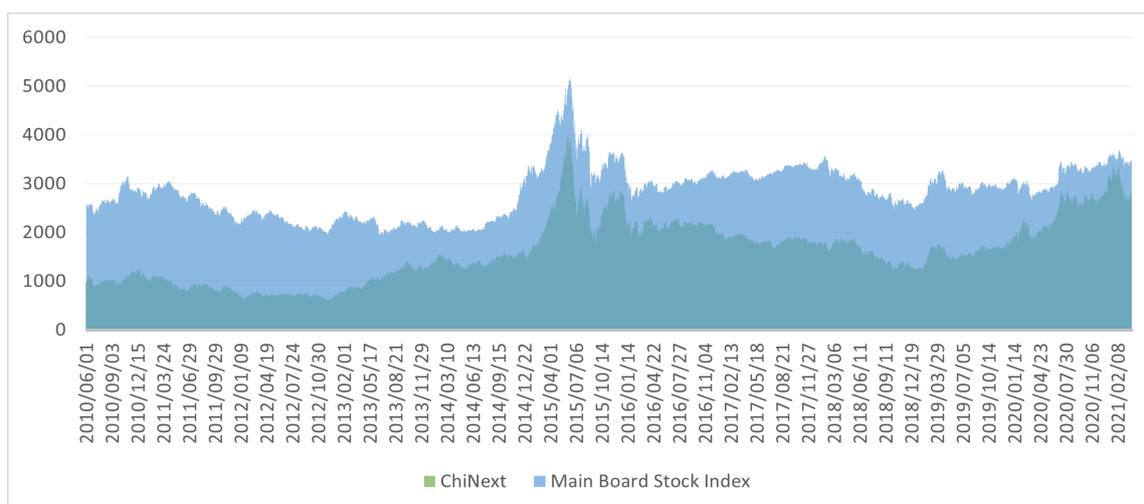
The fluctuations in the economy could plausibly affect both markets. An important but unexplored question is whether Main Board returns leads the ChiNext board in the happenstance of macroeconomic fluctuations because Main Board encompasses wider industry scope, or whether the ChiNext board's returns lead the Main board's returns because of its

coverage of specific industries and strong vulnerability to fluctuations, and hence a quicker responsiveness to the whole economy (Cheung & Liu, 2014). (Chan, 1992) analyzes the lead-lag relationship between the cash market and stock index futures market and concludes that the futures market is the main source of market-wide information.

The Growth Enterprise Market of China is essential to address the long-standing financing difficulties for the Chinese Small and Medium-sized Enterprises, which are unqualified to raise capital from the Primary Stock Market. ChiNext was to provide emerging companies with a capital formation platform and as an alternative market to the Main Board.

The following two figures show the Shanghai Securities Composite Index (SSCI) and ChiNext market index from 2010 to 2021. Chinese main board index measured by the Shanghai Securities Composite Index (SSCI) and code is 000001. ChiNext index measured by Growth Enterprise Index (GEI), and code is 399006. From Figure 1, we can see that the overall trend of the ChiNext and Main Board indexes in daily is roughly consistent. From Figure 2, we can see except for 2016, the trend of the main board market index and the ChiNext market index is consistent in other years.

Figure 2. Daily Data



Source: <http://www.sse.com.cn/> & <http://www.szse.cn/>

Note: ChiNext Index daily and Mainboard Index daily from 2010 to 2021.

The GEM and the main board index seem to influence each other from Figure 1. Sometimes, the GEM takes the lead to reflect the market trend and the performance is more violent than the main board, especially when there is a big pull up and a big drop. But their trends have not always been exactly the same, especially during China's bull market of 2014-2015, when the main board index rose earlier than the ChiNext index. Thus, the model is Main Board Stock index =  $f(\text{ChiNext}, \text{Main Board Volume Transaction})$ .

Figure 3. Yearly Data

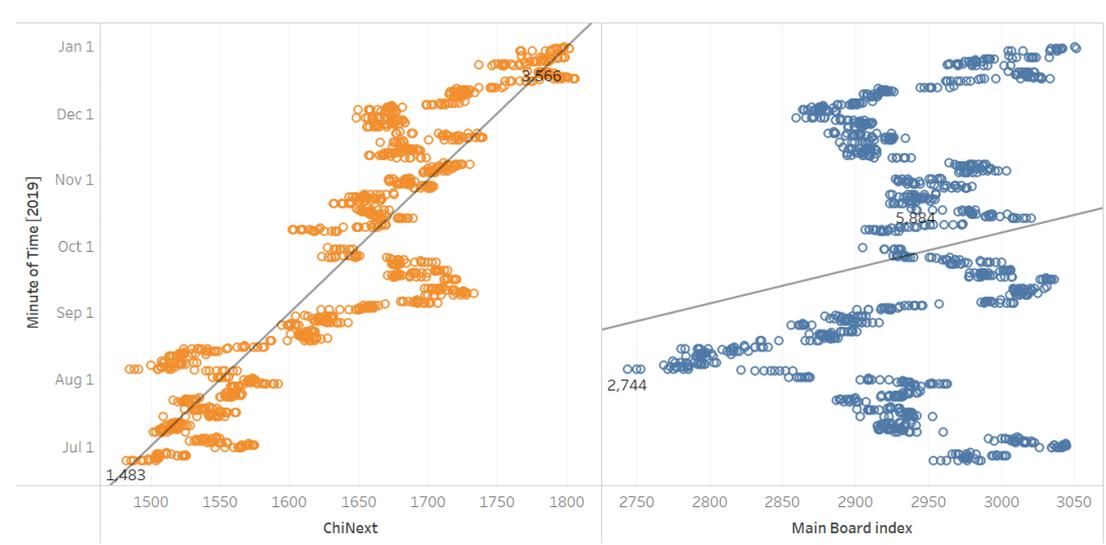


Source: <http://www.sse.com.cn/> & <http://www.szse.cn/>

Note: ChiNext Index yearly and Mainboard Index yearly from 2010 to 2021.

The Figure 3 shows a 30-minute chart of the GEM and the main board in 2019. The chart shows a 30-minute chart of the GEM and the main board in 2019. The two lines are the trend lines of the GEM and the main board respectively. The lowest point of the main board is more than 1.85 times of the GEM index, in which the lowest point of the GEM in 2019 is 1483 and the lowest point of the main board is 2744. The highest point, the main board is about 1.5 times that of the GEM, in which the highest point of the main board is 3566 and the highest point of the GEM is 5884. From the trend line and the gap between the highest and lowest points of the two stock markets we can also see that the GEM volatility is more obvious than the main board.

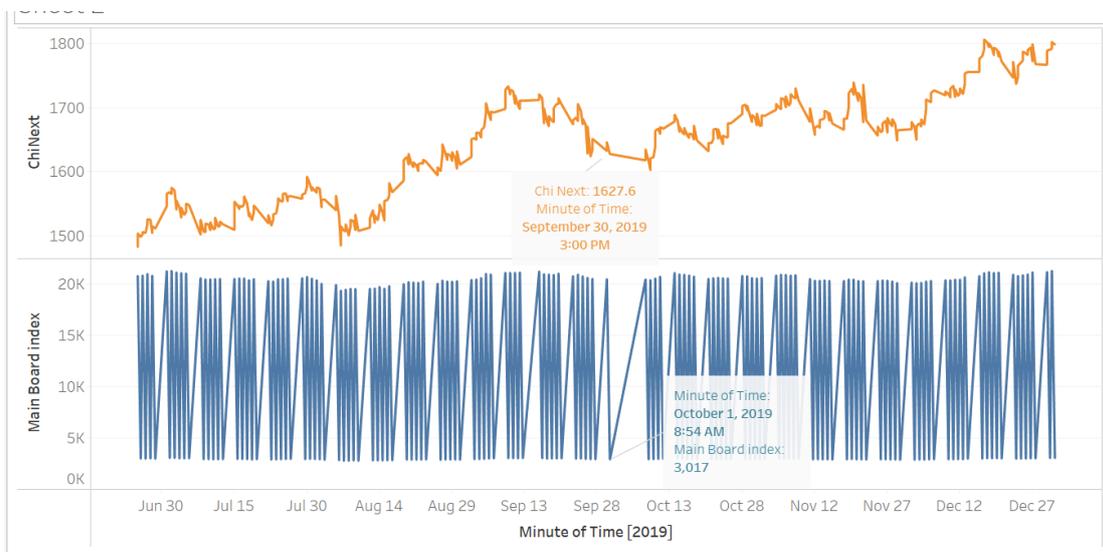
Figure 4. 30-min Data in 2019



Source: <http://www.sse.com.cn/> & <http://www.szse.cn/>

Note: ChiNext Index 30-min and Mainboard stock Index 30-min in 2019.

Figure 5. Minute Data in 2019



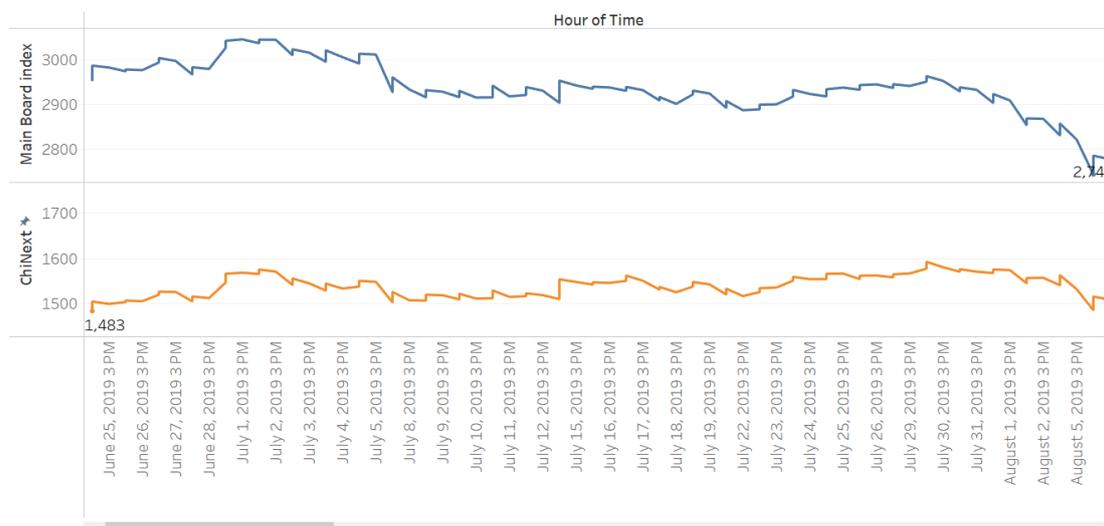
Source: <http://www.sse.com.cn/> & <http://www.szse.cn/>

Note: ChiNext Index 30-min and Mainboard stock Index 30-min from 30, Jun, 2019 to 27 Dec, 2019.

As can be seen from Figure 4, at 3 o’ clock in the afternoon of September 1, 2019, the GEM did not fall to the lowest point, but was still in the downward trend, while the main board market had already fallen to the lowest point at this moment. We can assume that the GEM downward trend accelerated the decline of the main board, so the main board quickly fell to the lowest point.

Figure 5 shows a short-term chart of the GEM and the main board from June 25 to August 5, 2019. In the short term, the indexes of the two markets seem to have roughly similar trends and seem to interact.

Figure 6. 30-min Data from 25, Jun 2019 to 5, Aug 2019



Source: <http://www.sse.com.cn/> & <http://www.szse.cn/>

Note: ChiNext Index 30-min and Mainboard stock Index 30-min from 25, Jun 2019 to 5, Aug 2019.

Therefore, whether there is a relationship between the two, what kind of relationship it is, who influences who first, and who has more influence, is the focus of this paper.

Although the ChiNext may reflect the trend of the stock market in advance, the ChiNext's decline during a bear market may exacerbate the decline of the main board market.

There are also some articles that have studied the relationship between China's main board market and GEM. For example, (Chao et al., 2013) study on the Spillover Effect of Main Board and GEM Stock Market. This paper discusses the spillover effect regarding return and liquidity caused between Main Board and Growth Enterprise Market at the beginning stage and the maturity stage respectively. (Wang & Liao, 2009) study on the Impact of the Second Board on the Main Board: Evidence and Enlightenment from Hongkong Stock Market and Shenzhen Small-and-medium Enterprise Board Market. The paper studies the relationship between the main-board market and the second-board market by using the data of Hongkong stock market. The studies reveal that there exist unidirectional spillover effect of volatility and liquidity between the two markets above which means that the second board market has not intensified the volatility of the main-board market and also has not significantly attracted the capital of the main-board market.

### **Problem Statement**

While ChiNext may serve as an early indicator of stock market trends, its decline during a bear market might amplify the downturn of the main board market. There are many factors that affect stock prices on the main board market. This study mainly studies the implication of ChiNext stock price on the main board market, so as to explore whether there is a relationship between the ChiNext and the main board market.

The objective of this study is analysing the impact of ChiNext stock prices on the main board market and the relationship between ChiNext and Chines main board market.

### **Scope of Study**

Because ChiNext (Growth Enterprises Market or Second-board Market) started in 2009, however, China Main-Board Market started in 1990. So, this study will analyze both market data from 2010 to 2021. The scope country is only China. The main market data will be based on the closing price of the Shanghai Securities Composite Index (SSE), and the GEM Index will be based on the closing price of the GEM Index.

### **Significance of the Study**

This study holds substantial importance in advancing both theoretical and practical perspectives. Theoretically, it contributes to our comprehension of the dynamic relationship between ChiNext and the main board market in China, unraveling their intricacies, collaborative potential, and strategies for conflict resolution. The findings provide theoretical insights into market development, complementarity, and regulatory considerations. On the practical front, the study furnishes actionable guidance for policymakers, market regulators, and industry stakeholders. It addresses tangible challenges like competition for listing,

management of capital flows, and influences on investor decision-making. By presenting practical solutions, the study equips decision-makers with valuable tools for navigating the complexities of ChiNext and the main board market.

### **Literature Review**

This study relies primarily on the On Balance Volume (OBV) theory and Behavioral Finance theory. Introduced by Joseph Granville in 1963, OBV theory posits that changes in market prices must be accompanied by corresponding changes in trading volume. The theory emphasizes the close connection between share price fluctuations and the expansion or contraction of turnover. If the price rises or falls without a corresponding increase or decrease in turnover, sustaining the change in market price becomes challenging. Notably, significant changes in volume, independent of substantial price shifts, can precede a subsequent “spring” in price, either upward or downward. Trading volume serves as a direct indicator of market activity and reflects the dynamic interplay between supply and demand in the market’s operational process. Without volume, market prices remain unchanged, and share price trends are absent. Therefore, fluctuations in volume signify specific share price trends.

Behavioral Finance theory, emerging in the 1980s, has had a profound impact on the capital asset pricing model and the efficient market hypothesis. This theory explores the decision-making behavior of traders based on the psychological activities of capital market participants and information asymmetry. According to Behavioral Finance theory, investor behaviors that affect psychology indirectly influence stock prices. As a theory successfully challenging traditional financial paradigms, Behavioral Finance provides a rational explanation for industry anomalies. By studying traders' decision-making behavior through the lens of psychological activities and information asymmetry, Behavioral Finance theory reveals that fluctuations in the Growth Enterprise Market (GEM) can impact investor psychology and, consequently, have an indirect effect on Main Board stock prices.

### **ChiNext Stock Price on Main Board Stock Price**

Several studies suggest that ChiNext has a negative effect on the Main Board Stock Market. According to Yue (2001), the launch of the Growth Enterprise Market (GEM) forms a competitive situation for the main board market. It not only competes for potential high-quality listing resources but also diverts investment funds from the secondary market of the main board. Liao et al. (2014) used the Lotka-Volterra model to quantitatively analyze the competition relationship between GEM and the main board in terms of trading volume. The research found that the GEM market “preys” on the trading volume of the main boards.

However, there are also studies that observe a positive effect of ChiNext on the Main Board Stock Market. Mei (2001) suggests that when some stocks are hotly speculated in the GEM, similar industries or related concept stocks on the main board will also be sought. Therefore, the GEM will bring incremental capital to the main board market. Another perspective is presented by Cheung and Liu (2013), who argue that the types of firms listed and investors participating in the China GEM board and the Main board are different. The GEM board does not prey on main board stock capital due to requirements set by the China Securities Regulatory Commission (CSRC), limiting GEM board access to investors with at least two years of trading experience. Additionally, the Main Board encompasses a wider industry scope

and exhibits stronger vulnerability to fluctuations, leading to quicker responsiveness to the entire economy.

Contrarily, Xia and Wen (2010) reveal that ChiNext has no effect on the Main Board Stock Market. They argue that although there is a long-term co-integration relationship between the GEM market and the main board market, the main board market is the Granger cause of the GEM fluctuations. In other words, the fluctuations of the main board market will affect the GEM fluctuations. However, ChiNext has no impact on the main board market. The small number of listed enterprises on the GEM and the much smaller total market value of enterprises on the GEM compared to the main board market suggest that the GEM index has little influence on the main board market index (Wang et al., 2010).

### **Main Board Stock Volume Transaction on Main Board Stock Price**

Some studies suggest a positive relationship between stock volume transactions and stock prices. For instance, Saatcioglu and Starks (1998) found a positive relation between volume and both the magnitude of price change and price change itself in their investigation of Latin American markets, without strong evidence of a causality relation. In another study, Smirlock and Starks (1988) explored the lagged relation between price changes and volume, using individual stock transactions data. They documented a strong positive lagged relation between volume and absolute price changes. Our paper employs Granger causality tests to examine the empirical relationship between absolute stock price changes and trading volume in the stock market. The results reveal a significant causal relationship between absolute price changes and volume at the firm level, with this relationship being stronger in periods surrounding earnings announcements. This suggests that information arrival follows a sequential rather than a simultaneous process, although the results do not support an extreme version of either information arrival model.

Moosa and Loughani (1995) tested the price-volume relation using data from four emerging Asian stock markets: Malaysia, the Philippines, Singapore, and Thailand. They found evidence for causality from volume to absolute price changes and from price changes per se to volume. Some evidence was also found for bidirectional causality. Another finding was that the relation is contemporaneous, lagged, positive, and sensitive to institutional, organizational, and structural factors. Nonlinear specifications did not seem to be superior to linear causality models. Ying (1966) studied the relationship between the daily closing price of the S&P 500 common stock index and the daily trading volume of the New York Stock Exchange (NYSE). He found that a large quantity increase is usually accompanied by a large price change, a large quantity increase is usually accompanied by a price increase, and a small quantity decrease is usually accompanied by a price decrease.

Several studies have indicated a negative impact of stock volume on main board stock prices. Initially, early research utilizing spectral analysis on weekly index data, as well as daily and transaction-level individual stock data, found little correlation between prices and volume, suggesting that price changes follow a random walk (Godfrey & Morgenstern, 1964). Additionally, Assogbavi and Osagie (2006) found that the absence of a direct positive relation between volume and price change is attributed to the lack of asymmetry in transaction costs. The limited evidence of the well-documented positive absolute price-volume relation suggests

that variations in institutions and information flows in emerging markets significantly impact the valuation process of equity securities. Karpoff (1987) proposed that the dissemination of information in financial markets might influence the price-volume relationship. In cases where most investors receive information late in the queue, the widely observed positive correlation can only manifest with a certain lag, and it may not be evident when examining volume and price changes on the same date.

Lee, (2002) investigates the dynamic relationships, including causal links and the direction and magnitude of dynamic effects, between trading volume and returns (as well as volatility) in both domestic and cross-country stock markets. The analysis is based on daily data from the three largest stock markets: New York, Tokyo, and London. Key findings include: firstly, trading volume does not Granger-cause stock market returns in any of the three markets. Secondly, there is a positive feedback relationship between trading volume and return volatility across all three markets. Thirdly, in terms of cross-country relationships, U.S. financial market variables, particularly U.S. trading volume, exhibit significant predictive power for UK and Japanese financial market variables. Lastly, sub-sample analyses reveal stronger spillover effects post the 1987 market crash and an increased significance of trading volume as an information variable following the introduction of options in the U.S. and Japan (Lee, 2002).

Li (2007) pioneered the use of the asymmetric GARCH-M model to explore the relationship between volume and price in China's stock market. Findings suggest that short-term price fluctuations are primarily explained by transactions, with expected trading volume significantly influencing market volatility. This contrasts with mature markets like the United States, as China's stock market fluctuations involve various factors beyond volume. The study introduces the impact of lagging return shocks, noting a post-1997 trend where negative returns have a more substantial effect on market volatility, reflecting the leverage effect.

## **Methods**

This study presents an analysis of the implication of ChiNext on main board stock market. Although the ChiNext may reflect the trend of the stock market in advance, the ChiNext's decline during a bear market may exacerbate the decline of the main board market. ARDL method is used in this study to estimate the short run and long run relationship between ChiNext stock index and main board stock index. In model 1, the main board stock index is the dependent variable and ChiNext stock index and main board volume transaction as the independent variables. In model 2, the main board stock index is the dependent variable and ChiNext volume transaction and main board volume transaction as the independent variables. Among other, correlation analysis, Augmented Dickey unit root test, cointegration test, error correction model (ECM) and Long-run Equation test are carried out in this study. The period of this study is from June 1, 2010, to April 2, 2021. The data scope country is only China.

Based on the theory of On Balance Volume which holds that the change of market price must be coordinated by the volume of trading, and the fluctuation of stock price is closely related to the increase or decrease of trading volume. Volume is relatively heavy in bull markets and light in bear markets, and it takes volume to make prices move are relevant for emerging stock markets. Combined with empirical literature, the model to be estimated in this study can be expressed as:

$$P_M = f(V_M) \tag{1}$$

Where  $P_M$  stands for Main Board Stock Price in China,  $V_M$  stands Main Board Volume Transaction.

Based on the literature and hypotheses about the impact of GEM on the main board market, the above model can be augmented to include ChiNext:

$$P_{M,t} = f(\text{ChiNext}, V_{M,t}) \tag{2}$$

Where ChiNext stands the stock prices or volume transaction on the second board market.

The above equation further expanded to examine the effect of ChiNext on Main Board Stock Price.

$$\text{Model 1: } P_{M,t} = a_0 + a_1 \text{ChiNext}P_t + a_2 V_{M,t} + \varepsilon \tag{3}$$

$$\text{Model 2: } P_{M,t} = a_0 + a_1 \text{ChiNext}V_t + a_2 V_{M,t} + \varepsilon \tag{4}$$

Where:  $a_0$  = Y intercept;  $a_1$  = slope of  $P_{M,t}$  with variable  $\text{ChiNext}P_t$  or  $\text{ChiNext}V_t$ , holding  $V_{M,t}$  constant;  $a_2$  = slope of  $P_{M,t}$  with variable  $V_{M,t}$ , holding  $\text{ChiNext}P_t$  constant;  $\varepsilon$  = random error in  $P_{M,t}$  for observation t. Where  $P_{M,t}$  stands for Main Board Market stock price at time t.  $\text{ChiNext}P_t$  represent the Second Board Market Stock Price at time t.  $V_{M,t}$  stands Main Board Volume Transaction at time t. And  $\text{ChiNext}V_t$  represents stands ChiNext volume transaction at time t.

In order to unify the measurement and facilitate calculation and analysis, this study will take the logarithm of all the data and then analyze it. logarithm may help to offer better insight about each impact, as well as value judgement for each impact without comparing. So, the above equation will transform to:

$$\text{Model 1: } \log P_{M,t} = a_0 + a_1 \log \text{ChiNext}P_t + a_2 \log V_{M,t} + \varepsilon \tag{5}$$

$$\text{Model 2: } \log P_{M,t} = a_0 + a_1 \log \text{ChiNext}V_t + a_2 \log V_{M,t} + \varepsilon \tag{6}$$

Measurement of ChiNext is the Growth Enterprise Index (GEI) and code is 399006, Measurement of main board stock price is the Shanghai Securities Composite Index (SSCI) and code is 000001. And the Main board Volume Transaction measured by the daily cumulative number of shares traded of volume.

Since there is a strong correlation between the GEM index and the main board index, and the fluctuation trend is sometimes similar, this study hypothesizes that the ChiNext stock price significantly on the Main Board stock price. From Figure 1.1, we also can see that the overall trend of the ChiNext and Main Board indexes in daily is roughly consistent.

## Findings

The descriptive analysis results are shown in following Table 1. As showed in Table 1, the summary of the common statistics contains the means, minimum, maximum and standard deviation values of each series after transforming into the logarithmic form. Over the past 10

years, mean of Main board stock index logarithm was 7.934 per day, with a peak at 8.55 and a low of 7.576. The mean of ChiNext volume transaction logarithm was 16.884, with a peak at 19.624 and the minimum at 13.814 from 2010 to 2021. The mean of logarithm volume transaction of Main board stock market was 18.88, with a peak at 20.57 and a low of 17.5 in the past 10 years. The mean of ChiNext index logarithm was 7.305, with a peak at 8.29 and the minimum at 7.58 from 2010 to 2021.

The index difference between the main board and ChiNext is small except standard deviation, less than 1. The trading volume difference between the two cities is not big, but it is greater than the index difference.

Table 2. Descriptive

	$\log P_{M,t}$	$\log \text{ChiNext} P_t$	$\log \text{ChiNext} V_t$	$\log V_{M,t}$
Mean	7.934	7.305	16.884	18.876
Median	7.969	7.354	17.278	18.854
Maximum	8.550	8.290	19.624	20.569
Minimum	7.576	6.386	13.814	17.495
Std. Dev.	0.186	0.421	1.267	0.588

Table 2 displays the results of correlation matrix which show the pairwise correlations between all variables (dependent and independent). From the table, the variables are correlated and unlikely there is an issue of serious multicollinearity in model 1, as all correlation coefficients ( $\log P_M$ ,  $\log V_M$ ,  $\log \text{ChiNext} P$ ) are not more than 80%. The data must not show multicollinearity, which occurs when you have two or more independent variables that are highly correlated with each other. When significant multicollinearity is present, it becomes difficult to isolate the effect of one independent variable on the dependent variable, the signs of coefficients may be the opposite of what they should be, making it difficult to interpret regression coefficients, and p-values can be inflated.

There is not serious multicollinearity issue in model 2 too, as  $\log \text{ChiNext} V$  and  $\log V_M$  correlation coefficients are more than 80%. ChiNext stock index is likely to affect Main Board index positively and ChiNext stock volume transaction affect Main Board volume transaction positively too.

Table 3. Correlation Analysis

	$\log V_{M,t}$	$\log P_{M,t}$	$\log \text{ChiNext} P_t$	$\log \text{ChiNext} V_t$
$\log V_{M,t}$	1.00			
$\log P_{M,t}$	0.757	1.00		
$\log \text{ChiNext} P_t$	0.774	0.773	1.00	
$\log \text{ChiNext} V_t$	0.662	0.519	0.795	1.00

Table 3 present the result of unit root test. For model 1,  $PM = f(\text{ChiNext}, V_M)$ , except  $V_M$ , all variables are stationary at order of 1,  $V_M$  is stationary at level. Since all variables is stationary at order 1 or below, then ARDL is suitable for model 1. For model 2,  $PM = f(V_C, V_M)$ ,  $V_C$  and  $V_M$  is stationary at level. Since all variables is stationary at order 1 or below, then ARDL is suitable for model 2.

Table 4. Unit Root Test

	Level		1 <sup>st</sup> Difference	
	C	C&T	C	C&T
$\log P_{M,t}$	-1.6995	-2.192	-49.456***	-49.449***
$\log \text{ChiNext}P_t$	-0.998	-1.899	-48.254***	-48.248***
$\log V_{M,t}$	-3.645***	-4.439***	-26.062***	-26.057***
$\log \text{ChiNext}V_t$	-1.984	-5.169***	-26.062***	-26.062***

Note: Three asterisks (\*\*\*) denotes statistically significance.

The Cointegration Test results are shown in following Table 4. From the table 4, the model 1 passed the cointegration test at 5%, so there is a short run impact among the variables. From the result, the model 2 passed the cointegration test at 1%, this model is valid.

Table 5: Cointegration test

	F-stat	Upper bound critical value		
		10%	5%	1%
MODEL 1:	4.561	10%	5%	1%
ARDL (1, 2, 2)	I (0)	2.63	3.1	4.13
	I (1)	3.35	3.87	5
MODEL 2:	8.784	10%	5%	1%
ARDL (1, 1, 0)	I (0)	2.63	3.1	4.13
	I (1)	3.35	3.87	5

Table 5 and Table 6 present the results of the Error Correction Model. From table 5, the adjusted R<sup>2</sup> is 0.567 which shows the 56.7% of variation in Y explained by all X variables adjusted for the number of X variables used in the model 1.

Table 6. Error Correction Model 1

Model 1: $\log P_{M,t} = a_1 + a_2 \log \text{ChiNext}P_t + a_3 \log V_{M,t} + \varepsilon$			
Adjusted-R <sup>2</sup>	0.567	S.E. of regression	0.0089

It can be seen from table 6, the adjusted R<sup>2</sup> is 0.0449 which shows which shows the 4.49% of variation in Y explained by all X variables adjusted for the number of X variables used in the model 2.

Table 7. Error Correction Model 2

Model 2: $\log P_{M,t} = a_1 + a_2 \log \text{ChiNext}V_t + a_3 \log V_{M,t} + \varepsilon$			
Adjusted-R <sup>2</sup>	0.0449	S.E. of regression	0.0132

Table 7 and Table 8 presents the results of Long-run Equation Model. From Table 7, Model 1 can be represented as follows:

$$\log P_{M,t} = -0.08 \log \text{ChiNext}P_t + 0.435 \log V_{M,t} + 0.285 \quad (7)$$

ChiNext unlikely to exert any effect on Main board market. From the Error Correction Regression and this Long-run Equation Model, ChiNext index has negative effect on Main Board Market index in the short run. On the other hand, results show if volume transaction in the Main Board Market increase by 1%, the Main Board Market Index will increase by 0.435%. This finding is consistent with the theory the rise in stock price is necessarily accompanied by an increase in trading volume.

Table 8. Long-run Equation Model 1

	Model 1	P-Value
Constant	0.2851[0.163]	0.8709
$\log\text{ChiNext}P_t$	-0.0799[-0.585]	0.6277
$\log V_{M,t}$	0.4353[0.141]***	0.0021

Based Table 8, Model 2 can be represented as follows:

$$\log P_{M,t} = -0.035\log\text{ChiNext}V_t + 0.389\log V_{M,t} + 1.21 \quad (8)$$

From Table 7, ChiNext volume transaction unlikely to exert any effect on Main board market. From the Error Correction Regression, ChiNext volume transaction has negative effect on Main Board Market index, in short term. On the other hand, results show if volume transaction in the Main Board Market increase by 1%, the Main Board Market Index will increase by 0.389%. This finding is consistent with the theory the rise in stock price is necessarily accompanied by an increase in trading volume.

Table 9. Long-run Equation Model 2

	Model 2	P-Value
Constant	1.2066[1.351]	0.1767
$\log\text{ChiNext}V_t$	-0.0354[-1.389]	0.1649
$\log V_{M,t}$	0.3886[6.433]***	0.0000

The reason why ChiNext unlikely to exert any effect on Main board market maybe the ChiNext is small compared with main board. The reason why GEM has a small negative impact on the main board market index in the short term is that GEM's reaction is faster and more intense, so it will accelerate the decline of the main board in the short term.

### Discussion and Conclusion

For correlation analysis, the variables are correlated and unlikely there is an issue of serious multicollinearity all correlation coefficients are not more than 80%. For Unit root test, all variables are stationary at order 1 or below, so ARDL is suitable for model 1 and model 2. For error correction test, model 1 adjusted R<sup>2</sup> is 0.567 which shows the model 1 is correlated and the data fits the sample regression line. Model 2 adjusted R<sup>2</sup> is just 0.0449 which shows the model 2 is a little correlated. From long-run equation model, it shows ChiNext index has negative effect on Main Board Market index. Every 1% rise in the ChiNext index will cause The Main Board index to fall 0.08%. And every 1% rise in ChiNext volume transaction will cause Main board index to fall by 0.035%. On the other hand, results show if volume transaction in the Main Board Market increase by 1%, the Main Board Market Index will increase by 0.389%. This finding is consistent with the theory the rise in stock price is necessarily accompanied by an increase in trading volume.

For investors, the Growth Enterprise Market should target investors who can objectively and comprehensively assess the operating conditions of listed companies and the risks involved. Retail investors who lack proper understanding of high-risk companies or are mainly led by rumours and chase rise and fall should not be encouraged to participate in the market. Therefore,

government should vigorously cultivate institutional investors in GEM, such as pension funds, insurance funds, venture capital companies, etc., to make institutional investors become the backbone of the GEM market. When the GEM market is mainly run by institutional investors who are familiar with investment skills, the speculative nature of the market will be greatly reduced, and the risks will be greatly reduced.

For listed companies, there should be more listings of high-tech growth companies that belong to the physical category, and these companies must have real products manufactured and have a market. Doing so reduces risk by preventing large bubbles in the stock market.

For government, it is very important to coordinate the structure and development of both markets, to propel market-oriented reform process of Chinese security market furthermore, because in the long run, the ChiNext will not prey on the capital of the main board market. It is encouraged to develop the ChiNext and build a multi-level capital market. And this paper also puts up some suggestion on the risk aversion of both Main-Board stock market and the ChiNext stock market.

### **Limitation of Study**

In this study, only the Shanghai Composite Index was used to represent the main board market, which is not sufficient. More other indexes should be used to represent the main board market, such as the Shanghai and Shenzhen 300 Index. Moreover, some representative listed companies should be selected from the ChiNext and the main board for supplementary analysis. Finally, this paper only studies the implication of ChiNext index, ChiNext trading volume and main board trading volume on the main board index, so it is suggested to add more factors.

### **Suggestion for Future Research**

It is suggested to use some other index to represent main board stock and add more variables in public in future studies to better explore the relationship between the GEM and Main Board market. It also suggested to use some representative company's stock to carry on the additional analysis and more in-depth, the specific discussion.

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