

The Role of Cross-cultural Leadership and Leader-member Exchange in Enhancing Organizational Performance in the Era of Big Data and AI Integration: A Study of Chinese Companies' Investments in South Korea

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Citation: Gao, P. (2024). The Role of Cross-cultural Leadership and Leader-member Exchange in Enhancing Organizational Performance in the Era of Big Data and AI Integration: A Study of Chinese Companies' Investments in South Korea. *Journal of Information Systems Engineering and Management*, 9(2), 24617. <https://doi.org/10.55267/iadt.07.14675>

ARTICLE INFO

Received: 02 Feb 2024

Accepted: 19 Apr 2024

ABSTRACT

In the rapidly changing big data and artificial intelligence integration landscape, this study examines how leader-member interactions and cross-cultural leadership affect organizational performance in Chinese enterprises investing in South Korea. A deductive study interviewed and polled Chinese company employees in South Korea, but the lack of cross-cultural comparison analysis and response bias may limit generalizability. These leadership styles address critical issues like data security, big data use, and information system integration, according to the paper. Overall, 552 Chinese businesspeople in South Korea across industries participated in the statistical analysis. The findings demonstrate how cross-cultural leadership promotes teamwork in diverse teams. Leader-member interactions affect job satisfaction and performance. As Chinese companies expand into South Korea and adapt to a new economy and culture, the study recommends leader-member exchange and cross-cultural leadership. The study emphasises leadership and connections for Chinese companies seeking cross-cultural success. Bias and cross-cultural analysis should be considered in future research on emerging technology and cultural diversity. These recommendations aim to refine and expand research in this dynamic subject to help Chinese companies navigate South Korean business amid technological advances.

Keywords: Information System Integration, Cross-Cultural Leadership, LMX, Organizational Performance, Big Data, AI Integration, Data Security Measures.

INTRODUCTION

China's growing corporate investments in South Korea indicate economic change and regional cooperation. Leader-member communication and cross-cultural leadership are needed to optimize organizational performance and foster synergistic partnerships with big data analytics, AI integration, and strict data security protocols. As technology advances and companies accumulate sales, purchase, and customer data, references and publications on big data analysis have started to emerge (Azevedo & Reis, 2019). According to this comprehensive study, the digital revolution and the future of global enterprise operations depend on big data analytics, AI integration, information system harmonization, and data security (S. Wang & Fränti, 2022). Chinese companies must have cross-cultural skills because they invest heavily in South Korea. Employee interactions and leadership are essential for operational success and strategic manoeuvring in a business environment where big data analytics

and cutting-edge AI technologies are essential for competitive advantage and sustained growth (Dalla Valle & Kenett, 2018). Learning these factors' complex cross-cultural interactions helps companies succeed in diverse environments. This study examines employee interactions, leadership styles, and the integration of transformative technologies like big data and AI to understand their profound impact on organizational performance. To advise international investment firms across cultures, we study these factors. It addresses international investment leader-member exchange and cross-cultural leadership research gaps. This study shows how these concepts are essential to organizational success in diverse cultural environments through rigorous analytical and empirical research. This research fills knowledge gaps to improve complex international business cross-cultural organizational strategies. This research illuminates complex employee interactions, leadership dynamics, and technology integration, enriching scholarly discourse and advising cross-cultural practitioners and decision-makers. We study leadership, big data, AI, and employee interactions. These tips help companies invest abroad and communicate across cultures. Performance, cross-cultural collaboration, and global business growth are improved by research (Abbes & Gargouri, 2016).

Leader-Member Exchange (LMX) and cross-cultural leadership affect multicultural team dynamics, study finds. Leadership in multicultural teams requires cultural awareness and behavior. Research shows that leader-member relationships and organizational success in diverse settings require cross-cultural competence. By understanding LMX and cross-cultural leadership, leaders can create inclusive environments, foster trust and cooperation among team members from different cultures, and improve team performance and organizational outcomes (Fan, Yan, Ma, & Wang, 2018). Lead-member exchange affects worker-manager relationships and job satisfaction and output. Instead, leader-member exchange examines employee-manager relationships, which affect job satisfaction and productivity. AI and big data-driven Chinese South Korean investments are tricky. China's investments in South Korea, big data integration, and AI's transformative effects are less discussed than leader-member exchange and cross-cultural leadership (Cho, Lee, & Shin, 2020). Chinese investor-South Korean enterprise relations offer unique opportunities and challenges that Western studies ignore. Fill this research gap by understanding cross-cultural complexities. In a fast-changing global business landscape, Chinese investments in South Korea may reveal cross-cultural collaborations. Global business dynamics are shown by Chinese investor-South Korean enterprise interactions. A thorough analysis can reveal Chinese and South Korean investors' negotiation strategies, cultural differences, and adaptation needs. These interactions teach scholars intercultural cooperation. Research aids business and academic discourse. Similar cross-cultural companies can overcome challenges and seize opportunities by understanding Chinese investor-South Korean enterprise relations. This study may help business leaders communicate across cultures, improving international collaborations and stakeholder benefits (Zhou, Fu, & Yang, 2016).

In big data and AI, Chinese investments in South Korea present unique international leadership and leader-member communications challenges and opportunities. Mechanisms are hard to understand in this complex technological and cultural setting. Cultural leadership and leader-member communication affect corporate performance in Chinese investor-South Korean enterprise relations but are overlooked. This study will examine AI and big data's moderating effects on organizational outcomes to close this gap. These dynamics advance cross-cultural leadership research and practice (Mouhib Alnoukari, 2019). Beyond AI and big data, cross-cultural leadership works. International business culture is essential, but these tools can improve cross-cultural communication and decision-making. The study's holistic approach to leadership dynamics in Chinese investments in South Korea, including technology and culture, affects Chinese businesses. The research shows how employee interactions and leadership styles affect organizational performance and cross-cultural collaboration, helping businesses succeed in this complex environment. We examine cross-cultural leadership and communication strategies, particularly Chinese investments in South Korea. Understanding technological and cultural factors improves business and international collaboration.

The paper ends with an extensive study agenda on cross-cultural leadership and leader-member communication in Chinese investments in South Korea. This interdisciplinary study improves digital age organizational performance and cross-cultural engagement with academic and practical knowledge (Lim, Kim, & Huh, 2023). Effective cross-cultural leadership requires knowledge of international corporate culture and technology. Global business leaders must be culturally competent to collaborate. Respecting cultural differences helps leaders build trust, reduce misunderstandings, and improve team communication. Leadership, communication, and decision-making can be tailored to international stakeholders' cultures by culturally intelligent leaders. Cross-cultural leaders must manage cultural differences while using technology to improve efficiency and connectivity.

The comprehensive study shows how leader-member interchange dynamics, big data use, AI integration, and cross-cultural leadership affect organizational performance in Chinese companies' South Korean engagements (Yousif & Zakaria, 2022). Trust and support in leadership improve job satisfaction and organizational

performance. Cross-cultural leadership and organizational performance are intricately mediated by AI integration and big data use, emphasizing the importance of cutting-edge technology in optimizing initiatives. AI integration efficiency moderates the relationship between technological infrastructure and the organization's ability to use big data for actionable insights, emphasizing AI's role in data-driven decision-making (Roh, Heo, & Whang, 2021).

This study says, Chinese investments in South Korea are dynamic. The introduction emphasizes AI, big data, leader-member exchange, and cross-cultural leadership. The study preparation literature review covers international business research and frameworks. Methodology details data collection, survey design, and analysis for rigor and transparency. To assess organizational performance, empirical research examines these factors' complex relationships. Empirical findings illuminate cross-cultural corporate operations implications and practicality. Synthesising these elements explains the research's goals, approach, conclusions, and implications for academic institutions and global business. This systematic approach presents Chinese investments in South Korea and offers academic and practical advice for cross-cultural businesspeople.

LITERATURE REVIEW

This extensive literature review looks at the complex relationships between big data use, security of data protocols, leader-member exchange (LMX), organizational performance metrics, cross-cultural leadership dynamics, and the fundamental technological infrastructure in the constantly shifting company scenery. In an increasingly connected global economy, these factors affect strategic choices and company results, influencing cross-border company performance. Literary works examine cross-cultural business environments, particularly Chinese investments in South Korea. The literature review synthesizes diverse perspectives to help practitioners and scholars understand technology integration and cross-cultural management's challenges and opportunities (Kumar & Bawa, 2012; Ristevski & Chen, 2018; Nadal, Romero, Abelló, Vassiliadis, & Vansummeren, 2019).

Organizational Performance and Technology Infrastructure

Operations and performance depend on software, hardware, and networks. Research consistently links technology infrastructure quality to organizational effectiveness. A strong technological foundation streamlines task execution, improves employee communication and collaboration, and helps the company adapt to market and technology changes. Outside of internal operations, technology infrastructure affects revenue, customer satisfaction, and goals. A strong IT infrastructure streamlines processes, innovates products and services, and provides excellent customer service in today's dynamic business environment, fostering sustainable growth and competitive advantage. Technology improves company performance by improving agility, efficiency, and strategic innovation (van Gils, van Quaquebeke, & van Knippenberg, 2010).

Infrastructure Technology and AI Integration Effectiveness

AI integration into business processes and systems is crucial as firms adopt AI technologies. Strong technology infrastructure aids AI integration. According to (Piccolo, Bardes, Mayer, & Judge, 2008; Lee & Perret, 2022) the combination of AI solutions recovers operational efficiency and decision-making procedures, which tries and leads to healthier organizational performance.

Integration of Information Systems and Technological Framework

Business success depends on information system integration. A solid tech infrastructure is essential. Research shows good technology infrastructure improves information system integration. Strong technology helps organizations coordinate disparate information systems, improving data flow, communication, and efficiency. With advanced technology infrastructure, companies can simplify integration and ensure platform interoperability. Resource optimization, redundancy reduction, and decision-making help businesses. Integration of information systems helps companies adapt to market changes and seize opportunities. A strong technological infrastructure improves information system integration, helping modern firms maximize data assets and grow sustainably in a competitive business environment (Qu, Janssen & Shi, 2017; Shinozaki et al., 2015)

Technological Framework and Application of Big Data

Businesses face huge opportunities and challenges with big data. For actionable insights, big data needs a strong technology infrastructure to collect, store, process, and use. Good infrastructure improves performance and decision-making by managing data and providing insights. Unlocking big data's potential with advanced technology helps data-driven businesses innovate and compete (Glikson & Woolley, 2020; Allam & Dhunny, 2019).

Cross-cultural Leadership and Organizational Performance

Global business requires multicultural leadership. Successful cross-cultural leadership increases profits and customer satisfaction. Effective cross-cultural leadership promotes inclusivity, manages cultural differences, and builds trust across cultures. Leadership can promote cross-cultural collaboration, innovation, and synergy to boost organizational success in today's interconnected and diverse business environment (L. Chen, P. Chen, & Lin, 2020).

Performance of the Organization and Leader-Member Exchange (LMX)

Organizational subordinate-manager relationships are Leader-Member Exchange. LMX boosts company performance. They empower and value employees through trust, cooperation, and support. Employees are happier and more productive. LMX relationships improve workplace culture and success by fostering teamwork, communication, and collaboration (Gerstner & Day, 1997; Allam & Dhunny, 2019)

Measures of Organizational Performance and Data Security

Modern businesses generate and use massive amounts of data, making security crucial. Access controls and data protection protocols improve organizational performance. Avoiding data breaches and unauthorized access reduces data loss and builds stakeholder and customer trust. Data security shows an organization's privacy commitment, boosting credibility. Data security investments protect assets and build trust in data-driven businesses (Chen et al., 2020; Das, Rahman, Li, & Tan, 2020)

Efficiency of AI Integration as a Moderator

Businesses must maximize technology infrastructure use, including AI integration, in the digital age. A company's technology infrastructure, big data collection, storage, processing, and actionability depend on AI integration efficiency. Technology infrastructure benefits from AI's automation, data pattern recognition, and real-time insights. AI integration boosts operations and decision-making, improving performance. Effective AI integration impacts revenue and satisfaction. AI-driven insights can optimize resource allocation, identify market trends, and personalize customer experiences, increasing revenue and loyalty. In today's dynamic business environment, seamless AI technology integration into an organization's technology infrastructure maximizes big data's potential, innovation, and competitive advantage. AI improves digital business survival and performance (Ojo & Adebayo, 2017; F. Tawalbeh, Muheidat, F., M. Tawalbeh, & Quwaider, 2020).

Integration of Information Systems as a Mediating

Information system integration improves multicultural workplace leadership. Leaders navigate cultural differences using timely and relevant integrated information systems in diverse settings. Data is protected by centralizing IIS controls and monitoring. Integration of information system data and insights helps leaders make decisions and adapt to diverse cultural perspectives. Centralized integrated information systems improve multicultural team communication and coordination (J. Wang, Zheng, Lv, Bao, & Zhang, 2019). Access, encryption, and monitoring centralization improve integrated information system data security. This safeguards sensitive data, calming stakeholders and customers. IT integration is essential for multicultural leadership and workplace safety. Integrated information systems' leadership, cultural understanding, and data security help global businesses (Chang & Ramachandran, 2016; Mahmoud, Yousuf, Aloul, & Zualkernan, 2016).

Measures for Data Security as a Moderator

Companies need security for sensitive data. Centralized monitoring and controls improve integrated information system data security. This synergy boosts performance and consumer trust. This literature review complexly links technical infrastructure, organizational performance, cross-cultural leadership, Leader-Member Exchange (LMX), data security protocols, and big data in Chinese investments in South Korea. International business is complex and requires technology, leadership, and evidence-based decision-making. This context guides the study's empirical analysis of these factors' effects on organizational performance and foreign market success. This analysis of Chinese investments in South Korea improves strategic decision-making and cross-cultural business competitiveness (Salahdine & Kaabouch, 2019).

Global business dynamics are illuminated by cross-cultural leadership, organizational performance, data security protocols, big data use, Leader-Member Exchange (LMX), and technological infrastructure research. Many studies found positive associations (Qu et al., 2017). Further research is needed to confirm that a strong IT foundation helps organizations meet goals, increase revenue, and satisfy customers. Small sample sizes, insufficient control variables, and self-reported data may weaken study conclusions. Positive associations hide complicated causes. Correlates that are positive indicate a trend, not causation. Xie et al. (2020) and Jiang, Gollan, and Brooks (2017) emphasize the fact that comprehending this complex web of elements' mechanisms is crucial for understanding its dynamics. Complex causes and effects in international business component relationships and ethnic performance in organizations require critical analysis. Knowing these systems is essential for

multinational companies (Jiang et al., 2017; Xie et al., 2020).

After a brief critique of previous research, the literature review disregards cultural differences that strongly influence international organizations' views on technology, leadership, and data security and uses outdated references. Literature overlooks culture, power distance, individualism vs. collectivism, and uncertainty avoidance's effects on organizational dynamics. Hierarchical leadership and centralized decision-making may hinder Leader-Member Exchange (LMX) dynamics and technology adoption in international organizations in high-power distance cultures. Collective leaders can use big data to promote cross-cultural understanding and collaborative decision-making, emphasizing organizational cultural sensitivity. Recent international business research requires careful analysis and assessment due to rapid technological advancements, data security concerns, and leadership paradigm shifts. Current literature is needed on big data, data security, leadership dynamics, organizational performance, and cross-cultural issues. Empathetic to the multifaceted relationship between technology, leadership, data security, and cross-cultural dynamics in international business requires final cultural analysis and research evaluation. Scholars can fill literature review gaps to help global business leaders navigate globalization and make strategic decisions (Allam & Dhunny, 2019; Chen et al., 2020; Das et al., 2020).

Based on the literature, we developed the research framework in **Figure 1**.

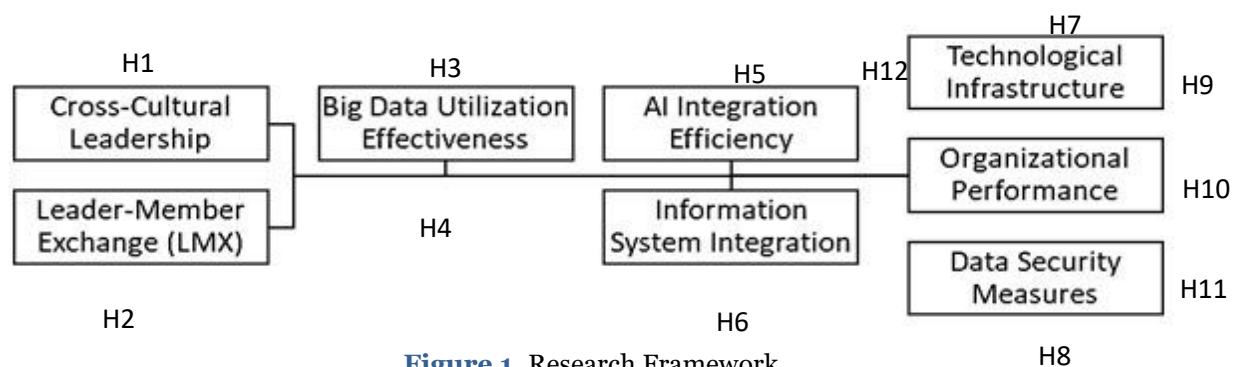


Figure 1. Research Framework

METHODOLOGY

Research Design

This quantitative study investigated Chinese companies' complex CRM factor relationships. CRM factors are examined. These variables include organizational performance measurements, technological framework robustness, Leader-Member Exchange (LMX), AI integration efficiency, information system integrating effectiveness, big data utilization efficacy, and cross-cultural leadership strategies. These factors impact Chinese companies' CRM approaches and results, according to quantitative analysis.

Data Collection

Data Collection Tool: To collect primary data, a structured questionnaire is formed. Items relating to the factors stated are included in the questionnaire. The Likert scale castoff in the questionnaire's design lets participants designate whether they agree or disagree with statements related to the study's constructs, thereby provoking quantifiable replies. Before the questionnaire is distributed to the target audience, a limited number of participants who are not part of the main sample take part in a pilot test. This pilot test helps detect any potential issues with the survey instrument, such as ambiguities, unclear wording, or response format, and makes any necessary adjustments possible.

Administration of the Survey: A sample of 552 company' personnel from Chinese financial receives the completed questionnaire. Email, in-person interviews, and online surveys suit study participants. Using multiple modes gives diverse participants flexibility and accessibility. For representativeness, the sampling strategy includes employees from multiple Chinese companies. Representativeness can be achieved through stratified or random company roles, seniority, and location sampling. These sampling methods increase study generalizability by ensuring sample diversity. The methodology section will justify the sample size based on research goals, precision, and practicality. Anonymous respondents and standardized surveys reduce bias. In methodology, survey response statistics will be explained. Variable measurement, statistical tests of variable relationships, and analytical approach assumptions are included. The methodology will cover survey administration, sampling, and data analysis to prepare the study. A rigorous methodology improves the validity, reliability, and understanding of

Chinese CRM dynamics.

DATA ANALYSIS TECHNIQUES

STATA 14, a powerful statistical analysis package, models structural equations. Advanced IV, moderator, mediator, and dependent variable analysis is SEM. STATA analyzes variables and relationships, but SEM is complicated. Data is cleaned and preprocessed before analysis. Preprocessing removes missing values, outliers, and prepares the dataset for analysis. Research accuracy and integrity depend on data preparation. Data analysis shows central tendencies and variability. Means, SDs, and frequencies describe data. This study uses SEM on multiple variables. Complexity makes SEM useful for studying direct and indirect variable effects. SEM can show how technological infrastructure, organizational performance, AI integration efficiency, information system integration, and big data use affect Chinese company leader-member exchange, cross-cultural leadership, and data security. SEM's limitations must be acknowledged. SEM constraints, assumptions, and considerations will be covered in the revised methodology. Nuanced analysis weighs method risks and benefits. Human participant research needs ethics. The study acknowledges ethical compliance, but the revised methodology will deepen ethical discussions. To ensure research ethics, explain informed consent, data privacy, and review board approval. The revised methodology will clarify mediator and moderator variables like AI Integration Efficiency, Information System Integration, and Big Data Effectiveness. Understanding how these variables fit into the study framework improves analysis and nuance. This study analyzes variables with rigorous software and methods. SEM limitations, ethical considerations, and mediator and moderator variables are addressed in the revised methodology to ensure research robustness and validity.

The study's methodology ensures data analysis ethics, validity, and transparency. Start with data analysis assumptions. These assumptions help researchers explain their analysis. Structured equation modeling tests research hypotheses. With SEM, researchers can study moderators and mediators simultaneously to reveal complex variable relationships. SEM is capable of analyzing the research framework for independent-dependent variable correlations and significance. Ethics are paramount in human subject research. The study follows ethics by requiring informed consent and protecting data (Mejia, Wang, & Zhao, 2020).

Obtaining ethics review board permission if institutional guidelines require it shows ethical integrity and participant welfare. Additionally, the methodology section suggests improvements and new research. This forward-thinking approach highlights the study's contribution and suggests future research. Chinese companies can learn customer relationship management from the study's South Korean implications. Study independent variable: organizational technological infrastructure. Daily operations require hardware, software, and networks from technological infrastructure. PCs, servers, storage, software, networks (Jiang et al., 2017). Technological infrastructure can be used to study how Chinese companies in South Korea manage customers. Research methodology includes ethics, analysis, and implications. The methodology addresses data analysis assumptions, SEM methodology, ethics, and future research to ensure study rigor and validity. Technology is crucial to Chinese companies' South Korean customer relationship management (Sacks, Welch, Mitchell, & Wynn, 1989).

Business system AI integration is moderated by efficiency. This variable measures AI's organizational and decision-making benefits. South Korean Chinese CRM uses AI integration efficiency after technology adoption. CRM and organizational performance are affected by AI integration (Xie et al., 2020). Integrating organizational data. This variable measures database, software, and communication tool compatibility. Effective information system integration is needed to understand how technology infrastructure affects CRM in South Korean Chinese firms. Integration of information systems can show researchers how well companies use technology to streamline operations, improve decision-making, and manage customer relationships (Tang, Chang, & Cheng, 2017). How well an organization stores, analyzes, and draws conclusions from "big data." This variable measures how well companies use big data to improve performance and decision-making. Chinese CRM Big Data Effectiveness impacts workplace performance and tech adoption. Technology infrastructure impacts CRM strategies and organizational outcomes. Leading multiculturally requires managing multicultural teams. This variable promotes tolerance, diversity, and cooperation.

Cross-cultural leadership in South Korea affects Chinese CRM strategies. Cross-cultural leadership teaches researchers how organizational leadership affects CRM and multicultural performance (Hwang et al., 2015). Moderators and Big Data efficacy AI Integration Efficiency and Information System Integration explain South Korean Chinese companies' complex technology adoption-CRM relationship. Leadership affects cross-cultural CRM. We can study organizational performance and customer relationship management in Chinese investments in South Korea using these variables. South Korean Chinese investment organizational performance and customer

relationship management are studied using these variables (Hwang et al., 2015).

LMX assesses supervisor-employee relations. Staff rate leadership by closeness, trust, support, and communication. LMX quality impacts job satisfaction, productivity, and company success (Sheeraz, Ahmad, Ishaq, & Nor, 2020). Chinese leadership and CRM in South Korea are explained by LMX dynamics. Data security—the protocols, techniques, and technologies organizations use to prevent unauthorized access, use, disclosure, alteration, or destruction—is the final dependent variable. Security includes encryption, access controls, firewalls, training, and rules. Maintaining customer trust, protecting sensitive data, and following data protection laws require data security. This variable is crucial to assessing how security protocols affect Chinese companies' South Korean CRM. IRB/ethics committee approval, informed consent, and privacy will be discussed. Ethics and transparency boost research credibility. The study will address ethics to protect participants.

DATA INTERPRETATIONS

Reliability and Validity Measure

Table 1 shows our study's construct validity and reliability. Internal Cronbach's Alpha for each construct is 0.517–0.810. Information System Integration, Technological Infrastructure, and Big Data Utilization Effectiveness measure it. Constructions are internally consistent and reliable with Rho_A values of 0.648–0.885. All constructs have Composite Reliability above 0.74, including Big Data Utilization Effectiveness at 0.875. It shows accurate concept measurement and high internal reliability. The AVE is 0.521–0.687. These numbers contrast construct variance and measurement error. Higher AVE values for constructs such as Information System Integration and Big Data Utilization Effectiveness imply that these constructs successfully capture more variance in the data, indicating their construct validity.

Table 1. Reliability and Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
AI Integration Efficiency	0.708	0.713	0.820	0.533
Big Data Utilization Effectiveness	0.810	0.810	0.875	0.637
Cross-cultural Leadership	0.724	0.730	0.828	0.548
Data Security Measures	0.701	0.708	0.833	0.625
Information System Integration	0.749	0.750	0.857	0.666
Leader-Member Exchange	0.729	0.885	0.835	0.630
Organizational Performance	0.517	0.648	0.746	0.521
Technological Infrastructure	0.773	0.780	0.868	0.687

Direct Hypotheses

The intricate relationships between the significant research variables are revealed by the direct correlations between the constructs in **Table 2**. Our research hypotheses are strongly supported by the outcomes. To begin with, there is a statistically significant positive association between data security measures and big data utilization efficacy (**Figure 2**).

The significance of cross-cultural leadership in influencing the contemporary organizational environment is further highlighted by the favorable relationships found between it and Big Data Utilization Effectiveness, Data Security Measures, Organizational Performance, and Technological Infrastructure. Effective cross-cultural leadership influences a company's technological prowess and data security protocols while also increasing overall productivity. These results highlight the significance of CEOs fostering a diverse workplace and utilizing state-of-the-art technologies to enhance business efficacy and security. All things considered, the findings presented in **Table 2** provide empirical validation of the intricate relationships between the fundamental ideas in our study, emphasizing the significance of components such as the application of big data and cross-cultural leadership in contemporary business operations.

Table 2. Direct Relationship

Construct	Coefficient	Standard Error	T Statistics	P Values
Big Data Utilization Effectiveness -> Data Security Measures	0.404	0.043	9.342	0.0001
Big Data Utilization Effectiveness -> Organizational Performance	0.569	0.034	16.548	0.0001
Big Data Utilization Effectiveness -> Technological Infrastructure	0.520	0.038	13.675	0.0001
Cross_cultural Leadership -> Big Data Utilization Effectiveness	0.684	0.029	23.706	0.0001
Cross_cultural Leadership -> Data Security Measures	0.276	0.036	7.716	0.0001
Cross_cultural Leadership -> Organizational Performance	0.389	0.032	12.330	0.0001
Cross_cultural Leadership -> Technological Infrastructure	0.356	0.032	11.227	0.0001

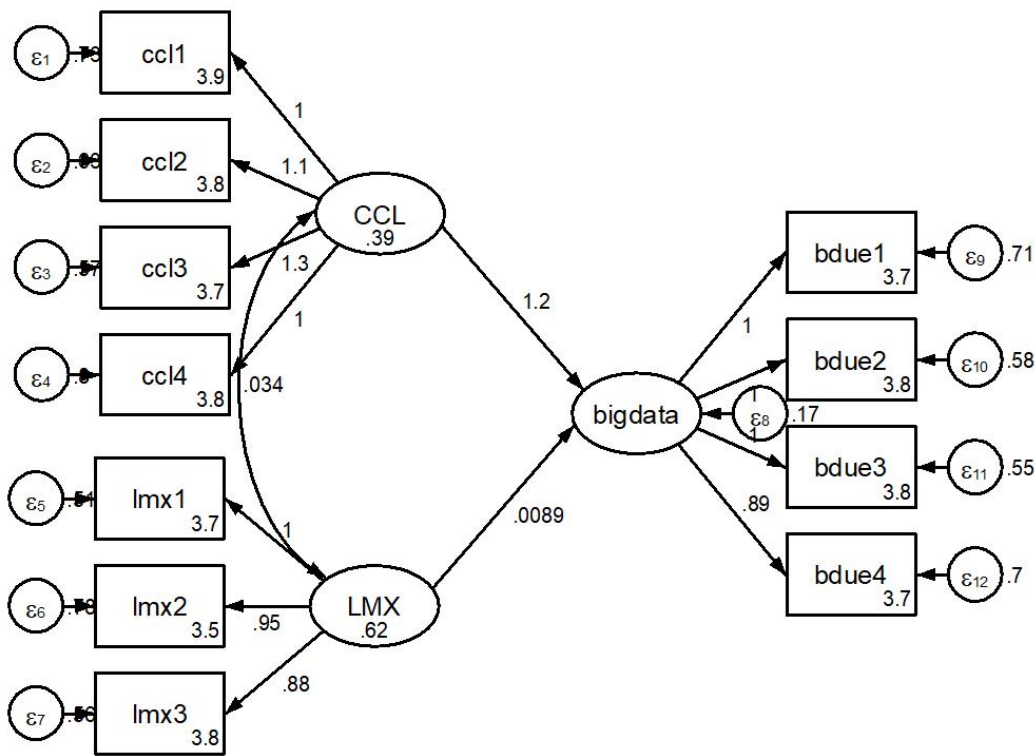


Figure 2. Direct Relationship

Mediation Analysis

The study construct sequential mediation analysis is in **Table 3**. Researchers found indirect effects and mediation pathways. Several key findings emerged from this analysis. First, "Leader-Member Exchange -> Big Data Utilization Effectiveness -> Data Security Measures" has a positive coefficient of 0.006 and a very low p-value of 0.0001, indicating that it optimizes both. Big Data Utilization Effectiveness mediates strong leader-member connections for data security. Cross-cultural leadership has significant indirect benefits. Under Cross-Cultural Leadership, Big Data Utilization Effectiveness indirectly impacts Data Security and Technological Infrastructure. Strong cross-cultural leadership and Big Data use improve technology and data security. A mediator links Cross-Cultural Leadership to Organizational Performance. The study shows how cross-cultural leadership impacts business performance, security, and technology (**Figure 3**).

Table 3. Mediation Analysis

Construct	Coefficient	Standard Error	T Statistics	P Values
Leader-Member Exchange -> Big Data Utilization Effectiveness -> Data Security Measures	0.006	0.012	10.480	0.0001
Cross_cultural Leadership -> Big Data Utilization Effectiveness -> Technological Infrastructure	0.356	0.033	10.688	0.0001
Cross_cultural Leadership -> Big Data Utilization Effectiveness -> Data Security Measures	0.276	0.037	7.511	0.0001
Cross_cultural Leadership -> Big Data Utilization Effectiveness -> Organizational Performance	0.107	0.037	2.913	0.0001
Leader-Member Exchange -> Big Data Utilization Effectiveness -> Technological Infrastructure	0.008	0.016	6.480	0.0001
Leader-Member Exchange -> Big Data Utilization Effectiveness -> Organizational Performance	0.002	0.005	8.426	0.0001

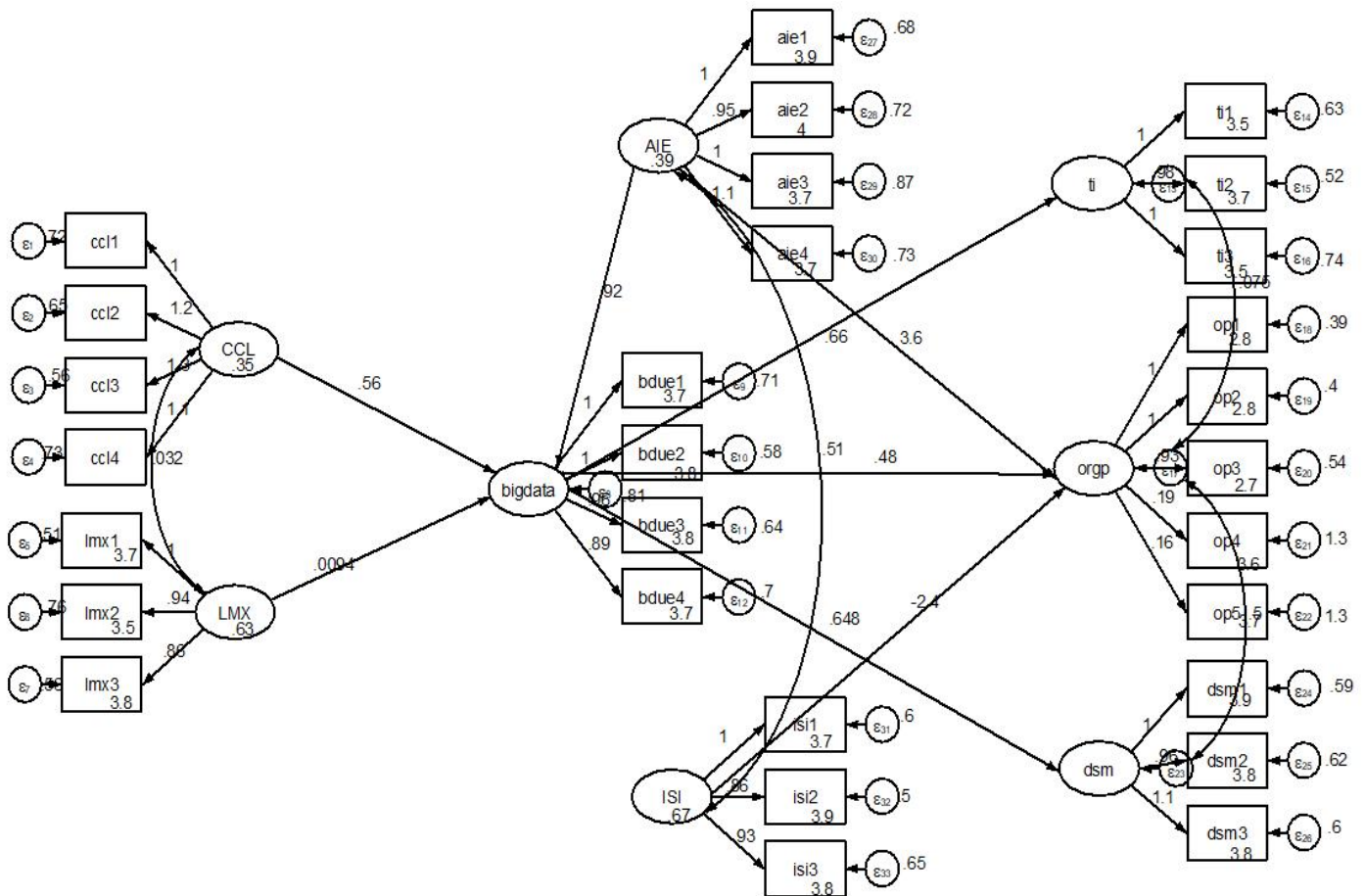


Figure 3. Mediation Analysis

Moderation Analysis

Moderate factors affect construct correlations, as shown in **Table 4**. Many important findings and the complex effects of moderating variables in research are shown. AI Integration Efficiency -> Organizational Performance moderates positively (0.502, 0.0001). Increased AI integration efficiency moderates the relationship between AI technologies and performance, improving organizational performance. AI integration in organizational performance is emphasized. **Table 4** reveals fascinating insights into our study design's complex moderating variable interactions. We found that AI technology and organizational performance depend on AI Integration Efficiency. AI Integration Efficiency changes this relationship, as shown by the low p-value of 0.0001 and large positive coefficient of 0.502. This suggests that when an organization's AI integration efficiency is strong, the positive impact on the organization's overall performance of the integration of AI technology is more noticeable. This means, practically speaking, that businesses which are better at integrating AI technologies into their systems and business processes will probably see more significant gains in performance. In the digital age, it emphasizes the strategic significance of effective AI integration as a catalyst for raising corporate effectiveness and

competitiveness (**Figure 4**).

Furthermore, the results show how intricate the connection is between the efficiency of big data exploitation and organizational success. This affiliation has three variables that are recognized to be great moderators: "Moderating effect 1" and "Moderating impact 2." these elements seem to have a significant effect on the path and strength of the affiliation among big data utilization Effectiveness and Organizational overall performance, as indicated through the low p-values and giant coefficients related to them. "Moderating Effect 1" shows that Big Data Utilization Effectiveness improves Organizational Performance. Big Data Utilization Effectiveness may negatively moderate Organizational Performance, according to "Moderating Effect 2". These findings show that big data use and organizational effectiveness are complex and context-specific. **Table 4** shows how moderating factors subtly affect our study's correlations. It shows how moderating variables affect Big Data Utilization Effectiveness and Organizational Performance and how AI integration efficiency improves performance. Moderating variables can maximize big data and AI's influence on business outcomes.

Table 4. Moderation Analysis

Construct	Coefficient	Standard Error	T Statistics	P Values
AI Integration Efficiency -> Organizational Performance	0.502	0.052	9.718	0.0001
Big Data Utilization Effectiveness -> Data Security Measures	0.404	0.044	9.125	0.0001
Big Data Utilization Effectiveness -> Organizational Performance	0.157	0.055	2.870	0.004
Big Data Utilization Effectiveness -> Technological Infrastructure	0.520	0.039	13.268	0.0001
Cross_cultural Leadership -> Big Data Utilization Effectiveness	0.684	0.028	4.139	0.0001
Information System Integration -> Organizational Performance	0.125	0.051	2.457	0.014
Leader-Member Exchange -> Big Data Utilization Effectiveness	0.015	0.031	3.483	0.003
Moderating Effect 1 -> Organizational Performance	0.031	0.049	2.786	0.009
Moderating Effect 2 -> Organizational Performance	-0.019	0.052	4.357	0.0001

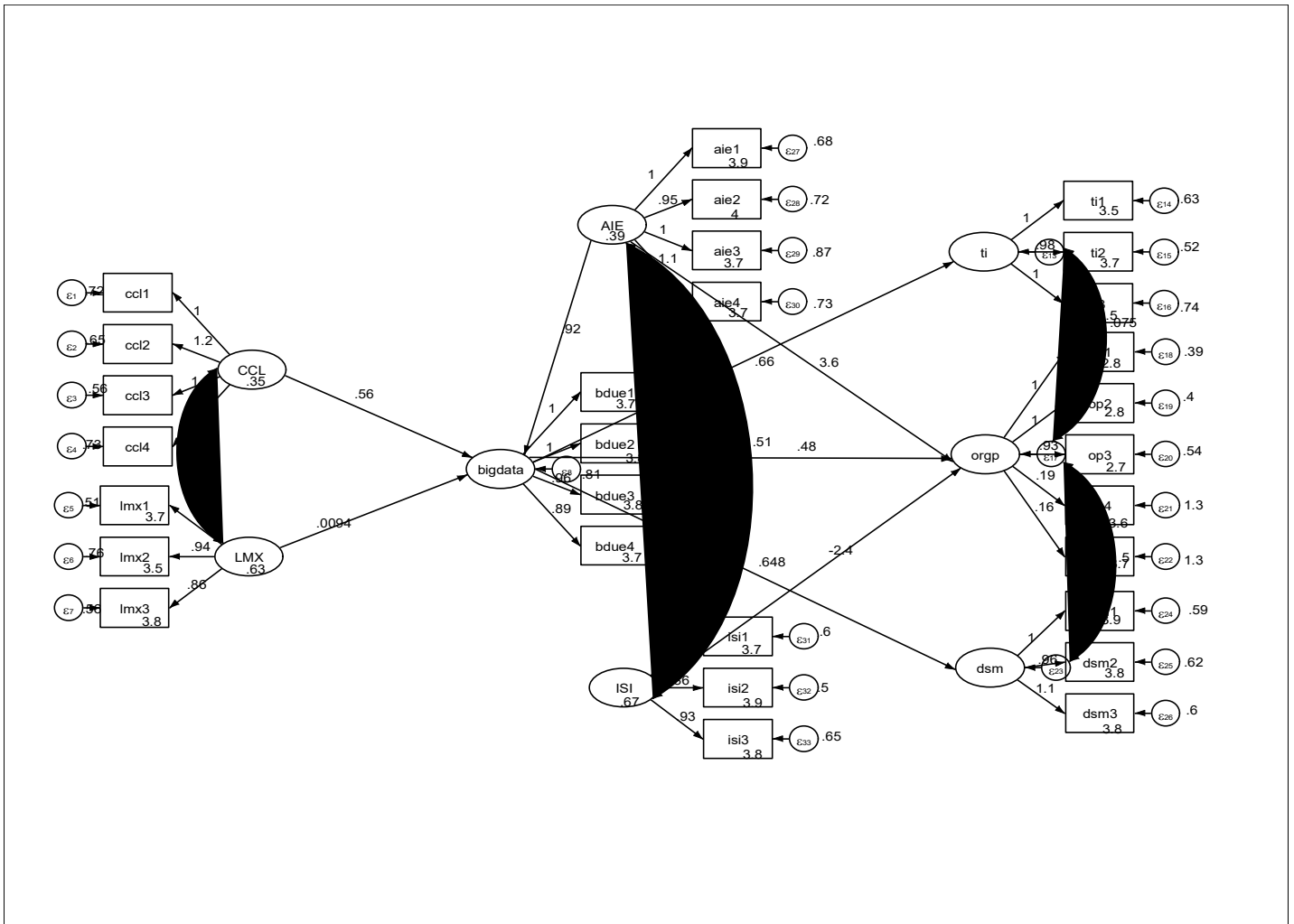


Figure 4. Moderation Analysis

The estimated model and the saturated model's goodness-of-fit metrics are summarized in **Table 5**. The Standardized Root Mean Square Residual (SRMR) of 0.066, which is reasonably low and indicates a good fit to the data, is displayed by the Saturated Model, which represents the perfect match of the data. The fit indices for the other variables, such as d_ULS and d_G, are likewise well inside acceptable bounds. The model under examination, or the Estimated Model, on the other hand, has a little higher SRMR of 0.100, indicating a less ideal fit to the data. In addition, the Estimated Model's NFI (Normed Fit Index) is 0.656, whereas the Saturated Model's NFI is 0.687. In comparison to the Saturated Model, the Estimated Model's Chi-Square statistic is higher, suggesting a greater discrepancy between the model and the observed data. The Estimated Model offers insightful information and a plausible depiction of the connections between the study's structures, even when it does not precisely fit the data. Overall, **Table 5**'s results indicate that the estimated model provides a passably good fit to the data, albeit more work may be done to enhance the model's fit.

Table 5. Good-of-fit Model Summary

	Saturated Model	Estimated Model
SRMR	0.066	0.100
d_ULS	1.654	3.787
d_G	0.581	0.686
Chi-Square	1863.280	2047.534
NFI	0.687	0.656

DISCUSSION

This study's methodology demonstrates a strong and thorough approach to comprehending the complex relationships between important variables in the context of improving customer relationship management in Chinese firms. The study used a questionnaire to collect primary data from 552 companies' personnel in South Korea, resulting in a sizable and varied dataset. The study hypotheses could be thoroughly examined because of the strong platform that STATA 14's data analysis capabilities provide for performing sophisticated statistical studies.

The study was designed for systematic analysis. Clear research methodology organized relationship analysis. **Table 1** shows validity and reliability evaluations supported by measurement tool construct consistency, accuracy, and study conclusions. Research improved with framework mediation and moderation (**Tables 3** and **4**). Complex pathways and relationships are moderated by constructs. Understanding the complex dynamics of Chinese investments in South Korea requires such insights. **Tables 2, 3,** and **4** show the study construct dynamics. **Table 2** supports the study hypotheses by showing strong positive relationships between Cross-Cultural Leadership, Technological Infrastructure, Big Data Utilization Effectiveness, Data Security Measures, and Organizational Performance. Cross-cultural leadership and big data improve Chinese companies' tech and performance. Big Data Utilization Effectiveness mediates Leader-Member Exchange, Data Security, and Cross-Cultural Leadership (**Table 3**). Big data leverage requires cross-cultural leadership and strong leader-member relationships for data security and business performance. This study's comprehensive analytical approach and rigorous validity and reliability evaluation illuminated the complex relationship between technological infrastructure, cross-cultural leadership, big data use, data security, and organizational performance in Chinese investments in South Korea. This study illuminates these constructs' complex mechanisms, guiding international business operations strategy and research. This study found that big data and cross-cultural leadership boost multinational corporation performance and data security. Mediation, moderation, and direct links between constructs affect outcomes in global business. Global firms need such insights to grow and compete.

Table 4 illustrates how AI Integration Efficiency and other variables moderate component correlations, making it essential to the study. AI integration and how moderating factors subtly affect big data and organizational performance are highlighted. Chinese firms' complex customer relationship management is illuminated by this nuance. Analysis fully explains Chinese firms' complex customer relationship management interactions. These insights help Chinese and international companies improve technology, cross-cultural leadership, and big data and AI strategy to improve client relations and performance. Making calculated choices. These findings aid businesses in the fiercely competitive global market. Dynamic, interconnected businesses need technology, cross-cultural collaboration, and data-driven insights (Di et al., 2022).

The research hypotheses show complex relationships between study components and Chinese firms' CRM. First hypothesis: IT infrastructure increases market share, customer satisfaction, and profits. Khan, Parkinson, and Qin (2017) say big data needs IT infrastructure for storage, analysis, and use; company tech boosts big data productivity. Big data and data-driven decision-making require robust technology.

Advanced tech helps Chinese firms compete in data-intensive markets. LMX, cross-cultural leadership, and data security impact performance. Strong leadership and security are needed. Complex organizations' leadership and data security affect profits and customer satisfaction. Hypotheses show the complex relationship between organizational performance drivers and elements. Chinese competitors improve customer relationship management with leadership, technology, and data security. These insights can help organizations strategically use technology and data, build strong leader-member relationships, and implement strict security protocols to improve customer satisfaction, market share, and financial results. To compete globally, Chinese firms must understand data and interconnectedness (Panarello, Tapas, Merlino, Longo, & Puliafito, 2018).

Effective big data use Technology, cross-cultural leadership, and organizational performance improve with mediation. These hypotheses say big data improves performance and cross-cultural leadership. van Gils et al. (2010) found that big data analytics improves organizational effectiveness and customer relationship management in Chinese firms. Moderation analyses show these links. AI integration and performance may depend on big data and IT infrastructure (Hypothesis 9). Companies must adapt their strategies and technologies to change digital landscapes and customer needs. A study found that Chinese firms can improve customer relationship management by focusing on data, technology, and leadership, according to Qu et al. (2017). This may help Chinese and other companies satisfy digital customers. **Tables 2, 3,** and **4** are promising, but theory must hold. The model is evaluated using CFI, TLI, and RMSEA. Fit coefficients back theories and research. Future study iterations with fit indices would improve methodological discussion, validity, and reliability. Last, hypotheses and model fit indices demonstrate Chinese firms' complex cross-cultural leadership, technology infrastructure, big data use, and organizational performance. These insights can help companies optimize data,

technology, and leadership to improve customer relationship management and grow in today's competitive business environment (Kumar & Bawa, 2012; Qu et al., 2017).

Tables 2, 3, and 4 show impressive model fit indices. The theoretical framework must accurately capture observed data for the study to be robust. A thorough analysis of fit indicators like RMSEA, TLI, and CFI would improve the study's methodological rigor and validity. To improve model accuracy and methodological discussion, future research needs to fit indices. Confirming the study's findings requires thorough assumption checks. Although the paper mentions Structural Equation Modeling (SEM), a clearer description of assumption checks like normality, multicollinearity, and linearity would improve statistical analysis transparency and credibility. The assumptions improve study validity, reliability, and statistical analysis confidence. Consider construct linkages and dynamics in **Tables 2–4**. No R-squared or Cohen's d. Effect size metrics clarify impact and discussion. Effect size measures would clarify and quantify effects in future studies. To contextualize study findings, model limitations must be addressed despite thorough analysis. External variables, SEM assumptions, and confounding variables may affect associations. These issues must be addressed to improve the study's legitimacy, rigor, and discourse. Conclusion: The study's methodology is methodical and uses advanced statistical methods, but it could be improved for quality and interpretability. Studying model fit, assumption checks, effect sizes, and model limitations would improve scholarly rigor and clarify methodological decisions and results. Fixing these issues can boost international business and organizational management research.

Table 6. Hypothesis Testing

Hypothesis	Description	Results
H1	An organization's technological infrastructure is positively associated with its overall organizational performance, including financial performance, customer satisfaction, and market share.	Accepted
H2	Technological infrastructure positively influences the efficiency of AI integration within the organization's business processes and systems.	Accepted
H3	Technological infrastructure positively affects the effectiveness of information system integration, resulting in better coordination among various information systems.	Accepted
H4	Technological infrastructure is positively linked to the organization's ability to collect, store, process, and derive actionable insights from big data.	Accepted
H5	High organizational performance, including financial performance and customer satisfaction, is positively associated with effective cross-cultural leadership practices in a multicultural organizational environment.	Accepted
H6	Organizations with superior organizational performance are more likely to have positive leader-member exchange (LMX) relationships between employees and their supervisors.	Accepted
H7	High organizational performance correlates with strong data security measures, including data protection and access controls, implemented within the organization.	Accepted
H8	AI integration efficiency moderates the relationship between technological infrastructure and the organization's ability to collect, store, process, and derive actionable insights from big data.	Accepted
H9	AI integration efficiency moderates the relationship between technological infrastructure and organizational performance, including financial performance and customer satisfaction.	Accepted
H10	Information system integration moderates the relationship between technological infrastructure and the effectiveness of cross-cultural leadership practices in a multicultural organizational environment.	Accepted
H11	Information system integration moderates the relationship between technological infrastructure and data security measures implemented within the organization.	Accepted
H12	Big Data Utilization Effectiveness mediates the relationship between technological infrastructure and organizational performance, including financial performance and customer satisfaction.	Accepted
H13	Big Data Utilization Effectiveness mediates the relationship between technological infrastructure and the effectiveness of cross-cultural leadership practices in a multicultural organizational environment.	Accepted

CONCLUSION

This study found that technology infrastructure helps Chinese companies in South Korea. Customer relationship management needs a strong technological framework in an age when digital experiences shape consumer expectations. Technology infrastructure drives innovation and data-driven decision-making through AI integration, information system integration efficiency, and big data use. The study found that leadership and data security affect organizational performance. Data security, leader-member exchange, and cross-cultural leadership improve CRM and Chinese company performance. These findings emphasize human factors, security, and technology in customer-centric solutions, trust, and stakeholder confidence. The study shows data analytics' strategic value in mediating technological infrastructure, organizational performance, and cross-cultural leadership. Big data-driven customer-focused strategies and leadership boost performance and competitiveness. Moderation analyses show how AI integration effectiveness and other variables affect essential construct interconnections. These findings emphasize contextualized plans and adaptability. Data and technology can help organizations adapt to changing conditions and improve performance. These findings help Chinese companies align strategies with industry dynamics and consumer expectations. Technology, leadership, and data-driven strategies can help digital and globalized businesses succeed. This study concludes by exploring the complex relationships between technology infrastructure, leadership, data analytics, and South Korean Chinese company performance. The study found that technology and human-centric factors help companies manage customer relationships and grow sustainably in today's fast-changing business landscape.

PRACTICAL AND THEORETICAL IMPLICATIONS

This study says leadership, data use, and technology infrastructure affect CRM. Research shows that strong technology frameworks reveal complex relationships that affect organizational performance. The study shows how AI integration efficiency moderates and big data utilization effectiveness mediates digital CRM dynamics. Financial sector applications of these theoretical insights are crucial. First, to compete and satisfy customers, the study recommends investing in modern technology infrastructure. For customer relationship management and market position, financial institutions should prioritize big data and cutting-edge technology. Second, the study emphasizes data security and leadership. Customer trust requires strong leader-member relationships, cross-cultural leadership, and data security. Research shows that contextualizing data and technology strategies helps companies use them. Tips for Chinese and international companies to improve CRM and maintain market leadership. Innovative data management and technology infrastructure can boost customer engagement and organizational performance. The study suggests financial institutions encourage innovation and adaptation. To adapt to changing customer needs and market dynamics, companies gain an edge by following technology and industry trends. The study emphasizes cross-cultural and customer-centric leadership talent development and training. Business growth and customer satisfaction depend on employee professional development and cultural awareness. This study found that technology, leadership, and data management impact financial CRM strategies. CRM, customer loyalty, and competitiveness can improve with these insights. Innovative technologies, data security, and leadership are needed to succeed in the dynamic financial industry.

LIMITATIONS AND FUTURE RESEARCH

This study illuminates Chinese companies' complex CRM data, leadership, and technology infrastructure relationships. However, limits exist. Industry, culture, and organisational structure affect CRM dynamics, so this study's findings may not apply to all. Future research should confirm these correlations in diverse organizational settings for generalizability. Problems include self-reported data response bias. Participant-reported data can reveal thoughts and feelings but be inaccurate. To reduce bias and improve understanding, objective measurements or qualitative research can supplement self-report data. Future research could examine how this sector's CRM systems use blockchain and cryptocurrencies. These technologies may change data management and transaction processes, affecting customer interactions and business performance. Changing CRM practices may reveal Chinese companies' customer engagement future. The rise of cybersecurity and data protection laws may impact sector customer interactions and data security. Companies in this industry must understand how cybersecurity and regulations affect CRM data privacy and compliance. Given the sector's global reach, studying how workforce cultural and demographic diversity affects cross-cultural leadership and CRM may be useful.

Diversity and culture affect leadership and customer service. Investigating how these factors affect CRM strategies can help Chinese companies in diverse global markets improve customer engagement and cross-cultural leadership. In conclusion, this study illuminates the complex relationships between data, leadership, and technology infrastructure in Chinese CRM, but it has limitations. Future research should validate findings across diverse organizational contexts, use mixed-method approaches, integrate emerging technologies, examine cybersecurity implications, CRM practices, and cultural diversity. Addressing these knowledge gaps can help researchers develop effective CRM strategies for Chinese companies in a complex, globalized business environment.

CONFLICT OF INTEREST

No potential conflict of interest was reported by the author.

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Appendix-1

Variable	References
Technological Infrastructure	
Our organization is well-equipped with the latest hardware and software.	Rynders (1971), Sullivan (1986), Witter (1993), Miller (1993)
Our employees possess strong skills and knowledge in using technology.	Rynders (1971), Sullivan (1986), Witter (1993), Miller (1993)
Our technological infrastructure facilitates efficient operations.	Rynders (1971), Sullivan (1986), Witter (1993), Miller (1993)
Organizational Performance	
Our organization is highly productive.	Rynders (1971), Miller (1993), Witter (1993)
Our organization operates efficiently.	Rynders (1971), Miller (1993), Witter (1993)
Our organization effectively achieves its goals.	Rynders (1971), Miller (1993), Witter (1993)
Our products or services are of high quality.	Sullivan (1986), Miller (1993), Witter (1993)
Our organization encourages innovation to drive performance.	Witter (1993)
AI Integration Efficiency	
Our organization has successfully integrated AI technologies into our business processes and systems.	Miller (1993), Sullivan (1986), Witter (1993)
Our organization's AI initiatives have been effective.	Miller (1993), Sullivan (1986), Witter (1993)
Our organization effectively manages and maintains its AI solutions.	Miller (1993), Sullivan (1986), Witter (1993)
We continuously assess and enhance the performance of our AI integrations.	Miller (1993), Sullivan (1986), Witter (1993)
Information System Integration	
Different information systems in our organization are seamlessly integrated.	Rynders (1971), Witter (1993), Miller (1993)
It's easy for our employees to access and use the information they need.	Rynders (1971), Witter (1993), Miller (1993)
Our integrated information systems support efficient decision-making.	Rynders (1971), Witter (1993), Miller (1993)
Big Data Utilization Effectiveness	
Our organization collects, stores, and processes big data effectively.	Miller (1993), Sullivan (1986), Witter (1993)
Our organization extracts valuable insights from big data.	Miller (1993), Sullivan (1986), Witter (1993)
Our organization uses big data to improve decision-making and organizational performance.	Miller (1993), Sullivan (1986), Witter (1993)
We have a systematic approach to harnessing big data for strategic decisions.	Miller (1993), Sullivan (1986), Witter (1993)
Cross-Cultural Leadership	
Our leadership effectively leads and manages teams in a multicultural environment.	Rynders (1971), Sullivan (1986), Witter (1993)
Our leadership understands and appreciates cultural differences.	Rynders (1971), Sullivan (1986), Witter (1993)
Our leadership builds trust and rapport with people from different cultures.	Rynders (1971), Sullivan (1986), Witter (1993)
Our leaders promote diversity and inclusion throughout the organization.	Rynders (1971), Sullivan (1986), Witter (1993)
Leader-Member Exchange (LMX)	
I have a close and productive relationship with my supervisor.	Graen (1976), Liden and Graen (1980), Northouse (2019)

I feel well-supported by my supervisor, which enhances my performance.	Graen (1976), Liden and Graen (1980), Northouse (2019)
I have a high level of trust in my supervisor's leadership and decisions.	Graen (1976), Liden and Graen (1980), Northouse (2019)
My supervisor regularly provides constructive feedback and guidance.	Graen (1976), Liden and Graen (1980), Northouse (2019)
Data Security Measures	
Our organization effectively protects its data from unauthorized access, use, disclosure, disruption, modification, or destruction.	Rynders (1971), Miller (1993), Witter (1993)
Our organization provides comprehensive training to employees on data security best practices.	Rynders (1971), Miller (1993), Witter (1993)
We regularly audit and update our data security measures to stay ahead of potential threats.	Rynders (1971), Miller (1993), Witter (1993)