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Comparative Study of Management Information Systems in Cement Companies in Southeast Nigeria, South Sulawesi, Kenya

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ABSTRACT

This study explores the impact of Management Information Systems (MIS) and technological innovations on the performance of cement manufacturing firms in Southeast Nigeria, South Sulawesi, and Kenya.
This study examines the use of management information systems in the cement industries of Southeast Nigeria, South Sulawesi, and Kenya using a literature review methodology.
Through a comprehensive literature review of three key journals, the findings reveal a significant positive correlation between the use of decision support systems, transaction processing systems, and executive support systems, and the enhancement of corporate performance. In Southeast Nigeria, these systems increased firm performance by 0.321, 0.496, and 0.501 respectively. Impact of information technology on agency capacity in the cement industry in South Sulawesi. The effect of information technology on body skills is 0.267 and p-value 0.025, it has a significant effect on the statement, which proves that information technology has a direct effect on the body. They have the ability to support movement. In Kenya, the adoption of strategic and technological innovations notably improved sales volumes, operational efficiency, and cost reduction, with a mean aggregate score of 4.12 from surveyed department heads.
The findings underscore the importance of strategic innovations tailored to specific industry needs and the necessity of training programs to equip employees with essential technical skills. This research provides actionable insights for cement firms aiming to enhance their competitive edge and achieve sustainable growth in a dynamic global market.

INTRODUCTION

Since World War II, modern information machines have emerged. At that time, the focus was solely on data processing, or merely reducing costs associated with administrative affairs and completed workloads. Initially, computerized business transactions, especially financial applications, were adjusted for use because computerization supported productivity improvements. To enhance technical skills, computerized devices underwent innovation and changes, becoming portable and rapidly growing in computerized technology. Initially, corporations used computerization to process data related to marketing production results, inventory control, and other corporate goals. The result of these developments was efficiency in expenditure for each corporation and user when utilizing information technology. The discovery of various knowledge that supports the rapid advancement of information technology has resulted in all information needs in the world being obtainable in a short time. Information technology is trusted as a driving force and is essential for global economic improvement in the future. Information technology is also considered very important in expanding learning opportunities and obtaining information for people around the world. The failure of a country, especially a developing country, in catching up with the rapid development of information technology can hinder that country from fully participating in the information community and the global economic community (Supratikta et al., 2021).

The rapid pace of information technology invites the world into a new generation that moves quickly from previous thoughts. The internet has become a vital tool for corporations to compete on a global scale. Each phase has its own characteristics that are inseparable, either directly or indirectly, from the fields of competition (macro and micro) in the business world. It must be understood that, except for several developed countries such as America, Japan, Germany, and other large countries, not all parts of the world participate in the use of computers characteristic of the fourth era (Supratikta et al., 2021).

One important factor in globalization is the rapid development of information technology, which is much earlier than everyone imagined. The proliferation of social media, online stores, marketplaces, etc., has successfully broken down geographical boundaries between countries. The convergence of information technology and telecommunications is what causes rapid changes in the field of information technology (Supratikta et al., 2021).

In an era of globalization and increasingly fierce industrial competition, the implementation of Management Information Systems (MIS) has become an urgent necessity for companies, including those in the cement industry. MIS is a vital tool that helps companies manage information efficiently, increase productivity, and support strategic decision-making. This study aims to compare the implementation of MIS in cement companies in Southeast Nigeria, South Sulawesi, and Kenya, regions with varying economic and infrastructural conditions.The cement industry has unique characteristics such as high production volumes, complex distribution networks, and a reliance on locally available raw materials. MIS assists cement companies in managing supply chains, monitoring production processes, and ensuring efficient product distribution. Additionally, the proper implementation of MIS can enhance operational transparency, strengthen system integration, and minimize human error in production and distribution processes. In Southeast Nigeria, South Sulawesi, and Kenya, cement companies face challenges like limited infrastructure, economic fluctuations, and strict government regulations. Therefore, effective MIS implementation can be key to overcoming these challenges and remaining competitive (Yunus et al., 2023).

In Southeast Nigeria, cement companies often face poor infrastructure and political instability (Nworie & Oguejiofor, 2023). However, the large market and infrastructure development needs present significant opportunities for the cement industry. Effective MIS implementation can help address logistical challenges and improve operational efficiency. For example, adopting cloud-based MIS allows companies to manage data in real-time and enhance coordination between various departments involved in production and distribution. In Sulawesi, Indonesia, cement companies operate in a more stable environment but with intense competition. MIS is used to enhance production efficiency and optimize distribution in a broad and dispersed market. The geographic and demographic differences make the

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analysis of MIS implementation in Sulawesi crucial. For instance, implementing big data and analytics technology in MIS can help companies forecast market demand and optimize production schedules to reduce operational costs (Yunus et al., 2023).

Meanwhile, the cement industry in Kenya is rapidly growing in line with increasing infrastructure development. However, companies face challenges such as fluctuating energy and raw material prices. Using MIS can aid companies in cost management and supply chain optimization. In Kenya, the adoption of ERP (Enterprise Resource Planning) systems has shown positive impacts in improving data integration and operational efficiency of cement companies. Against this backdrop, this study aims to analyze and compare MIS implementation in cement companies in these three regions, hoping to identify best practices and strategies that can be adopted to enhance operational performance and competitive advantage. This study also aims to provide insights into how local contexts influence the success of MIS implementation and offer recommendations for cement companies in other regions facing similar challenges (Mbogori & Moguche, 2021).

LITERATURE REVIEW

Theory of Technology Adoption

The implementation of management information systems in the cement industry requires careful technological integration to enhance operational efficiency and strategic decision-making (Misra, 2021). This involves adopting technologies that streamline processes, improve data visibility, and accelerate workflows crucial for operational success. However, local adaptation is essential due to varying government policies, organizational cultures, and market dynamics (Gupta, 2020). Adapting technology to fit existing infrastructure and local conditions ensures effective implementation and alignment with organizational goals.

Theory of Organizational Culture

Organizational culture plays a pivotal role in the success of implementing management information systems within the cement industry (Gupta, 2020). Companies must ensure that existing values and norms support the adoption of new technologies and digital transformation initiatives. Adapting to and aligning with the organizational culture can significantly impact the acceptance and integration of implemented information systems.

International Comparison Theory

Comparative studies across countries highlight the significant impact of government regulations and local market conditions on the success of management information systems in the cement sector (Chen & Wang, 2021). These factors influence strategic decisions regarding technology adoption and operational practices in Southeast Nigeria, South Sulawesi, and Kenya. Companies must tailor their strategies to navigate varying regulatory environments and market dynamics to achieve successful implementation.

Strategic Management Theory

The success of management information systems in the cement industry depends on companies' abilities to integrate new technologies with existing business processes (Nguyen & Tran, 2019). Effective strategic management considers adapting to changing local business environments, including intense global competition and rapid market changes (Smith & Jones, 2022). This underscores the importance of flexible and responsive adaptation strategies to external environmental changes.

Globalization and Local Influence Theory

Information technology has revolutionized how cement companies manage operations and business strategies (Brown et al., 2023). Local adaptation is crucial, considering geographical conditions and market characteristics, highlighting the importance of effective information management and timely decision-making in a globally connected context (Hasanuddin et al.,

2023). Adapting to local contexts ensures that technology implementations are not only effective but also aligned with regional business practices and customer expectations.

By integrating these theories with the reviewed literature, a deeper understanding of the complexities and challenges in implementing management information systems in the cement industry across Southeast Nigeria, South Sulawesi, and Kenya can be achieved. This approach also helps identify best practices in managing both local adaptation and the globalization of information technology within diverse business contexts.

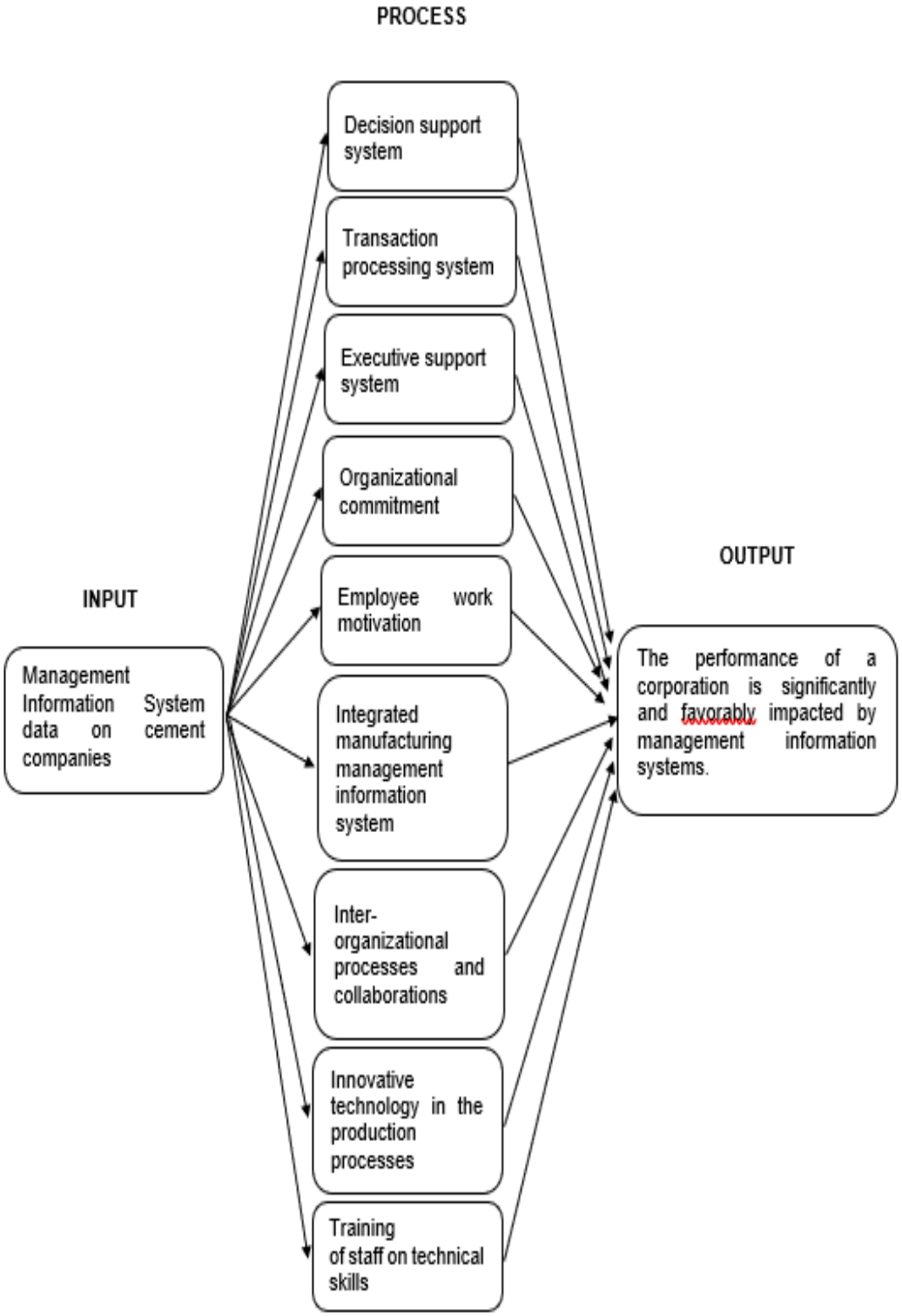

Figure 1. Conceptual Framework

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METHOD

This research employs a literature review approach to explore the implementation of management information systems in the cement industry in Southeast Nigeria, South Sulawesi, and Kenya. The initial step involves a comprehensive search and in-depth analysis of relevant literature from various sources such as leading academic journals, international conferences, textbooks, and industry reports discussing practices and comparisons among countries in the application of information technology in the cement industry (Muiruri & Peterson, 2020). The literature search focuses on gaining a profound understanding of how management information systems are implemented and operated in cement companies in Southeast Nigeria, South Sulawesi, and Kenya. The analysis considers not only the technology used but also other key factors such as organizational culture, government policies, and local market dynamics that influence the success or failure of implementation (Mukherjee, 2020). Subsequently, a synthesis of findings is conducted to identify common patterns, significant differences, and similarities in implementation practices across these three regions. This aims to deepen the understanding of the challenges and opportunities faced by cement companies in adopting and integrating information technology into their operations, and how local adaptation is crucial to successful implementation in a constantly evolving global context (Kiplagat, 2019). Thus, this research is expected to provide valuable insights for practitioners and researchers in the cement industry, as well as contribute theoretically to understanding the importance of local adaptation strategies in effectively managing management information systems in diverse business environments (Karuga & Kibe, 2023).

RESULT AND DISCUSSION

Based on research conducted at Cement Companies in Southeast Nigeria, Management Information System have significant and positive influence on company performance (Nworie & Oguejiofor, 2023). The Management Information System assessed are transaction processing systems, decision support system, and executive supportsystem. After a number of descriptive and inferential tests were run using the primary data that was gathered for the study, this conclusion was reached. The findings therefore imply that superior managerial decision-making is necessary to achieve improved corporate performance, as a company's financial performance cannot be superior than the caliber of decisions made by its managers. Gaining a competitive edge can be achieved through the strategic implementation of the management information system, which raises task productivity and firm profitability by improving the quality of information shared within the organization. Since companies that make the best use of their MIS structure are able to obtain high-quality information that is characterized by timeliness, correctness, relevance, and reliability, it makes sense that MIS and firm performance are related. MIS is a true instrument that gives corporate decision-makers pertinent data to improve their decision-making process as a whole (Nworie & Oguejiofor, 2023).

According to studies done at South Sulawesi cement companies, information technology significantly and directly affects organizational commitment (Yunus et al., 2023). Employee motivation is not much impacted by information technology. Organizational performance is directly improved by information technology, alert systems, and staff motivation. Information technology fosters employee motivation and organizational commitment, which have a favorable and considerable indirect impact on organizational performance (Yunus et al., 2023).

According to studies done at Kenyan cement firms, technological innovation significantly and favorably affects the performance of Kenyan cement production companies (Mbogori &

Moguche, 2021). The results, in particular, identified the four most important elements of technological innovation that have a major impact on how well Kenyan cement manufacturing companies operate. These include technological staff training, interorganizational procedures and partnerships, new manufacturing technology, and integrated manufacturing management information systems (Mbogori & Moguche, 2021).

Findings from Journal 1: Management Information System and Performance of Cement Firms in Southeast Nigeria

This study demonstrates that the use of Management Information Systems (MIS), such as decision support systems, transaction processing systems, and executive support systems, significantly and positively contributes to the performance of cement manufacturing companies in Southeast Nigeria. Statistical analysis shows that increased use of MIS contributes significantly to company performance with coefficients of 0.321, 0.496, and 0.501 respectively ($p < 0.05$). These findings are consistent with previous research (Alzhrani, 2020; Emmanuel et al., 2019; Ikechukwu et al., 2019; Kariuki & Nzuki, 2019; Ojo & Oni, 2022; Onodi et al., 2021; Tantua & Godwin-Biragbara, 2020), indicating that effective implementation of MIS can enhance operational and financial performance.

Findings from Journal 2: Enhancing Information Technology On Organizational Performance Through In Cement Industry South Sulawesi

Impact of information technology on agency capacity in the cement industry in South Sulawesi. The effect of data technology on body capacity is significant with a coefficient of 0.267 and a p-value of 0.025, which proves that information technology has an indirect effect on the ability of the body. Movement. The results of this study confirm that the promotion of activity mediates the enhancement of information technology to improve the body's capabilities. This shows that effective organizational commitment is needed to improve information technology to improve the quality and productivity of activities, ultimately increasing the body's capacity. This shows that the position of activity support in the implementation of industrial activities is really important to improve information technology and organizational capabilities. (Yunus et al., 2023).

Findings from Journal 3: Effect of Technological Innovation on Performance of the Cement Manufacturing Firms in Kenya

This study reveals that the performance of cement manufacturing companies in Kenya is significantly influenced by strategic innovations across various operational aspects. Statistical analysis indicates that the majority of respondents (82%) agree that strategic innovations, such as increased sales volume, operational efficiency, and reduced production costs, have a positive impact on company performance. The statement with the highest average rating is that increased sales volume occurs due to the adoption of strategic innovations, with an average rating of 4.35 out of 5. These findings support the theory that innovation is a key factor in enhancing competitiveness and profitability (Atalay et al., 2013; Veugelers, 2012; Baraev, 2015).

From these findings across the three journals, it can be concluded that effective implementation of Management Information Systems and adoption of strategic innovations are key to improving the performance and competitiveness of cement manufacturing companies. These findings provide a strong foundation for company management to consider further investment in information technology and innovation strategies to strengthen their market position.

CONCLUSION

Based on the findings from the three reviewed journals, it can be concluded that the use of Management Information Systems (MIS), including transaction processing systems, decision support systems, and executive support systems, significantly enhances the performance of cement manufacturing companies. Effective implementation of MIS improves operational efficiency, enhances planning accuracy, and coordinates operational activities to achieve organizational goals. Strategic innovations such as increased sales volume, production efficiency, and cost reduction also play a critical role in boosting company

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performance. Therefore, the integration of MIS and strategic innovations is crucial for strengthening competitiveness and profitability in cement manufacturing firms.

Based on the comprehensive literature review, several key recommendations emerge for cement manufacturing firms in Southeast Nigeria, South Sulawesi, and Kenya. Firstly, prioritizing the adoption of Management Information Systems (MIS), including transaction processing systems, decision support systems, and executive support systems, can significantly enhance operational efficiency and decision-making capabilities. Secondly, continuous investment in technological innovations such as integrated manufacturing management systems, automation of routine tasks, and online reporting systems is crucial. These innovations not only streamline operations but also contribute to cost reduction and improved productivity. Thirdly, fostering strategic innovations tailored to increase sales volumes, enhance operational efficiency, and lower production costs is essential. This entails embracing process, product, and market innovations that align with industry-specific needs. Fourthly, equipping employees with the necessary technical skills through training programs is vital to maximize the benefits of technological advancements. Lastly, promoting collaboration with stakeholders and refining inter-organizational processes can leverage collective expertise and resources for mutual growth and competitiveness. Implementing these recommendations strategically will empower cement firms in these regions to strengthen their market position and achieve sustainable growth amidst global competition.

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