

Evaluating Effective Project Management Strategies for Sustaining Market Competitiveness within the E-commerce Industry

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Abstract

This study evaluates effective project management strategies that enable sustained market competitiveness within South Africa's e-commerce sector. The research adopts a mixed-methods approach grounded in the pragmatic paradigm, combining a quantitative survey of 30 e-commerce firms with qualitative semi-structured interviews of five project managers. The aim is to identify critical success factors, operational challenges, and best practices that align with international standards while reflecting the contextual realities of South Africa. The findings reveal that strategic planning, leadership innovation, and risk management are the most influential practices driving project success. However, persistent barriers such as logistical constraints, limited infrastructure, and skill shortages continue to impede competitiveness. Agile and hybrid methodologies were found to be the most widely adopted frameworks, underscoring the importance of flexibility and cross-functional collaboration in a dynamic digital market. Thematic analysis highlights the significance of customer experience, omnichannel strategies, and AI-driven personalisation in sustaining customer loyalty and operational efficiency. The study concludes that achieving long-term competitiveness in South African e-commerce requires integrating global best practices with localised project management adaptations. This entails strategic investment in digital infrastructure, workforce upskilling, and innovation-driven leadership.

Keywords

E-Commerce, Project Management, Market Competitiveness, South Africa, Strategic Planning

1. Introduction

The digital economy cannot exist without e-commerce, which has expanded significantly, especially in China and Indonesia (Hendricks & Mwapwele, 2024). Nevertheless, the challenges of implementing Industry 4.0 technologies, including investment and employee training, pose a threat to companies' market positions (Bekmurzaeva & Kovalev, 2023). The competitive environment is changing because the effective implementation of Industry 4.0 may redraw industry boundaries, and thus, firms must be innovative enough to meet diverse market needs. To develop innovation and a competitive advantage, project management practices are essential. Despite their market leadership, e-commerce companies are facing challenges such as imitation of their business models and the pressures of globalization.

1.1 Objectives

The purpose of this research is to outline effective project management practices for South African e-commerce companies to address operational gaps and increase competitiveness.

2. Literature Review

Project management has become a strategic mechanism in modern business, facilitating competitiveness in an ever-changing environment. In e-commerce, project management aligns operational capacity with the business strategy to enhance efficiency, customer experience, and future performance. Yiching (2021) emphasises the motivational and coordinating powers of project management, whereas Zikovska (2019) mentions project management frameworks such as the Project Management Body of Knowledge (PMBOK) and the Project Management Maturity Model (PMMM) as means of integrating quality, risk, and change management. Wijayanto et al. (2021) also identify clarity of objectives, managerial expertise, and communication as universal success factors. Previous studies in Bangladesh by Jamil and Ahmed (2009) show that the concepts of responsiveness, flexibility, and system integration are highly effective in improving service quality, an aspect relevant to the emerging e-commerce-based market in South Africa, which requires a high degree of flexibility and technological compatibility.

2.1 Project Management Evolution. The 1950s-1960s were a period of scientific management principles, with a focus on planning and scheduling, which led to the maturation of project management (Drob, 2009). According to Russell et al. (2024), it was developed across four technological periods: PM 1.0 (planning, Gantt Charts, and PERT), PM 2.0 (quality and lean efficiency), PM 3.0 (agile flexibility), and PM 4.0 (digital automation). The new PM 5.0 aims to strike a balance between productivity, ethical responsibility, and environmental responsibility. Cabecas (2022) builds on this development with a Green Project Management (GPM) approach that combines predictive and agile approaches and integrates sustainability. The model's applicability to e-commerce is that it connects technological advancement to sustainability and competitiveness by linking operational objectives to the greater corporate responsibilities.

2.1 E-commerce Challenges

Online trade has become more complex and riskier due to technological advances. Norian et al. (2020) and Gupta et al. (2023) identify cybersecurity threats and data privacy issues, weak supply chains, and regulatory uncertainty as issues. Incidents like the COVID-19 pandemic highlighted the reliance on global logistics, leading to delays in stock orders and customer dissatisfaction. Adhering to privacy regulations such as GDPR and CCPA is costly for administrators, especially for SMEs (Cremer, 2022). Gupta et al. (2023) stress that phishing and ransomware are examples of cyber-attacks that diminish consumer confidence, whereas Wahshat et al. (2023) offer a solution in the form of blockchain to secure, machine-learning-based logistics, and the use of immersive AR/VR tools to customers. As a result, resilience in e-commerce now depends on the strength of digital security, ethical governance, and technological agility.

2.2 Project Management Best Practices in E-commerce

Competitiveness in the fast-growing digital marketplace is based on effective project management (Statista, 2023; Rane et al., 2023). Best-practice models focus on risk, interfaces, strategic planning, competency development, technological change, knowledge management, lifecycle management, and leadership (Drob, 2009).

Risk Management: It is necessary to identify and reduce cyber, operational, and compliance risks in their early stages (Cabecas, 2022; Safitra et al., 2023). Institutionalised risk practices are recognised by standards such as ISO 31000, ISO 27001, and the PMBOK processes, whereas the PMBOK processes encourage ongoing monitoring and adjustment, as advocated by the Smith Model.

Management of Interfaces: Organisation of interactions between suppliers and customers, as well as between the company's teams, using digital collaborative tools increases alignment (Cabecas, 2022).

Strategic Planning: Combining market analysis and SWOT analysis into the project design will ensure efficient resource use and market relevance (Laemmel, 2019).

Development of Competency: Ongoing training of digital literacy, analytics, and agile practice to develop adaptive human capital, facilitated through mentoring and professional learning.

Technological Evolution: Forecasting and efficiency are enhanced through automation, AI, and machine learning as long as ROI and scalability are evaluated.

Knowledge Management: AI-based systems to store and analyse data promote informed decision-making and innovation, and keep customer feedback loops.

Lifecycle and Operations Management: The use of lifecycle tracking programs and the application of Total Quality Management (Aljifri et al., 2003) will ensure quality and on-time delivery.

Leadership Style: Transformational and empowering leadership promotes collaboration and accountability, avoiding micromanagement and using results-based performance assessment (Yiching, 2021; Gupta et al., 2023). Together, the practices will increase operational resilience, communication, and technological competitiveness (Fong, Chan and Fong, 2002).

2.3 Global E-commerce Comparative Benchmarks

Best-practice benchmarking around the world is showing the opportunities for South Africa to bridge competitive gaps. Efficiency in cybersecurity, logistics optimisation, and the best customer service are the features of the best e-

commerce economies highlighted by international research (Hassan et al., 2015; Bekmurzaeva & Kovalev, 2023). Ensuring this kind of standard, such as secure payment gateways, clear-cut return policies, and being in line with the privacy laws, creates trust and transparency, the key drivers of repeat purchases (Aljifri et al., 2003). Additional integrity assurances are provided through certifications and security seals. Learning about world leaders will therefore help South African companies embrace new solutions, improve the reliability of their services, and meet international standards.

2.4 The Role of Customer Experience in E-commerce Project Management

The customer experience (CX) is becoming a prominent part of project management. The inclusion of UX/UI design and feedback systems in the project life cycle enhances satisfaction and loyalty (Hassan et al., 2015). Surveys and analytics can be used to identify pain points, and the design can be improved through repeated iterations. Engagement is further enhanced by personalisation and customisation. Severo et al. (2019) show that recommendation systems based on AI and user-defined product characteristics are easily boosting sales and emotional engagement. Personalisation using data analytics can make CX a strategic differentiator that can maintain a competitive advantage.

2.5 The Impact of Regulatory Compliance on E-commerce Project Management

Project governance is a vital part of regulatory compliance. Data-protection regulations, including the GDPR in the European Union and the CCPA in the United States, will require that project plans take into account legal requirements for transparency, consent, and consumer rights (Cremer, 2022). According to Aljifri et al. (2003), integrating compliance can reduce financial fines and increase trust. Having safe transaction systems and product information is not only a requirement of statutory duties, but also helps build reputation and consumer confidence.

2.6 The Influence of Supply Chain Management on E-commerce Success

Efficient supply chains support the timely delivery, cost control, and customer satisfaction. As emphasised by Chen and Rogers (2021), combining supply-chain strategies with project goals enhances forecasting, inventory management, and supplier reliability. The inventory systems are digital, providing visibility, whereas strategic collaboration with suppliers enhances responsiveness and quality. In a South African context, focusing on infrastructural and logistical inefficiencies is essential to improving operational performance and global competitiveness.

2.7 Role of Innovation and Technology in E-commerce Project Management

The sustainability of digital commerce is powered by innovation. AI, machine learning, and blockchain streamline workflows, optimise decision-making, and enhance security (Bekmurzaeva & Kovalev, 2023; Severo et al., 2019). The cultures of continuous innovation promote early adoption and experimentation to keep organisations flexible. Examples include blockchain, which offers clear traceability, and AI, which gets to know the customer better by personalising marketing and streamlining processes, thereby increasing efficiency and competitiveness.

2.8 The Importance of Data Analytics in E-commerce Project Management

Data analytics supports strategic decision-making by converting information into action (Norian et al., 2020; Xiao et al., 2022). By studying customer trends, customer performance, and market trends, businesses can predict future trends and effectively manage their resources and optimise their marketing strategies. The use of sophisticated analytics solutions would increase the responsiveness to consumer preferences and macroeconomic changes. Evidence-based management, hence, empowers nimbleness and integrates project objectives with quantifiable.

3. Methods

This study followed a pragmatic philosophy that prioritises practical approaches and real-world outcomes in research. This perspective is particularly valuable for understanding complex phenomena, as it enables the utilisation of diverse methods and techniques to explore the topic effectively. To achieve comprehensive insights, the research employs a mixed-methods design that integrates qualitative case studies with quantitative survey analysis. This methodological blend allows for a more holistic examination of the subject, as qualitative case studies provide in-depth contextual understanding, while quantitative surveys facilitate the identification of patterns within a larger population.

The study adopts an inductive approach, which is essential for theory development. By commencing with empirical observations, the research aims to generate insights regarding project management practices in South African e-

commerce firms. This approach fosters flexibility and exploration, enabling the development of theories that emerge from data rather than the rigid testing of existing models.

While the primary focus is on inductive theory development, limited deductive validation was also employed. This combination ensures that the research is anchored in established knowledge while also offering new insights. The research utilises a cross-sectional design, which involves data collection at a single point in time. This design effectively captures the current state of project management practices among South African e-commerce firms, providing a snapshot that can inform stakeholders about prevailing trends and challenges in the industry. This study aims to enhance the field of project management in the specific context of e-commerce in South Africa, ultimately assisting firms in improving their practices and strategies in a rapidly evolving digital marketplace.

4. Data Collection

Primary data collection included semi-structured interviews with 5 project managers and stakeholders, conducted virtually for 15–20 minutes each, to explore operational challenges and leadership practices. A structured online questionnaire (10 minutes) measured the frequency and effectiveness of project management practices across the sector. Purposive and snowball sampling ensured relevance and access, with recruitment conducted through PMI networks, e-commerce forums, and LinkedIn. Interview participants were excluded from the survey to maintain the independence of the datasets.

5. Results and Discussion

A six-phase thematic analysis, as outlined by Braun and Clarke (2006), was conducted on five semi-structured interviews. The process included familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up the findings. The analysis identified several recurring themes in the South African e-commerce sector, including operations, challenges, competitiveness, and innovation. A summary of the thematic code is presented in Table 1. With e-commerce growth, logistics challenges, customer UX optimisation, and best-practice adoption appearing more frequently in the responses. Overall, the findings show strong momentum in e-commerce, driven by post-pandemic demand, cross-border growth and repeat purchases. Companies are prioritising seamless customer experiences, from checkout to post-purchase support. However, logistical constraints especially delivery costs, rural delays and infrastructure gaps remain major barriers. Firms are increasingly aligning with global standards in payment security and delivery reliability. Best practices such as omnichannel strategies, influencer marketing, SEO and AI-based personalisation are widely adopted. Looking ahead, mobile commerce, automation and AI-driven scalability are key innovation areas shaping the sector's future (Table 1).

Table 1. Thematic analysis

Major Theme	Illustrative Sub-Themes	Frequency (out of 5)
E-commerce Growth	Post-pandemic demand; cross-border expansion; repeat purchases	5/5
Customer UX Optimization	Seamless checkout; UX/UI; post-purchase experience	5/5
Logistical Challenges	High delivery costs; rural delays; infrastructure constraints	5/5
Global Standards & Competitiveness	Payment security, delivery reliability, benchmarking	4/5
Best Practices Adoption	Omnichannel; influencer marketing; SEO; AI personalization	5/5
Future Innovation	Mobile commerce; automation; AI-driven scalability	4/5

5.1 Numerical Results

The analysis examined participants' years of industry experience, highest educational qualifications, and age distribution. The largest proportion of respondents reported having 3 to 5 years of experience (37%), indicating that over one-third of the sample had mid-level industry tenure. This was followed by those with 10 or more years of experience (30%), who suggested a substantial representation of highly experienced employees. A smaller proportion reported 6 to 10 years (23%) and 1 to 2 years (10%) of experience. Notably, no respondents reported having less than 12 months of experience. Overall, the distribution reflects a workforce with predominantly moderate to extensive experience.

Educational attainment varied across the sample. The most common qualification was a three-year degree (M+3), reported by 33% of respondents. This was followed by M+4 qualifications (27%), which include BSc Honours and B-Tech degrees. Approximately 23% of participants held a Master's degree (M+5). Lower proportions reported Matric (10%), PhD-level qualifications (M+7) (3%), or Other qualifications (3%). These results indicate that the majority of respondents possess post-secondary and postgraduate qualifications, reflecting a highly educated sample.

Participants' ages were distributed across all reported categories. The largest age groups were 50 years and older (27%) and 41 to 50 years (23%), indicating that half of the sample was over 40. Another 23% of respondents were between 36 and 40 years, while smaller proportions were observed in the younger categories: 31 to 35 years (10%), 25 to 30 years (10%), and 21 to 25 years (7%). This distribution suggests a workforce dominated by mature, experienced individuals.

Table 2. Participant Profile for quantitative data (N=30)

Years of Experience in the Industry	
Experience Range	Related Percentage
<12 months	0%
1–2 years	10%
3–5 years	37%
6–10 years	23%
10+ years	30%
Highest Educational Qualifications	
Qualification	Related Percentage
M+4 (BSc-Hons; B-Tech.)	27%
M+3 (Three-year degree)	33%
Matric	10%
M+5 (Master's Degree)	23%
M+7 (PhD or similar)	3%
Other	3%
Age Distribution	
Age Range	Related Percentage
21–25	7%
25–30	10%
31–35	10%
36–40	23%
41–50	23%
50+	27%

5.2 Project Management Practice

In this section, the respondents were asked to rate project management practices in e-commerce in South Africa (Table 2). Respondents rated project management practices positively overall. Strategic planning received the strongest agreement (M = 4.2), followed closely by leadership innovation (M = 4.1). Cross-functional collaboration was also well-regarded (M = 3.9), while risk management scored slightly lower but remained generally well-implemented (M = 3.8). Technological investment was rated moderately high (M = 3.7). Lifecycle and operations management reflected moderate implementation (M = 3.6), and knowledge management, though slightly above neutral, had the lowest mean score (M = 3.5).

Table 3. Project Management Practice

Practice	Mean (M)	Interpretation
Strategic Planning	4.2	Strong agreement
Leadership Innovation	4.1	Positively perceived
Cross-functional Collaboration	3.9	Well-regarded
Risk Management	3.8	Generally well-implemented
Technological Investment	3.7	Moderately high
Lifecycle & Operations Mgmt	3.6	Moderate implementation
Knowledge Management	3.5	Slightly above neutral

5.3 Key Challenges in E-commerce Project Management

The results in Table 3 show that logistical constraints were the most frequently cited and highly rated challenge (n = 22; M = 4.3), indicating strong concern. Customer expectations also emerged as a high-importance issue (n = 18; M = 4.1). Technology integration was identified by 15 respondents and rated as a significant challenge (M = 3.6). Regulatory compliance, while selected less frequently (n = 12), still reflected moderate concern (M = 3.8). Skill shortages were the least selected challenge (n = 10) and were viewed as only slightly challenging (M = 3.5) (Table 4).

Table 4. Key Challenges in E-commerce Project Management

Challenge	Frequency	Mean Rating	Interpretation
Logistical Constraints	22	4.3	Major challenge
Customer Expectations	18	4.1	High importance
Technology Integration	15	3.6	Significant issue
Regulatory Compliance	12	3.8	Moderate concern
Skill Shortages	10	3.5	Slightly challenging

5.4 Areas for improvement from the practitioner's perspective

Survey results indicated that the most critical improvement area was supply chain and logistics management, identified by 70% of respondents. Technology infrastructure also emerged as a major concern (63.3%), followed by leadership and decision-making (60%). Team communication and collaboration were noted by 53.3% of participants, while budgeting and financial management were cited by 46.7%. Regulatory compliance was the least frequently mentioned issue, though still identified by 36.7% of respondents (Figure 1)

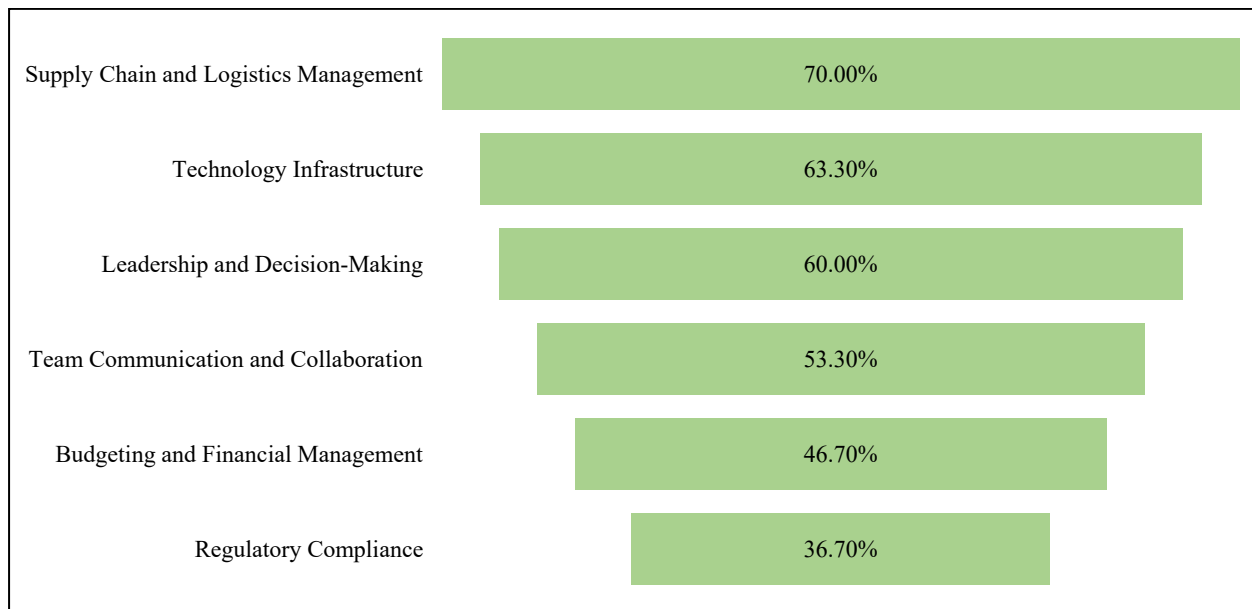


Figure 1. Areas for Improvement from the Practitioner's Perspective

5.5 Comparison of Qualitative and Quantitative Results

There is a strong consensus that logistics is the primary constraint: interviews highlighted delivery costs, rural delays, and infrastructure gaps, and the survey ranked logistics as the most critical challenge (Table 5). Customer experience also aligns with both qualitative and quantitative data, emphasising its importance. Professional practice maturity is supported by high means for strategic planning and leadership innovation. Divergences emerge where best practice adoption appears stronger qualitatively than quantitatively (e.g., in knowledge management). Innovation is a strong theme, but challenges with technology integration persist. Growth appears prominently in qualitative data but lacks quantitative measurement.

Table 5. Convergence Between Qualitative and Quantitative Indicators

Qualitative theme (freq)	Key qualitative evidence	Quantitative indicator(s)	Strength of agreement	Interpretation
Logistical challenges (5/5)	Delivery costs, rural delays, infrastructure gaps	Top challenge (n=22; M=4.3)	High	Strong consistency across methods.
Customer UX optimisation (5/5)	Checkout, UX/UI, post-purchase	Customer expectations (n=18; M=4.1)	High	UX importance supported quantitatively.
Best-practice adoption (5/5)	Omnichannel, SEO, AI personalisation	High PM ratings (M=4.2-3.9)	High	Practices mature overall.
Global standards (4/5)	Security, reliability, benchmarking	Regulatory compliance (n=12; M=3.8)	Moderate	Important but not top challenge.
Future innovation (4/5)	Mobile, automation, AI	Tech invest (M=3.7); integration (M=3.6)	Moderate	Intent > execution.
E-commerce growth (5/5)	Post-pandemic growth, cross-border	No direct metric	Not assessed	Survey did not measure growth.

In Table 6, qualitative findings suggest a strong emphasis on best-practice adoption, innovation, and benchmarking, yet the quantitative results reveal gaps in knowledge management, lifecycle management, and technology integration, indicating underlying capability constraints. Together, these patterns show that while organisations aspire to growth and modernisation, strengthening governance, improving integration capacity, and establishing measurable growth indicators are needed to fully realise these ambitions.

Table 6. Divergences Between Qualitative and Quantitative Findings

Area	Qualitative signal	Quantitative signal	Implication
Best-practice depth	Widely adopted themes	Lowest means: Knowledge Management (3.5), lifecycle management (3.6)	strengthen governance.
Innovation readiness	Strong focus on AI, automation	Tech integration challenge (3.6)	Integration bottlenecks limit innovation.
Standards vs pressures	Strong benchmark orientation	Moderate compliance concern (3.8)	Overshadowed by logistics/UX issues.
Growth narrative	High qualitative emphasis	No growth metrics collected	Add KPIs to verify narrative.

5.6 Proposed Improvements

The results point to several areas where the e-commerce environment can be strengthened. One of the most pressing issues is logistics, particularly delivery reliability and rural coverage. Companies could benefit from refining their distribution networks, forming regional delivery partnerships, and adopting tools that help optimise routes. Customer experience also needs continuous attention; simplifying online purchasing steps and improving follow-up communication would go a long way in building trust.

Although many organisations believe they follow best practices, the survey suggests gaps in knowledge sharing and lifecycle management. Introducing clearer processes, routine reviews, and shared project documentation could stabilise performance. On the technology side, firms appear keen to innovate, yet integration difficulties slow progress. Prioritising system compatibility and structured change-management processes may help translate ambition into real improvements. Finally, capturing specific growth indicators such as repeat customer activity or fulfilment accuracy would help businesses track whether their strategies are truly delivering results.

5.7 Validation

Both the interview protocol and the survey questionnaire were developed through an extensive review of relevant literature on e-commerce, project management practices, and operational challenges. Anchoring the instruments in established theory ensured that each item reflected constructs that are widely recognised and empirically supported in prior studies. This foundation strengthened the initial content relevance of both tools.

To confirm that the instruments accurately measured the intended content, the draft versions were subjected to expert validation. An independent practitioner with professional experience in e-commerce operations and project

management reviewed the interview questions and survey items. The expert evaluated each question for clarity, appropriateness, and alignment with the constructs of interest.

Feedback from this process highlighted areas where wording could be improved or where questions required better alignment with the study objectives. The suggested adjustments were incorporated, ensuring that the revised tools demonstrated strong content validity and were suitable for data collection.

After expert review, a pretest was conducted using a small group of individuals who closely resembled the target population. The purpose of the pretest was to ensure that respondents interpreted the questions consistently and without confusion. Participants provided feedback on: clarity of wording, flow of questions, the suitability of response options, and the overall length and structure of the instruments. Based on this feedback, several refinements were made to improve the usability and reliability of the instruments. The final versions eliminated ambiguous phrasing and enhanced the logical sequencing of items.

Before the study commenced, the complete research proposal, including the interview protocol, survey questionnaire, and all participant documents, was submitted to the institutional ethics committee for review. Ethical approval was granted only after the committee confirmed that the study met the required standards of academic integrity, participant protection, and responsible data handling. The ethics clearance certificate authorised the researcher to begin data collection, ensuring compliance with principles of voluntary participation, informed consent, confidentiality, and responsible storage and use of data. No data collection activities were undertaken prior to receiving official ethics clearance.

6. Conclusion

This study sets out to identify effective project management practices that can enhance competitiveness in South Africa's e-commerce sector, and the findings successfully address all stated research objectives. Through a mixed-methods approach, the research demonstrates that strategic planning, leadership innovation, and sound risk management form the foundation of successful project delivery in the industry. Qualitative insights and quantitative results consistently highlight logistics constraints, technology integration challenges, and rising customer expectations as the most pressing barriers to sustaining competitiveness. A key contribution of this research is its integration of global best practices with South Africa's unique operational context, offering a framework that blends strategic alignment, innovation readiness, and customer-centric delivery. Overall, the study provides evidence-based guidance to help e-commerce firms strengthen their capabilities, enhance their resilience, and improve their long-term market performance.

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Biographies

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