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Unpacking the dynamics: The influence of M&A networks on e-innovation in African Listed Firms

Authors:
Suleman Bawa[1]
Xie Yongping[1]
Ibn W. Benin[2]
Inuusah Mahama[3]
Abdulaziz S. Almudaihesh[4]

Affiliations:
[1]Department of Economics and Management, Faculty of Management Science and Engineering, Xidian University, Xi'An, China

[2]Department of Accounting and Finance, University of West Scotland, Paisley, United Kingdom

[3]Department of Counseling Psychology, University of Education Winneba, Winneba, Ghana

[4]Department of Business and Management, University of Bradford, Bradford, United Kingdom

Corresponding author:
Suleman Bawa,
sulemanbawa@ymail.com

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Purpose: This study examines the impact of mergers and acquisitions (M&A) networks on e-innovation networks within African-listed firms. It provides empirical evidence of how M&A influences e-innovation, emphasising the roles of resource acquisition and market dynamics in promoting innovation, technological advancement, and economic growth.

Design/methodology/approach: Employing a quantitative research design, this study analyses the relationship between M&A and e-innovation networks among African-listed firms. Through purposive sampling, it evaluates 238 firms involved in M&A transactions from 2010 to 2023. Multiple regression models are used to test hypotheses regarding the structural characteristics of M&A networks and their impact on e-innovation, with robustness tests conducted to ensure reliability. This approach offers insights into how resource acquisition and market volatility influence e-innovation within the African corporate context.

Findings/results: The study reveals that M&A networks significantly impact e-innovation networks in African firms, with resource acquisition enhancing e-innovation capabilities. Additionally, market volatility further strengthens this relationship. These findings suggest that leveraging M&A networks is vital for fostering innovation across various firm types, and targeted governmental support could enhance these effects.

Practical implications: The results indicate that M&A networks can substantially boost e-innovation in African firms. Businesses are encouraged to pursue strategic mergers to access new technologies and drive economic growth, while policymakers should support M&A activities that align with innovation and economic development goals.

Originality/value: This article explores the role of M&A networks in influencing e-innovation within African-listed firms, filling a significant gap in the existing literature and offering valuable insights for corporate strategists and policymakers.

Keywords: M&A networks; e-innovation networks; network analysis; resource acquisition; market volatility; corporate strategy.

Introduction

E-innovation networks refer to firms that utilise digital technologies to drive innovation, enhance business processes and offer new products and services (Wang & Zhou, 2023). These firms collaborate within broader networks to foster technological advancements and economic growth (Yousaf et al., 2021). E-innovation leverages advanced technologies in information, computing, communication and connectivity to create new products, enhance existing ones, streamline production and optimise organisational models (Hasan et al., 2017; Javed et al., 2021; Yousaf et al., 2021). These networks are crucial for improving production efficiency, adapting business models, enhancing competitive advantage and breaking down organisational barriers, thus making exploring e-innovation network strategies vital for economic growth. However, the overall significance of networks does not automatically lead to a uniform perception among firms. Instead, it pertains to how individual firms perceive and respond to adopting e-innovation networks, which may differ based on strategic orientation, resource availability and internal capabilities. Therefore:

RQ1: *How is an e-innovation network uptake perceived in a firm?*

Researchers have investigated the link between internal capabilities (resource management, dynamics and integrative capacities) (Tsou et al., 2016) and external factors (infrastructure

development and customer engagement) (Pereira et al., 2024; Srivastava et al., 2023). Despite significant research and development (R&D) investments in high-tech fields, companies often face challenges in innovation because of intense competition and resource constraints. Thus, leveraging external networks is a practical strategy for e-innovation, supporting creative R&D, product development and competitiveness. Social networks play a crucial role in fostering corporate innovation by providing access to complementary resources, reducing information asymmetry and facilitating information exchange, which builds trust and reduces coordination costs (Wang et al., 2024; Xie et al., 2022).

Mergers and acquisitions (M&A) networks are interconnected relationships formed through M&A between firms (Zhang et al., 2023). These networks involve the strategic connections and collaborations established as a result of M&A activities. They play a critical role in enhancing e-innovation by offering access to valuable resources such as market research, industry insights, regulatory information and advanced technical knowledge (Chen, 2023; Zhang et al., 2024). Theories like weak ties, structural holes and social capital explain how M&A networks foster innovation by improving information flow, reducing risks, and building trust and collaboration (Bawa & Yongping, 2024; Ceci et al., 2020). Contextually, the theory of structural holes provides significant explanatory power, emphasising how firms in brokerage roles within M&A networks can tap into non-redundant, valuable knowledge flows. These bridging firms are better positioned to meet the demands of e-innovation networks by linking disparate knowledge domains, thereby enhancing their innovation potential. This theoretical perspective informs the interpretation of the network mechanisms examined in the study. Consequently:

RQ2: *How is a firm's M&A network demonstrated in response to e-innovation network requirements?*

Researchers have examined how M&A networks impact M&A behaviour, focusing on network position to evaluate a business's influence within the network (Ding et al., 2024a; Jin et al., 2021). Firms with significant power typically occupy central positions in the network, determining their ability to allocate resources, seek information and form close relationships. Network centrality reflects a company's standing and access to diverse resources, facilitating information sharing and collaboration and boosting the company's reputation and influence within the network. Research shows that centrally positioned firms have better access to resources and data, can leverage national policy support, and form cooperative partnerships to overcome technological barriers and reduce risks (Teece, 2010). Thus, strengthening a company's network position provides a competitive edge in e-innovation through enhanced access to resources, information and collaboration opportunities.

Despite the benefits, extensive R&D cycles and other aspects of e-innovation networks present challenges (Hasan et al., 2017; Rabelo et al., 2015). Mergers and acquisitions networks and the flow of markets, information and resources are crucial in corporate technological e-innovation networks (Gupta et al., 2021; Chen, 2023; Zhang et al., 2024). Embeddedness theory suggests that businesses within a network influence and constrain each other (Wigren-Kristoferson et al., 2022). Studies indicate that a company's integration into social networks significantly impacts its partners' innovation capacity (Najafi-Tavani et al., 2018). While there is no significant short-term impact on e-innovation networks (Popa et al., 2016), M&A networks have a cumulative positive effect in the long-term (Ding et al., 2024a), facilitating resource acquisition and innovation (Christofi et al., 2019). Thus, this brings the question:

RQ3: *How do a firm's M&A networks support the maximisation of an e-innovation network?*

Market volatility can reduce this positive impact (Cheng & Yang, 2017), while diverse professional backgrounds in top management teams, larger firms and those in low-tech markets show stronger benefits from these networks (Buenechea-Elberdin et al., 2018).

This article addresses a core gap in the literature by clearly articulating the problem: while networks are increasingly used as vehicles for innovation, there remains limited understanding of how M&A networks, particularly in resource-constrained and volatile markets, support e-innovation uptake and expansion over time. Specifically, there is a lack of empirical evidence on how firms' positions within M&A networks influence their capacity to access, integrate and utilise critical resources to meet the demands of digital transformation and long-cycle innovation.

This article contributes to the literature by examining how multinational M&A firms enhance their e-innovation networks through M&A networks. By considering M&A transactions as network links, the article describes the structural features of these networks and measures a company's power and intelligence, influencing its resource distribution and network search capabilities. It provides an overview of the effects of M&A on the frequency, scope and success rate of transactions, contributing to understanding corporate M&A activity across e-innovation network firms, particularly in Africa. The research tests both short-term and long-term cumulative effects of M&A networks on corporate e-innovation networks. The study will also gain insights regarding the three research questions raised through a face-to-face interview with industry experts.

The study highlights that while e-innovation networks involve extended R&D cycles (Hasan et al., 2017; Wang & Zhou, 2023), M&A networks have a constant and dynamic cumulative influence (Ding et al., 2024b; Zhang et al., 2023), thus differentiating the short- and long-term impact mechanisms. The article systematically investigates how M&A networks facilitate the acquisition of corporate resources such as money, people and information, thereby enhancing e-innovation outcomes. It examines the moderating role of

market volatility, showing how it can impact the effectiveness of M&A networks in promoting e-innovation by introducing more significant risks and necessitating adjustments in innovation strategies. Additional analyses on top management teams, African markets and firms provide a comprehensive understanding of the factors affecting e-innovation networks, making the findings more precise and applicable. The article suggests that corporations should develop specific strategies to leverage their network positions for e-innovation and that governments should enhance policies to provide targeted advice and support for e-innovation networks.

Theoretical framework and hypotheses development

Mergers and acquisitions and e-innovation networks

E-innovation networks involve extended development cycles, substantial risks and high expectations (Chen, 2023). To enhance innovation outcomes, businesses need robust financial, technological and human resources (Bawa et al., 2023; Koster & Benda, 2020). Managing risks and accelerating the innovation process are crucial for success. Mergers and acquisitions networks are pivotal in providing access to essential expertise, technology and resources necessary for research and development within e-innovation networks (Chen, 2023; Gupta et al., 2021; Zhang et al., 2024). Firms strategically positioned within these networks can quickly access valuable information and resources, which facilitates corporate e-innovation (Javed et al., 2021; Wang & Zhou, 2023).

By leveraging M&A networks, businesses can exchange and transfer crucial knowledge, fostering the development of new ideas and innovations. These networks also enhance inter-company relationships, encouraging regular communication and dialogue, which improves problem-solving and openness to knowledge-sharing. Efficient resource utilisation for innovation is another advantage of strong M&A networks (Cheng & Yang, 2017; Xing et al., 2023). Firms with well-positioned networks can support their R&D partners in minimising costs through strengthened trust and ties, increasing the efficiency of R&D investments over time (Wen et al., 2021). This is because of their ability to rapidly allocate resources in response to market changes, manage technology transfers strategically and maximise innovation resources, thereby reducing costs and risks while improving the quality of innovation (Teece, 2010). The impact of network positions on e-innovation is cumulative rather than immediate (Wang et al., 2024). Building relationships and utilising resources requires time, resulting in varying short-term and long-term effects (Wu et al., 2017). The long-term impact of M&A networks reflects their cumulative influence on a company's e-innovation efforts (Alfaro et al., 2019; Chen, 2023), whereas the short-term impact pertains to immediate effects (López & Oliver, 2023).

In emerging economies, where firms frequently operate below the technological frontier and encounter skill deficiencies (Goedhuys & Sleuwaegen, 2010), M&A networks provide essential pathways for bridging capability gaps. These networks facilitate the assimilation of external knowledge and expertise, assisting firms in compensating for internal limitations in managerial and production competencies. Consequently, strategic M&A participation enables and significantly enhances e-innovation network engagement in this context.

Sustained integration of both internal and external resources significantly enhances e-innovation networks (Yousaf et al., 2021). Companies can strengthen their co-innovation capabilities by transferring, accumulating, and combining new and existing knowledge. Firms that consistently utilise their networks over time are more likely to see improvements in their e-innovation network outcomes (Javed et al., 2021; Nassani et al., 2023; Tsou et al., 2016; Wang & Zhou, 2023; Yousaf et al., 2021). Familiarity with established networks optimises a company's acquisition of information and expertise, positively impacting innovation. Mergers and acquisitions networks, characterised by their enduring relationships, provide continuous benefits for advancing e-innovation networks (Chen, 2023). These networks facilitate easy access to resources and help build strong connections with other firms, enhancing a company's influence and leadership within the network. Furthermore, in developing regions where innovation systems are often fragmented and institutional constraints are significant (Bradley et al., 2012), M&A networks act as crucial external channels that alleviate environmental uncertainties and resource deficiencies. By integrating into these networks, firms can secure more stable funding, managerial expertise and innovative knowledge flows that would otherwise be beyond their reach, enhancing their capacity to innovate even in constrained contexts.

Thus, we propose the following hypotheses:

H1a: Mergers and acquisitions networks have a long-term cumulative effect that fosters e-innovation networks.

H1b: In the short-term, M&A networks have a minimal impact on e-innovation networks.

Mergers and acquisitions networks and resource acquisition for e-innovation networks

For businesses to thrive in e-innovation networks, they need ongoing access to financial, human and informational resources (Tsou et al., 2016; Wang & Zhou, 2023; Yousaf et al., 2021). Resource Dependence Theory highlights that relying solely on internal resources can hinder a company's growth and survival (Celtekligil, 2020). Thus, external resources are vital in bolstering a company's e-innovation networks and maintaining a competitive edge (Hasan et al., 2017; Tsou et al., 2016). Financial resources are crucial for sustaining high-tech R&D activities. Adequate funding helps mitigate the impact of insufficient investment, enabling continuous R&D efforts and enhancing the effectiveness of e-innovation networks (Chen, 2023; Xu et al., 2020).

Human capital is equally essential, as skilled personnel in R&D foster innovation through teamwork and learning, enhancing the organisation's ability to assimilate and apply new information (Bawa & Yongping, 2024). Additionally, having robust information resources is essential for maintaining the momentum of corporate e-innovation networks (Chen, 2023). Understanding market demands is crucial for innovation success, and access to rich information resources helps firms capture emerging market needs (Shenhar et al., 2020; O'Connor & Rice, 2013). Effective use of information resources enables firms to better align with customer needs and deliver high-quality products and services (Camisón-Haba et al., 2024; Setia et al., 2013).

Being well-positioned within M&A networks enhances access to various resources. Firms central to these networks can collaborate with other companies, reallocating financial, human and informational resources to optimise their network position (Zhang et al., 2023). Central firms benefit from increased partnership opportunities, facilitating business loans and additional funding without relying heavily on specific partners (Schell et al., 2024). Central network positions offer better communication opportunities, advanced skills and expertise, strengthening relationships and trust and attracting top talent (Jin et al., 2021; Zhang et al., 2023). Firms with greater network centrality have more influence, reducing information asymmetry and ensuring better access to critical information (Xing et al., 2023). This is particularly significant in emerging economies, where the capabilities of firms may be inadequate, and the external environment presents unique challenges for innovation. Mergers and acquisitions networks, by enhancing resource acquisition capabilities, provide firms in these contexts with vital tools to surmount structural limitations and enhance their innovation potential. Thus, we propose the hypothesis:

H2: Mergers and acquisitions networks enhance e-innovation networks by facilitating corporate resource acquisition.

The moderating role of market volatility

Mergers and acquisitions networks can potentially drive e-innovation networks, but they must contend with a complex and unpredictable external environment (Chen, 2023). Market volatility can disrupt business plans, making it difficult to forecast economic growth and consumer demand, which in turn hampers innovation (Tidd & Bessant, 2020). Limited access to external information further constrains a firm's capacity for innovation (Mendoza-Silva, 2021).

In periods of high uncertainty, assessing investment projects' feasibility becomes challenging, leading firms to make more conservative decisions that negatively impact innovation outcomes (Lou et al., 2022). Increased uncertainty also raises communication costs and financial challenges, hindering business cooperation. Managers may reduce their investment in innovation because of anticipated instability and lower revenues, thereby affecting e-innovation outcomes (Alfaro et al., 2019; Bawa et al., 2023). Moreover, high uncertainty can cause managers to prioritise personal gains over organisational interests, diminishing innovation efforts. Firms embedded in M&A networks may find their collaborative advantage diminished in volatile market conditions, as the strategic benefits of alliances are compromised by declining predictability, shortened planning horizons and heightened risk aversion among partners. These dynamics are particularly critical in emerging markets, where economic cycles, regulatory shifts and institutional changes occur frequently, compounding the challenges of long-term innovation planning and inter-firm knowledge exchange. In such environments, even resource-rich firms may hesitate to tap into the full potential of M&A networks because of concerns about misaligned incentives and fluctuating innovation returns. Consequently, the effectiveness of M&A networks in stimulating e-innovation can be significantly undermined in circumstances of high market volatility. Based on these considerations, we hypothesise:

H3: Market volatility weakens the positive relationship between M&A networks and corporate e-innovation networks by disrupting knowledge flows and amplifying uncertainty.

Heterogeneous impacts of mergers and acquisitions networks on e-innovation networks

Mergers and acquisitions networks influence e-innovation at multiple levels, including top management, industry and company, with varying effects (Alfaro et al., 2019; Chen, 2023; Gupta et al., 2021; Zhang et al., 2024). For instance, top management teams with diverse professional backgrounds can better identify market shifts and capitalise on innovation opportunities (Firk et al., 2022). Managers with financial expertise often prioritise capital security and earnings, which may lead to resistance against high-risk e-innovation initiatives (Dotzel et al., 2013). Conversely, other managers may prioritise the potential utility and impact of innovation. The leadership team's cognitive diversity and decision-making orientation play a vital role in how firms utilise M&A networks for innovation. A variety of perspectives facilitates more balanced risk assessment, faster recognition of synergies and more adaptable responses to technological change.

The associated risks and costs in high-tech markets can deter additional innovation investments (Fontana & Nesta, 2009). On the other hand, low-tech markets are more likely to leverage technological advancements for significant transformations (Hirsch-Kreinsen, 2008). This distinction is particularly relevant in developing economies, where low-tech sectors may adopt digital technologies to bypass traditional growth trajectories. In contrast, although inherently more innovative, high-tech industries encounter more significant cost barriers and market saturation, rendering the long-term benefits of M&A networks more dependent on ecosystem maturity. With abundant resources, financial strength and higher risk tolerance, large firms are better positioned to engage in e-innovation networks. In contrast, smaller firms often face information asymmetry and

limited resources (Alfaro et al., 2019). Mature firms have the stability and resources to embrace e-innovation networks more effectively (Smid et al., 2005).

In contrast, firms in their growth or decline stages may struggle to prioritise and implement innovation because of more significant challenges (Shahzad et al., 2022). The organisational lifecycle significantly influences how firms extract value from M&A networks. Mature firms benefit from established routines, absorptive capacity and a stable resource base that facilitates strategic integration and innovation scaling. In contrast, younger firms may lack the institutional maturity or operational discipline necessary to manage complex inter-firm collaborations, while declining firms often focus on survival rather than innovation. Based on these insights, we propose the following hypotheses:

H4a: Firms led by top management teams with diverse professional backgrounds and a balance of financial expertise are more likely to leverage M&A networks to promote e-innovation networks.

H4b: Mergers and acquisitions networks exert more sustained influence on e-innovation in both low-tech and high-tech markets, though the mechanisms and timelines of impact differ by sectoral context and innovation capacity.

H4c: Large and established firms experience more enduring and significant effects from M&A networks in fostering e-innovation networks due to their structural capabilities and institutional stability.

Methodology

Strategies and methodologies

A mixed-method approach was employed, integrating exploratory, qualitative and quantitative methods.

The study employed face-to-face and online questionnaires to gather primary data, ensuring geographical inclusivity and methodological consistency. Specifically, 238 firm executives took part in the survey – 18 through face-to-face interviews and 220 via email or online platforms such as LinkedIn and X (formerly Twitter), using a standardised questionnaire provided by the firm executives. These complementary methods facilitated broader participation and yielded robust insights. The study created a questionnaire using Google Forms and responses were collected via email and online platforms such as LinkedIn and X (formerly Twitter), as provided by the firm executives. The study utilised an inductive methodology to summarise and analyse textual content, identify connections, and develop a framework grounded in existing studies and data (Azungah, 2018; Vears & Gillam, 2022). This interpretive approach effectively reveals new insights by comparing different scenarios (Loureiro et al., 2020).

Mergers and acquisitions' transactions and participant selection

The study examines M&A transactions from the Zephyr database, focusing on those marked as 'Assumed Completed' and 'Completed' between 2010 and 2023. This study used Zephyr for M&A data, ensuring that the network structure was accurately captured. Unlisted firms and transactions from specific conflict zones were excluded to ensure data accuracy. A network structure was created where each company acts as a 'node', and each M&A is a 'connecting edge', illustrating relationships formed through M&A activities. Purposive sampling was used to select participants, emphasising 'information-rich' cases. In July 2023, desk research identified 398 significant companies across 18 major African stock exchanges, with 238 executives participating in the study, resulting in a 70% response rate. This high response rate was driven by their interest in e-innovation networks, resource investment and the potential for international publications. The diverse and large sample size enhances the study's depth and industry representativeness in Africa.

Sample dataset

The research leveraged a secondary dataset covering African stock exchanges from 2010 to 2023, specifically focusing on M&A agreements. To ensure thorough analysis, e-innovation data and network position centrality were meticulously aligned with the corresponding stock codes and firm names. Financial data for the same period was sourced from the Bureau van Dijk (BvD) database, providing a robust foundation for the study.

Survey data collection strategy

The study's questionnaire was structured into two sections: the first gathered demographic data. In contrast, the second explored vital themes such as perceptions of e-innovation networks and the role of M&A networks in enhancing e-innovation. Participants were encouraged to share detailed examples, with follow-up questions used to clarify their responses. To ensure consistent understanding, definitions of e-innovation networks were provided to all participants. The survey, conducted between January 2022 and March 2023, included interviews lasting 1–2 h. The research team carried out 18 in-person interviews and gathered 220 online responses. All responses were verified through a cohesive survey protocol, and follow-up clarifications were made where necessary. After thoroughly screening to eliminate unmatched samples and those missing key indicators, the final dataset consisted of 238 firm-year observations. Data collection continued until no new themes emerged, aligning with the inductive methodology (Azungah, 2018).

Measurement of mergers and acquisitions networks and key variables

E-innovation, the dependent variable, is measured by the number of high-tech patent firms that hold, using data from the Zephyr database (2010–2023). The natural logarithm of the total number of high-tech patents at the 'company-year' level addresses the skewed distribution of patent data.

We assumed that the number of firms in the M&A network in year t is N, and thus represent the M&A network as an N x N adjacency matrix A and compute our network centrality degree as Equation 1:

$$\text{degcent}, i = \sum_j aij / (N-1) \quad \text{[Eqn 1]}$$

where $aij = 1$ when firm i takeover or merges with a firm j, if not $aij = 0$. $\Sigma_j aij$ denotes the sum of M&A activities by firm i while N denotes the sum of M&A network firms.

The study also examines the mediating role of resource acquisition (financial, human and informational). Financial and human resources are measured by R&D investment and the ratio of R&D workers, respectively. Information resource acquisition is assessed using the accuracy of analysts' earnings forecasts.

Market volatility (MV), a moderating factor, is quantified using anomalies in company revenue. This involves regressing the company's sales revenue for the previous 14 years, calculating the residuals' standard deviation, and dividing this by the average sales revenue.

Control variables include operating income, profit rate, and other financial metrics. Table 1 shows the characteristics of respondents and their companies, and Table 2 shows the correlation matrix.

TABLE 1: Characteristics of respondents and their companies (N = 238).

Variable	Frequency (n)	%
Firm size (full-time staff)		
< 200 staff (micro)	93	39.08
200 ≤ no. < 500 (medium)	94	39.50
> 500 staff (large)	51	21.42
Industry experience (years)		
< 10	167	71.17
> 10	71	29.83
Industry operation		
Fintech	71	29.83
E-commerce	37	15.55
Agri-tech	28	11.76
Health-tech	37	15.55
Edtech	19	7.98
Telecommunications	26	10.92
Other industry	20	8.41
Participant role		
Director	104	43.70
Manager	121	50.84
Other	13	5.46
Global presence		
Yes	210	88.24
No	28	11.76
Gender		
Male	179	70.21
Female	59	24.79
Firm location		
West Africa	60	25.21
North Africa	58	24.37
East Africa	55	23.11
Southern Africa	65	27.31

Data analysis

Qualitative content analysis (QCA) was used to examine the data, focusing on the short-term and long-term impacts of M&A networks on e-innovation networks through quantitative analysis. We thus formulated and used a panel model (Equation 2 and Equation 3):

$$innovation_{it} = \alpha_1 + \beta_1 Degcent_{it} + \theta_1 X_{it} + \mu_i + \delta_t + \varepsilon_{it}(1) \quad \text{[Eqn 2]}$$

$$innovation_{it} = \alpha_2 + \beta_2 LDegcent_{it} + \theta_2 X_{it} + \mu_i + \delta_t + \varepsilon_{it}(2) \quad \text{[Eqn 3]}$$

where X is the set of control variables for firm i in year t, μ_i is the firm fixed impact, δ_t is the annual fixed impact, LDegcent is the increasing network centrality and ε_{it} is the error term. We anticipate that the coefficient β_1 will be insignificant, whereas we expect the coefficient β_2 to be significantly positive, based on our previous H1a and H1b that M&A networks have a long-term cumulative effect that fosters e-innovation networks and in the short-term, M&A networks will have a minimal impact on e-innovation networks. The goal of QCA was to thoroughly explain the studied phenomenon and develop a conceptual model based on the data. This method systematically analyses textual content to uncover patterns and themes, providing insights into underlying processes and relationships (Thomann & Maggetti, 2020).

A structured template guided the analysis, incorporating participants' researcher-centric themes and informant-centric codes and terminology (Dunwoodie et al., 2023). This dual-layered approach ensures that the analysis integrates both researchers' insights and participants' perspectives. As the analysis advanced, theoretical dimensions emerging from the data were refined, helping to build a conceptual model and understand complex relationships. This iterative process allowed for continuous refinement of the theoretical framework. Pearson's Chi-square test was used to check for discrepancies in responses across different industries and to validate the findings. The test revealed no significant differences, indicating that the responses were consistent and reliable, which supports the generalisability of the study's conclusions. We also recognise potential methodological limitations. Specifically, self-reported data can be prone to biases such as social desirability or recall errors. To tackle these limitations, the study employed triangulation by integrating desk research, follow-up interviews, and cross-validation across data sources. Furthermore, consistency checks and statistical controls improved data reliability and reduced respondent bias.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Ethics Unit Committee of the Faculty of Management Science

TABLE 2: Correlation matrix.

Variable	Mean (μ)	SD (σ)	M&A	E-INs	MV	OI	PR	CR	ALR	ATR	LP
M&A	1.82	1.26	1.00	-	-	-	-	-	-	-	-
E-INs	2.89	0.41	0.15***	1.00	-	-	-	-	-	-	-
MV	3.16	0.36	0.33***	0.24***	1.00	-	-	-	-	-	-
OI	12.95	1.31	0.35***	0.18***	0.23***	1.00	-	-	-	-	-
PR	3.21	0.56	0.12	0.12	0.18***	0.26***	1.00	-	-	-	-
CR	5.83	0.46	0.17***	0.11	0.20***	0.12***	0.16***	1.00	-	-	-
ALR	3.61	0.51	0.14	0.13	0.15**	0.14***	0.17***	0.56***	1.00	-	-
ATR	3.59	0.31	0.18***	0.14	0.21***	0.16***	0.12	0.25***	0.18***	1.00	-
LP	7.88	0.94	0.17***	0.11	0.15***	0.32***	0.11	0.29***	0.16***	0.17***	1.00

M&A, mergers and acquisitions; E-INs, E-innovation networks; MV, market volatility; OI, operating income; PR, profit rate; CR, current ratio; ALR, asset-liability ratio; ATR, asset turnover rate; LP, labour productivity; SD, standard deviation.

, denotes significance at the 5% level ($p < 0.05$); *, denotes significance at the 1% level ($p < 0.01$).

and Engineering at Xidian University's School of Economics and Management (reference no.: 2023/XDU/SEM/001).

Results

Demographics of participants and firms

The demographic analysis indicates that micro- and medium-sized enterprises dominate the study, with a well-distributed representation across various industries. Most companies are located in Southern Africa, followed by West, North and East African regions, with economic hubs such as Johannesburg, Lagos, Nairobi and Cairo prominently featured. Africa's increasing foreign direct investment (FDI) has positioned the continent as an attractive destination for international business, with 88% of organisations engaged in global activities. Tsou et al. (2016) highlight the significance of such international expertise in fostering competitive advantage and effective marketing strategies. This involvement strengthens competitive positions within e-innovation networks (Cheng & Yang, 2017). Additionally, companies gain from M&A-related benefits, including market access, technology transfer and tax incentives, which are essential for international firms (Chen, 2023; Eds. Farole & Winkler, 2014; Gupta et al., 2021).

Survey participants emphasised that 'technological compatibility, financial stability, cultural alignment, and innovation potential' are critical for successful M&A partnerships (see Teece, 2010). Many respondents, who have over a decade of experience in M&A and e-innovation networks, highlighted these as crucial determinants of success (see Cheng & Yang, 2017; Shenhar et al., 2020). The participants also revealed that their firms have either integrated new technologies such as *AI-driven analytics, blockchain, IoT, cybersecurity solutions, precision agriculture tools, telemedicine, digital health tools* and/or *5G infrastructure* through M&A activities (see Christofi et al., 2019; Jin et al., 2024). However, they also reported challenges in adopting these technologies, including 'lack of technological compatibility, high costs of integration, resistance to change, skill gaps among employees, and regulatory barriers'.

Regarding technological literacy, 75% of respondents rated it as 'extremely important' to their firm's success in e-innovation, while the remaining 25% considered it 'very important'. All firms indicated that they 'always' or 'often' tailor their M&A strategies to the specific industry. 'Strategic alignments with technology providers, focus on sustainability and innovation' were identified as the most effective M&A practices within their sectors, given that respondents considered the impact of M&A on innovation as 'extremely significant'. To address talent retention post-M&A (see Zhang et al., 2015), respondents mentioned strategies such as 'competitive compensation packages, career development opportunities, cultural integration programmes, and flexible work arrangements' as significant.

However, the role of emerging technologies, such as AI, blockchain and IoT, was deemed 'extremely important' in shaping future M&A strategies. However, 'rapid technological change, regulatory issues, cultural integration, market volatility, and cybersecurity threats' were also noted as significant obstacles. Respondents identified 'digital transformation and integration, cross-industry collaboration, emerging markets, sustainability, and green technologies' as key opportunities that will drive the future success of M&A networks and e-innovation (see Alfaro et al., 2019; López & Oliver, 2023).

Additional recommendations from respondents included the importance of 'cultural integration, value creation metrics, adoption of emerging technologies, and customer feedback integration' in refining M&A networks and sector-specific strategies. Random follow-up interviews confirmed these insights and further validated the findings (see the section 'Field results: Perceptions uptake').

Regression analysis summary

The baseline regression analysis examines the impact of M&A networks on e-innovation. The study provides the following insights: The short-term analysis shows no significant correlation between M&A networks and e-innovation (supporting H1b). This suggests that M&A networks have a minimal effect on e-innovation activities. In contrast, the long-term analysis reveals a significant positive correlation at the 1% level (supporting H1a). This indicates that while M&A networks may only influence e-innovation after a while, they provide substantial long-term benefits. These networks play a crucial role in acquiring resources,

strengthening inter-firm connections and improving resource utilisation efficiency, which collectively enhances e-innovation over time (Alfaro et al., 2019; Lee et al., 2024). This study explicitly investigates the role of M&A networks in fostering e-innovation among African firms, using M&A transaction data from 2010 to 2023. The findings validate Hypotheses H1a and H1b, confirming that M&A networks facilitate e-innovation in the long run. The research further supports Hypothesis H2, highlighting that resource acquisition through M&A networks significantly promotes innovation. This finding underscores the importance of these networks in driving e-innovation by enhancing access to essential resources (Zhang et al., 2024) (Table 3).

Analysis of control variables and robustness checks

Control variables

The analysis of control variables yields significant insights. Positive coefficients for operating income and profit rate suggest that profitability and active business performance are conducive to fostering e-innovation. On the other hand, negative coefficients for labour productivity, asset turnover rate and current ratio indicate that high liquidity and labour-intensive operations may detract from investments in innovation. The non-significant results for the asset-liability ratio suggest that the impact of fixed asset investments and borrowing costs on e-innovation is mixed and not straightforward.

Robustness checks

Several robustness checks were conducted to ensure the reliability of the findings. These included the Heckman two-stage technique and instrumental variable estimation (Certo et al., 2016), which address potential endogeneity and sample selection bias. The results confirmed that while M&A networks have a minor impact on e-innovation in the short-term, their influence is significant in the long-term. This is consistent with findings from previous studies (Alfaro et al., 2019; Chen, 2023; Gupta et al., 2021; Lee et al., 2024).

The robustness of the findings was further validated across various models and subsamples, with the zero-inflated Poisson regression model emerging as the most effective (Zhang & Yi, 2023). This model successfully handled the data's specific characteristics and provided a comprehensive understanding of the relationships between variables.

Mediating and moderating effects

As depicted in Table 4, the mediating links between M&A networks and e-innovation indicate that these networks enhance innovation by facilitating the acquisition of resources – informational, financial and human (see Ding et al., 2024b). The study found significant mediating effects, supporting H2. Additionally, market volatility moderates the relationship between M&A networks and e-innovation (see Dotzel et al., 2013; Li, 2024). A significant negative interaction term between network centrality and market volatility demonstrates that

TABLE 3: Concepts and their indicators (reliability and convergent validity).

Concept	Indicator	Factor loading (FL)	Cronbach's alpha (α)	Reliability coefficient (rho_A)	Composite reliability (CR)	Average variance extracted (AVE)	Variance inflation factor (VIF)
M&A	M&A1	0.87	0.85	0.81	0.88	0.56	2.50
E-INs	E-INs1	0.79	0.87	0.80	0.85	0.61	2.24
MV	MM1	0.72	0.85	0.83	0.90	0.58	2.14
OI	OI1	0.84	0.86	0.88	0.89	0.57	2.09
PR	PR1	0.73	0.88	0.84	0.91	0.53	2.10
CR	CR1	0.73	0.80	0.89	0.84	0.59	2.11
ALR	ALR1	0.84	0.81	0.82	0.91	0.55	2.04
IN	IN1	0.81	0.89	0.87	0.92	0.62	2.20
LP	LP1	0.74	0.83	0.85	0.80	0.55	2.70

M&A, mergers and acquisitions; E-INs, E-innovation networks; MV, market volatility; OI, operating income; PR, profit rate; CR, current ratio; ALR, asset-liability ratio; ATR, asset turnover rate; LP, labour productivity.

TABLE 4: Analysis results.

Test of hypothesis	SE	Coefficient (β)	*p*	f^2	Results
Effect					
M&A → E-INs (H1a)	0.09	0.14	0.022	0.481	H1a confirmed
M&A → E-INs (H1b)	0.06	0.19	0.018	0.321	H1b confirmed
Mediating effect					
M&A → RA → IN (H2)	0.08	0.18	0.075	0.317	H2 confirmed
Moderating effect					
MV × M&A → E-INs (H3)	0.01	0.16	0.043	0.461	H3 confirmed
Heterogeneous effect					
TM × E-INs → M&A (H4a)	0.03	0.15	-	0.351	H4a confirmed
M&A → E-INs × L-TM/H-TM (H4b)	0.02	0.10	-	0.333	H4b confirmed
M&A → LMF × E-INs (H4c)	0.05	0.13	0.024	0.242	H4c confirmed

Note: Effect (χ^2/degree of freedom [*df*] = 1.83, $p < 0.01$, CFI = 0.85, RMSEA = 0.045, SRMR = 0.020); Mediating effect ($\chi^2 = 1.89$, $p < 0.01$; CFI = 0.75, RMSEA = 0.045, SRMR = 0.025); Moderating effect ($\chi^2 = 1.75$, $p < 0.01$; CFI = 0.73, RMSEA = 0.045; SRMR = 0.029); Heterogeneous effect ($\chi^2 = 1.82$, $p < 0.01$; CFI = 0.75, RMSEA = 0.045; SRMR = 0.027).

M&A, mergers and acquisitions; RA, resource acquisition; TM, top management; LMF, large and mature firms; L-T/H-TMs, low-tech/high-tech markets; *df*, degrees of freedom; CFI, comparative fit index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual; SE, standard error.

high uncertainty diminishes the positive impact of M&A networks on innovation, confirming H3. This implies that market volatility affects the relationship between M&A networks and innovation, reinforcing the support for hypothesis H3. Furthermore, the study found that large and mature firms, firms operating in low-tech markets, and firms with management teams having diverse professional backgrounds benefit more from these networks (see Buenechea-Elberdin et al., 2018; Firk et al., 2022; Miller, 2018). This confirms hypotheses H4a, H4b and H4c.

Heterogeneity analysis

Senior management team characteristics significantly influence the impact of M&A networks on innovation (see Cheng & Yang, 2017; Ding et al., 2024a; Xing et al., 2023). For instance, the Herfindahl-Hirschman Index analysis reveals that diverse professional backgrounds within the senior management team enhance the long-term benefits of M&A networks (Ding et al., 2024b). In contrast, variations in financial backgrounds have a lesser effect (Xu et al., 2020), thus supporting hypothesis H4a.

Moreover, industry characteristics are a moderating factor in the relationship between M&A networks and innovation (Cheng & Yang, 2017). Mergers and acquisitions networks drive long-term innovation in low-tech markets. In contrast, this effect is less prominent in high-tech markets (Ding et al., 2024a), confirming hypothesis H4b. Additionally, business attributes like company size and life cycle stage further shape the impact of M&A networks on innovation (Xing et al., 2023). Larger firms and those in the growth or mature stages gain substantial long-term benefits from M&A networks (Miller, 2018). Conversely, smaller firms and those in the decline stage do not experience the same level of benefit (Shahzad et al., 2022; Wen et al., 2021), which supports hypothesis H4c.

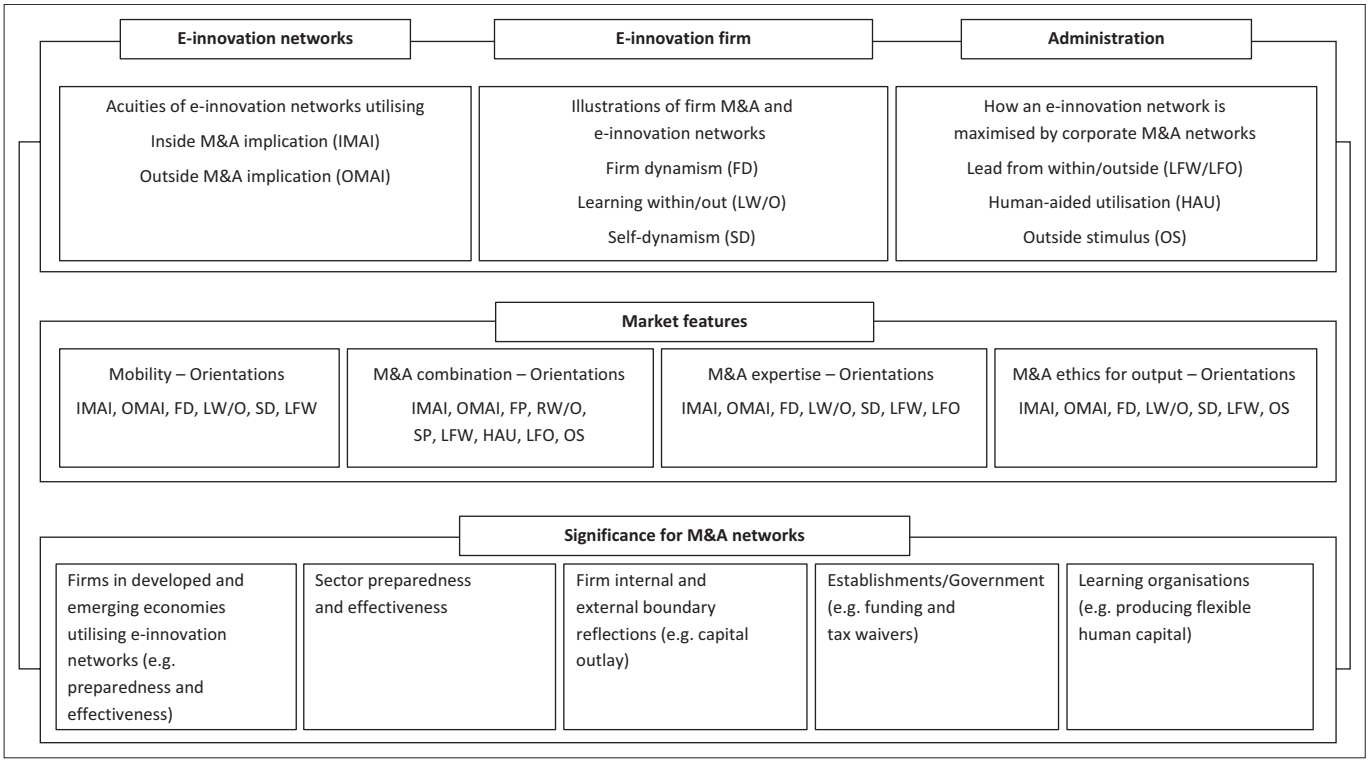
Field results: Perceptions uptake

How an e-innovation network uptake is perceived in a firm

The initial investigation examined perceptions of e-innovation networks within firms, identifying three critical features across two dimensions (see Figure 1) (Table 5). The benefits of e-innovation networks were classified as either 'direct' or 'indirect', with indirect benefits being more prevalent across industries [E1S/M/O to E7S/M/O]. Only [SE/X-CAM] experienced these benefits directly through 'advancements in trading technologies, data analytics, and regulatory compliance systems'. More than 42% of interviewees highlighted 'improvements in communication, processes, and competitiveness', which led to 'increased

TABLE 5: Mergers and acquisitions and e-innovation networks data and/or codes – Informants.

Informant sector	Position	Code identifier
Fintech	Executive/Senior Management/Other	E1S/M/O
E-commerce	Executive/Senior Management/Other	E2S/M/O
Agri-tech	Executive/Senior Management/Other	E3S/M/O
Health-tech	Executive/Senior Management/Other	E4S/M/O
Edtech	Executive/Senior Management/Other	E5S/M/O
Telecommunications	Executive/Senior Management/Other	E6S/M/O
Other industry	Executive/Senior Management/Other	E7S/M/O
Stock exchange	Corporate Affairs Manager	SE/X-CAM



M&A, mergers and acquisitions.

FIGURE 1: Mergers and acquisitions networks and e-innovation networks among Africa's listed firms.

efficiency, time savings, and cost reductions'. These factors underscore the 'core M&A implications' feature (see Jin et al., 2024), which includes overcoming geographical barriers and enhancing networking and communication, as captured by the external e-innovation network implication dimension (see Javed et al., 2021).

Participants stated that:

> 'Firm satisfaction [*emerged as a key*] driver for adopting e-innovation networks.' (E1S/M/O; E2S/M/O; E4S/M/O and E5S/M/O)

As technical costs rise, firms are expected to increasingly engage with e-innovation networks because of consumer demand for improved products and services (see Javed et al., 2021; Nassani et al., 2023; Smid et al., 2005; Yousaf et al., 2021). However:

> '… deployment may encounter challenges if e-innovation network technologies become more expensive or if consumer interest declines.' (E1S/M/O to E5S/M/O)

In contrast, other firms are:

> '… generally more resilient to such fluctuations [*as they often*] have established infrastructures, diversified revenue streams, and are less dependent on consumer trends.' (E6S/M/O and SE/X-CAM)

Nonetheless, these firms still:

> '… face difficulties if technology costs rise significantly or if there is a major shift in consumer behaviour.' (E7S/M/O)

How a firm's mergers and acquisitions network is demonstrated in response to e-innovation network requirements

The study uncovered key data with significant implications for firms' M&A networks. The findings highlight the necessity of both:

> '… individualised and standardised training [*alongside*] management-driven strategies [*to boost*] engagement with e-innovation networks, continuous upskilling, and on-the-job training.' (E1S/M/O, E2S/M/O, E4S/M/O to E6S/M/O)

Additionally the following are crucial for preparing firms to meet e-innovation network demands:

> '… management-driven strategies [*and the*] value of individualised training, especially for integrating new technologies into traditional practices.' (SE/X-CAM and E3S/M/O)

This proactive approach to developing employees' digital skills and expertise is supported by recent research, which indicates that awareness campaigns, hands-on experience and technology workshops can facilitate the adoption of e-innovation networks (Alfaro et al., 2019):

> 'Managers play a key role in establishing best practices, selecting change agents, and aligning job requirements with modern technology' [*E1S/M/O, E2S/M/O, E4S/M/O, E6S/M/O*]. However, due to 'variations in the pace of technological adoption and operational nature,' the level of involvement in these areas is lower for [*E3S/M/O, E5S/M/O, E7S/M/O, SE/X-CAM*]. Integrating external specialists and learning through internal and external activities, such as webinars and forums, underscores the strategic importance of information absorption and sharing. However, 'firms often struggle to align management expertise with technological proficiency' [*E3S/M/O to E5S/M/O*], which hinders effective e-innovation network implementation. (Hasan et al., 2017; Wang & Zhou, 2023)

To facilitate firms' transition to e-innovation networks, participants recommend:

> '… consistent training, awareness of cooperative production systems, and dedicated funding for e-innovation technologies.' (E3S/M/O to E6S/M/O)

Participants stressed the importance of:

> '… leveraging external knowledge and experience' while emphasising 'internal activities focused on information acquisition, sharing, and absorption.' (E1S/M/O to E7S/M/O)

Additionally, they highlighted the need to:

> '… prioritise leveraging external knowledge [*particularly in*] regulatory, financial, and technological domains [*while focusing on*] internal data management and market-specific knowledge.' (SE/X-CAM)

Self-study and self-learning are vital for adapting to e-innovation network expectations [E1 … to … E7S/M/O]. While [SE/X-CAM] also requires 'continuous learning', their emphasis remains on 'financial trends and regulatory changes' rather than the technological adaptation central to e-innovation networks (Hasan et al., 2017; Nassani et al., 2023; Rabelo et al., 2015; Yousaf et al., 2021; Zhang et al., 2024).

How a firm's mergers and acquisitions networks support the maximisation of an e-innovation network

The final research question explored how firms' M&A networks can significantly bolster e-innovation networks. Key themes identified the concepts encapsulated within the 'lead from within' framework (see Figure 1), with:

> '… strategic importance of understanding e-innovation network demands, mental readiness, and commitment to necessary changes.' (E1S/ M/O to E7S/M/O)

Recent studies underscore the need for continuous education and skill development from various perspectives (Rahmatika, 2022). Crucial skills highlighted include:

> '… technological literacy, data management, cognitive analytics, sense-making abilities, and digital crisis management.' (E1S/ M/O, E2S/ M/O, E4S/M/O to E7S/M/O)

Consequently, retaining employees with specialised talents is vital (Kajwang, 2021). The findings also revealed a disparity between firms' expectations and the actual availability of e-innovation network soft skills across Africa, emphasising the critical role of both technological expertise and human elements, termed human-aided utilisation (see Figure 1). Participants stressed that:

'… knowledge and skill development should begin early [*noting its importance in*] fostering a proactive learning environment.' (E1S/M/O, E4S/M/O to E7S/M/O)

Conclusion

The study explored the future of Africa's e-innovation and M&A networks, highlighting the strategic importance of aligning company operations with the demands of e-innovation. It revealed that M&A transactions significantly enhance e-innovation by incorporating advanced technologies and strengthening organisational capacities across various sectors. Through M&A, companies can acquire pioneering knowledge and technology to foster e-innovation. For example, startups that merge with firms specialising in blockchain technology and AI-driven analytics in the Fintech industry can considerably improve digital financial services (E1S/M/O). Likewise, e-commerce companies integrating with logistics providers focusing on advanced delivery technologies can optimise their value chains (E2S/M/O). These findings correspond with Chen's (2023) research, which emphasises the role of M&A in accessing crucial technological resources and competencies. The study also highlighted the sector-specific benefits of M&A activities. Examples include agri-tech companies acquiring precision agricultural instruments (E3S/M/O) and health-tech companies merging with telemedicine specialists (E4S/M/O), demonstrating how M&A supports sector-specific advancements. These findings align with the research of Vears and Gillam (2022), which underscores the role of M&A in enhancing operational and technological capabilities unique to specific industries.

However, the study identified a gap between the actual competencies of e-innovation networks and the expectations of enterprises, emphasising the importance of human assistance and ongoing skill development. Kajwang (2021) supports this finding, underscoring the necessity of retaining employees with unique skills and the importance of continuous skill development to bridge these gaps. The focus on early knowledge and skill development also aligns with Rahmatika's (2022) findings regarding the significance of cognitive analytics and technological literacy. The participants in the study emphasised the need for a proactive learning environment to address skill gaps. This result is consistent with Loureiro et al. (2020), who argue that proactive stakeholder engagement and exploratory research are crucial for generating new knowledge and fostering a culture of continuous learning.

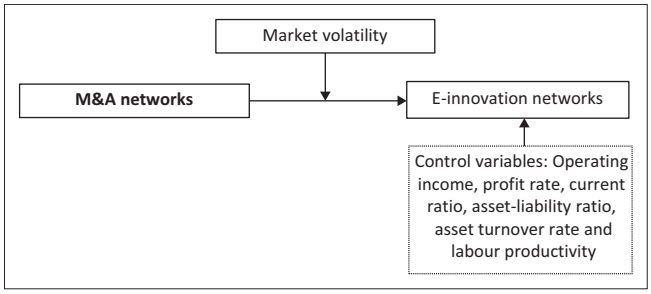
The study demonstrated that M&A networks can enhance e-innovation across various industries, including stock exchanges, telecommunications, Fintech, e-commerce, agri-tech, health-tech and Edtech. The benefits of M&A activities vary by sector, ranging from modernising processes and improving service delivery to integrating cutting-edge technologies. This industry-specific impact aligns with Thomann and Maggetti's (2020) comprehensive approach to understanding how M&A affects innovation.

In conclusion, the study indicates that M&A networks are vital for enhancing e-innovation by integrating advanced technologies, addressing talent gaps and fostering proactive learning environments. Strategically utilising M&A networks can significantly contribute to overall e-innovation growth and the advancements specific to each industry (see Figure 2).

Theoretical implications

The study's findings expand the scope of M&A networks by emphasising their strategic role in enhancing e-innovation through access to resources, information and technology. In Africa, where access to capital, technological infrastructure and skilled labour may be limited, businesses must prioritise forming M&A networks that optimise resource allocation. For policymakers, this highlights the necessity of creating a regulatory environment that fosters cross-border collaborations and strategic partnerships, enabling African firms to leverage global networks for innovation. Integrating human skills with technological advancements is vital for driving e-innovation (Hasan et al., 2017; Tsou et al., 2016; Yousaf et al., 2021). In Africa, where the digital divide remains challenging, the emphasis on human-aided utilisation has significant theoretical implications. Thus, businesses must develop dynamic capabilities that blend local expertise with technological know-how (Teece, 2010). This includes investing in workforce development programmes tailored to the African context, where cultivating cognitive skills and digital literacy is critical. Policymakers should support initiatives that enhance educational infrastructure and provide incentives for companies that invest in skill development, ensuring that the workforce is equipped to meet the demands of e-innovation.

Moreover, the study's support for a proactive learning environment is especially pertinent in the African market, where swift technological changes and economic conditions necessitate ongoing adaptation. African businesses must cultivate a culture of organisational learning attuned to technological capabilities, global trends and local market conditions. This requires updating technological capacities and adjusting business models to meet the distinct challenges of African markets. For policymakers, this entails promoting programmes that encourage lifelong learning and assisting businesses in adopting best practices from both local and international sources.



E-INs, E-innovation networks; M&A, mergers and acquisitions.

FIGURE 2: Model framework.

The study's insight that industry-specific M&A strategies can enhance e-innovation is particularly relevant in Africa, where sectors such as Fintech, Agri-tech and Telecommunications are rapidly developing. African businesses must align their M&A strategies with their industries' unique technological and market demands. This strategic alignment is essential for ensuring that M&A activities result in sustainable innovation and competitive advantage (Camisón-Haba et al., 2024; Wang et al., 2024). Policymakers can aid this process by offering industry-specific guidelines and support, assisting businesses in navigating the complexities of aligning M&A with innovation objectives.

Moreover, absorptive capacity, a firm's ability to recognise, assimilate and apply new knowledge, is essential for African businesses seeking to leverage e-innovation networks. Companies must bolster their absorptive capacity by integrating organisational strengths with technological advancements (Najafi-Tavani et al., 2018). This is particularly crucial in Africa, where businesses frequently need to innovate with limited resources. Policymakers should support knowledge-sharing platforms and innovation hubs that enable firms to build and exchange expertise, enhancing their capacity to absorb and utilise new technologies.

Robust policy support for establishing inclusive innovation ecosystems is vital for African markets to harness the advantages of M&A networks and e-innovation fully. Policymakers ought to concentrate on designing frameworks that promote collaboration among large corporations, SMEs and start-ups, ensuring that innovation is both inclusive and widespread. This encompasses providing incentives for joint ventures, public-private partnerships and cross-industry collaborations that advance technological progress while addressing local needs.

Implications for management

In the African context, businesses should adapt their M&A strategies to the region's unique characteristics, such as varying levels of market maturity, infrastructure and regulatory environments. Our findings provide original insights by demonstrating how M&A networks in Africa, particularly in underserved sectors such as Fintech and Agri-tech, can drive e-innovation through localised technology transfer and market-specific partnerships. This addresses a critical gap in the literature, which frequently overlooks the unique challenges and opportunities in emerging markets. African companies can benefit from M&A networks by acquiring firms that align with their strategic objectives and provide complementary technologies and local market knowledge. For example, in sectors like Fintech and Agri-tech, where technological infrastructure may be underdeveloped, M&A strategies should concentrate on acquiring firms that offer innovative solutions tailored to local needs. This approach can bridge technological gaps and create competitive advantages specific to the African market.

Given the rapid technological changes and the increasing importance of e-innovation (Hasan et al., 2017; Yousaf et al., 2021), African businesses must prioritise early skill development and continuous education. The focus should be on building a workforce that is not only technologically literate but also adaptable to the unique challenges and opportunities the African context presents. Managers should invest in training programmes that cultivate essential skills such as technological literacy, data management and digital crisis management. Furthermore, retaining employees with specialised talents who understand local market dynamics is crucial (Kajwang, 2021; Zhang et al., 2015). Companies should foster a proactive learning environment that equips employees to navigate and capitalise on the evolving e-innovation landscape in Africa.

In African markets, where access to financial and technological resources can be limited, M&A networks provide a strategic avenue for optimising resources. Firms should concentrate on leveraging these networks to acquire essential resources, such as technology, talent and market access, that can drive e-innovation (Wang & Zhou, 2023). By establishing strategic partnerships and collaborations within their M&A networks, African companies can mitigate resource constraints and share the risks associated with innovation. This collaborative approach is vital in sectors such as telecommunications and e-commerce, where technological advancements are crucial for maintaining competitiveness (Eds. Farole & Winkler, 2014).

For African policymakers, supporting e-innovation through targeted policy interventions is essential (Javed et al., 2021). Governments can enhance the regulatory and economic environment by offering tax incentives, grants and increased investment in sectors critical to the region's economic development, such as Fintech and agri-tech. Additionally, strengthening intellectual property protection systems will encourage innovation and attract investment. Policymakers should also focus on providing tailored support for small and medium enterprises (SMEs), enabling them to participate in innovation networks alongside larger firms. By facilitating collaboration and reducing barriers to entry, governments can ensure that SMEs play a significant role in driving e-innovation across Africa.

African markets are diverse, exhibiting significant cultural and economic differences across regions. Managers should consider these factors when designing and implementing M&A strategies and e-innovation initiatives. Understanding local consumer behaviour, regulatory environments and market dynamics is crucial for the success of e-innovation efforts (Yousaf et al., 2021). For instance, innovations that tackle specific local challenges, such as access to healthcare and education, are more likely to thrive in the health-tech and Edtech sectors. Thus, businesses should align their innovation strategies with local needs and preferences to maximise impact (Bawa et al., 2023).

Study limitations and future directions

While the study's focus on African businesses offers valuable insights, its findings may have limited applicability in regions with varying technological, economic and regulatory contexts. Nonetheless, this regional specificity is also a strength, as it challenges the dominance of Western-centric models in M&A and innovation research. Factors such as market maturity, regulatory frameworks and technical infrastructure differ considerably across regions, which could result in different outcomes if similar research were conducted elsewhere. Broadening the geographical scope in future research would facilitate comparisons across various continents, providing a more global perspective on M&A networks and e-innovation.

The study highlights industry-specific M&A practices and their effects on e-innovation, but it may not fully capture the nuanced sectoral differences in M&A strategies and technology adoption. Future work could explore underrepresented sectors (e.g. renewable energy or informal economies) to uncover novel patterns in how African firms leverage M&A for innovation. Because the outcomes of M&A and innovation dynamics are significantly influenced by industry characteristics, as Zhang et al. (2023) demonstrated, future studies should adopt a more holistic approach that encompasses multiple industries or focus more narrowly on specific sectors to gain deeper insights.

Given the rapid pace of market changes and technological advancements, the data collection period from January 2022 to March 2023 may have overlooked critical developments in M&A networks and e-innovation. To address this, we propose longitudinal studies tracking African firms over time, which would uniquely capture the evolving role of M&A in fostering innovation amid infrastructural and regulatory shifts. A longitudinal research design would more effectively capture the long-term effects and evolving dynamics of M&A networks on e-innovation, facilitating a better understanding of trends over time (Chen, 2023).

The study's reliance on self-reported data from executives introduces potential biases and inaccuracies that could compromise the validity of the results. Self-reporting is often subject to social desirability and recall biases, which may lead to skewed findings (Ceci et al., 2020). To mitigate these issues, future research should contemplate triangulating primary data with secondary data sources, such as financial reports or third-party evaluations, to enhance the accuracy and reliability of the data.

Despite a high response rate, the sample size of 238 firms may only partially represent the diverse perspectives of companies of various sizes and stages. A more extensive and more varied sample would yield more comprehensive findings, reflecting a broader spectrum of organisational contexts. Future studies should aim to increase the sample size and include data from a broader range of companies to enhance the generalisability and robustness of the conclusions (Azungah, 2018).

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Authors' contributions

S.B. contributed to the conceptualisation, methodology, formal analysis, investigation, original draft writing, visualisation, project administration, software, validation, data curation, resources, review and editing, and funding acquisition. X.Y. contributed to the project administration, validation, resources, supervision and funding acquisition. I.W.B. contributed to the project administration, validation, review and editing, and funding acquisition. I.M. contributed to the investigation, project administration and review and editing. A.S.A. contributed to the review and editing, and funding acquisition.

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Data availability

The data that support the findings of this study are available from the corresponding author, S.B., upon reasonable request.

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