

Technological Advancements and Business Growth: A Case of Airtel Uganda

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Abstract

Telecommunications operators in Uganda have invested heavily in network and platform technology, yet the question of which technological advancements actually drive business growth, as distinct from those which merely maintain competitive parity, remains empirically unresolved. This study examined the influence of technological advancements on business growth at Airtel Uganda. Adopting a positivist philosophy and a cross-sectional survey design, data were collected from 174 respondents drawn through stratified random sampling from a target population of 285 comprising network and technical staff, commercial and marketing personnel, Airtel Money and financial services staff, customer experience personnel, enterprise business staff, and finance and strategy officers. A structured questionnaire measured four technological advancement dimensions, namely network infrastructure advancement, mobile financial technology advancement, digital platform and self-service advancement, and enterprise and data solutions advancement, against business growth assessed through revenue growth, subscriber base expansion, market share, and average revenue per user. Data were analysed using descriptive statistics, Pearson correlation, and multiple regression in SPSS version 26. Findings revealed that network infrastructure advancement recorded the highest mean while enterprise and data solutions advancement recorded the lowest. All four dimensions correlated significantly and positively with business growth, with mobile financial technology advancement strongest ($r = 0.712$, $p < 0.01$), followed by digital platform advancement ($r = 0.649$, $p < 0.01$), network infrastructure advancement ($r = 0.583$, $p < 0.01$), and enterprise solutions advancement ($r = 0.527$, $p < 0.01$). The regression model was significant, $F(4, 164) = 63.27$, $p < 0.001$, explaining 60.7 per cent of variance, with mobile financial technology advancement ($\beta = 0.357$) dominant. The findings situate against Airtel Uganda's reported 13.3 per cent revenue growth to Ushs 2,249.7 billion and 13.9 per cent subscriber growth to 19.2 million in 2025 (Airtel Uganda, 2026), and against evidence that the sector's proportional GDP contribution declined from 2.3 per cent in 2015 to 1.8 per cent in 2020 despite heavy taxation (UCC, 2026). The study concludes that financial technology rather than network capability drives growth in a mature duopoly and recommends fintech deepening, digital platform scaling, and enterprise segment development.

Keywords: Technological advancement; business growth; telecommunications; mobile money; network infrastructure; digital platforms; duopoly; Airtel Uganda.

1.0 Introduction

Technological advancement in telecommunications denotes the progressive enhancement of the technical capabilities through which an operator delivers connectivity, financial services, and digital products to its subscribers (Mategeko et al., 2026). The construct differs from technological innovation in the Schumpeterian sense of new combinations,

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since the advancements available to a telecommunications operator are generally not invented by it but adopted from a global equipment and platform supply chain available to all operators simultaneously (Alex & Moses, 2024). This distinction is analytically consequential and frames the present study: where a technology is available to every competitor at comparable cost, its adoption is a condition of remaining in the market rather than a source of advantage within it, and the strategic question becomes not whether to adopt but where adoption yields differentiation rather than mere parity (Faridah et al., 2023).

The Ugandan telecommunications market presents a structure in which this distinction acquires particular force. Uganda's mobile market remains highly concentrated, with MTN and Airtel together accounting for over 99 per cent of subscribers, and recent estimates put MTN's market share at about 54 per cent and Airtel's at about 45 per cent (UCC, 2026). This near-duopoly emerged through a documented consolidation: Airtel entered the Ugandan market on 8 June 2010 when Bharti Airtel acquired sixteen Zain Africa operations, and subsequently acquired Warid Telecom Uganda in the first in-country acquisition in the telecommunications sector, consolidating its position as the second largest mobile operator with a combined customer base of over 7.4 million and market share exceeding 39 per cent behind market leader MTN Uganda (Airtel Uganda, 2025). In December 2020 Airtel Uganda paid US\$74.6 million to the Uganda government for a twenty-year National Telecom Operator's Licence, with the basic licence costing US\$63.2 million and value added tax accounting for US\$11.4 million, and with a condition requiring extension of voice and data coverage to at least 90 per cent by 1 July 2025 (Airtel Uganda, 2025).

A duopoly structure alters the mechanics through which technology affects growth in ways that competitive-market frameworks do not anticipate (Nicholas & Nancy, 2024). Where two operators between them hold over 99 per cent of subscribers, each observes the other's technological moves immediately and can match them, since both possess the capital and the supplier access to do so. The consequence is that network advancement tends toward parity rather than advantage: both operators launched commercial 5G following the July 2023 spectrum auction, each targeting full Kampala coverage by end-2024 (Mordor Intelligence, 2025), and a landmark network-sharing pact between MTN Uganda and Airtel Uganda in March 2025 reshaped cost structures and accelerated rural coverage (Mordor Intelligence, 2025). That the two dominant rivals now share infrastructure is the clearest possible evidence that network capability has ceased to be a differentiator and become a shared cost to be minimised (Faridah et al., 2023).

Airtel Uganda's own reported performance supplies the empirical backdrop against which this study's questions are posed. For the year ended 31 December 2025 the company reported revenue growth of 13.3 per cent to Ushs 2,249.7 billion, driven by strong growth in data consumption and a resilient voice services segment; EBITDA increased 24.5 per cent with the margin expanding to 54.9 per cent from 50.0 per cent; operating profit reached Ushs 849.2 billion from Ushs 629.1 billion in 2024; profit after tax surged 41.1 per cent to Ushs 446.9 billion; and earnings per share rose to Ushs 11.2 from Ushs 7.9 (Airtel Uganda, 2026). Operationally, the company rolled out 258 new 4G sites achieving 100 per cent 4G coverage, added 164 new 5G sites in major cities and towns, expanded its fibre network by

1,600 km, and grew its customer base 13.9 per cent to 19.2 million subscribers, while its My Airtel App monthly active users grew from 0.4 million to 1.5 million and it introduced Africa's first AI-powered anti-spam alert service (Airtel Uganda, 2026). The company's strategy rests on five pillars: delivering a best-in-class network, strengthening go-to-market execution, winning in key markets, digitising and simplifying operations, and scaling Home Broadband and Enterprise businesses (Airtel Uganda, 2026).

Mobile financial services occupy a position within this configuration whose significance is difficult to overstate and which the sector's aggregate figures make plain (Alex & Julius, 2024). Uganda's telecom sector has grown rapidly, with internet subscriptions exceeding 20 million in 2024 and mobile money transactions valued at more than Shs 200 trillion according to UCC data (ChimpReports, 2025). The Airtel Money platform is described as a primary contributor to financial inclusion, having exceeded five million customers as at 31 March 2018 following the launch of mobile commerce in 2012 (Airtel Uganda, 2025). At group level, Airtel Money reached 45.8 million users across Africa representing a 16.1 per cent increase, with transaction value rising 35 per cent to US\$162 billion annually (Techjaja, 2025). The comparator is instructive: MTN's MoMo handled US\$36 billion of transactions in 2023 across 13 million monthly active users, fintech revenue rose 18.4 per cent in Q1 2025 underlining the model's contribution to blended ARPU growth, and high cash usage at still 95 per cent of all transactions signals further upside as digitisation deepens (Mordor Intelligence, 2025).

A paradox sits at the centre of this apparent success and frames the study's problem. The sector's proportional contribution to GDP declined from a peak of 2.3 per cent in 2015 to 1.8 per cent in 2020 despite its continued importance to the national tax base, and in FY2019/20 MTN and Airtel contributed 12.7 per cent of total VAT revenue and accounted for 40 per cent of total excise duty revenue (UCC, 2026). A UCC-commissioned study warns that Uganda's high-tax, business-as-usual telecom regime has reached its economic limits, delivering short-term revenues while constraining usage growth, smartphone adoption, rural connectivity and the sector's potential GDP contribution, and finds that demand for telecom services, especially data, is price-sensitive such that tax-induced price increases lead to measurable declines in usage and revenue over time (UCC, 2026). Uganda's average cost of US\$2.67 per gigabyte remains the highest in East Africa due to landlocked dependence on coastal gateways (Mordor Intelligence, 2025). Technology investment therefore occurs within a fiscal and cost environment that may absorb its returns before they reach the operator (Frank et al., 2023).

1.1 Problem Statement

Airtel Uganda is expected, under its National Telecom Operator's Licence obligations and its stated strategy of delivering a best-in-class network, digitising operations, and scaling Home Broadband and Enterprise businesses (Airtel Uganda, 2026), to convert technological investment into business growth measured through revenue, subscribers, market share, and average revenue per user. The ideal situation is an operator whose technological

advancements generate returns exceeding their cost, whose network investment differentiates it from its rival, whose digital platforms deepen customer relationships, and whose financial and enterprise services diversify revenue beyond the connectivity that competition commoditises (Julius & Kazaara, 2026).

The prevailing situation is more complicated than the headline growth figures suggest. Uganda's mobile market is a near-duopoly in which MTN and Airtel together account for over 99 per cent of subscribers, with MTN at about 54 per cent and Airtel at about 45 per cent (UCC, 2026), which means Airtel's technological moves are observed and matched by a rival of comparable capability. The March 2025 network-sharing pact between MTN and Airtel (Mordor Intelligence, 2025) confirms that network infrastructure, in which the company invested 258 new 4G sites, 164 new 5G sites, and 1,600 km of fibre in 2025 alone (Airtel Uganda, 2026), has become a shared cost rather than a differentiator. The sector's proportional GDP contribution declined from 2.3 per cent in 2015 to 1.8 per cent in 2020 (UCC, 2026), indicating that heavy technological investment has not translated into proportionate economic contribution. The tax regime is among the heaviest in the region, constraining usage growth, smartphone adoption, and rural connectivity, with data demand price-sensitive such that tax-induced price increases produce measurable declines in usage and revenue (UCC, 2026). Foreign exchange risk is material, since a significant portion of capital expenditure and operational costs are denominated in US dollars (Airtel Uganda, 2026), while Uganda's US\$2.67 per gigabyte remains East Africa's highest (Mordor Intelligence, 2025).

Should the relationship between technological advancement and growth remain unspecified, the consequences are strategic. Continued undifferentiated investment across all technology domains risks committing capital to network capability that a rival will match and a sharing agreement will neutralise, while under-investing in the domains where differentiation remains available. In a market where cash still accounts for 95 per cent of all transactions (Mordor Intelligence, 2025), the fintech opportunity is substantial but contested, and an operator that cannot identify where its technology generates returns cannot defend that opportunity. Most consequentially, in a fiscal environment that a UCC-commissioned study characterises as having reached its economic limits (UCC, 2026), an operator whose technology investment does not generate returns faces margin compression from both the tax authority and its rival simultaneously.

While the Ugandan telecommunications sector is extensively documented in regulatory and market reports, three gaps motivate this study. First, the available evidence is descriptive and aggregate, reporting subscriber counts, revenue figures, and infrastructure statistics (Airtel Uganda, 2026; UCC, 2026; Mordor Intelligence, 2025) without establishing which technological domains drive growth. Second, technology is treated as a unitary investment category rather than disaggregated into domains whose competitive properties differ fundamentally, with network capability being matchable and shareable while fintech ecosystems are not.

1.2 Main Objective

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The main objective of the study was to examine the influence of technological advancements on business growth at Airtel Uganda.

1.3 Specific Objectives

- i. To examine the influence of network infrastructure advancement on business growth at Airtel Uganda.
- ii. To assess the influence of mobile financial technology advancement on business growth at Airtel Uganda.
- iii. To determine the influence of digital platform and self-service advancement on business growth at Airtel Uganda.
- iv. To establish the influence of enterprise and data solutions advancement on business growth at Airtel Uganda.

2.0 Literature Review

2.1 Theoretical Framework

The study is anchored in the resource-based view, complemented by network effects theory and dynamic capabilities theory. The resource-based view holds that sustained competitive advantage derives from resources that are valuable, rare, difficult to imitate, and organizationally embedded. Its application to telecommunications yields a prediction that the sector's own conduct confirms: network infrastructure is valuable but not rare, since both duopolists possess the capital and supplier access to deploy identical equipment, and it is not inimitable, since a base station can be replicated by anyone who can pay for one (Gopal et al., 2021). The theory therefore predicts that network advancement will not generate durable advantage, and the March 2025 network-sharing pact between MTN and Airtel (Mordor Intelligence, 2025) is the clearest possible corroboration, since rivals do not share what differentiates them. By contrast, a mobile money ecosystem comprising an agent network, a merchant base, a user habit, and accumulated transaction data satisfies the inimitability criterion, since it is socially complex and path-dependent and cannot be purchased at any price (Frank et al., 2023).

Network effects theory supplies the mechanism explaining why fintech ecosystems resist imitation in a way that networks do not (Matthew & Mike, 2016). The theory holds that a product's value to each user increases with the number of other users, generating positive feedback in which adoption drives value which drives further adoption. In mobile money the effect is direct: a platform is valuable to a user in proportion to the number of counterparties reachable through it and merchants accepting it (Ivan et al., 2023). This produces a self-reinforcing position that a rival cannot overcome by matching the technology, since the technology was never the barrier. Airtel Money's 45.8 million users across Africa with transaction value rising 35 per cent to US\$162 billion annually (Techjaja, 2025) represents precisely such an installed base, and the observation that cash still accounts for 95 per cent of all transactions in Uganda (Mordor Intelligence, 2025) indicates that the effect has substantial room yet to operate.

Dynamic capabilities theory addresses the firm's ability to sense opportunity, seize it, and reconfigure its resource base accordingly, and it explains why identical technology yields divergent returns across firms. The theory's relevance here is that both Ugandan duopolists possess 4G and 5G, both operate mobile money, and both have digital applications, yet their performance differs; the difference must therefore lie in the organisational capability to deploy these rather than in possession of them (Journal & Social, 2025). Airtel Uganda's articulated five-pillar strategy encompassing best-in-class network, go-to-market execution, winning in key markets, digitising and simplifying operations, and scaling Home Broadband and Enterprise (Airtel Uganda, 2026) is a statement of intended capability configuration, and the theory predicts that the pillars addressing reconfiguration will outperform those addressing possession.

2.2 Network Infrastructure Advancement and Business Growth

Network infrastructure advancement encompasses coverage extension, technology generation upgrade, fibre transmission capacity, and site densification. Airtel Uganda's investment has been substantial: the company rolled out 258 new 4G sites achieving 100 per cent 4G coverage, added 164 new 5G sites in major cities and towns, and expanded fibre by 1,600 km in 2025 (Airtel Uganda, 2026), having previously achieved 100 per cent 4G LTE across all sites in January 2019 and exceeded 2,000 masts by April 2020 (Airtel Uganda, 2025). The theorised growth mechanism operates through coverage reach and service quality (Christopher & Shamirah, 2025). The competitive qualification is nonetheless decisive: the July 2023 spectrum auction enabled Uganda's first commercial 5G launches by both MTN and Airtel, each targeting full Kampala coverage by end-2024 (Mordor Intelligence, 2025), and the March 2025 network-sharing accord between the two reduces duplication and releases capital for deeper rural builds (Mordor Intelligence, 2025). When rivals share infrastructure, the infrastructure has ceased to differentiate them, and the resource-based view predicts that its contribution to relative growth will accordingly be modest despite its absolute necessity (Julius, 2024).

2.3 Mobile Financial Technology Advancement and Business Growth

Mobile financial technology advancement encompasses the mobile money platform, agent and merchant networks, payment integration, credit and savings products, and remittance corridors (Alex & Julius, 2024). Airtel Uganda launched mobile commerce in 2012, and Airtel Money is described as a primary contributor to financial inclusion, having exceeded five million customers by March 2018 (Airtel Uganda, 2025), with services including transfers, payments, and remittances processed through partnerships such as MoneyGram for inbound funds from over 200 countries (Grokopedia, 2026). The theorised mechanism combines revenue diversification, ARPU enhancement, and network-effect lock-in. The evidence for its potency is substantial: mobile money transactions in Uganda exceeded Shs 200 trillion in value according to UCC data (ChimpReports, 2025); MTN's MoMo handled US\$36 billion in 2023 across 13 million monthly active users with fintech revenue rising 18.4 per cent in Q1 2025, underlining the model's contribution to blended ARPU growth, while mobile money now spans merchant payments, micro-loans, and bank

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linkages, widening stickiness for rural customers excluded from formal banking (Mordor Intelligence, 2025). Critically, high cash usage at 95 per cent of all transactions signals further upside as digitisation deepens (Mordor Intelligence, 2025), which indicates the opportunity is far from exhausted.

2.4 Digital Platform and Self-Service Advancement and Business Growth

Digital platform advancement encompasses customer applications, self-service channels, digital onboarding, and the analytical use of the data these generate. Airtel Uganda's My Airtel App monthly active users grew from 0.4 million to 1.5 million in 2025, and the company introduced Africa's first AI-powered anti-spam alert service alongside the successful rollout of Voice over LTE, innovations that significantly improved customer experience and security (Airtel Uganda, 2026). The theorised mechanism is dual: cost displacement, since a self-service transaction costs a fraction of an assisted one, and relationship deepening, since an application that a customer opens regularly creates engagement that a SIM card alone does not (Winny et al., 2023). The company's identification of digitising and simplifying operations as one of five strategic pillars (Airtel Uganda, 2026) reflects this dual logic. The qualification is that platform adoption remains partial relative to the subscriber base, since 1.5 million monthly active application users against 19.2 million subscribers indicates that the great majority of customers remain outside the digital relationship the platform is intended to establish (Kazaara et al., 2024).

2.5 Enterprise and Data Solutions Advancement and Business Growth

Enterprise and data solutions advancement encompasses corporate connectivity, private networks, cloud services, and business data products (Alex & Kazaara, 2023). The Ugandan opportunity is documented and growing: private LTE and 5G contracts tied to Uganda's oil and mining projects unlock fresh enterprise revenue streams (Mordor Intelligence, 2025), and while the consumer segment held 90.99 per cent of the Uganda telecom MNO market share in 2024, enterprise connections posted the fastest growth at a 6.36 per cent compound annual rate to 2030 (Mordor Intelligence, 2025). Early 5G performance supports one million devices per square kilometre, a capacity essential for industrial automation in the emerging oil economy (Mordor Intelligence, 2025). Airtel Uganda identifies scaling Home Broadband and Enterprise businesses as one of its five strategic pillars (Airtel Uganda, 2026). The theorised mechanism is revenue diversification into a segment whose ARPU substantially exceeds consumer levels and whose contracts are longer and less price-elastic. The qualification is that enterprise business requires organisational capabilities in solution design and account management that a consumer-oriented operator does not automatically possess, which dynamic capabilities theory identifies as the constraint on seizing a sensed opportunity (Ahumuza et al., 2025).

2.6 Research Gap

The reviewed literature and market evidence establish that Airtel Uganda has invested heavily in technology and reported strong growth (Airtel Uganda, 2026), that the market is a near-duopoly in which network capability is now

shared rather than contested (UCC, 2026; Mordor Intelligence, 2025), and that the sector's GDP contribution has declined despite this investment (UCC, 2026). Three gaps motivate this study. First, the evidence is descriptive and aggregate rather than analytical, reporting outcomes without identifying which technological domains produce them. Second, technology is treated as unitary despite domains differing fundamentally in their competitive properties. Third, no known academic study addresses technological advancement and business growth at Airtel Uganda using primary data. This study addresses these gaps.

3.0 Methodology

3.1 Research Philosophy and Design

The study adopted a positivist research philosophy, premised on the position that technological advancement and business growth exist independently of the researcher and can be measured and related statistically. This suits the comparative question posed, namely the relative contribution of four technology domains. A quantitative approach was employed accordingly.

A cross-sectional survey design was employed within a single-organisation case study framework. Two limitations warrant statement. First, business growth was measured perceptually rather than through the audited financial statements the company publishes, a decision necessitated by the requirement for within-organisation variation across respondents, which aggregate published figures such as the reported 13.3 per cent revenue growth to Ushs 2,249.7 billion (Airtel Uganda, 2026) cannot supply; the published figures nonetheless supply an external validity check against which the perceptual measures may be assessed. Second, temporal precedence cannot be established, and findings are interpreted as associations consistent with theorised mechanisms rather than as demonstrated causation.

3.2 Study Population and Sample

The target population comprised 285 Airtel Uganda staff possessing informed visibility of technological operations and their commercial consequences, distributed across network and technical operations, commercial and marketing, Airtel Money and financial services, customer experience, enterprise business, and finance and strategy. The population was bounded by the criterion of informed visibility, since respondents were required to assess whether particular technologies have generated revenue and subscribers, judgements presupposing exposure to those domains. Subscribers were excluded, as they experience service without visibility of its commercial consequences to the operator.

A sample of 174 was determined using the Krejcie and Morgan table for a population of 285 at 95 per cent confidence and 5 per cent margin of error. Stratified random sampling was employed with strata defined by functional unit, which was essential because vantage points differ systematically and in ways central to this study's question: network staff observe capability, Airtel Money staff observe the fintech ecosystem, commercial staff observe competitive response,

and finance staff observe returns. A network engineer and a fintech product manager would give materially different accounts of what drives growth, and both are necessary.

Stratum	Population	Sample	Technique
Network and technical operations	68	42	Stratified random
Commercial and marketing	54	33	Stratified random
Airtel Money and financial services	61	37	Stratified random
Customer experience	47	29	Stratified random
Enterprise business	31	19	Stratified random
Finance and strategy	24	14	Stratified random
Total	285	174	

3.3 Data Collection Instrument

Data were collected using a structured, self-administered questionnaire. Section A captured demographic and professional characteristics including gender, age, education, professional qualification, functional unit, position, and tenure. Section B measured the four technology dimensions: network infrastructure advancement through nine items covering coverage extension, technology generation, site densification, fibre capacity, and service quality; mobile financial technology advancement through eleven items covering platform capability, agent and merchant network, product breadth, transaction volume, and ecosystem integration; digital platform and self-service advancement through nine items covering application adoption, self-service migration, digital onboarding, and analytical use of platform data; and enterprise and data solutions advancement through eight items covering corporate connectivity, private network capability, solution design, and account management. Section C measured business growth through thirteen items spanning revenue growth, subscriber base expansion, market share, and average revenue per user. All substantive items employed a five-point Likert scale.

The performance construct was informed by the indicator set the company itself reports, encompassing revenue, EBITDA margin, profit after tax, customer base, and earnings per share (Airtel Uganda, 2026), and by the ARPU emphasis that the sector literature identifies as the metric through which fintech contributes to blended performance (Mordor Intelligence, 2025). Items were aligned to Ugandan telecommunications vocabulary including Airtel Money, agent, National Telecom Operator licence, and Universal Service and Access Fund.

3.4 Validity and Reliability

Content validity was established through expert review by two information systems and strategy academics and three telecommunications practitioners including a network planning manager and a mobile money product lead, yielding a Content Validity Index of 0.89. Construct validity was assessed through exploratory factor analysis using principal components extraction with varimax rotation; the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.858 and

Bartlett's test of sphericity was significant, confirming factorability. Items loading below 0.50 or cross-loading substantially were removed, and the retained solution reproduced the hypothesised five-factor structure.

Reliability was assessed through Cronbach's alpha computed on a pilot of 25 respondents drawn from a comparable telecommunications operator and excluded from the main study, yielding 0.827 for network infrastructure advancement, 0.884 for mobile financial technology advancement, 0.846 for digital platform advancement, 0.803 for enterprise and data solutions advancement, and 0.911 for business growth. Common method bias was addressed procedurally through anonymity assurance, separation of predictor and criterion sections, and item order mixing, and statistically through Harman's single-factor test, in which the first unrotated factor accounted for 31.4 per cent of variance, below the 50 per cent threshold indicating problematic bias.

3.5 Data Analysis

Completed questionnaires were screened for completeness, coded, and entered into IBM SPSS version 26 (Nelson et al., 2022). Descriptive statistics summarised respondent characteristics and variable distributions, with mean interpretation guided by a scale in which 1.00 to 1.80 denotes very low, 1.81 to 2.60 low, 2.61 to 3.40 moderate, 3.41 to 4.20 high, and 4.21 to 5.00 very high. Pearson product-moment correlation established the strength and direction of bivariate relationships. Multiple linear regression estimated the joint and relative contributions of the four domains (Promise et al., 2024). Regression assumptions were tested through Shapiro-Wilk statistics and normal probability plots for normality, scatterplots of standardised residuals for linearity and homoscedasticity, variance inflation factors for multicollinearity, and the Durbin-Watson statistic for independence of errors.

3.6 Ethical Considerations

Ethical clearance was obtained from the relevant institutional review committee and administrative permission was secured from Airtel Uganda management. Given the commercial sensitivity of questions concerning competitive positioning, technology returns, and platform underutilisation in a market where a single rival holds the majority share, anonymity protection was treated as paramount: no identifying information was recorded, responses were not attributable to individuals or functional units, questionnaires were returned through sealed collection boxes, and data were stored securely with access restricted to the researcher. No confidential financial, subscriber, or network information was solicited, and all company performance data referenced in this study derive from the company's published annual report and from public regulatory sources. No responses were shared with management or third parties, and participation was voluntary with the right of withdrawal at any point. No inducements were offered.

4.0 Results

4.1 Response Rate

Of 174 questionnaires distributed, 172 were returned and 169 were usable after screening, yielding an effective response rate of 97.1 per cent. This substantially exceeds the threshold conventionally regarded as adequate for organisational survey research and is attributable to management endorsement, on-site administration, and the professional salience of technology strategy to the respondent population.

4.2 Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev	Interpretation
Network infrastructure advancement	169	2.44	5.00	4.06	0.562	High
Mobile financial technology advancement	169	2.09	4.91	3.64	0.673	High
Digital platform and self-service advancement	169	1.67	4.78	3.11	0.784	Moderate
Enterprise and data solutions advancement	169	1.38	4.63	2.58	0.841	Low
Business growth	169	2.15	4.85	3.52	0.658	High

Source: Primary Data, 2025

The descriptive results presented a portrait consistent with the company's reported performance and with the structural properties of a duopoly market. Network infrastructure advancement recorded the highest mean of 4.06, in the high band, with the smallest standard deviation of 0.562, indicating both the most advanced domain and the greatest consensus. This rating is directly corroborated by the company's reported operational achievements, comprising 258 new 4G sites, 100 per cent 4G coverage, 164 new 5G sites, and 1,600 km of additional fibre in 2025 alone (Airtel Uganda, 2026), building on 100 per cent 4G LTE across all sites achieved in January 2019 and over 2,000 masts by April 2020 (Airtel Uganda, 2025). The tight dispersion is characteristic of a domain whose status is objectively measurable in coverage percentages and site counts rather than subject to interpretation. The rating's competitive significance is nonetheless equivocal, since a capability that a rival matches and that the two now share under the March 2025 network-sharing accord (Mordor Intelligence, 2025) is a capability that has ceased to distinguish them.

Mobile financial technology advancement recorded a mean of 3.64, in the high band, with a standard deviation of 0.673. The interpretation warranted is of a substantially developed platform with room to deepen, which is consistent with the ecosystem's documented trajectory from mobile commerce launch in 2012 to over five million customers by March 2018 (Airtel Uganda, 2025) and to 45.8 million users across Africa with transaction value rising 35 per cent to US\$162 billion (Techjaja, 2025). Its position below network advancement is theoretically important rather than incidental: a fintech ecosystem, comprising agents, merchants, habits, and data, accumulates over time and cannot be completed by capital expenditure in the way a network can, which means that a lower rating on a slower-building asset is not a deficiency but a description of the asset's nature.

Digital platform and self-service advancement recorded a mean of 3.11, in the moderate band, with a standard deviation of 0.784. This rating aligns closely with the company's own disclosed figures: My Airtel App monthly active users grew from 0.4 million to 1.5 million (Airtel Uganda, 2026), which is impressive growth in proportional terms while representing under eight per cent of the 19.2 million subscriber base. A moderate rating on a platform reaching under a tenth of customers is an accurate reading rather than a pessimistic one, and it indicates that the digital relationship the platform is intended to establish remains prospective for the great majority.

Enterprise and data solutions advancement recorded the lowest mean of 2.58, in the low band, with the largest standard deviation of 0.841. This finding is the study's most consequential descriptive result and it corresponds precisely to the market's structure, in which the consumer segment held 90.99 per cent of the Uganda telecom MNO market share in 2024 (Mordor Intelligence, 2025). An operator whose business is over ninety per cent consumer will have developed consumer capabilities and not enterprise ones, and the low rating records this specialisation rather than a failure. The wide dispersion is diagnostically informative, indicating that enterprise capability is perceived very differently across functions, which is consistent with a nascent business concentrated in a small unit whose activities are invisible to the rest of the organisation. That the company identifies scaling Enterprise as one of five strategic pillars (Airtel Uganda, 2026) while its staff rate the capability lowest is precisely the gap between sensing an opportunity and seizing it that dynamic capabilities theory identifies.

Business growth recorded a mean of 3.52, in the high band, which corroborates the company's reported 13.3 per cent revenue growth to Ushs 2,249.7 billion, 13.9 per cent subscriber growth to 19.2 million, and 41.1 per cent profit after tax growth to Ushs 446.9 billion (Airtel Uganda, 2026). The convergence between perceptual and published measures supports the validity of the perceptual instrument.

4.3 Correlation Analysis

Variable	1	2	3	4	5
1. Network infrastructure advancement	1				
2. Mobile financial technology advancement	.462**	1			
3. Digital platform and self-service advancement	.437**	.596**	1		
4. Enterprise and data solutions advancement	.384**	.428**	.513**	1	
5. Business growth	.583**	.712**	.649**	.527**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed), N = 169.

Source: Primary Data, 2025

All four technology domains correlated positively and significantly with business growth at the one per cent level, confirming that technological advancement bears a real relationship to commercial outcomes. The ordering of coefficients, however, carries the analytical weight and is close to an inversion of the ordering of advancement. Mobile financial technology advancement exhibited the strongest association with business growth at $r = 0.712$, sharing

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approximately 50.7 per cent of variance. This is the study's headline correlational finding and it is theoretically coherent under both the resource-based view and network effects theory (Nelson et al., 2023). A fintech ecosystem satisfies the inimitability criterion that network infrastructure does not: an agent network, a merchant base, an established user habit, and accumulated transaction data are socially complex and path-dependent, cannot be purchased, and generate the positive feedback in which each additional user raises the platform's value to every existing one. The evidence for the mechanism's potency is substantial, with mobile money transactions in Uganda exceeding Shs 200 trillion (ChimpReports, 2025) and fintech revenue rising 18.4 per cent in Q1 2025 underlining its contribution to blended ARPU growth (Mordor Intelligence, 2025). That cash still accounts for 95 per cent of Ugandan transactions (Mordor Intelligence, 2025) indicates the opportunity remains substantially unexploited.

Digital platform and self-service advancement recorded the second strongest association at $r = 0.649$, in the strong range (Julius & Audrey, 2026). Its position above network advancement despite a considerably lower implementation mean is analytically significant, indicating that the digital relationship generates commercial returns disproportionate to its current scale. The substantial inter-correlation with mobile financial technology at $r = 0.596$ supports a coupled reading: the application is the interface through which fintech services are consumed, so that platform and fintech advancement reinforce one another, which is consistent with the My Airtel App's growth from 0.4 to 1.5 million monthly active users occurring alongside fintech deepening (Airtel Uganda, 2026).

Network infrastructure advancement correlated at $r = 0.583$, moderate to strong but ranked third despite recording by a clear margin the highest advancement mean of 4.06. This inversion between advancement and association is the study's most theoretically interesting correlational finding and it constitutes direct empirical support for the resource-based prediction. Network capability is valuable but neither rare nor inimitable in a duopoly where both operators command comparable capital and identical suppliers, and the March 2025 network-sharing pact between MTN and Airtel (Mordor Intelligence, 2025) is the definitive evidence: rivals do not share the assets that differentiate them. Network advancement is therefore a condition of participation rather than a source of advantage, and its restricted variance between the only two operators that matter suppresses the association that its absolute importance would otherwise generate.

Enterprise and data solutions advancement recorded the weakest association at $r = 0.527$, though this remained moderate and highly significant. Read alongside the descriptive finding that this is the least developed domain at a mean of 2.58, the coefficient is very likely attenuated by restricted variance at the low end, since a capability that is uniformly nascent cannot express its potential through variation. The theoretical case for enterprise is strong and growing, with enterprise connections posting the fastest growth at a 6.36 per cent compound annual rate to 2030 against a consumer segment holding 90.99 per cent of the market in 2024, and with private LTE and 5G contracts tied to Uganda's oil and mining projects unlocking fresh revenue streams (Mordor Intelligence, 2025). The coefficient should be read as a floor rather than a measure.

4.4 Regression Analysis

Model Summary			
R	R Square	Adjusted R Square	Std. Error
.779	.607	.597	.4176

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Regression	44.128	4	11.032	63.27	.000
Residual	28.596	164	0.174		
Total	72.724	168			

Predictor	B	Std. Error	Beta	t	Sig.	VIF
(Constant)	0.412	0.238		1.731	.085	
Network infrastructure advancement	0.239	0.062	.204	3.855	.000	1.318
Mobile financial technology advancement	0.349	0.061	.357	5.721	.000	1.674
Digital platform and self-service advancement	0.238	0.057	.284	4.175	.000	1.812
Enterprise and data solutions advancement	0.134	0.049	.171	2.735	.007	1.487

Dependent Variable: Business Growth. Durbin-Watson = 1.941.

Source: Primary Data, 2025

The regression model was highly significant, $F(4, 164) = 63.27$, $p < 0.001$, establishing that the four technology domains jointly predict business growth. The coefficient of determination of 0.607 indicates that the model explains 60.7 per cent of the variance in business growth, with the adjusted value of 0.597 confirming robustness (Nelson et al., 2023). The unexplained 39.3 per cent reflects factors beyond technology, and the sector evidence identifies them with unusual precision: the tax regime, which a UCC-commissioned study characterises as among the heaviest and most distortionary in the region and as having reached its economic limits while constraining usage growth, smartphone adoption, and rural connectivity (UCC, 2026); foreign exchange risk, since a significant portion of capital expenditure and operational costs are denominated in US dollars (Airtel Uganda, 2026); the US\$2.67 per gigabyte cost that remains East Africa's highest due to landlocked dependence on coastal gateways (Mordor Intelligence, 2025); and competitive intensity from a rival holding about 54 per cent share (UCC, 2026). Diagnostics supported the model: variance inflation factors ranged from 1.318 to 1.812, and the Durbin-Watson statistic of 1.941 confirmed residual independence.

Mobile financial technology advancement emerged as the strongest predictor with a standardised coefficient of 0.357, significant at $p < 0.001$, the largest marginal effect in the model. Its retention of dominance after controlling for network, platform, and enterprise advancement demonstrates an independent contribution and establishes the study's central substantive finding: in a mature duopoly, financial technology rather than network capability drives growth.

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The mechanism is that which the resource-based view specifies, since the fintech ecosystem is the one technological asset Airtel possesses that its rival cannot replicate by purchasing equipment, and which network effects theory reinforces, since each additional user and merchant raises the platform's value to all existing ones. The strategic implication is direct: with cash still accounting for 95 per cent of Ugandan transactions (Mordor Intelligence, 2025) and mobile money spanning merchant payments, micro-loans, and bank linkages that widen stickiness for rural customers excluded from formal banking (Mordor Intelligence, 2025), the domain combining the largest marginal effect with the largest unexploited market is the same domain.

Digital platform and self-service advancement was the second strongest predictor with a beta of 0.284, significant at $p < 0.001$. Its substantial independent contribution, persisting after fintech is controlled, indicates that the platform operates through channels beyond serving as the fintech interface, plausibly including the cost displacement of self-service migration and the engagement that regular application use generates. The finding acquires practical force from the descriptive result: with My Airtel App monthly active users at 1.5 million against 19.2 million subscribers (Airtel Uganda, 2026), the domain with the second largest effect currently reaches under a tenth of the customer base, which identifies a substantial reservoir of unexploited return.

Network infrastructure advancement recorded a beta of 0.204, significant at $p < 0.001$, ranking third despite being by a clear margin the most advanced domain at a mean of 4.06. This inversion between advancement and effect is the study's most pointed finding and it should be read carefully rather than as evidence that networks do not matter, which would be absurd for a telecommunications operator. The defensible reading is that network capability has become a condition of trading rather than a source of advantage: both duopolists achieved 5G following the July 2023 auction, both target comparable coverage, and since March 2025 they share infrastructure to reduce duplication and release capital (Mordor Intelligence, 2025). A capability that rivals share is definitionally not a differentiator, and the modest beta records that structural fact rather than any deficiency in Airtel's network, which its reported 100 per cent 4G coverage demonstrates is exemplary (Airtel Uganda, 2026).

Enterprise and data solutions advancement recorded the smallest beta at 0.171, significant at $p = 0.007$. Read against its descriptive standing as the least developed domain at a mean of 2.58, this combination identifies enterprise as the largest reservoir of unrealised capacity in the model, since marginal returns are greatest where current development is lowest and since the market evidence indicates the opportunity is expanding: enterprise connections post the fastest growth at 6.36 per cent compound annual rate to 2030 while consumer holds 90.99 per cent of the market, and private LTE and 5G contracts tied to oil and mining projects unlock fresh revenue streams supported by 5G capacity of one million devices per square kilometre essential for industrial automation (Mordor Intelligence, 2025). That the company identifies scaling Enterprise among its five strategic pillars (Airtel Uganda, 2026) while its capability is rated lowest is precisely the sensing-seizing gap that dynamic capabilities theory predicts. The regression equation may be expressed as $BG = 0.412 + 0.239(NIA) + 0.349(MFTA) + 0.238(DPSA) + 0.134(EDSA)$.

5.0 Conclusion and Recommendations

The study concludes that technological advancements exert a substantial and statistically significant influence on business growth at Airtel Uganda, jointly explaining 60.7 per cent of variance. The effect is heterogeneous and inversely related to advancement: mobile financial technology dominates while network infrastructure, the most advanced domain, contributes third. This inversion is explained by duopoly structure and by the resource-based distinction between valuable resources and rare ones, and it is corroborated by the operators' own conduct in agreeing to share the network infrastructure they had competed to build (Mordor Intelligence, 2025). Enterprise solutions, the least developed domain, represents the largest unrealised opportunity in a market where enterprise connections are the fastest-growing segment.

It is recommended that Airtel Uganda concentrate technology investment on mobile financial technology, since it combines the largest marginal effect with the largest unexploited market, given that cash still accounts for 95 per cent of Ugandan transactions (Mordor Intelligence, 2025); deepening should extend beyond transfers into the merchant payments, micro-loans, and bank linkages that widen stickiness for customers excluded from formal banking. Digital platform scaling should be the second priority, since My Airtel App monthly active users at 1.5 million against 19.2 million subscribers (Airtel Uganda, 2026) indicate that a domain with the second largest effect currently reaches under a tenth of customers, and closing that gap requires addressing the smartphone affordability that the UCC identifies as a barrier for low-income households (ChimpReports, 2025). Enterprise capability should be built rather than merely declared, since a pillar of stated strategy (Airtel Uganda, 2026) that staff rate lowest is an intention rather than a capability, and seizing the enterprise opportunity that oil and mining projects present requires solution design and account management competencies that a consumer operator does not automatically possess. Network investment should be maintained at parity rather than pursued for advantage, since the March 2025 sharing accord confirms the domain has become a shared cost, and capital released through sharing should be redirected to the domains where differentiation remains available. Finally, the company should continue engaging the regulator on the tax regime, since a UCC-commissioned study finds that well-designed reductions in VAT and excise duty could expand the user base, stimulate data consumption, crowd in private investment and generate higher long-term fiscal returns (UCC, 2026), which indicates that the constraint on technology's returns lies partly outside the company's control and can be addressed only through advocacy.

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