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Strategic Alliances and Competitive Advantages in Telecommunication Firms in Kenya

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Abstract

The telecommunication sector is a critical driver of economic development in Kenya, yet its contribution to Gross Domestic Product remains notably low at 1.7%, compared to 5.5% in China and 9% in India. This study, therefore, sought to examine the influence of four dimensions of strategic alliances including production, financial, marketing, and research and development (R&D) on competitive advantage, measured through market share, brand loyalty, cost leadership, and product diversification. A descriptive research design was adopted, targeting senior managers from Internet Service Providers (ISPs) in Kenya. A census approach was employed, targeting all 50 licensed Internet Service Providers in Kenya, with three senior managers per firm (Head of strategy, finance and marketing), yielding 150 potential respondents. Data was collected from 118 respondents through structured questionnaires, achieving a 79% response rate. The data were analyzed using descriptive statistics, Pearson correlation, and multiple linear regression analysis, with assumptions of normality, multicollinearity, and homoscedasticity confirmed prior to inferential analysis. The findings revealed that production alliances (mean = 3.16) and financial alliances (mean = 3.29) were moderately adopted, with infrastructure sharing and cost-sharing agreements being the most prevalent practices. Marketing alliances (mean = 3.34) were selectively adopted, primarily through product bundling, while R&D alliances recorded the lowest adoption (mean = 2.49), reflecting firms' preference for internal innovation to protect proprietary knowledge. The regression model was statistically significant, $F(4, 113) = 54.67$, $p < .001$, explaining 65.9% of the variance in competitive advantage ($R^2 = 0.659$). Financial alliances emerged as the strongest predictor ($\beta = 0.302$, $p < .001$), followed by marketing alliances ($\beta = 0.294$, $p < .001$), production alliances ($\beta = 0.191$, $p = 0.004$), and R&D alliances ($\beta = 0.112$, $p = 0.037$). The study concludes that strategic alliances have a positive and significant influence on competitive advantage among Kenyan ISPs, with financial and marketing collaborations serving as the primary drivers of market expansion and cost efficiency. However, the limited adoption of R&D alliances presents an untapped opportunity for sustained innovation and long-term competitiveness. The study recommends that ISPs strengthen production and financial partnerships, selectively leverage marketing alliances, and explore collaborative R&D through partnerships with technology firms and innovation hubs. Policymakers are encouraged to develop regulatory frameworks that facilitate infrastructure sharing and introduce incentives such as grants and tax reliefs to encourage joint innovation initiatives. Future research should adopt longitudinal designs and comparative studies across different sectors to examine the long-term sustainability of strategic alliances in enhancing competitive advantage.

Keywords: Strategic Alliances, Competitive Advantages, Telecommunication Firms, Kenya

1.0 Background of the Study

Strategic alliances have become a standard corporate practice globally, pursued by organizations seeking to enhance industry performance and develop competitive advantages in an increasingly dynamic marketplace. Wheelen et al. (2017) assert that strategic alliances are integral to the economic sustainability strategies of commercial organizations. Lin and Darnall (2015) further note that forming alliances with other businesses and institutions has become the most popular competitive practice among firms today. Leiblein and Reuer (2004) define a strategic alliance as a cooperative arrangement between two or more businesses aimed at breaking into new markets or improving existing business conditions. Despite their widespread adoption, alliances carry inherent risks, as firms often underestimate the costs of development and maintenance relative to anticipated benefits, rendering these relationships frequently unstable and prone to disintegration (Berquist et al., 1995; Morris & Hergert, 1987).

Effective strategic alliances offer firms multiple tangible benefits, including technology transfer, improved organizational effectiveness, reduced design and after-sales costs, and enhanced financial performance (Cumming et al., 2017; Ireland et al., 2002; Kang et al., 2014). These partnerships leverage complementary assets, skills, and knowledge to improve competitiveness, foster innovation, and achieve objectives difficult to pursue independently (Beamish & Killing, 1997). They also accelerate market entry and reduce the cost of acquiring critical resource inputs (Elmuti & Kathawala, 2001). However, collaboration alone is insufficient to guarantee success. Pre- and post-alliance activities remain essential in fostering competitive advantages and sustained corporate performance (Meier, 2011; Nielsen & Nielsen, 2009). Competitive advantage, defined as the ability to deliver superior customer value through lower costs or differentiated offerings, ultimately determines a firm's capacity to outperform rivals and sustain superior profitability (Narayanan, 2001; Porter, 1985).

At the global level, the telecommunication industry has become a particularly active arena for strategic alliances. Major corporations including Mobily, Ericsson, Nokia, and Huawei have pursued partnerships spanning artificial intelligence, 5G technology, IoT integration, gaming, and digital infrastructure development. These alliances are driven by the relentless demand for advanced technologies and faster, more reliable connectivity. However, despite their strategic rationale, global telecommunication alliances have recorded significant failure rates. Hughes and Weis (2024) report that while the number of corporate alliances grows by approximately 25% annually, their failure rate hovers between 60% and 70%. These failures are commonly attributed to mismatched goals, low commitment, poor operational integration, inadequate communication, and hidden agendas that erode trust, challenges that have persisted despite widespread awareness of their root causes (Gatobu & Maende, 2019).

Across Africa, strategic alliances in the telecommunication sector have grown alongside rapid sector expansion, driven by government privatization of state-owned enterprises and intensifying multinational competition (Kirabo et al., 2021). International firms such as Vodafone, Orange, and Huawei have forged extensive partnerships with regional operators including Safaricom, Bharti Airtel, and MTN to access local markets, foster innovation, and cultivate talent. Huawei alone reports nearly 3,000 partners across the African region (Huawei, 2023). However, outcomes remain mixed. A notable example is the failed alliance among Telkom Kenya, Essar's Yu, and Zain, which was unable to capture meaningful market share from Safaricom despite offering highly competitive pricing. This illustrates that even well-resourced African alliances are not immune to the strategic and operational pitfalls that undermine collaborative ventures globally (Kirabo et al., 2021).

In Kenya specifically, the telecommunication sector has undergone remarkable growth over the past two decades, contributing significantly to social and economic development and earning Kenya recognition as East Africa's "Silicon Valley." The sector recorded a 7.7% revenue increase to Ksh. 339.4 billion in 2023, with mobile subscriptions exceeding 66.4 million (CAK, 2023). Despite this growth, the sector's GDP contribution remains low at 1.7%, well below China's 5.5% and India's 9%, and has stagnated since declining from 1.8% in 2020 (KNBS, 2023). To address this gap, approximately 80% of Kenyan telecommunication firms engage in strategic alliances to access technical expertise, financial resources, and new technologies (Mong'are, 2016). Nevertheless, these collaborations face challenges including poor coordination, cultural differences, governance complexities, and intellectual property disputes (Gatobu & Maende, 2019), underscoring the need for empirical investigation into their actual influence on competitive advantage.

1.1 Statement of the Problem

Despite telecommunication industry being a major player in economic development, in Kenya its 1.7% contribution to GDP in 2023 (KNBS, 2023) is far much lower compared to the sector's contribution to GDP in other countries like China (5.5%) (GSMA, 2023) and India (9%) (Keshri, 2023). Moreover, the contribution of the sector to the Kenyan GDP declined from its highest ever of 1.8% in 2020 and remained stagnant at 1.7% in the past 2 years (KNBS, 2023). A sign of slowed growth and untapped opportunities within the sector. Opportunities which can be taken advantage of through strategic alliances by the telecommunication industry businesses to boost their performance in terms of profitability, maintaining growth, streamline operations and their overall contribution to the general nominal GDP.

However, in Kenya notable strategic alliances in the telecommunication have not lived up to their billing. Most have either failed to deliver on the operational or strategic benefits they purport to provide with failure rate being estimated to between 30 and 70% (Gitabu & Maende, 2019). Thus, the need to fully understand the actual impact of these alliances on strategic competitive advantages and the overall performance of the telecommunication firms. It is equally important to identify the weak links in such alliances. Towards this, several studies have explored the effect of strategic alliances on performance of telecommunication industry (Emami et al., 2022). In Kenya most of these studies have used case-based approach with focus on the three major telecommunication firms in Kenya (Gatobu & Maende, 2019; Maina et al., 2023), presenting a major methodological gap. This narrow scope fails to capture the diversity of strategic alliance experiences across the entire sector. These studies often lack empirical depth and fail to apply robust sampling techniques, thus limiting the generalizability of their findings.

Studies in the telecommunication industry in Kenya have heavily been viewed from the lens of mobile phones service providers with performance being evaluated from profitability perspective (Onchwari, 2017; Kirabo et al., 2021) and extent of sharing network infrastructure (Ndunge et al., 2019). Very few studies explicitly use competitive advantages as a primary measure of performance presenting a conceptual gap. Further, these studies have not exhaustively included the non-telephone service providers like the internet and software service providers, presenting contextual gaps. It is also important to note that, existing research tends to focus on mobile telephone service providers while neglecting other key players like Internet Service Providers, infrastructure providers and value-added service firms. These segments form a critical part of the telecommunication ecosystem and their exclusion from analysis leaves a significant gap in understanding industry-wide dynamics. The current study sought to

fill these knowledge gaps by investigating the influence of strategic alliances on competitive advantages among telecommunication firms in Kenya.

1.2 Objectives of the Study

- i. To assess the influence of production alliances on competitive advantages of telecommunication firms in Kenya.
- ii. To determine the influence of financial alliances on competitive advantages of telecommunication firms in Kenya.
- iii. To explore the influence of marketing alliances on competitive advantages of telecommunication firms in Kenya
- iv. To determine the influence of research and development strategic alliances on competitive advantages of telecommunication firms in Kenya.

2.0 Literature Review

This section explores the literature study in detail, concentrating on the relationship between strategic alliances and competitive advantage in Kenya's telecommunication industry. The section covers theoretical and empirical review of literature on which the study is anchored.

2.1 Theoretical Review

The following theories are reviewed in this study since they are pertinent to strategic alliances and competitive advantage: The resource dependency theory, competitive advantage theory, the transaction cost theory and innovation theory. Resource dependency theory originally proposed by Emerson (1963) and refined by Pfeffer and Salancik (1978) holds that organizations lack self-sufficiency and must depend on external resources controlled by other entities, necessitating inter-organizational relationships to ensure survival. Firms therefore form strategic alliances to reduce dependency on scarce resources, enhance bargaining power, and access critical production capabilities (Gichui, 2011; Leiblein, 2003). Each alliance partner contributes unique competencies that, when combined, generate positive synergies and competitive advantages. This theory directly informs the first objective, assessing the influence of production alliances on competitive advantage, by explaining why telecommunication firms collaborate in infrastructure sharing, joint operations, and resource pooling to enhance operational efficiency and market competitiveness.

Transaction Cost Theory posits that markets occasionally fail to efficiently allocate resources due to externalities, information asymmetries, and governance challenges, prompting firms to internalize or collaborate rather than rely solely on market mechanisms (Beckman, Haunschild & Phillips, 2014; Williamson, 1985). Firms engage in strategic alliances specifically to minimize the costs associated with market transactions and internal management, particularly when full outsourcing is prohibitively expensive but independent production is not viable. In the Kenyan telecommunication context, alliances driven by cost minimization enable firms to achieve competitive pricing and operational efficiency. This theory anchors the second objective, determining the influence of financial alliances on competitive advantage, by explaining how co-funding arrangements, cost-sharing agreements, and joint capital ventures reduce transactional costs and improve financial sustainability.

Porter's (1985) Competitive Advantage Theory explains why some firms consistently outperform rivals by developing unique organizational strengths that deliver superior customer value. Firms achieve this through cost leadership, differentiation, or focus strategies, realized via cost efficiency, innovation, brand loyalty, and operational excellence. Strategic alliances contribute directly to competitive advantage by enabling firms to share resources and infrastructure to reduce costs, access economies of scale, strengthen brand differentiation, and

enter new markets more rapidly by leveraging partner expertise. This theory underpins the third objective, exploring the influence of marketing alliances on competitive advantage, by establishing the conceptual link between collaborative marketing efforts such as product bundling, brand partnerships, and joint promotions, and the resulting gains in market share, customer loyalty, and competitive positioning.

Kogut and Zander's (1993) Innovation Theory emphasizes that creating and introducing new knowledge and products is central to sustaining competitive advantage, particularly in dynamic, technology-intensive industries. Strategic alliances facilitate collaborative innovation by enabling firms to pool R&D resources, share technological expertise, and develop market-responsive products more rapidly and cost-effectively than independent efforts allow. Senge (1990) further argues that learning organizations that continuously adapt and innovate are best positioned to maintain competitive relevance. This theory informs the fourth objective, determining the influence of R&D alliances on competitive advantage, by explaining how knowledge partnerships, developer collaborations, and data-sharing agreements among Kenyan ISPs can accelerate innovation cycles, reduce R&D costs, and generate the proprietary capabilities necessary for sustained competitive differentiation.

2.2 Conceptual Framework

Figure 1 presents the conceptual framework.

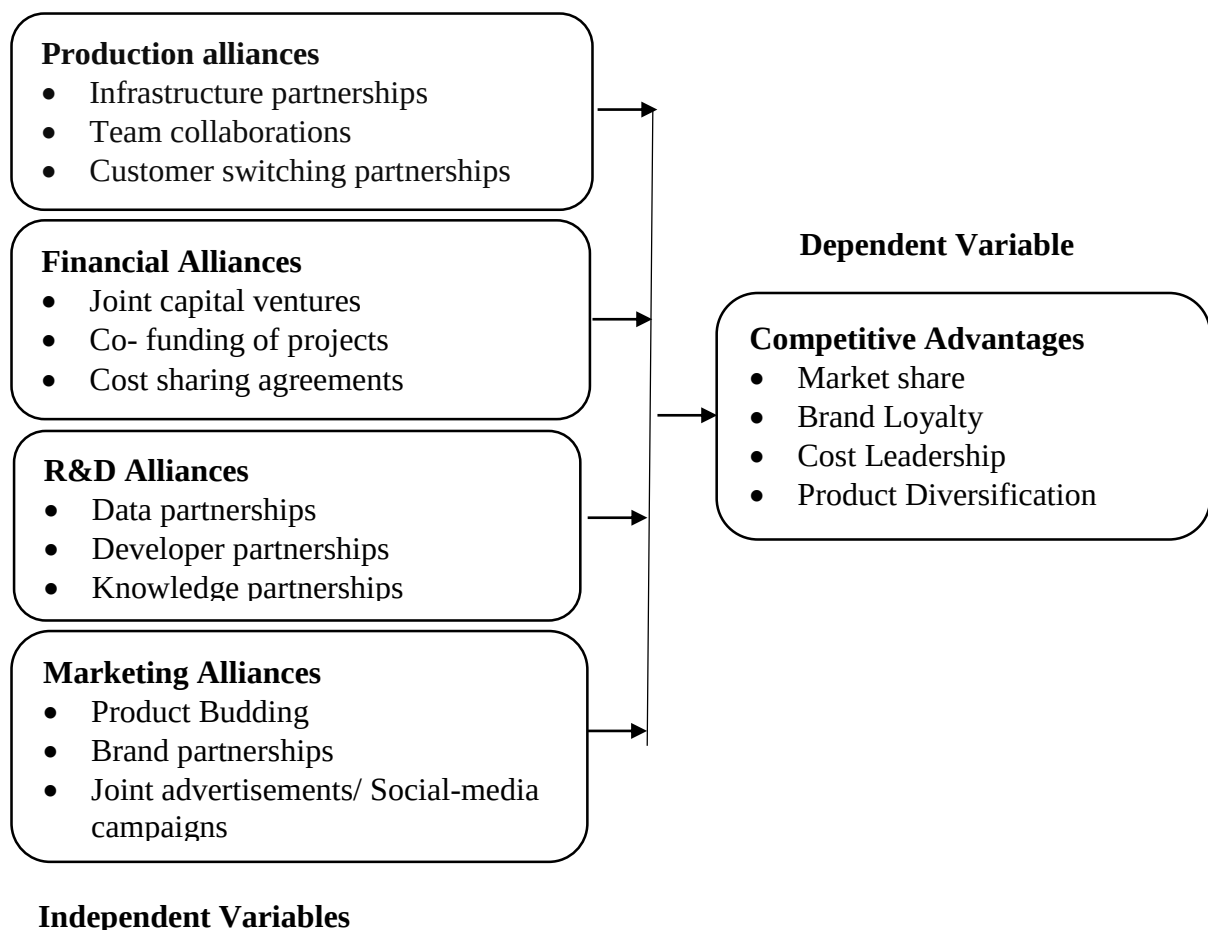


Figure 1: Conceptual Framework

2.3 Empirical Review

Studies on production strategic alliances indicate that these partnerships significantly enhance the competitive advantages of firms, the telecommunication sector in particular. Production alliances allow firms to share resources like technology, expertise and production facilities which lead to cost efficiencies and improved operational performance. For example, a study by (Brown and Jones, 2018) found out that telecommunication companies involved in production alliances reported a reduction in production costs and increased output quality. These alliances also enable firms to optimize capacity utilization and reduce downtime, which is important to meet the fluctuating market demands (Smith & Lee, 2019). The nature of production alliances also fosters innovation in production process and product quality, further strengthening the competitive position of firms. These alliances provide the capital and risk-sharing mechanisms which enable firms to pursue growth opportunities and enhance their competitive advantages. Empirical evidence suggests that financial alliances facilitate access to additional funding, allowing firms to invest in new technologies, enter new markets and expand operations.

Research done by Ngugi and Mugo, 2017 demonstrated that firms which engaged in financial alliances experienced improved financial stability and reduced borrowing costs, which contributed to enhanced profitability and market competitiveness. These alliances help mitigate financial risks by distributing them across partner firms, thereby enhancing resilience against economic fluctuations (Kariuki & Wainaina, 2019). With the benefits offered by financial alliances, drawbacks may include the complexity of managing joint financial resources and ensuring equitable returns for all partners. An analysis of the financial performance of Kenyan telecommunication firms which involved strategic alliances was done by Njoroge and Ngugi (2019), whereby they found out that the firms exhibited higher revenue growth and profitability as compared to those that did not engage. The study attributed this financial success to the enhanced capabilities and efficiencies derived from the collaborative efforts. Wanjiku and Wambui (2020) found out that firms that were more adept at the adoption of new technologies and processes led to increased productivity and operational efficiency.

There is empirical evidence to prove that marketing strategic alliances enhance competitive advantages by expanding market reach, increasing brand visibility and improving customer loyalty. Studies show that joint marketing efforts enable firms to penetrate new customer segments and geographic markets more effectively than individual efforts. Johnson and Smith, 2017 found that telecommunication firms in marketing alliances reported higher customer acquisition and retention rates, as well as increased brand strength. Collaborative marketing campaigns allow the sharing of market intelligence and resources, resulting in more impactful and cost-effective marketing strategies. These alliances can also lead to synergies in promotional activities, enhancing overall market presence and competitive positioning. Empirical validation by Kamau and Bosire (2017) explored the effects of marketing alliance on market expansion and customer retention in the telecommunication industry. Their significant study demonstrated that firms which engaged in joint market efforts experienced significant improvements in brand visibility and customer loyalty. Marketing alliances enabled these firms to leverage shared resources for large-scale promotional campaigns, which would have been cost-prohibitive if undertaken individually. Muthoni (2019) also indicated that marketing alliances facilitated access to new customer segments, thus contributing to increased revenue and market presence.

Research and development strategic alliances are critical for driving innovation and maintaining a competitive edge in the telecommunication industry. Empirical research

highlights those R&D alliances enable firms to pool resources, share risks and leverage diverse expertise to accelerate technological advancements. A study by Todeva & Knoke, 2005 revealed that firms engaged in these alliances achieved faster innovation cycles and developed more advanced products as compared to those that conducted R&D independently. These alliances also facilitated knowledge transfer and integration, thus fostering a culture of continuous improvement and adaptability to emerging technological trends. The alliances can also lead to the co-creation of proprietary technologies and patents, providing firms with unique competitive advantages.

A study done by Kariuki and Wainaina (2019) investigated the impact of technological alliances on service innovation among telecommunication companies. Their finding was that firms engaging in technological partnerships were able to introduce new and improved services faster than the ones operating independently. This accelerated innovation process resulted in an increase in customer satisfaction and market share. Another empirical analysis by Ngugi and Mugo (2017) showed that technological alliances facilitated access of cutting-edge technologies that enhanced operational efficiency and cost-effectiveness of the firms involved. Mwangi and Ochieng (2020) conducted a study on knowledge sharing practices among Kenyan telecommunication companies and their impact on organizational performance. They found out that effective knowledge sharing led to improved problem-solving capabilities, greater adaptability to market changes and enhanced innovation. The outcomes were particularly pronounced in firms that established robust mechanisms for internal and external knowledge exchange. Moreover, companies with strong knowledge-sharing cultures reported high levels of employee productivity and customer service excellence (Njenga & Kimani, 2018)

3.0 Research Methodology

This study adopted a descriptive research design to examine the relationship between strategic alliances and competitive advantage among telecommunication firms in Kenya, enabling detailed analysis of prevailing characteristics, frequencies, and variable relationships (Kothari, 2004). The target population comprised all 50 licensed Internet Service Providers (ISPs) in Kenya as listed by the Communications Authority of Kenya (2024). Given the manageable and finite population size, a census approach was employed, incorporating all 50 ISPs to eliminate sampling error and maximize representativeness. From each firm, three senior managers were purposively selected, the head of strategy, chief finance officer, and chief marketing/R&D officer, yielding 150 potential respondents. This triangulation of perspectives across strategy, finance, and marketing functions minimized single-respondent bias and ensured a holistic, multi-dimensional understanding of how strategic alliances influence competitive advantage.

Data were collected using a semi-structured questionnaire combining close-ended Likert-scale items and open-ended questions, administered online or via email over a two-week period with follow-up reminders to enhance response rates. A pilot test involving 15 senior managers was conducted prior to full deployment to assess clarity, reliability, and validity (Julious, 2005). Reliability was measured using Cronbach's alpha, with a threshold of 0.7 considered acceptable (Gliem & Gliem, 2003), while content and face validity were established through expert review and pilot respondent feedback respectively. Collected data were cleaned, coded, and analyzed using SPSS. Quantitative data were examined through descriptive statistics, means, frequencies, and standard deviations, and inferential techniques including Pearson correlation and multiple linear regression. Qualitative responses were analyzed thematically, with findings presented through tables, graphs, and narrative descriptions to provide a comprehensive account of the study's results.

4.0 Results and Discussion

This chapter provides a comprehensive analysis and interpretation of the data collected to evaluate the impact of strategic alliances on competitive advantage among Internet Service Providers (ISPs) in Kenya.

4.1 Response Rate

The study targeted 150 respondents, (3 from each firm). From this cohort, 118 questionnaires were successfully completed and returned, representing a response rate of 79%. According to Draugalis et al. (2008), a response rate of this magnitude significantly enhances reliability and generalizability of the findings.

4.2 Demographic Information of Respondents

The demographic profile of the 118 respondents who participated in the study as shown in Table 1 provides valuable context for understanding the strategic decision-making environment within Kenya's Internet Service Provider (ISP) sector.

Table 1: Demographic Information of Respondents

Characteristic	Category	Frequency	Percentage
Age	18–25	29	24.6%
	26–35	74	62.7%
	36–45	11	9.3%
	Above 45	4	3.4%
Education Level	Certificate	24	20.3%
	Diploma	57	48.3%
	Degree	37	31.4%
Work Experience	< 2 years	19	16.1%
	2–5 years	55	46.6%
	6–10 years	31	26.3%
	> 10 years	13	11.0%

The majority of the respondents fall within the 26–35 years age bracket (62.7%), followed by those aged 18–25 years (24.6%), indicating that the ISP workforce is predominantly composed of young professionals. This finding suggests that a considerable proportion of managers within the Internet Service Provider sector are relatively young. This demographic may have positive implications for the adoption and implementation of strategic alliances within the sector. In terms of educational attainment, nearly half of the respondents hold a diploma (48.3%), while an additional 31.4% possess a degree, suggesting that the sector benefits from a reasonably well-educated cadre of mid-level managers capable of understanding and executing complex alliance arrangements. Regarding work experience, the largest proportion of respondents have between 2 and 5 years of industry experience (46.6%), followed by those with 6–10 years (26.3%). This distribution implies that while the respondents are not necessarily industry veterans, they possess sufficient operational and strategic exposure to provide informed insights into how strategic alliances influence competitive advantage. Cumulatively, these demographic characteristics paint a picture of a sector driven by a young, educated, and

moderately experienced workforce factors that position ISPs well to leverage strategic alliances as a dynamic tool for cost efficiency, market expansion, and innovation.

4.3 Descriptive Analysis

The summarizes of the descriptive analysis is presented below.

Production Strategic Alliances

Production strategic alliances were moderately adopted among Kenyan ISPs, recording a total aggregate mean of 3.16 (SD = 1.11). Customer switching partnerships registered the highest sub-aggregate mean of 3.46 (SD = 1.12), with 54.8% of respondents agreeing that alliances prioritize seamless customer experience, standardization for switching, and data sharing for client retention. Infrastructure partnerships followed with a mean of 3.30 (SD = 1.12), where 49.7% affirmed engagement in network sharing and smart solution collaboration. Team collaborations recorded the lowest mean of 2.72 (SD = 1.09), with only 27.1% confirming active knowledge exchange or joint relationship building. These findings suggest that production alliances among Kenyan ISPs are predominantly transactional and customer-driven, consistent with Brown and Jones (2018), who noted that telecommunication firms limit collaboration to operational aspects while remaining cautious about deeper integration that may expose proprietary capabilities.

Financial Strategic Alliances

Financial strategic alliances were moderately adopted, yielding a total aggregate mean of 3.29 (SD = 1.14). Cost-sharing agreements recorded the highest sub-aggregate mean of 3.36 (SD = 1.10), with 51.2% of respondents confirming that their firms leverage purposeful cost-sharing to optimize resource utilization. Co-funding of projects followed with a sub-aggregate mean of 3.27 (SD = 1.15), where 48.6% indicated engagement in co-funded partnerships to spread financial risk. Joint capital ventures recorded a sub-aggregate mean of 3.23 (SD = 1.16), with 49.5% confirming pursuit of planned joint capital structures for long-term growth. Notably, capital-based partnerships recorded the lowest mean of 2.91, suggesting firms remain cautious about deep financial integration with competitors. These findings align with Johnson and Scholes (2020), who argue that financial alliances enable resource sharing and risk distribution while firms maintain organizational independence.

Marketing Strategic Alliances

Marketing strategic alliances were moderately adopted among Kenyan ISPs, with a total aggregate mean of 3.34 (SD = 1.12). Product bundling registered the highest sub-aggregate mean of 3.57 (SD = 1.10), with 60.4% of respondents agreeing that their firms engage in joint product offerings to expand market reach and deliver value-added solutions. Brand partnerships followed with a sub-aggregate mean of 3.33 (SD = 1.11), where 50.6% confirmed that such partnerships enhance firm visibility, competitive edge, and brand credibility. Joint advertisements and social media campaigns recorded the lowest sub-aggregate mean of 3.13 (SD = 1.14), with only 42.3% affirming collaborative promotional activities. These findings indicate that Kenyan ISPs favor marketing alliances that directly enhance customer value and market reach while remaining selective about joint promotional campaigns, consistent with Thompson and Green (2020) and Ochieng (2021), who linked collaborative marketing to improved brand visibility and market penetration.

Research and Development Strategic Alliances

R&D strategic alliances recorded the lowest adoption among all alliance types, with a total aggregate mean of 2.49 (SD = 1.14). Knowledge partnerships registered the highest sub-

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aggregate mean of 2.77 (SD = 1.13), with only 29.1% of respondents agreeing that their firms engage in activities strengthening technological expertise and promoting continuous learning. Data partnerships recorded a sub-aggregate mean of 2.36 (SD = 1.18), with 17.2% affirming enhancement of innovation capacity and decision-making through data sharing. Developer partnerships recorded the lowest sub-aggregate mean of 2.35 (SD = 1.12), with 18.1% confirming collaboration on product development and technology integration. These results indicate a strong preference for internal innovation over collaborative R&D, likely driven by intellectual property protection concerns, consistent with Garcia and Patel (2019) and Njoroge (2022), who observed that technology-intensive firms limit external R&D collaboration to safeguard competitive differentiation.

Competitive Advantage

Kenyan ISPs exhibited a relatively high level of competitive advantage, with a total aggregate mean of 3.55 (SD = 1.09). Brand loyalty recorded the highest sub-aggregate mean of 3.60 (SD = 1.02), with 63.2% of respondents agreeing that strategic alliances reinforce brand reputation and improve customer retention. Market share followed with a mean of 3.58 (SD = 1.13), where 62.4% confirmed that alliances support market expansion and facilitate entry into new segments. Cost leadership recorded a sub-aggregate mean of 3.52 (SD = 1.11), with 59.8% affirming that alliances promote competitive pricing and reduce operational expenditures. Product diversification recorded the lowest sub-aggregate mean of 3.51 (SD = 1.10), with 56.8% agreeing that alliances contribute to service expansion and co-creation of solutions. These findings support Porter (1985) and Barney (1991), who argue that leveraging unique, shared resources through collaboration is central to sustaining superior competitive positioning.

4.4 Test for Assumptions

Before conducting multiple regression analysis, the study tested four key assumptions of normality, linearity, homoscedasticity, and multicollinearity to ensure the validity and reliability of the model estimates.

Test for Normality

Skewness test was conducted to check for data normality

Table 2: Skewness Test

Variable	Mean	Std. Deviation	Skewness
Infrastructure Partnerships	3.30	1.12	-0.142
Financial Alliances	3.62	1.04	-0.315
Marketing Alliances	3.58	1.15	-0.284
Research and Development Alliances	2.72	1.09	0.214
Competitive Advantage	3.55	1.08	-0.245

The skewness values for all variables in the study fell within the range of -0.315 to 0.214, as shown in Table 2. Because all raw skewness statistics lie well within the widely accepted academic threshold of -1.0 to +1.0, the data distribution for each construct is considered approximately symmetric and free from significant distortion. Overall, these skewness statistics confirm that the fundamental assumption of normality has not been violated, thereby providing a robust statistical justification for the subsequent deployment of parametric tests, such as Pearson's correlation and linear regression analysis.

Test for Multicollinearity

Multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF) values.

Table 3: Multicollinearity Test

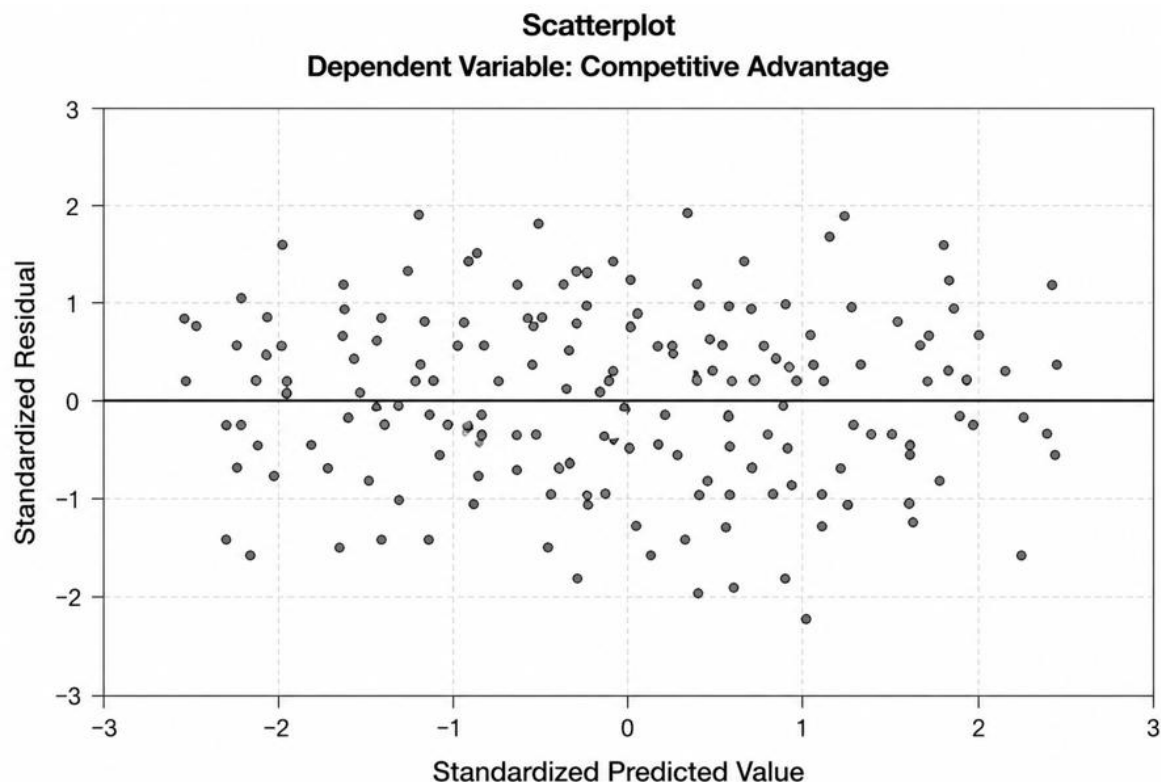
Variable	Tolerance	VIF
Production Alliances	0.674	1.484
Financial Alliances	0.521	1.919
Marketing Alliances	0.588	1.701
Research & Development Alliances	0.452	2.212

All VIF values fell between 1.484 and 2.212, well below the conservative threshold of 10, while Tolerance values ranged from 0.452 to 0.674, all exceeding the acceptable minimum of 0.2. These results indicate no problematic correlation among the independent variables, confirming that each strategic alliance dimension (Production, Financial, Marketing, and Research & Development) provides a unique and independent contribution to the regression model. Thus, the multicollinearity assumption is satisfied.

Test for Homoscedasticity

The scatter plot Figure 2 shows residuals randomly dispersed around the horizontal zero line in a rectangular pattern, with no funnel shape, widening, or systematic clustering. This random distribution confirms constant error variance across all predicted values, satisfying the homoscedasticity assumption.

Figure 2: Scatter Plot of Residuals- Homoscedasticity Test



4.5 Correlation Matrix

To examine the interrelationships among the four strategic alliance dimensions, a Pearson correlation analysis was conducted, with the results presented in Table 4

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Table 4: Correlation Matrix

Alliance	Production	Financial	R&D	Marketing	Competitive advantage
Production	1.000				
Financial	.542	1.000			
R&D	.302	.285	1.000		
Marketing	.411	.489	.315	1.000	
Competitive Advantage	.650	.702	.421	.684	1.000

The correlation matrix reveals that there is a strong synergy between Financial and Production Alliances. The strongest correlation in the matrix is between Financial and Production alliances ($r = .542$, $p < 0.01$). This indicates that in the Kenyan telecommunication sector, sharing physical infrastructure and technical resources is almost always coupled. Although the correlation is still below max 0.8 to cause multicollinearity concerns. This supports the earlier finding that these alliances are primarily driven by the need to manage high capital expenditure. There is also a significant positive correlation between Marketing and Financial alliances ($r = .489$, $p < 0.01$), suggesting that firms that co-fund large-scale projects also tend to engage in joint promotional efforts or product bundling to maximize their return on investment. Research and Development Alliances shows the weakest correlations across the board, ranging from .285 to .315. This reinforces the stance identified, that firms are willing to share costs and brands but remain protective of their core technological innovations. All correlation coefficients are positive, indicating that the four dimensions of strategic alliances are mutually reinforcing. An increase in one form of collaboration typically corresponds with an increase in others, contributing to a holistic approach to building a competitive advantage in the industry.

4.6 Regression Analysis

The study conducted simple regression analysis and findings are presented below.

Production Alliances and Competitive Advantages

To assesses the influence of production alliances on competitive advantage among telecommunication firms in Kenya, a simple linear regression analysis was conducted. The results are presented in Table 5.

Table 5: Production Alliances and Competitive Advantages

Source	SS	df	MS	Number of obs	118
Model	14.714	1	14.714	F (1, 116)	84.62
Residual	20.166	116	0.174	Prob > F	0.000
Total	34.880	117		R-squared	0.422
				Adj R-squared	0.417
				Std. Error	0.4171
				Cohen's f^2	0.73
Competitive Advantages	Coefficient	Standard Error	Beta	T	P> t
Constant	1.142	0.265		4.31	0.000
Production Alliances	0.684	0.074	0.650	9.20	0.000

Table 5 presents the regression analysis results examining the influence of production strategic alliances on competitive advantage among Kenyan ISPs. The model was statistically significant, $F(1, 116) = 84.62$, $p < .001$, explaining 42.2% of the variance in competitive advantage ($R^2 = 0.422$). Production alliances had a positive and significant coefficient ($B = 0.684$, $\beta = 0.650$, $t = 9.20$, $p < .001$), with a large effect size (Cohen's $f^2 = 0.73$). These findings align with Brown and Jones (2018), who found that telecommunication firms in production

alliances achieved cost efficiencies and improved output quality. Similarly, Ngugi and Mugo (2017) reported that technological partnerships enhance operational efficiency and cost-effectiveness. The large effect size ($f^2 = 0.73$) further supports Kariuki and Wainaina (2019), who demonstrated that firms engaging in technological partnerships introduce new services faster than those operating independently. Collectively, these findings confirm that production alliances are a strategic necessity for Kenyan ISPs operating in a capital-intensive environment.

Financial Alliances and Competitive Advantages

Table 6: Financial Alliances and Competitive Advantages

Source	SS	df	MS	Number of obs	118
Model	17.189	1	17.189	F (1, 116)	112.56
Residual	17.691	116	0.153	Prob > F	0.000
Total	34.880	117		R-squared	0.493
				Adj R-squared	0.488
				Std.Error	0.3912
				Cohen's f^2	0.97
Competitive Advantages	Coefficient	Standard Error	Beta	T	P> t
Constant	0.884	0.252		3.51	0.001
Financial Alliances	0.738	0.070	0.702	10.61	0.000

Table 6 presents the regression analysis results examining the influence of financial strategic alliances on competitive advantage among Kenyan ISPs. The model was statistically significant, $F(1, 116) = 112.56$, $p < .001$, explaining 49.3% of the variance in competitive advantage ($R^2 = 0.493$). Financial alliances had a positive and significant coefficient ($B = 0.738$, $\beta = 0.702$, $t = 10.61$, $p < .001$), with a very large effect size (Cohen's $f^2 = 0.97$). These findings align with Njoroge and Ngugi (2019), who found that Kenyan telecommunication firms in strategic alliances exhibited higher revenue growth and profitability, and with Zamir and Zafar (2014), who reported that effective alliances enable partners to pool resources and cut costs, resulting in superior financial outcomes. The results also support Teece, Prashart and Harbir (2009), who argued that strategic alliances support ongoing innovation essential for long-term competitive advantage, and Wanjiku and Wambui (2020), who found that firms in alliances report higher innovation levels and operational efficiency. Collectively, these findings confirm that financial alliances serve as the primary mechanism for Kenyan ISPs to achieve sustainable market growth.

Marketing Alliances and Competitive Advantages

To address the third specific objective of exploring the influence of marketing alliances on competitive advantages of telecommunication firms in Kenya a simple linear regression analysis was conducted. The results are presented in the Table 7.

Table 7: Marketing Alliances and Competitive Advantages

Source	SS	df	MS	Number of Obs	118
Model	16.324	1	16.324	F (1, 116)	102.15
Residual	18.556	116	0.160	Prob > F	0.000
Total	34.880	117		R-squared	0.468
				Adj R-Squared	0.463
				Std. Error	0.4000
				Cohen's f^2	0.88
Competitive Advantages	Coefficient	Standard Error	Beta	T	P> t
Constant	1.258	0.232		5.42	0.000
Marketing Alliances	0.640	0.063	0.684	10.11	0.000

Table 7 presents the regression analysis results examining the influence of marketing strategic alliances on competitive advantage among Kenyan ISPs. The model was statistically significant, $F(1, 116) = 102.15$, $p < .001$, explaining 46.8% of the variance in competitive advantage ($R^2 = 0.468$). Marketing alliances had a positive and significant coefficient ($B = 0.640$, $\beta = 0.684$, $t = 10.11$, $p < .001$), with a large effect size (Cohen's $f^2 = 0.88$). These findings align with Kamau and Bosire (2017), who found that joint marketing efforts improve brand visibility and customer loyalty, and with Johnson and Smith (2017), who reported that telecommunication firms in marketing alliances experience higher customer acquisition and retention rates. The results also support Holmberg and Cummings (2009), who stated that marketing strategic alliances help businesses grow market share and strengthen brand recognition, and Gatobu and Maende (2019), who noted that joint marketing initiatives are particularly effective in the Kenyan telecom market. Collectively, these findings confirm that marketing alliances are a vital strategic lever for Kenyan ISPs, providing the external visibility and customer-facing strength necessary to secure competitive advantage.

R&D Alliances and Competitive Advantages

To address the fourth specific objective a simple linear regression analysis was conducted to determine the influence of research and development strategic alliances on competitive advantages of telecommunication firms in Kenya. The results are presented in Table 8

Table 8: R&D Alliances and Competitive Advantages

Source	SS	df	MS	Number of Obs	118
Model	6.182	1	6.182	F (1,116)	24.99
Residual	22.698	116	0.247	Prob > F	0.000
Total	34.880	117		R- Squared	0.177
				Adj R- Squared	0.170
				Std Error	0.4974
				Cohen's f^2	0.22
Competitive Advantages	Coefficient	Standard Error	Beta	T	P> t
Constant	2.421	0.231		10.48	0.000
R&D Alliances	0.416	0.083	0.412	5.00	0.000

Table 8 presents the regression analysis results examining the influence of research and development strategic alliances on competitive advantage among Kenyan ISPs. The model was statistically significant, $F(1, 116) = 24.99$, $p < .001$, explaining 17.7% of the variance in competitive advantage ($R^2 = 0.177$). R&D alliances had a positive and significant coefficient ($B = 0.416$, $\beta = 0.412$, $t = 5.00$, $p < .001$), with a medium effect size (Cohen's $f^2 = 0.22$). These findings align with Kariuki and Wainaina (2019), who found that while technological alliances lead to faster service innovation, firms remain protective of proprietary technologies, and with Ngugi and Mugo (2017), who noted that technological partnerships require careful management of intellectual property rights. The results also support Njenga and Kimani (2018), who found that knowledge-sharing cultures are not uniformly adopted due to concerns over competitive differentiation, and Todeva and Knoke (2005), who observed that R&D alliances present challenges related to protecting intellectual property. Collectively, these findings confirm that R&D alliances play a supplementary rather than primary role in the Kenyan ISP sector.

Strategic Alliances and Competitive Advantage

To address the general objective of examining the influence of strategic alliances on competitive advantages of telecommunication firms in Kenya a multiple linear regression

analysis was conducted with all four alliance dimensions entered simultaneously as predictors. The results are presented below 9

Table 9: Strategic Alliances & Competitive Advantage

Source	SS	df	MS	Number of obs	118
Model	22.986	4	5.746	F (4, 113)	54.67
Residual	11.894	113	0.105	Prob > F	0.000
Total	34.880	117		R- Squared	0.659
				Adj R-squared	0.647
				Std. Error	0.3240
				Cohen's f ²	1.93
Competitive Advantage	Coefficient	Standard Error	Beta	T	P> t
Constant	0.452	0.215		2.10	0.038
Production Alliances	0.184	0.062	0.191	2.97	0.004
Financial Alliances	0.312	0.074	0.302	4.22	0.000
R&D Alliances	0.095	0.045	0.112	2.11	0.037
Marketing Alliances	0.286	0.068	0.294	4.20	0.000

A multiple linear regression analysis was conducted with all four alliance dimensions entered simultaneously as predictors of competitive advantage. The combined model was statistically significant, $F(4, 113) = 54.67$, $p < .001$, explaining 65.9% of the variance in competitive advantage ($R^2 = 0.659$, adjusted $R^2 = 0.647$), with an exceptionally large effect size (Cohen's $f^2 = 1.93$). Financial Alliances emerged as the strongest unique contributor ($\beta = 0.302$, $t = 4.22$, $p < .001$), followed by Marketing Alliances ($\beta = 0.294$, $t = 4.20$, $p < .001$), Production Alliances ($\beta = 0.191$, $t = 2.97$, $p = 0.004$), and R&D Alliances ($\beta = 0.112$, $t = 2.11$, $p = 0.037$). These findings align with Njoroge and Ngugi (2019) and Zamir and Zafar (2014) on financial collaborations, Kamau and Bosire (2017) and Johnson and Smith (2017) on marketing alliances, Brown and Jones (2018) on production alliances, and Kariuki and Wainaina (2019) on R&D alliances. Collectively, the results confirm Todeva and Knoke (2005) assertion that successful strategic alliances involve multiple reinforcing dimensions, with financial and marketing collaborations serving as the primary drivers of competitive advantage in the Kenyan ISP sector.

5.0 Conclusion

In conclusion, the study notes that strategic alliances play a significant and practical role in shaping competitive advantage among Internet Service Providers in Kenya. Across all the four dimensions examined- production, financial, marketing and research and development, alliances were seen to have a positive influence on firm performance, though to varying degrees. Production strategic alliances emerged as one of the most established forms of collaboration with ISP sector. The study concludes that production strategic alliances are widely adopted within the sector and contribute positively to operational efficiency, cost reduction and improved service delivery. Infrastructure sharing emerged as a common practice, since firms mainly use it to reduce operational costs, expand their network coverage and improve service delivery.

Financial strategic alliances are crucial for accessing capital and managing risk. A key finding reveals that ISPs rely heavily on structured partnerships, such as co-funding and cost-sharing, to sustain operations and support growth. Despite these benefits, firms remain cautious about deep financial integration with competitors, preferring controlled, external financing

arrangements. When addressing the specific objective of determining how these financial alliances influence competitive advantage, the study concluded that they significantly enhance organizational sustainability. By collaborating, firms successfully pool investment costs, share the financial risks of large-scale operations, and secure the necessary capital to drive market expansion.

Marketing strategic alliances are moderately adopted and contribute significantly to competitive advantage through market expansion, service differentiation and customer acquisition. The study concludes that firms in the ISP sector prioritize independent branding and customer acquisition strategies, mainly due to the competitive nature of the market, where brand identity serves as a key differentiator. Consequently, marketing alliances are applied selectively rather than as a standard strategy.

The study concludes that collaboration is limited, despite the importance of innovation when it comes to Research and Development. Firms internalize R&D activities and are reluctant to engage in knowledge sharing, viewing it as a critical source of competitive advantage. This indicates a strong preference for protecting proprietary information over pursuing joint innovation. In general, the study concludes that strategic alliances have a positive and significant influence on competitive advantage. Furthermore, competitive advantage in the Kenyan Internet Service Provider sector is primarily driven by cost efficiency and market expansion. Strategic alliances make a significant contribution to the outcomes by enabling firms to share resources, reduce costs and access new markets. However, collaboration is more widespread in operational and financial areas than in strategic domains like marketing and innovation.

6.0 Recommendations

The study recommends that Internet Service Providers (ISPs) in Kenya should strengthen their engagement in production strategic alliances, particularly in infrastructure sharing. Given the high cost of network deployment, firms can achieve greater efficiency and wider coverage by forming structured and long-term infrastructure partnerships. Financial alliance participation should also be enhanced through exploring diversified funding models such as joint ventures and co-investment strategies. Since financial strategic alliances emerged as a strong predictor of competitive advantage, such arrangements would significantly improve access to capital while reducing the financial burden associated with large-scale projects. Firms are also encouraged to reconsider their approach to marketing strategic alliances. Although competition remains high in the sector, selective collaboration can be pursued in non-core areas such as joint promotions and bundled service offerings. Such collaborations could enhance market reach and customer value without compromising brand identity.

Additionally, Internet Service Providers should explore opportunities for collaborative research and development. Partnerships with technology firms, innovation hubs, and universities could significantly accelerate product development and improve service quality while reducing duplication of effort across the industry. The study recommends that regulators should strengthen and develop policies that encourage collaboration among ISPs, particularly in infrastructure development. Since infrastructure sharing was found to contribute significantly to operational efficiency, supportive regulatory frameworks can facilitate resource sharing and reduce barriers to strategic alliances. Given the low level of collaborative R&D observed in the sector, policymakers should introduce incentives such as grants, tax reliefs, and innovation funds to encourage joint research initiatives. Policymakers should also consider funding programs that support collaborative innovation, as this would promote technological advancement within the sector and improve overall service delivery.

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