Quest Journals
Journal of Research in Business and Management
Volume 11 ~ Issue 10 (2023) pp: 43-54
ISSN(Online):2347-3002
www.questjournals.org

Research Paper

Mediation Effect of Innovation on the Relationships between Strategic Agility and Competitive Advantage among Telecommunication Firms in Kenya

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ABSTRACT
Telecommunication firms in Kenya are faced with many challenges of competitive advantage. The study mainly was aimed at finding innovation's mediating role on the link between strategic agility and competitive advantage. The study was guided by dynamic capability theory, innovation diffusion theory and the theory of competitive advantage. The research design adopted was explanatory. A sample size of 301 derived from 1220 respondents using Slovin's formula. Cronbach Alpha Coefficient with a threshold of 0.7 was utilized to test reliability of the instrument. Testing of validity involved face, content and construct validity. The results indicated that strategic agility (β = 0.7565) and innovation (β = 0.2823) were significant predictors of competitive advantage. Sobel test showed that indirect effect of innovation 0.2281 with (Z= 6.25, p = .0000) was statistically significant which indicated that there was partial mediation. R^2 results displayed that strategic agility and innovation explained 72.60% of competitive advantage. Stakeholders of enterprises must consider competitive advantage through strategic agility and innovation. Mediating role of innovation on strategic agility and competitive advantage of Telecommunication firms in Kenyan is crucial.
KEY WORDS: *Innovation, Strategic Agility, Competitive Advantage*

***R**eceived 14 Oct., 2023; **R**evised 25 Oct., 2023; **A**ccepted 27 Oct., 2023 © The author(s) 2023.*
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I. INTRODUCTION

Scholars like Arokodare and Asikhia (2020) posit that competitiveness is delineated as a company's advantage over other competing companies in the market. Companies with higher advantage over their rivals are distinguished by their product creation, service delivery or combination of both. Simply put, competitive advantage is a company's capacity to be ahead of potential and existing rivals. Genoveva and Siam (2017) argues that competitive advantage is the outcome from a company distinctively exceeding and fulfilling the needs of their customers compared to their competitors. Competitive advantage may thus be construed to be a position of advantage for a business which enhances sustainability and profitability like Telecommunication firms.

Moreover, Dagnino *et al*. (2021) posits that competitive advantage ensures that a company stands out from other competitors in their respective market. The competitive strategy of a telecommunication firm is the quest for a strong position in the industry in which they operate. The laws of competition can thus be categorized respective to the five forces propounded by Porter (2008), which are threat from new rivals, bargaining power of suppliers and buyers, rivalry among competitors and dangers from substitutes. Gomes and Romão (2023) argue that a company's competitive advantage refers to its ability to consistently generate high revenue margins in markets where several other companies operate. Similarly, Ricardianto *et al*. (2023) argues that companies have the competitive edge when they have creative and unique strategies that adequately serve the needs of customers by guaranteeing operational effectiveness and efficacy.

Compared to offerings of competitors, competitive advantage delineates an organization's capacity to extend value to customers that they believe is better. It also means providing customers with similar value as other companies, albeit at discounted rates. If the advantage is sustained by the company regardless of attempts by competing firms to surpass or be equal to it, the company is said to have achieved sustainability (Ricardianto *et al*., 2023). As such, competitive advantage is associated with the failure or success of a Telecommunication

firm, and is also a determinant for its operation's appropriates, both of which have an effect on the company's performance.

Further, Atikiya (2015) surmised that the basis of competitiveness is extraordinary and relies on the condition of the industry a company operates in, which comprises economies of scale, extent of innovation, efficacy in strategy, achievement of unique and sizeable flexibility of company inputs, development of ideal re-appropriations, profitability, reasonability in resource use, cost reduction in terms of production, easing production processes and efficacy and effectiveness in providing communication and feedback.

Similar notions are held by Walter (2021) who emphasized that competitive advantage comprises streamlining of production processes and enhancing efficacy and effectiveness of conveyance such that companies, products and services are evaluated comprehensively. Strategic agility has been established to be pivotal tool in the achievement of competitiveness especially in the context of the dynamic labor market (Ashori *et al*., 2015). According to Junni, Sarala and Tarba (2015) and Sukati, Hamid, Baharun, Yusoff and Anuar (2012), strategic agility is defined as an organization's ability for renewal and maintaining flexibility without affecting efficacy. Tikkanen (2014) augur with Doz and Kosonen (2008) supposition that strategic agility is a combination of dynamic capacities comprising collective commitment, fluidity of resources and strategic sensitivity.

Arokodare and Asikhia (2020) posit that past researches have confirmed that organizations focus more on strategic agility through which competitiveness is obtained in the current competitive and dynamic industry environment. However, none of these studies conceptualized innovation's mediation on the link between strategic agility and competitive advantage. Alternatively, it was pinpointed that strategic agility and competitive advantage is mediated by other factors, for instance organization's capability to innovate (Park *et al*., 2020). Na *et al*. (2019) avers that innovation can generally be delineated as the orientation of an organization towards experimentation with notions and implementation of creative processes leading to advancement of novel services and products.

II. LITERATURE REVIEW

Competitiveness is a firm's strategic advantage that allows it to establish and maintain a strong position. Competitive advantage encompasses research and development, management and productivity, representing the organizations efforts to sustain competitiveness in the long term through outperforming competitors, being unique in its various capabilities or having acquired distinct assets (Yu *et al*., 2017). According to Singh (2014), an organization's position in the market is determined by the advantage it has over its competitors, which is pursued through cost leadership and differentiation of services and products. Competitive advantage is considered meaningful when related to characteristics that the market values highly for example product and service quality, after sales service and product prices provided by an organization.

In addition, Al-Romeedy (2019) emphasizes that in the current century, characterized by globalized and knowledge based economies, survival and achievement of competitive advantage by all organizations relies on a workforce that is agile, enhancement of information technology capacity and development of strategic foresight. It can be in developed, developing or emerging economies. Organizations in various sectors and industries are faced with myriad challenges that hinder their attainment of competitiveness which may be an outcome of fluctuations in forces that include changing preferences of customers, rapid progression of technology, creativity, innovation and globalization. As far as the challenges are concerned, studies globally recognize that is achievable through strategic foresight in the establishment and utilization of business strategy (Arokodare *et al*., 2020; Nkuda, 2017; Arokodare & Asikhia, 2020; Sherehiy & Karwowski, 2014; Alavi & Abd-Wahab, 2013).

According to Kumar and Pansari (2016), the capability of companies to work in various ways that competitors are not able to imitate is what characterizes competitive advantage, emphasizing the need for Telecommunication firms to create and provide significant value of products and services to customers either by what customers themselves deem to be valuable or that which is considered by customers to have high quality albeit at low prices. In Namada (2018) illustration, competitive advantage revolves around companies utilizing prospective and existing rivalries to arrive at strategies that serve consumers better and in specific ways to achieve significant outcomes, which gives the summation that great organizational outcomes are associated with many advantages that sustain the company's advantages. Superseding competitors in various ways is pivotal for a company's success. Namada (2018) adds that great company performance results from a company establishing various advantages and reviewing their strategies frequently, so that competitiveness is sustained constantly.

In all economies, competitive advantage is perceived from the lens of companies seizing opportunities and controlling larger shares of the market in which they operate, giving an indication that it has an edge over its competitors. Competitiveness is assessable using varied factors such as price, flexibility, profitability, growth in sales, net income, employee growth and time (Vesselina, 2017). Nkuda (2017) argues that without taking into consideration, the conditions of suppliers, competencies of the organization and human resources, which is

instrumental in reduction of cost of production in activities of the value chain and alternately, the efficacy and effectiveness of differentiation, companies may not realize their goal of competitiveness. Essentially, this reveals that achievement of competitive advantage is difficult, unless companies take up strategic agility and enhance the capabilities of the organization to facilitate differentiation (Mavengere, 2013).

Various telecommunication firms are currently facing uncertain and turbulent business environments as a result of rapid changes across the globe (Barahma *et al*., 2021), which has added to the competitiveness among companies, eroding the chance of survival for some. Strategic agility, which is a process that companies adapt to change, helps companies in the achievement of better performance through exploitation of available opportunities and creation of competitive advantage. Therefore, strategic agility has a significant role of market sustainability when companies are competing against uncertainty (Nejatian, Zarei, Rajabzadeh, Azar and Khadivar (2019). Felipe, Roldán and Leal-Rodríguez (2016) posit that strategic agility is the core capacity of survival for companies amidst severe competition. Strategic agility is applicable through reconfiguration of the company and its strategy so that they match the dynamic business environment. Saha *et al*. (2017) argues that companies must continually interact and anticipate trends in the market, without compromising the strategic vision.

Arokodare and Asikhia (2020) posit that strategic agility is multidimensional, and provide three dimensions, which are collective commitment, flow of resources and sensitivity. However, Ahammad *et al*. (2020) provide four dimensions, which are efficiency, responsiveness, speed and flexibility. On the other hand, Dabiri and Gholami (2015) provide two scopes, which are market differentiation and innovation differentiation. Contextualized within supply chain, Mavengere (2014) provided three dimensions, which are partnership, operational and customer agility. Further, Khoshnood *et al*. (2017) provided two dimensions respectively, which are decision making and sensing agility. Further, Doz and Kosonen (2008) argue that strategic agility is an amalgamation of vibrant capacities comprising collective commitment, fluidity of resources and strategic sensitivity.

In addition, Clauss *et al*. (2019) posit that aspects reflecting strategic agility comprised of unity in leadership, fluidity of an organization's resources and strategic sensitivity. Comprehensive review of literature delving into strategic agility reveal that agile firms can achieve success in competitive environments through their capacity of flexibility, competence, speed and responsiveness which enables them to achieve market competitiveness (Oyedijo, 2012; Ganguly *et al*., 2009). Although there are many definitions, this study explored the aspects of strategic agility, thus, resource fluidity, sensitivity and flexibility after cross checking.

Diete-Spiff and Nwuche (2021) argue that as a dual process, strategic sensitivity begins at industry environment and matches the firm's benefits with the environment's gaps. Strategic sensitivity is delineated as an organization's capacity to search actively for and collect data that is usable. Further, Adim and Maclayton (2021) argue that the organization absorbs data with respect to relevance, content, accuracy, interpretation, timing and analysis in order to gain information enabling it to effectively and efficiently implement activities. Reed *et al*. (2020) augur with Fakunmoju *et al*. (2020), surmising that strategic sensitivity is pivotal in increasing an organization's capability to recognize surrounding environment, sensing changes be it exploitable opportunities or avoidable hindrances through planning and predicting activities as well as developing alternatives to counter probable scenarios.

Doz et al. (2010) posit that fluidity of resources is associated with firm capability to restructure and gain new capabilities and resources to enable value addition to customers and shifting towards current models of business. Fluidity of resources affects an organization's short term capabilities such as operational capability, and affects the firm's structural and strategic capabilities (Kale, Aknar & Ba¸sar, 2019).

Aaker and Mascarenhas (1984) posit strategic flexibility is described as the business's capacity to realign itself respective to uncertain, immense and rapid variations in the environment that significantly impact performance. Brozovic (2016) argues that as a dynamic capability of organizations, strategic flexibility facilitates firms to effectively and efficiently utilize resources. Further, Eisenhardt and Martin (2000) posit that strategic flexibility is instrumental in providing firms with competitiveness in uncertain environments. According to Wei *et al*. (2013), through strategic flexibility, firms are able to adapt to turbulences in the environment by taking positive innovative steps to achieve effectiveness and performance of firm operations. Consequently, strategic flexibility results to improvements in innovation capacity of firms and performance (Mohammed, Arab, Abdullah & Sadq, 2022; Wang, Cao, Xi & Chen, 2021).

Therefore the following Hypotheses were postulated:

$H0_1$: There is no significant effect of sensitivity on competitive advantage of Telecommunication firms.

$H0_2$: There is no significant effect of resource fluid on competitive advantage of Telecommunication firms.

$H0_3$: There is no significant effect of flexibility on competitive advantage of Telecommunication firms.

In light of sporadic changes in business environments of various industry sectors, it is essential for companies to have employees whose skills and knowledge are high (Lee *et al*., 2015; Ashori *et al*., 2015). Employees' agility is characterized by their capacity to appropriately adapt to changes and their capacity to benefit from merits associated with the changes. According to Akkaya (2020), agile employees are characterized by quick response to the market conditions and customer needs, intelligence, capacity of knowledge acquisition, cooperation between them and management, a high propensity of quick decision making and a capacity of utilizing technology effectively and efficiently. Similarly, Sohrabi *et al*. (2014) surmises that agile employees can deal with uncertain circumstances, collectively solve problems, are flexible, learn tasks and procedures related to their work quickly. In good rapport with other employees and are able to deal with work pressure, all of which maintains the competitive advantage of companies against their rivals.

Young (2013) emphasizes the dynamism of business environments, rapidly changing and intensively competitive; therefore firms must be able to survive against competitors with workforces that are highly skilled and capable if they are to withstand the environment's dynamism. Further, Idris and Al-Rubaie (2013) augur with Qin and Nembhard (2015), indicating that strategic agility is the sure way for firms to survive and compete in their specific markets. For strategic agility to be achieved, companies need to adapt to changes (Tikkanen, 2014), global competition (Abu-Radi & Al-Hawajreh, 2013) so as to provide variety and quality products and services, change management, process development and innovation. Cegarra-Navarro, Soto-Acosta and Wensley (2016) add that it is essential for companies to acquire and share knowledge, embrace teamwork and enhance customer relationships. Other than financial support, Alavi and Abd-Wahab (2013) argues that technology training, creation of new ways for efficacy and effectiveness in performing tasks, flexibility and worker qualification are key components of strategic agility that lead to the achievement of competitiveness.

AlTaweel and Al-Hawary (2021) aver that strategic agility is indispensable for innovation due to the fact that it facilitates telecommunication firms' ability to sense environmental changes rapidly, which allows the creation of innovative processes, products, services and ideas. Researchers have concluded that strategic flexibility is instrumental in the promotion of innovation (Mohammed, Arab, Abdullah & Sadq, 2022) and performance (Wang, Cao, Xi & Chen, 2021). Li, Peng, Koo, Zhang and Yang (2021) asserted that superiority in innovative capacity is a crucial aspect of company competitiveness and leads to sustainable advantages in the environment that a company operates in.

Mikalef, *et al*. (2020) established that agility of organizations or their capacity to competitively execute innovations is instrumental in improving performance. Further, it was established that strategic agility is a supportive aspect to capacity of organizations in creating innovative models of business through improvement of styles of teamwork, restructuring of the organization and reduction of the impact that internal policy issues and conflicts have on the organization. This study used innovation as a mediator as proposed by (Yildiz & Aykanat, 2021).

Innovation capability has been explained by Ganguly *et al*. (2020) as an organization's capacity for composing and managing resources for the production of various services and products. Innovation is a crucial approach that organizations use in venturing into different markets and further expanding existing markets (Chouaibi, 2021). Lestari *et al*. (2020) state that organizations can achieve competitiveness through strategic innovation for example by elimination of barriers, increasing strength of suppliers and buyers and enhancing decision making accuracy.

According to Kiptoo and Koech (2019), innovation is also the process of developing and applying ideas, leading to improvement of how an organization does or achieves things, which comprises making improvements to processes of business, services and products as well as introducing novel technologies to business processes and operations. Further, strategies of innovation refer to different aspects but are summarized into technology, strategic, product and process innovation. Lei, Nguyen and Le (2019) argue that two main aspects are used in measuring innovation: process and product innovation.

Julius and Maru (2020) argue that innovation essentially refers to novel processes, products, changes and policies being introduces to an organization, enabling services, processes, policies and offerings to be implemented and contribute to the business's competitiveness. Bedford, Ma, Maand Vojvoda (2020) pinpoint the relation of innovation with availability of innovative capacities and business' desire to interpret theoretical notions and practicing them. Additionally, innovation capability has been delineated as a complex set of activities contributing to new ideas being generated and accepted, leading to new services, products or models of business.

Other studies for example Tuan, Nhan, Giang and Ngoc (2016) and Bowen, Rostami and Steel (2010) have used innovation and adopted other innovation aspects as independent variables, establishing that innovation significantly and positively affects organizational performance. Studies done by Ali, Iqbal, Haider, Tehseen, Anwar, Sohail and Rehman (2021), AlAnazi, Kura, Suleiman and Abubakar (2021) and Li, Fu and Liu (2020) have also utilized variations of innovation as moderators and mediators with different dependent and independent variables. Whereas research has been pointed towards strategic agility and competitiveness, the

association between strategic agility and competitive advantage, mediated by innovation has not been investigated, hence this study was aimed at filling the gap by investigating mediation effect of innovation on the relationship between strategic agility and competitive advantage among Telecommunication firms in Kenya. Thereby, the following hypothesis was developed:

$H0_4$: Innovation does not mediate the link between strategic agility and competitive advantage of telecommunication firms.

III. THEORETICAL REVIEW

The study was guided by the following three theories: dynamic capability theory, diffusion of innovation theory and competitive advantage theory.

3.1 Dynamic Capability Theory

Postulated by Teece, Pisano and Shuen (1997), it points out that a company's competitiveness is a result of the business's ability to exploit unique intellectual and physical assets. The business environment dynamics are incorporated in the theory especially with regard to processes of renewing and configuring resources specific to the company (Ghosh, 2022; Sabahi & Parast, 2020: Haarhaus & Liening, 2020). Dynamic capabilities is the firm's capacity for assimilation, construction and realignment of external and internal capacities to effectively and efficiently address rapidly changing business environments.

Dynamic capability theory emphasizes change continuity while adapting to stimuli in business environments. Bogers *et al*. (2019) argues that strategic agility allows companies to react to market opportunities and threats. Thus, dynamic capability theory is focused on prompt and swift responses to market disruptions. According to Matarazzo *et al*. (2021), the theory significantly attempts to understand the association between a company's capacity for quick response and its competitive advantage, meaning that it features the company's ability to adjust to changes that would impact it. The theory queries how capacities unique to a Telecommunication firm may force it to have its asset base broadened or adjusted such that competitive advantage of the company is sustained.

3.2 Diffusion of Innovation Theory

Propounded by Rogers (1962), it explores how sometimes, products or ideas spread and are accelerated in society, among them telecommunication firms. The result of diffusion is that as society's members, people accommodate modes of operation, products or ideas. Diffusion is probable, as a method through which innovation is made known through specific channels in a certain time period and among a social system's members. Members of a social system include telecommunication firms.

3.3 Competitive Advantage Theory

Porter (1980) posits that in order for correct strategies to be performed, organizations should test prevailing consistencies: environmental adaptability, internal consistence, resource adjustment, communication and implementation. Instruments and strategies updated towards organizational, marketing or product designs are instrumental. According to Sigalas *et al*. (2013), benefits can be achieved through exploitation of the market, neutralizing threats and cost efficacy. McGrath et al. (1996) and Porter (1990) argue that competitiveness can be achieved by organizations through innovation. Innovation by organizations may variedly be performed respective to technologies and methods and will lead to various benefits to telecommunication firms in many facets.

3.4 Conceptual Framework

The study determined the association of strategic agility (independent variable) and competitive advantage (dependent variable) of telecommunication firms. Innovation was the mediating variable as Figure 1 shows.

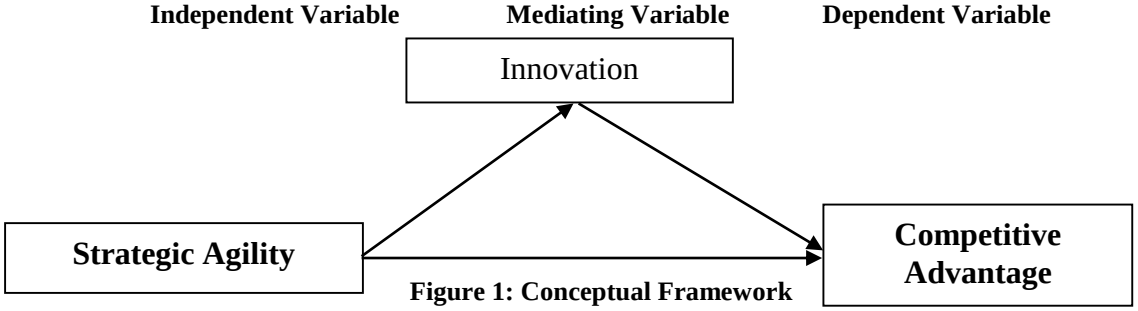

Figure 1: Conceptual Framework

IV. RESEARCH METHODOLOGY

Explanatory design was used in this study. According to Akhtar Inaam (2016), the design is appropriate in an instance where a problem has not received comprehensive investigation. Explanatory research design always starts with a theory or hypothesis and after gathering evidences it approves or disapproves a theory.

Data collection was conducted in all registered telecommunication firms in Kenya, targeting 1220 respondents. Subsequently, 301 respondents were sampled using Slovin's formula, recommended for small populations by Dionco-Adetayo, 2011 as shown.

$$n = \frac{N}{1+NE^2}$$

Where: n = Size of the sample
N = Size of the population
E = margin of error or error tolerance (5%)
1 = is a constant

Employees' sample size:

$$n = \frac{N}{1+NE^2} = 1220/1+1220\times0.05^2 = 301$$

Simple random sampling technique was utilized in identifying the sample, ensuring that respondents' representation was equal. Instrument reliability was determined using Cronbach's Coefficient Alpha. In the study sensitivity (0.842), resource fluid (0.758), flexibility (0.813), Innovation (0.730) and competitive advantage (0.852) met the threshold of 0.7. In addition, validity of research instruments was by use of content validity and face validity.

The Hayes (2013) PROCESS Macro tool was applied in testing innovation's mediation effect, to understand how strategic agility affects competitive advantage of Telecommunication firms through innovation. The regression models used in this study were;

$Y= \beta_0 + \beta_1X1+ \beta_2X2+ \beta_3X3+ \varepsilon$……(1)
$M= \beta_0 + \beta_1X1+ \beta_2X2+ \beta_3X3+ \varepsilon$..……..(2)
$Y= \beta_0 + \beta_1X1+ \beta_2X2+ \beta_3X3+ \beta_4M4 + \varepsilon$.……(3)

β_0=Constant
$\beta_1, \beta_2, \beta_3, \beta_4$=Coefficients
M= Mediator= Innovation
Y=Competitive Advantage
X1= Sensitivity
X2= Resource Fluid
X3= Flexibility

4.1. Measures

Measures from the previous research were adopted and slightly modified for the study. Fifteen (15) items were used in measuring strategic agility in line with (Kale, Aknar & Ba¸sar 2019; Doz & Kosonen, 2010; Doz, 2020) where each objective was measured using 5 items. Innovation was measured by 11 items in accordance with (Najafi-Tavani, Najafi-Tavani, Naudé, Oghazi & Zeynaloo, 2018; Ferreira, Coelho & Moutinho, 2020). Ten (10) items were adopted from (Sigalas *et al*., 2013) in measurement of competitive advantage.

V. ANALYSIS

PROCESS ***macro*** (Hayes, 2013) was implemented in testing the mediation mode (model 4).

5.1 Response Rate

The results indicated that out of 301 questionnaires, only 262 were returned and used in analysis, projecting 87 % rate of response.

5.2 Correlation

There was positive link between competitive advantage and sensitivity (r = 0.808, P = 0.000). The correlation of competitive advantage and resource fluid was positively significant (r = 0.705, P = 0.000). The correlation of competitive advantage and flexibility was positively significant (r = 0.739, P = 0.000). The correlation of competitive advantage and innovation was significant and positive (r = 0.720, P = 0.000). This

revealed a positive significant degree of association between dependent, mediator and independent variables in relation to Telecommunication firms as indicated in Table 1.

Table 1: Correlations

		COMAD	SEY	REF	FLY	INNO
COMAD	Pearson Correlation	1				
	Sig. (2-tailed)					
SEY	Pearson Correlation	.808**				
	Sig. (2-tailed)	.000				
REF	Pearson Correlation	.705**	.735**	1		
	Sig. (2-tailed)	.000	.000			
FLY	Pearson Correlation	.739**	.737**	.709**	1	
	Sig. (2-tailed)	.000	.000	.000		
INNO	Pearson Correlation	.720**	.663**	.556**	.675**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

COMAD= Competitive advantage, SEY=Sensitivity, REF= Resource fluid and FLY= Flexibility and INNO=Innovation,

5.3 Total Effect

The model was statistically significant where strategic agility explained 68.71% of variance on competitive advantage of Telecommunication firms R^2 = 0.6871, F (1, 260) = 571.0514, p < 0.001. Strategic agility was statistically significantly predictor of competitive advantage (β=0.9846, se= 0.0412, t= 23.8967, p =0.0000). There was no zero between low level confident intervals and high level confident intervals. The findings meant that a unit increase in strategic agility leads to 0.9846 units of competitive advantage as shown in Table 2. Therefore **H0**$_1$, **H0**$_2$ and **H0**$_3$ were rejected**.** This was in line with findings of Arokodare and Asikhia (2020) they confirmed that organizations focus on strategic agility as an approach of obtaining competitiveness in the current dynamic environment.

Table 2: Total Effect Model Summary (Outcome: Competitive Advantage)

R	R-sq	MSE	F	df1	df2	p
.8289	.6871	.2140	571.0514	1.0000	260.0000	.0000
	coeff	se	t	p	LLCI	ULCI
constant	.2885	.1597	1.8068	.0719	-.0259	.6029
Stragl	.9846	.0412	23.8967	.0000	.9034	1.0657

Stragl= Strategic agility

5.4 Direct Effect

The model was statistically significant where strategic agility explained 48.70% of variance on innovation R^2 = 0.4870, F (1, 260) = 246.7988, p < 0.001. Strategic agility was statistically significantly predictor of innovation (β=0.8078, se= 0.0514, t= 15.7098, p =0.0000) as shown in Table 3. The findings revealed no zero between low level confident intervals and high level confident intervals. The findings meant that a unit increase in strategic agility leads to 0.8078 units of innovation. This augured with Brand *et al*. (2021) who concluded that strategic agility significantly supports the capacity of companies to be innovative with regard to business models through restructuring, improvement of styles of teamwork and reduction of impact of internal policy issues and conflicts of the organization.

Table 3: Direct Effect Model (Outcome: Innovation)

R	R-sq	MSE	F	df1	df2	p
.6978	.4870	.3333	246.7988	1.0000	260.0000	.0000
	coeff	se	t	p	LLCI	ULCI
constant	.6530	.1993	3.2767	.0012	.2606	1.0454
Stragl	.8078	.0514	15.7098	.0000	.7065	.9090

Stragl= Strategic agility

5.5 Indirect Effect

As presented in Table 4, the model was statistically significant where strategic agility and innovation explained 72.60% of variance on competitive advantage of Telecommunication firms R^2 = 0.7260, F (2, 259) = 343.1045, p < 0.001. Strategic agility significantly predict competitive advantage (β=0.7565, se= 0.0539, t= 14.0255, p =0.0000) when innovation was controlled. There was no zero between low level confident intervals and high level confident intervals. The findings meant that a unit increase in strategic agility leads to 0.7565 units of competitive advantage. Although, the effect remained significant there was a drop from 0.8078 to 0.7565 confirming partial mediation.

Innovation significantly predict competitive advantage (β=0.2823, se= 0.0466, t= 6.0593, p =0.0000) when strategic agility was controlled. There was no zero between low level confident intervals and high level confident intervals. The findings established that a unit increase in innovation leads to 0.2823 units of competitive advantage. This was in line with findings of Julius and Maru (2020) who concluded that innovation comprises organizations introducing novel processes, products, services, changes or policies to enable the organization to implement new processes, policies, services and offerings that lead to sustainable competitiveness of telecommunication firms.

Table 4: Model Summary (Outcome: Competitive Advantage)

R	R-sq	MSE	F	df1	df2	p
.8520	.7260	.1882	343.1045	2.0000	259.0000	.0000
	coeff	se	t	p	LLCI	ULCI
constant	.1042	.1528	.6817	.4960	-.1967	.4050
Inno	.2823	.0466	6.0593	.0000	.1906	.3741
Stragl	.7565	.0539	14.0255	.0000	.6503	.8627

Inno= Innovation, Stragl= Strategic agility

5.6 Confirming Mediation Effect

The mediating effect of innovation was attained as a product of two indirect paths of competitive advantage expressed as *a* and *b*, equivalent to total effect minus direct effect. Indirect effect=*a* x *b* → (0.8078 x 0.2823) = 0.2281= c-c'= (0.9846-0.7565) =0.2281. There was no zero between low level confident intervals and high level confident intervals as presented in Table 5. This confirms that there was mediation and the null hypothesis **($H0_4$)** was rejected. This augured with AlAnazi *et al*. (2021) who concluded that innovation can be employed on different perspectives as mediator with different variables.

Table 5: Total, Direct, and Indirect Effects

Effect of X on Y	**Total**	**Direct**	**Indirect**
Effect	.9846	.7565	.2281
SE	.0412	.0539	.0643
t	23.8967	14.0255	
p	.0000	.0000	
LLCI	.9034	.6503	.1111
ULCI	1.0657	.8627	.3524

5.7 Normal Theory Tests for Indirect Effect

Sobel test is based on the assumption that the products of indirect effects are normally distributed. The regression output shows that indirect effect of innovation 0.2281 with (Z= 6.25, p = .0000) was statistically significant. This indicates that there was partial mediation of innovation and was not the only dominant

mediator. There might be other mediators that strategic agility influences competitive advantage of telecommunication firms.

Additionally, Preacher and Kelley (2011) Kappa-squared effect of 0.2497 with CI (0.1327, 0.3510) and R-squared mediation effect size (R-sq_med) of 0.4790 with CI (0.0568, 0.5874). Had no zero within the bootstrapping range hence innovation mediating effect was significant as Table 6 shows.

Table 6: Normal Theory Tests for Indirect Effect

Normal theory tests for indirect effect			
Effect	se	Z	p
0.2281	0.0404	5.6434	.0000
Preacher and Kelley (2011) Kappa-squared			
Effect	Boot SE	BootLLCI	BootULCI
0.2497	0.0561	0.1327	0.3510
R-squared mediation effect size (R-sq_med)			
Effect	Boot SE	BootLLCI	BootULCI
0.4790	0.0568	0.0568	0.5874

VI. CONCLUSION

The construct strategic agility was measured by the three objectives combined to enable mediation analysis under model 4 of Macro Process. The findings showed that strategic agility and innovation were significant predictors of competitive advantage of telecommunication firms. Sobel test showed that innovation mediated partially the relation between strategic agility and competitive advantage. Consequently, activities of innovation played a role in acceptance and generation of novel ideas that initiate new models of business, services and products in the telecommunication firms.

VII. IMPLICATIONS TO PRACTICE AND THEORY

Findings of research would help stakeholders of telecommunication firms allocate resources to activities of strategic agility that will increase competitive advantage of Telecommunication firms. It also, pinpoint that innovation partially mediated the positive effect of strategic agility on competitive advantage. Stakeholders of telecommunication firms might be better off by concentrating in strategic agility and competitive advantage when it comes to sustainable competitive advantage.

Moreover, this study advances the theoretical basis provided by earlier scholars on the interplay of strategic agility, innovation and competitive advantage of telecommunication firms. Specifically, the study emphasizes the extension contribution of dynamic capability theory, innovation diffusion theory and theory of competitive advantage. In doing so, the study offers a more understanding of theories for examining innovation's mediation on the link between strategic agility and competitive advantage of telecommunication firms in Kenyan context for future development of knowledge.

VIII. RECOMMENDATIONS FOR FURTHER RESEARCH

Mediating role of innovation may be employed to examine the effectiveness of innovation on strategic agility as well as its effects on competitive advantage of telecommunication firms. Apart from telecommunication sector, future researchers could repeat the same study in other sectors to enable generalization of the findings.

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