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**THE MODERATING ROLE OF ADAPTIVE TECHNOLOGICAL ORIENTATION: DISRUPTIVE  
INNOVATION AND CORPORATE RESILIENCE OF TELECOMMUNICATION FIRMS IN LAGOS  
STATE**

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***Abstract***

*The study investigated the moderating role of adaptive technological orientation on the relationship between disruptive innovation and corporate resilience of telecommunication firms in Lagos State. The study utilized the cross-sectional survey design with a population of 2650 managers of relevant strategic units and departments of all the 530 registered telecommunication firms in Lagos State. A sample size of 336 respondents was determined using Krejcie and Morgan's (1970) while a 10% mark-up was made to bring the adjusted sample size to 370 raters. The simple random sampling technique was used in order to ensure that each member of the population has an equal chance of being selected. Questionnaire was the instrument for data collection and the Cronbach's Alpha statistics of 0.7 was adopted as the reliability threshold. Descriptive statistics involved the use of mean and standard deviation, while inferential statistics involved the use of partial correlation to evaluate the effect of the moderating variable on the relationship between the predictor and criterion variables. It is therefore recommended that telecommunication firms should have a growth mindset that accepts changing conditions and anticipates business evolution and innovations, create opportunities for innovation in order to develop agile and robust businesses. Also, management of telecommunication firms should frequently adopt new technological innovations and skills in order to bring about adaptive capability and capacity.*

*Keywords: adaptive technological orientation, disruptive innovation, corporate resilience and telecommunication firms.*

## Introduction

The telecommunications industry is characterized by standard service market, standard technology and over-lapping patronage. However, within the last decade, the telecommunication industry in Nigeria has experienced an environmental turbulence, a high propensity of corporate mortality and buyout than any other industry (NCC, 2018). According to Fubara (2008), the industry experienced a high mortality rate as many operators could not survive the environmental tempest after the five years from their inception. This is informed by the manifest adoption of critical strategies for survival such as mergers, acquisition, turnaround, divestment, all leading to captive firms, captor firms, and sometimes corporate mortality (Fubara, 2008). Consequently, rivalry among industry players shifted to price competition, rebates; flexibility and utility and sophistication of service offer. This manifestation of high volatility, demands a strong and reliable resilient capacity of the industry operators.

The need for corporate resilience has become a top priority for business executives (Horowitz, 2020), as investigation indicates that resilient firms have capacities for dealing with disruptive innovations, thereby allowing such firms to earn higher performance outcomes (Wong, Lirn, Yang & Shang, 2019; Yu, Jacobs, Chavez & Yang, 2019). The understanding of the nature and consequences of corporate resilience at the operation processes level is vital in that, operations process is a distinct subsystem of a firm and forms a principal value-creation purpose that produces incomes for firms and their investors (Ivanov, Dolgui, Sokolov & Ivanova, 2017). Though investigations on corporate resilience is growing (Pettit, Fiksel, Croxton, Pettit, Fiksel & Croxton, 2019) but the knowledge of the corporate resilience in relationship with disruptive innovations hypothesis is inadequate. Previous researches of disruptive innovations and corporate resilience were limited to the study of the concept at supply chain system and firm's sectors. In addition, systemic disruptive innovation often affects the operations sector. The degree of product innovation disrupting mobile networks is staggering in the telecommunication industry where firms like Globacom and 9Mobile altered the business model of the leading networks (MTN and Airtel) while other companies such as Zain, Visafone, Multilinks, Celtel, Starcomms, Reltel, MTel, Econet, and Etisalat have lost their dominant positions (Alabar, Egena & Gbande, 2014). This has made the market quite slippery, that an adventure into disruptive innovation may account for strategic difference. Despite the plethora of studies on inadequate corporate resilience, it has been observed that only few scholarly endeavors focused on disruptive innovation as a panacea, especially in the telecommunication industry in Lagos State. Having observed this lacuna in literature, this study seeks to fill the gap by critically examining disruptive innovation and how it affects corporate resilience of telecommunication firms in Lagos State, using adaptive technological orientation as a moderating variable.

## Literature Review

### Concept of Disruptive Innovation

Concerns about the attendant consequences of the uncertainties in the business environment have given rise to a literary of theories, concepts and propositions to serve as heuristic models. Nonaka (1995) specifically contended that in an economy where the only certainty is on uncertainty, where products proliferate, market shift, and technology becomes obsolete virtually overnight, survival depends on the firm's knowledge management through which the environment is understood and adapted to. In respect to such consequences, adaptations and heuristics, Christensen (1997), after a rigorous

empirical research introduced the concept of disruptive technologies, which was later developed to the theory of disruptive innovation. This was developed to explain the reasons why incumbents most likely lose hold of the dominance and market leadership to innovations introduced by new entrants in industry, or generally business arena. This development was described by Kumaraswamy, Garud and Ansari (2018) as an epoch of continual disruption of which broad and specific technological discoveries and innovations, and emerging business model changes are influenced by individual firms, entire industries and ecosystems. From the foregoing therefore, the concept of disruptive innovation connotes the tendencies and consequences when smaller new entrants in an industry introduce new technologies, and innovations to capture unattractive smaller markets to the huge incumbents, only for such captured smaller markets to disrupt the strongholds of the incumbents.

### **Concept of Corporate Resilience**

Resilience is mainly defined as the positive adaptation capacity to struggle with unfavorable circumstances (Kantur & Iseri-Say, 2015). Similarly, resilience is the ability to bounce back from adversity, frustration, and misfortune and is essential for the effective organization and leaders (Ladesma, 2014). Also, Jung (2017) suggest that understanding Corporate resilience allows us to explore a broad set of “adaptive capacities” of a corporate organization by focusing on its ability to mobilize resources and facilitate successful adaptation in unpredictable situations. According to Sahebjamnia, Torabi and Mansour (2018), corporate organizations are increasingly realizing the importance of taking proactive approaches such as Integrated Business Continuity and Disaster Recovery Planning (IBCDRP) for protecting personal lives, preserving reputation and reducing financial losses. Present research around resilience is predominantly inspired by the notion that some of the inherent capabilities that make organizations resilient are the same (or very similar) to the elements of corporate organizations competitiveness. Thus, the resilient organization is believed to be a competitive organization.

In a period of intense business disruption, only resilient corporate organizations will survive and prosper over the long term (BSI Group, 2017). Ruiz-Martin, Lopez-Paredes and Wainer (2018) noted that while the debate on the origin and definition of resilience is ongoing within the engineering, disaster management, psychology, ecology and social science disciplines, common ideas are found in the definition and conceptualization of resilience across these disciplines. Riding on these cross disciplinary evidence, management researchers and experts have led many inquiries into organizational resilience as a construct. These inquiries are critical in management practice because: to invest in resilience (or effectively build resilient systems and capabilities), corporate organizations need to understand their resilience strengths and weaknesses and must be able to explicitly evaluate the effectiveness of resilience strategies (Lee, Amy, Vargo, John, Seville & Erica, 2013).

### **Concept of Adaptive Technological Orientation**

The concept of technology according to Cooper (2013) refers to the means by which work is done. This broad view tends to include: machines, tools, materials used, skills, sequence or flow of operations, processes, and general and specific procedure and guidelines of operations. The view of Gassman, Widenmayer, and Zeschky (2012) as a follow up argue that technology involves the methods and processes of manufacturing, measured in the state of the historical development of production processes; inter-relationship

between the items of equipment use for these processes, and the extent to which the operations performed in the processes are repetitive. These conceptual attempts see technology as the means through which any work is accomplished. However, the view of Wahab, Rose and Osman (2012) is that technology consists of two categories. These are the physical component which comprises of items such as products, tooling, equipment, techniques, and processes; and the informational component: which consists of know-how in management, marketing, production, quality control, reliability and others.

Technology as presently used within organizations has diverse definitions, forms and utility. Scholars have also observed that technology as a concept exists within the environment of other organizational capabilities and thus helping (or moderating) organizations and the individuals within them, towards better responses when faced with challenges (Oscar, Ferran, Arostegui, Nieves & Glenn, 2016). With respect to technology acquisition, the discussion has centered on stolen or transferred technology. Due of the competition between businesses, and between nations, it is often argued that technology cannot be transferred, but can only be stolen. However, according the view expressed in Woodward (1958), Cohen and Levinthal (1990); and Gibson (1997) technological orientation of a firm is either adaptive or adoptive. These orientations tend to show a bipolar means of acquiring the know-how and the know-what of work. Adoptive technological orientation is the acquisition culture whereby the technology in use is wholly obtained without any adjustments, whereas in the adaptive technological orientation, an acquired technology is transformed to suit the peculiar needs and challenges of the firm.

### **Theoretical framework:**

#### **The Theory of Dynamic Capabilities**

The baseline theory that underpins this study is the theory of dynamic capabilities. This theory represents the ability of a firm to combine internal and external experiences to respond to unstable environment (Teece, Pisano & Shuen, 1997). Dynamic capabilities are to be found in firms that are mainly entrepreneurial oriented, with clear vision, and a high degree of autonomy in order to ensure rapid response to changes in the dynamic environment (Teece, 2000). Dynamic capability is a concept of competitive advantage in a rapidly changing environment. Reconciling this explanation with previous theories of competitive advantage, it shows how it informs and complements explanations based on market positions, firm resources, and Schumpeterian creative destruction. The scope conditions of dynamic capability observed that the theory has more and less explanatory power, it was discovered that dynamic capability has greatest explanatory power when a partially foreseeable technological change is on the verge of transforming market competition; and less explanatory power when dynamic capabilities are not undervalued or scarce; when change is unpredictable; when change is easily predictable; when the effect size of new capabilities is small; in industries subject to repeated technological shifts; and in markets that reward short bursts of extraordinary performance over long-term tenacity.

The objective of the study is to ascertain how adaptive technological orientation on the relationship between disruptive innovation and corporate resilience of telecommunication firms in Lagos State.

#### **Research hypothesis**

**H<sub>01</sub>:** Adaptive technological orientation does not significantly influence the relationship between disruptive innovation and corporate resilience?

#### **Methodology**

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The cross-sectional survey design was adopted because the raters were not subject to manipulation. The underpinning research philosophy is positivism which is the objectivism of epistemology. This study aimed at examining the influence of adaptive technological orientation on the relationship between disruptive innovation and corporate resilience of telecommunication firms in Lagos State. The population for this study comprises is 2650 managers of relevant strategic units and departments of all the 530 registered telecommunication firms in Lagos State. A sample size of 336 respondents was determined using Krejcie and Morgan's (1970) while a 10% mark-up was made to bring the adjusted sample size to 370 raters. The simple random sampling technique was used in order to ensure that each member of the population has an equal chance of being selected. Questionnaire was the instrument for data collection and the Cronbach's Alpha statistics of 0.7 was adopted as the reliability threshold. Construct - convergence validity was assessed based on the following thresholds: Factor loadings  $\geq 0.6$  (Brown, 2014); Average Variance Extracted (AVE)  $\geq 0.5$ , composite reliability  $\geq 0.6$  (Fornell and Larcker, 1981), while construct- discriminant validity was assessed based on the criterion that "the square root of the Average Variance Extracted should be more than a construct correlation with other constructs" (Fornell & Larcker, 1981). Descriptive statistics was assessed using mean and standard deviation, while inferential statistics involved the use of Partial Correlation Coefficient to test the relationships.

**Results and Discussions**

**Respondent Demography**

The instrument for adjusted sample size of 370 was distributed to respondents. After the cleaning process, only 360 copies (97.29%) of the questionnaire were completed and usable. They were 278 (77.2%) males and 82 (22.8%) females. 244 (67.8%) were married, 50 (13.9%) were single, while 66 (18.3%) were separated.

**Test of Hypothesis**

**Table 1.1: The influence of the moderating variable (Using Partial Correlation)**

			Correlations	
Control Variables			Disruptive Innovation	Corporate Resilience
Tech_Orietation	Disruptive Innovation	Correlation	1.000	.650
		Significance (2-tailed)	.	.000
		df	0	357
Corporate Resilience	Corporate Resilience	Correlation	.650	1.000
		Significance (2-tailed)	.000	.
		df	357	0

Source: SPSS 25.0 output on research data, 2021

**Table 1.2: Result of Test of Hypothesis**

S/N	Mediation Stage	Hypothesis	Partial Correlation	Sig. (2-tailed) (P-values)	Remark
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1	ATO→DI ATO→CR (Hypothesis 1)	Adaptive technological orientation does not significantly moderate the relationship between disruptive innovation and corporate resilience.	0.650 (df = 357)	0.000	Not supported

**Source:** SPSS 25.0 output on research data, 2021

The hypotheses ( $H_{01}$ ), states that adaptive technological orientation does not significantly moderates the relationship between disruptive innovation and corporate resilience of telecommunication firms in Lagos State. However, tables 1.1 and 1.2 suggest that adaptive technological innovation significantly moderates the relationship between disruptive innovation and corporate resilience of telecommunication firms in Lagos State (Rho= 0.650, p=0.000). Therefore,  $H_{01}$  was not supported. This indicates that technological orientation is controlling the effect of disruptive innovation on corporate resilience. Thus, Adoptive technological orientation has a significant influence on the relationship between disruptive innovation and corporate resilience of telecommunication companies in Lagos State.

### Discussion of the Findings

The specific objective was to find out if adoptive technological orientation significantly moderates the relationship between disruptive innovation and corporate resilience and was captured by a research question and expressed under  $H_0:1$ . This hypothesis stated that adaptive technological orientation does not significantly moderates the relationship between disruptive innovation and corporate resilience. The result shows that technological orientation significantly moderates the relationship between disruptive innovation and corporate resilience in telecommunication companies in Lagos state. This means that the technological orientation affects the influence of disruptive innovation on corporate resilience. This finding agrees with the works of Nonaka (1995) who specifically contended that in an economy where the only certainty is on uncertainty, where products proliferate, market shift, and technology becomes obsolete virtually overnight, corporate resilience depends on the firm's knowledge management and technological orientation of the workforce. With this, we see that disruptive innovation connotes the tendencies and consequences when smaller new entrants in an industry introduce new technologies, and innovations to capture unattractive smaller markets and disrupt the strongholds of the incumbents. This is possible when new technologies are introduced in the market by the small new entrants. Finally, this finding further validates the Theory of Dynamic Capabilities which suggests the ability of a firm to combine internal and external experiences to respond to unstable environment (Teece, Pisano & Shuen, 1997).

### Summary, Conclusion and Recommendations

The study affirms that adaptive technological orientation significantly moderates the relationship between disruptive innovation and corporate resilience in telecommunication companies in Lagos state. The result further substantiates the assertion that telecommunication firms are becoming capable of delivering instant, intimate, frictionless value on a large scale. It is therefore recommended that management of telecommunication firms should frequently adopt new technological innovations and skills in order to bring about adaptive capability and capacity.

Furthermore, this study contributes to the understanding of the basic concept of adaptive technological orientation and how it could be combined with disruptive innovation

and corporate resilience to deliver global marketplace competitiveness for telecommunications firms.

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