Linkage Between Product Line Strategy and Competitive Advantage: Does Environmental Dynamism Matter?

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Abstract: *Changes in the operating environment normally force many firms to reconsider and adopt new strategies in search of new techniques and innovative management philosophies that can improve their competitiveness. This study is aimed at investigating the link between product line strategy and competitive advantage taking into consideration frequency and intensity of change in the operating environment, and enhancing the literature on strategic management and competitive advantage. The study involved a questionnaire-based survey of managers from a variety of manufacturing firms in Nigeria. A total of 215 responses were received and subjected to multiple regression analyses. Findings of the study revealed that product line strategy, which involves vertical and horizontal line extension line modernization and line pruning strategies constructs, has a significant effect on the firm's competitive advantage. Further, that the relationship between product line strategy and firm competitive advantage was influenced by the environmental dynamism construct including changes in industry, competition and consumer. This study can help managers to understand the role of changes in environmental factors when formulating strategies concerning their product line. We, therefore, concluded that managers and other decision-makers can make informed decisions on the product line by paying attention to the firm's external environment.*

Keywords: Product line strategy, Environmental dynamism, Competitive advantage.

INTRODUCTION

Nigeria has a dynamic market environment with a wide range of products, where consumers are offered with different alternatives to choose from. According to National Bureau of Statistics (NBS), (2019) report over the last few years shows that the Nigerian economy has experienced a series of reforms and restructuring of its key sectors. The size of the Nigerian economy as measured by the Gross Domestic Product (GDP) has increased with the high contribution from the non-oil sector particularly the agriculture and manufacturing sector. Yet, in today's modern world, for firms operating in a turbulent environment like the manufacturing industry to improve its

competitiveness and survive in the global economy, there is a need to adopt appropriate marketing strategies that will ensure organizational success (Draganska & Jain, 2005; Allman, 2013). It is obvious that, companies that operate in a turbulent business environment must be able to withstand market competition through sustainable strategies. Business firms can be able to create low-cost and differentiation strategies that will make their products unique and more popular than the competitors' products. According to NBS (2019) GDP report, the manufacturing sector of the Nigerian economy has faced a lot of challenges in the last five years and no significant improvement has been experienced until late last year. The challenges which were brought about by unfavourable macro-economic factors have obviously reduced this sector records of losses by most key factors such as; falling oil prices, rising inflation, dwindling exchange rate and the effects of the Covid 19 pandemic. Despite these trials, however, the Nigerian manufacturing sector remains a vital component of the economy. It is still one of the largest contributors to the country's economic growth as measured by its contribution to the gross domestic product (GDP) which stood at 11.32% as contained in GDP report, (NBS, 2019). Manufacturers lament that the operating environment in the country is poor and the cost of business operation is on the increase, thus impacting negatively on their performance. Thus, poor management of macro-economic variables such as; interest rate, exchange rate, import, export and deterioration of essential infrastructures account for the challenges in this regard. The performance of firms in this industry is inextricably linked to the aggregate spending power in the economy, and with the Nigerian economy hit by these macro-economic factors while manufacturing firms have mainly been affected badly (Oladimeji, Amida & Essien, 2019).

Nigerian manufacturing firms are in a sorry state, as a result of many or all of the aforementioned problems (Akpoyomare, Adeosun, & Ajao, 2012), thus, the conclusion that the country's manufacturing sector is among the worst within the West African sub-region (Oghojafor, Aduloju, & Olowokudejo, 2012). As a result of this, the manufacturer's relevance in Nigeria has been seriously questioned in providing the required products needed by the country. This is evidenced by the clear mismatch between societal needs and products offered by these firms. In a competitive and dynamic environment of this nature, it is crucial for manufacturing firms to be strategically sound so as to cope with the uncertainty. However, it is still common to see consumers complaining about products that perform below expectations, mainly due to the inability of the firm to get the right combination of product variety for all kinds of consumers. The purpose of a firm's competitive strategy such as cost leadership, differentiation, and focus depends to a considerable extent on the performance of its product line (Abubakar & Mohammad, 2019). In fact, one of the major objectives of marketing planning is offering ideal products to the selected market segment. However, many manufacturing firms find it difficult to achieve this objective mainly due to the complexity of the problem, environmental factors, the number of decision-makers involved, frequent lack of information among others.

Most of the empirical studies on product management have largely focused on new product development, product innovation, product line extension, among others (Allman, 2013; Drakanska & Jain, 2005; Heath, Del Vecchio & Michael, 2011), thus, neglecting other product line decisions such as product modernisation and elimination. Additionally, most of the studies were conducted in the turbulent environment of developed countries (Allman, 2013), neglecting emerging economies (Akpoyomare, Adeosun, & Ajao, 2012), which is characterized by rapid and

unpredictable environmental changes (Mohammad, 2019). It is obvious that manufacturing firms in developing countries need to adapt to today's changing environment, and thus the research question on the impact of product line strategy on competitive advantage. In essence, the need for firms to achieve competitive advantage in this twenty-first century requires organizations to be flexible and in tune with changing times. Hence, the need to consider the role of frequency and intensity of change in manufacturing firms to ascertain their effects on firm's product decisions and how they influence firm's competitive advantage. Thus, this study attempts to fill the identified gap by examining the effect of product line strategy on the competitive advantage of manufacturing firms in Nigeria and examine how environmental dynamisms affect this relationship. The structure of the paper is as follows. In the next section, the theoretical framework and the hypotheses are presented followed by a description of the study methods, then comes the presentation and discussion of the results. The final section contains the conclusion, implications and suggestions for further research.

Theoretical Foundation and Hypotheses

Dynamic capability approach is the main theoretical foundation that contributed to this study because it is an extension of resources based theory which suggests that firms can strategically offer products through proper utilisation of their capability to improve competitiveness. Dynamic capability has been defined by Peteraf, (1993) as a firm's processes for integrating, reconfiguring, gaining and releasing resources that match and even build market amendment and "organizational and strategic routines by which firms achieve new resources and configurations as markets emerge, collide, split, evolve, and die". Firms can use dynamic capabilities, as means of incorporating, reconfiguring, recommencing, and reinventing resources and capabilities in reaction to environmental changes, in order to achieve sustainable competitive advantage (Peteraf, 1993: Grant, 1991: Miller & Shamsie, 1996). Most related studies (Amit & Shoemaker, 1993) have agreed that the development of capabilities is capable of strengthening firm's competitive advantage in a turbulent environment. According to Amit & Shoemaker, (1993) dynamic capabilities are the major contributors to sustainable competitive advantages for firms. (Haas & Hansen, 2005), as well as (Long & Koch, 1995) elucidate the role of capabilities and suggest that a firm can gain competitive advantage from its ability to apply its capabilities to provide products and perform other vital activities within the firm.

Firm's dynamic capabilities are its ability to organise resources along with the process to achieve its objectives (Amit & Shoemaker, 1993: Ferreira, Cardim & Coelho, 2020). They are information-based, physical or mental processes that are specific to the firm. These capabilities are usually developed over time by way of intricate interactions among resources of the organisation on one hand and the business environment on the other. Grant, (1996) identified four distinct categories of capability. These are "cross-functional, broad-functional, activity-related, and specific capabilities". The importance of product improvement has been stressed by (Allman, 2013: Putsis & Bayus, 2001: Wan, Evers & Dresner, 2012). They suggest that capabilities and product development are implicitly and visibly part of any strategy within a firm. The main goal of the firm's capability is that competitive advantage is based on valuable and unique internal resources and capabilities that are costly for competitive rivals to imitate (Wernerfelt, 1984; Barney, 1991). This implies that competitive advantage is an outcome of resources and capabilities residing within the firm, but these capabilities can be "directed" towards the environment of the firm. Thus, if the

firm can exercise this capability faster than its rivals it can give the firm a competitive advantage (Lee, Lee, & Pennings, 2001).

Product Line Strategy and Competitive Advantage

Many studies have demonstrated a linkage between the environment and firm innovation and strategy. A study by (Tan & Tan, 2005) revealed a positive relationship between environmental dynamism and the prospector behavioural type, while (Li, Tse, & Zhao, 2009) found a positive link between environmental changes and environmental scanning, which is an action seen as linked to firm strategy and innovative behaviour. Available literature also showed empirical studies were conducted over the years suggesting that for any manufacturing company to record any meaningful achievement, the right kind of product must be offered to the target market. In today's dynamic business environment, a firm can be situated at the finest location and offer the best price yet not achieving its set objectives as a result of not offering the right kind of products to the target market (Cant, Kallier, & Wild, 2016). Therefore, the ideal decision on firm's product line can be worthy strategies that can enable it to achieve competitiveness in the market. Past studies indicate a significant relationship between product line decisions and a firm's performance measures such as brand performance (Shrestha, 2016), consumer purchasing decisions (Akpoyomare, et al, 2012), market share (Allman, 2013) and profit (Wan, Evers & Dresner, 2012).

As a result, we predicted that a relationship exists between product line strategy and competitive advantage. Specifically, a study conducted by (Shrestha, 2016) to analyse the product line decisions and their effect on brand identity in Dabur Nepal, Pvt ltd. identified product differentiation strategy as a determinant of a firm's success. Similarly, findings of the study carried out by (Akpoyomare, et al, 2012; Bauer & Turcinkova, 2020) on the influence of product attributes on consumer purchase decisions revealed a significant positive correlation between the two variables implying that product line modernisation strategy leads to better market outcomes. Product line extension strategy was also found to be a major determinant of a firm's market outcomes as indicated by findings from (Allman, 2013) which indicate an interactive effect among product line extension both vertical and horizontal with regards to sales volume and value. As such, we hypothesize thus:

H1: There is a relationship between product line strategy and competitive advantage.

Product Line Strategy and Environmental Dynamism

For any manufacturing firm that seeks to compete successfully in the dynamic and competitive business environment, it must continuously develop products and product lines to satisfy the ever-increasing changing needs of customers (Joshi, Reibstein & Zhang, 2016). In fact, it is necessary for these firms to adopt an effective product line strategy by modifying the existing products, introducing new ones or eliminating products that are unsuccessful base on the current environmental realities. Product line strategy encompasses product planning as well the technical activities of product research, engineering design, among others to take advantage of potential opportunities facing a company's product idea in a market. These mixed results showed that, one cannot conclude a definitive market performance brand effect from the existing literature either. For instance, a study by (Draganska & Jain, 2005) showed a negative correlation between brand equity levels as measured by price premium and vertical line extensions into lower quality levels.

The result also indicates a positive correlation between brand performance and vertical line extensions into higher quality levels. Other studies like (Putsis & Bayus, 2001) show that vertical line extensions increase the market share of the brand. It also showed that higher quality extension improves total evaluation of brand while lower quality extension decreased overall evaluation of the brand. Conversely, a recent study by (Heath et al, 2011) indicates that higher-quality extensions improve brand evaluations to a much greater extent than lower-quality extensions damage them. Again (Muir, & Reynolds, 2011) opined that understanding what influence the changes in a brand's performance over time is another subject of interest to management. Because, the markets for consumer goods evolve so rapidly, some interesting dynamics in the performance of the key brands are observed. These dynamics could also be due to environmental factors and the changing attributes in a firm's product line. Finally, (Bayus & Putsis, 2001) found a relative influence of product line strategy and intrinsic brand preferences on the nature of a firm's environmental dynamism. This, therefore, suggests that environmental dynamism, which refers to rate of changes in a firm's external environment depends to a considerable extent on product line strategy in the manufacturing sector. We, therefore, hypothesize thus:

H2: There is a hypothetical link between product line strategy and environmental dynamism.

Environmental Dynamism and Competitive Advantage

Environmental dynamism is among the critical aspects for strategy development and source of firm competitiveness. Researchers in the field of organization theory and strategic management realized the importance of environmental dynamism in adopting effective strategy (Luo & Park, 2001). A pool of studies has shown that managerial perceptions of the firm's external environment influence strategy which in turn influences firm competitive advantage (Verdu-Jover et al. 2006). Again, many empirical studies (Luo & Park, 2001: Keats & Hitt 1988) linked environmental dynamism to organization strategy and organizational "postures" toward product innovation (Zahra & Pearce, 1990). These studies and others indicate the importance of the environmental dynamism construct in explaining firm-level phenomena such as competitive advantage. However, Extreme states of environmental dynamism can lead to 'hyper competition', where the paybacks derived from almost all forms of competitive advantage are momentary (Bierly and Daly, 2007). Iansity (1995) suggests that emergent levels of environmental dynamism lead to more uncertainty in product development, which also reduces the predictability and effects of change the changes. Empirical studies linking firm competitive advantage to the environmental complexity and dynamism has shown mixed results. A study by (Andretti, 2008) adopted intensity and frequency of changes as dimensions of complexity and dynamism and concluded that both had a positive effect on firm competitive advantage. Yet a study carried out by (Dess & Beard, 1984) only detected this association in some of the companies in a sample. Again, (Wang & Ang, 2004) investigated the impact of environmental dimensions on the competitive advantage whose results confirmed that more munificent environments lead to improved competitive advantage in firms. Relating these findings to the context of manufacturing firms, we hypothesize thus:

H3: There is a relationship between environmental dynamism and competitive advantage

Product Line strategy, Environmental Dynamism and Competitive Advantage

Organizational theory and strategic management literature have long argued that a firm's external environment has effects on the linkage between strategy and performance outcomes (Jiao, Alon & Cui, 2011; Mohammad, Daniel, Usman & Ahmed, 2019). For a business organization to achieve success, a strategic decision-making process needs to spin around examining a firm's reactions to environmental changes such as, rival's activities (Mohammad, 2019; Keats & Hitt, 1988). This, in turn, aids a firm to position itself in an industry in such a way as to best defend itself from competitive actions (Kaliappen, Chuah, Gorondutse & Moktar, 2019). Therefore, environment and strategic change have become strongly connected and management should address it proactively (Mohammed, 2019; Jiao, et al, 2011). An important topic in the field of strategic management is the issue of how to match a firm's internal resources and capabilities to the external environment (Mohd, Idris & Momani, 2013). In this process, environmental dynamism is the most important contingent variable. The relevant literature indicates that environmental dynamism, typified by rapid change and a state of crisis, affects the relationship between innovation strategy and dynamic capabilities (Petrus, 2019; Zhang, 2006). In differing degrees, the relationship between the innovation strategy and dynamic capabilities may vary. Generally, environmental dynamism describes the rate and instability of changes in a firm's external environment (Dess and Beard, 1984). Across industries, there are significant differences in terms of the impacts of environmental characteristics on firms. Therefore, where there are environmental dynamism increases, it will be difficult for all involved parties, such as the top management team, stakeholders, and others, to accurately assess both the present and future state of the environment.

If firms within industries exhibits greater environmental dynamism, such as rapid changes in technologies, markets, and competition, the top managers must make quick strategic decisions. That can be done by developing creative and innovative strategies to build a rapid response capability to cope with the changing external conditions and thereby to survive and/or prosper in the new environment (Jiao, et al, 2011; Mohammad, 2019). An innovation strategy will increase the effectiveness of communication and planning, and will dynamically enhance the ability to respond. As the environment changes more rapidly, a higher level of dynamic capabilities is required to meet customers' needs (Covin & Slevin, 1989). However, when the external environment is stable, customer preferences are relatively fixed and the increased costs of innovation will not be necessary (Mohammad, 2019). We, therefore, hypothesize that:

H4: Environmental dynamism is mediating the relation between product line strategy and competitive advantage.

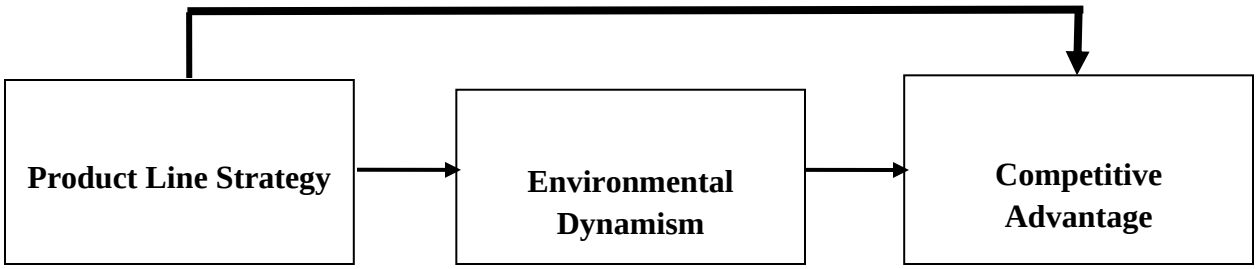

Figure 1: Conceptual Model and Hypothesized Relationships

Methodology

Sample and Data Collection

The study adopted a cross-sectional method in which manufacturing firms in different industries was considered. A sample of 460 was derived from Nigerian manufacturing firms which were classified as small and medium-sized enterprises. The sample size is based on the 15:1 sample-to-item ratio method of sample determination suggested by (Costelo & Osborne, 2005) in Memon, Ting, Cheah, Ramayah, Chuah & Cham, 2020). Cluster sampling technique was used to collect the data through a structured questionnaire to ensure a high rate of return. The selection of the firms was informed by the assumption that they alter their product line in the last five years and demonstrated potential and related capabilities. The structured, mainly closed-ended formatted questionnaire was addressed to the managers of the companies via e-mailin few cases by self-administer.

Measurement

The instrument consisted of five points Likert scale where one represents strongly disagree and five for strongly agree. All the variables had a varied number of items in the questionnaire. Product line construct comprises fourteen items adapted from (Abubakar & Mohammad, 2019), whereas Competitive Advantage holds eight items adapted from (Bratic, 2011) and (Abubakar & Mohammad, 2019). Similarly, environmental dynamism resides with six items adapted from (Halim, Ahmad, Ho & Ramayah, 2017) and (Mohammad, 2019). Primary sources were used to collect data where managers of manufacturing firms filled the surveys. Statistical tests, such as Reliability analysis, and Regression, were used to analyse the collected data.

Table 1: Profile of Firms by Industry

Industry	Frequency	%
Food beverages	37	17
Textiles manufacturing	21	10
Rubber and plastic	20	9
Furniture	28	14
Chemical & Petroleum product	18	8
Metal and Aluminium product	19	9
Paper and printing	15	7
Leather product	18	8
Household products	15	7
Form manufacturing	13	6
Others	11	5
Total	**215**	**100**

Analysis and Results

Data was collected on product line strategy and competitive advantage result for firms representing several industries. The sample included companies involved in food and beverages, furniture, textiles, chemical and petroleum product as well as range of industrial grouping within the Nigerian manufacturing sector.

Table 2: Factor Loading

Code	Statement	Loading
1	**Competitive Advantage**	
CA1	We offer competitive prices	**.866**
CA2	We offer products that are very durable	**.865**
CA3	We respond well to customer demand for new features	**.852**
CA4	We are first in the market in introducing new products	**.811**
2	**Product Line Strategy**	
PL5	We introduce higher quality-higher priced product category to increase our profit.	**.895**
PL4	We introduce higher quality-higher price products to target a particular market segment	**.876**
PL8	We introduce new product category to attract higher income earners.	**.872**
PL3	We introduce lower quality-lower priced products to increase our sales	**.859**
PL2	We introduce lower quality-lower priced products to induce customer trial	**.831**
PL7	We introduce lower quality-lower priced products to reduce the cost of launching a new product	**.826**
PL9	We introduce medium quality-medium priced products to maintain our market share	**.817**
PL6	We introduce medium quality-medium priced products to create brand awareness	**.791**

PL1	We introduce medium quality-medium priced products to increase brand loyalty	**.783**
3	Environmental Dynamism	
ED3	Changes in production technology are very fast	**.861**
ED2	Changes in technology are difficult to predict	**.855**
ED1	Changes in competitors' actions are difficult to predict	**.851**
ED4	Changes in mix of products/brands carried in the industry are very fast	**.833**
ED5	Changes in consumer demand are difficult to predict	**.792**

The profile of the companies shows that majority were in food and beverages industry with household manufacturing closely following them. Having 25% and 14% of the sample respecting others with a higher percentage are rubber and plastics, textile manufacturing and furniture products manufacturers. A detail of the distribution of companies is contained in Table 1.

Table 3: Reliability Analysis

Variables	No. of Items	Reliability (α)
CA, PL, and ED	Table = 18	.962
Competitive Advantage	4	.909
Product Line Strategy	9	.958
Environmental Dynamism	5	.917

The items loading of each variable in the pattern matrix is represented in Table 2. The reliability analysis manifests the value of Cronbach's Alpha is 0.962, which is higher than the minimum degree of 0.70, and it showed that the items as per this research were internally consistent, as represented in Table 3. Correlation analysis showed that the correlation of the variables was significant at the level below 0.01, as indicated in Table 4.

Table 4: Correlation Analysis

Correlation	**PL**	**ED**	**CA**
PL	1	.	
ED	.695**	1	
CA	.674**	.653**	1

Note: n = 215, Correlation is significant at .001

Regression Analysis

The correlation and regression were carried out to achieve the study objectives. Table 4 is the correlation matrix showing inter-correlation of the variables used in the study. The result indicated that product line strategy had significant impact on firm's competitive advantage ($\beta = 0.674$ $p < 0.01$), product line strategy also had a significant effect on environmental dynamism ($\beta = 0.695$, $p < 0.01$), this signifies that H1 and H2 were supported. The result also showed that environmental

dynamism had a significant effect on firm competitive advantage (β= 0.653 p < 0.01). Thus, H3 is also supported. A simple explanation of mediation steps by (Ramayah, Samat & Lo, 2011) based on (Baron & Kenny, 1986) four steps method is presented in Table 6. An indirect effect between product line strategy and competitive advantage exists through environmental dynamism. The finding revealed that the indirect effect was .2367, which exhibited environmental dynamism was taking ahead 23.67 percent impact of product line strategy to competitive advantage as shown in Table 6. The Upper Limit Confidence Interval (ULCI) and Lower Limit Confidence Interval (LLCI) did not contain 0, which meant that the mediation was intense.

Table 5: Regression Analysis

Variables	**Model 1**	**Model 2**	**Model 3**
Product Line Strategy	.674**		
Environmental Dynamism		.695**	
Competitive Advantage			.653**
R^2	.454	.482	.427
F-value	13.321	14.088	12.594
P-value	.000	.000	.000

Note: n = 215, Correlation is significant at .001

This suggests that mediation effect existed, and the results were statistically significant. The relation of product line strategy and firm competitive advantage was still significant after the direct influence of environmental dynamism on competitive advantage was controlled. Product line strategy had significant influence on firm competitive advantage, even though it decreased from β= 0.642 to 0.2367. This showed a significant mediation. Therefore, H4 also was supported.

Table 6: Mediation Analysis

Hypothesis	**Effect**	**P-value**	**LLCI**	**ULCI**
PL, ED & CA				
Total Effect	.642	.000	.5473	.7374
Direct Effect	.4057	.000	.2816	.5298
Indirect Effect	.2367	.000	.1062	.3714

Discussions

The findings of the study gave emphasis to the importance of product line strategy and environmental dynamism on the competitive advantage of manufacturing firms in Nigeria. The study provided empirical support for the four hypotheses proposed in the conceptual framework. The overall implication for the manufacturers was that both product line strategy and environmental dynamism provided a strong foundation for enhancing their competitive advantage.

Based on the findings, product line strategy had a significant impact on the firm competitive advantage which provided sufficient support for the hypothesis that an effective product line strategy pursuing by manufacturing firms, would lead to a competitive advantage (Abubakar & Mohammad, 2019). This is consistent with earlier studies that confirm product line strategy as an important contributing factor of firm competitive advantage (Abubakar & Mohammad, 2019; Draganska & Jain, 2005; Heath et al, 2011). Furthermore, the study also found that the product line strategy has a significant impact on Environmental Dynamism agreeing with (Luo & Park 2001; Jiao et al, 2011; Mohammed, 2019) finding which argued Marketing Strategy are key components of Environmental Dynamism. Again, this research discovered that environmental dynamism had a significant positive impact on the competitive advantage that supports the hypothesis that environmental dynamism has a significant effect on competitive advantage. Previous studies support consideration of the environment in formulating and implementation of strategies as it influences organisational performance (Luo & Pack, 2001; Wang & Ang, 2004). Finally, the result of the mediation effect has shown that environmental dynamism plays a significant mediator role in the relationship between product line strategy and firm competitive advantage. It is accurate that ever since product line strategy has been a business level strategy that leads to attaining competitive advantage (Porter 1980; 1985). Therefore, with environmental dynamism, product line strategy will give a better competitive advantage to manufacturing firms. Hence, this finding supports the necessity of linking the right strategy based on the prevailing environmental conditions which could enhance competitive advantage (Wang & Ang, 2004). Product line strategy is critical for manufacturing firms to set a strategic direction to survive in a current hyper-competitive business environment. Manufacturing firms should pursue product line strategy as their business strategy, as it has previously been linked to firm competitive advantage. Findings of this study have also suggested that environmental dynamism should be incorporated as a tool to evaluate product line strategy efforts in the manufacturing industry. This in turn could be used to determine the effectiveness of the manufacturer's product line strategy in achieving competitive advantage.

Limitations and Future Research

The current research only concentrated on manufacturing firms classified as small and medium-sized enterprises. Future research should examine this issue on large scale manufacturing companies. This study only examined environmental dynamism as a mediator between product line strategy and competitive advantage nexus. Future research could focus on the impact of other factors like organisational culture, organizational learning and dynamic capability as potential mediators on the above-mentioned relationship.

Conclusion

This research examines the link of product line strategy and environmental dynamism on the competitive advantage of manufacturing firms in Nigeria. The study found out a strong linkage between product line strategy and environmental dynamism. As a result, manufacturing firms in Nigeria give relative emphasis on product line strategy as their core business activity even though not too frequent. Also, the research found out that environmental dynamism partially mediates the association of product line strategy and competitive advantage. It can be said that product line

strategy would enhance the competitive advantage if the manufacturing firms put environmental dynamism into consideration when deciding on product line strategy.

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