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Product Life Cycle and Time Varying Advertising Elasticity in Port Harcourt, Rivers State

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ABSTRACT: The research study examines product life cycle and time-varying advertising elastics in Port Harcourt, Rivers State. The population of the study consisted of 10 Television dealers, 10 Food and Beverages Distributors, 5 Tobacco Distributors, 10 Detergent Distributors, 10 Foam Mattress and Bedding Dealers and Suppliers registered with the Rivers State Chamber of Commerce. The sample size of the study consisted of 40 firms and a total of 120 respondents made up of owners, senior managers, sales representative and marketing executives in the frame of three (3) respondents from each firm were surveyed through the administration of questionnaire. The instrument for data collection contains 4 questions for the independent variable and 20 questions for dependent variables. Product life cycle was measured with time varying advertising elasticities, total scales of a product brand; advertising by rival firms, cumulative effect of past advertisement of product brand and advertising elasticity affected by other factors affecting demand for a product brand. The Cronbach Alpha was calculated to confirm the reliability of the study construct. The reliability coefficient obtained was 0.82 and the data generated were analyzed using mean and standard deviation scores. The researcher used Person Product Moment Correlation to test the stated hypotheses. Findings reveals that product life cycle is significantly associated with time varying advertising elasticities of product brand. The study conclude that to fully adopt product life cycle and the varying advertising elasticities dimension as key strategies for business cycle growth and continued survival. The researcher thus recommended that marketing and sales managers should utilize the huge benefit to advertising elasticity to campaign effectively in generating new sales in line with the product life cycle of a product life/brand, reduce product cost to prevent potential competitors, ensure the product should be reformulated and remodeled to suit the consumers' preferences.

KEYWORDS: Product Life Cycle, Time Varying Advertising, Elasticity

INTRODUCTION

The increasingly competitive environments in which modern business operate is leading to greater effort being applied to manage cost. Business need to keep costs to a minimum so that they can supply goods and services at a price that customers will be prepared to pay, and, at the same time, generate a level of profit necessary to meet the businesses objectives of enhancing shareholder wealth (Eddie and Peter, 2010).

Research has shown that a product life cycle usually gives the functional relationship between sales of a product, the dependent variable, and time (varying advertising elasticity) the independent variable. The period under consideration is usually limited by the introduction of the article into the market and the end of its sales by the producing firm. This period is referred to as the "life" of the product, and the expressing "life cycle" naturally stems from this. (Brochoff, Klaus, (2011).

It is thus hypothesized that one may find typical forms of product life cycle for different classes of products. For investments good Weinhold-Stiinzi (2015) has argued that a so-called "camel-backcycle" is typical. The second hump is thought to be produced by replacement demand that is itself induced by the demand that formed the first hump.

For consumer goods one may find different forms of cycles. The product life cycles of consumer goods may be described by four successive phases: product introduction, market growth, market maturity and sales decline. The growth of product sales is caused by rising demand as the product becomes known to people. The decline of sales may be caused by the growing possibilities for substitution through better product that come out as time passes.

From the foregoing statement, Stanton and Buskirk (1964) noted that several methods be widely used to determine that total amount of funds to be apportioned for advertising. Many firms allocate for advertising is certain percentage of anticipated sales. Sometimes the total advertising budget is established simply by the amount of funds available. Other times the appropriation is determined by the task advertising is supposed to accomplish. In any event the decision on which method will be used is ordinarily a matter of executive judgment.

Stanton and Buskirk (1964) further opined that once the total amount of advertising money has been agreed upon, the fund must be allocated to time periods, media which will be used, products which will be promoted, areas in which the promotions will occur, markets which will be stimulated, or any other meaningful marketing cleavage. The sales budget will be an important factor in the allocation of advertising money among products and markets. In general, advertising expenditures will be roughly proportional to the anticipated revenues from these market segments. Obviously, there can be many exceptions to this broad generalization because certain products and markets require or deserve a larger amount of advertising than others. Competition and relative profitability of the unit are examples of influencing factors in the matter.

Product life cycle in industry means the process of managing the entire life cycle of a product from inception, through engineering, design and manufacturing to service and disposal of manufactured products (Wikipedia). Whereas, the concept of advertisement elasticity (advertising elasticity) is a useful tool in determining the optimum level of advertisement expenditure, the concept of advertising elasticity assumes a greater significance in deciding on advertisement expenditure particularly when government imposes restriction on advertisement cost or there is competitive advertising by the rival firms (Dwivedi, 2000).

Mickwitz (1959) in his marketing theory aver that, marketing strategy and tactics should vary over the product life cycle given that the demand elasticities of managerial decision variables changes over the product life cycle. The changes in elasticities over the product life cycle are both absolute and relative. In general, the absolute magnitude of these elasticities bit a non-linear decline overtime. Differential rates of change among the various elasticities mean that the relative importance of each of the decision variables is altered in successive periods.

According to Nwokah, Opara and Adiele (2012) the product life cycle is very useful as a framework for developing effective marketing strategies in different stages of the product life cycle. In essence, every stage requires a different emphasis in marketing strategy.

Parsons Leonard (1975) cited Mickwitz (1959) on the changes in elasticities over the product life cycle both absolute and relative in terms advertising. Whereas, Brockhoff (1967) assert that, the growth of product sales is caused by rising demand as the product becomes to people. The decline of sales may be caused by the growing possibilities for substitution through better products that come out as time passes. It is upon this precise that the need to investigate product life cycle and time varying advertising elasticity in Port Harcourt, Rivers State became very crucial.

Statement of the Problem

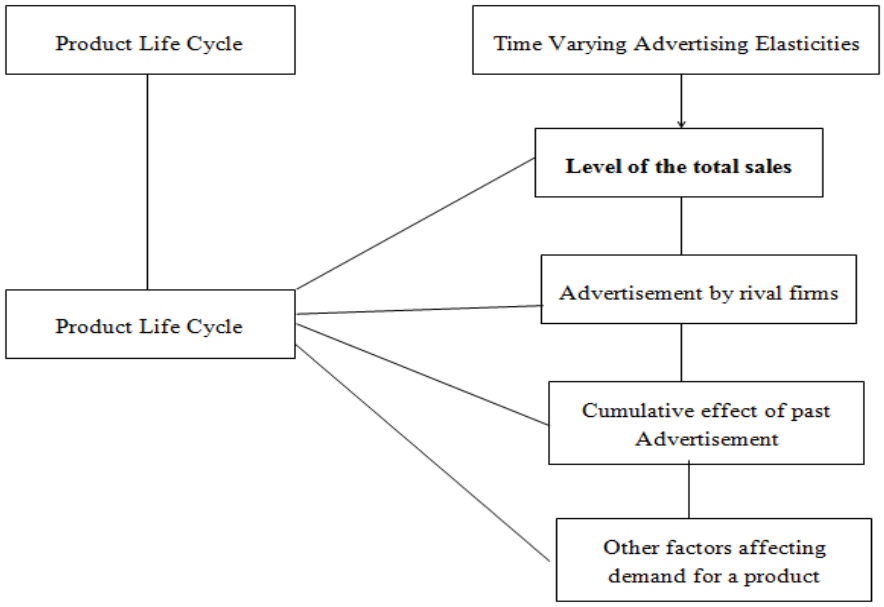
Increased study and analysis of products and intensive pre-occupation with product features and attributes have brought marketing analysts to the conclusion that products, like living things, come and go; that they are born, that they grow and reach maturity or saturation and then decline. With very few exceptions, the means of communication and transportation used at the beginning of this century has given way to new or improved ones (in popularity) (Ezirim, Melford, Nwokah and Amadi, 2004).

Similarly, Ezirim et al. (2004) stressed that, with the types of dress, shoes, cosmetics, furniture, etc, that people use. So also with the type or brand of food and beverages people consume. Common to all products is the fact that they have limited life during which they retain profit-earning capacity. This varies from one product to another and is also considerably influenced by market conditions. Conscious efforts are often made by management to influence, that is, to extend the life of products in order to earn enough profits to cover the efforts and capital investments expended on them. Apart from market conditions, technological progress tends to influence, that is to shorten the life span of products (there are cases of planned obsolescence). Fashion article also tend to have shorter life spans than non-fashion goods.

The pertinent question(s) here is, how does the product life cycle hinge on the level of the total sales of a product brand, affect advertisement by rival firms, create net cumulative effect of past advertisement and advertising elasticity affected by other factors affecting demand for a product such as change in products' price, consumers' income, growth of substitute and their prices and other intervening variables? Owing to this questions asked thus arouse interest created a need for this study-product life cycle and time varying advertising elasticity of product brand.

CONCEPTUAL FRAMEWORK

The conceptual framework of this study



Objective of the Study

The purpose of the study was to investigate product life cycle and time-varying advertising elasticities.

Specifically, the other objectives are:

i. Find out the extent to which product life cycle has on level of the total sales of product brand.
ii. Examine the extent to which product life cycle has on advertisement by rival firms.
iii. Ascertain the extent to which product life cycle has on cumulative effect of past advertisement of a product brand determine.
iv. Explore the extent to which product life cycle has on advertising elasticity affected by other factors affecting and for a product brand.

Research Questions

The study attempts to provide answers to the following research questions:

i. To what extent does product life cycle has on level of the total sales of a product brand?
ii. To what extent does product life cycle has on advertisement by rival firms?
iii. To what extent does product life cycle has on cumulative effects of past advertisement of a product brand?
iv. To what extent does product life cycle has on advertising elasticities affected by other factors affecting demand for a product brand?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho_1: There is no significant relationship between product life cycle and level of the total sales of a product brand.

Ho_2: There is no significant relationship between product life cycle and advertisement by rival firms.

Ho_3: There is no significant relationship between product life cycle and cumulative effects of past advertisement.

Ho_4: There is no significant relationship between product life cycle and advertising elasticities affected by other factors affecting demand for a product brand.

REVIEW OF RELATED LITERATURE

Concept of Product Life Cycle (Product Life Style)

Product Life Style (Product Life Cycle)

Anozie (2016) viewed product life cycle as "a business analysis that attempt to identify a set of common stages in the life of commercial products. In other words the "product life cycle" Plc is used to map the life span of the product such as the stages

through which a product goes during it life span. According to Nwokah (2012) product life cycle is useful as a framework for developing effective marketing strategies in different stages of the product life cycle. In essence, every stage requires a different emphasis in marketing strategy in manipulating the marketing mix (product, price, promotion and place.

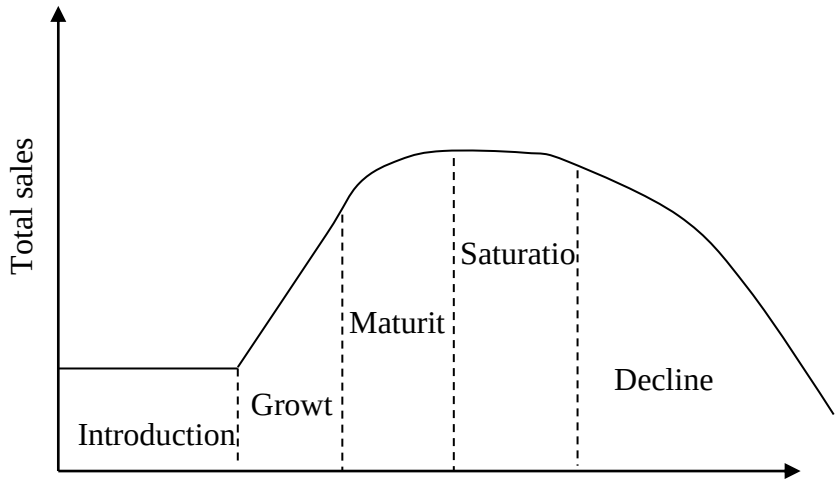
Product life cycle (Plc) is another strategy to manage a brand. The product life cycle is a concept that attempts to describe a product's sales, profit, customers, competitors and marketing emphasis from its beginning until it is removed from the market. (Bell, 1978:202)

Thus, from the foregoing every product grows and dies given that every products passes through different stages from introduction, growth, maturity, saturation and decline stages. The time period differs between introduction and decline among different products. The understanding of the typical life cycle pattern of a product helps entrepreneurial to manage profitable products and to know when it is time to delete unprofitable ones. As a product moves through its life cycle, the strategies for production pricing, distribution and competition must be regularly evaluated and adjusted.

Dimension of Product Life Cycle (Life Cycle of a Product)

Dwivedi (2000: 260) advanced the life-cycle of a product (product life cycle) is generally divided into five stages:

(i) Introduction or initial stage
(ii) Growth
(iii) Maturity
(iv) Saturation and
(v) Decline



Life Cycle of a Product

Source: Dwivedi, D.N (2000, p.260) – Managerial Economics

The figure presents the five stages of product's life-cycle through a curve showing the behaviour of the total sales over the life cycle. The introduction is the period taken to introduce the product to the customers. The total sale during this period is limited to the quantity put on the market for trial with considerable advertisement. The sales during this period remain almost constant. Growth is the stage, after a successful trial, during which the product gains popularity among the consumers and sales increase at an increasing rate as a result of cumulative effect of advertisement over the initial stage. Maturity is the stage in which sales continue to increase but at a lower rate and the total sale eventually becomes constant. During the saturation period the total sale saturates – there is neither increase nor decrease in the sales volume. After the saturation stage, comes the stage of decline in which the total sales registers a declining trend for such reasons as:

(i) increase in the availability of substitutes, and
(ii) The loss of distinctiveness of the product.

Product Life Cycle and Time Varying Advertising Elasticity of Product Brand

Ezirim et al. (2004) see products are like living organisms. They are born, they live and they die. A new product is introduced into the market, it grows and when it loses its appeal it is terminated. Thus production life cycle may be short or long depending on the extent of competition, speed of technological advance, changing consumer tastes or a combination of those factors.

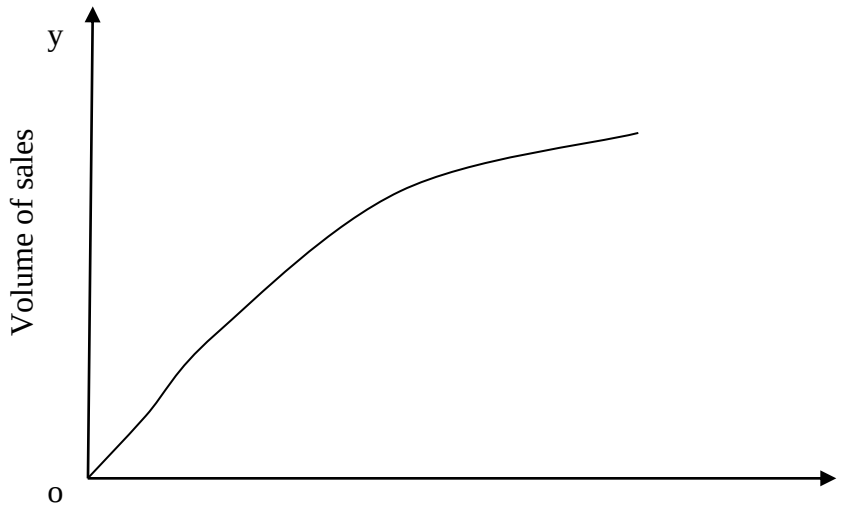
Product Life Cycle and Time Varying Advertising Elasticity in Port Harcourt, Rivers State

In a similar vein, Nwokah et al. (2012) posit that the product life cycle concept is like a human life cycle every new product introduced into any given industry pass through four major stages in its lifetime. The product life cycle is very useful as a framework for developing effective marketing strategies in the different stages of the productlife cycle. In essence, every stage requires a different emphasis in marketing strategy.More so, since every product grows and dies and every product has different stages or life cycle. The time period differs between introduction and decline among different products as well as advertisement expenditure.

Advertisement costs are incurred with the objective of promoting sale of the product. Advertisement helps in increasing demand for the product in at least four ways:

(a) by informing the potential consumers about the availability of the product
(b) by showing its superiority to the rival products
(c) by influencing consumers' choice against the rival products; and
(d) by setting fashion and changing tastes.

The impact of such effects shifts the factors remaining the same, as expenditure on advertisement increases, volume of sales increase to an extent, the relationship between advertisement outlay and sales.



Advertisement Expenditure (RS)
Advertisement and Sale

With this in mind, understanding of the market need is required in designing the product attributes and knowledge of the product life cycle is very necessary in order to manage the product very well. Product design-packaging, labeling and so on should appeal to the customer.Leonard (1975) cited that the changes in elasticities of the product life cycle are both absolute and relative in terms of advertising regarding the different stages of a product:-

In the introduction stage, the quality elasticity is high and so is the advertising elasticity. The service and price elasticities are relatively lower. Quality is important to new buyers who are considering adopting the innovation. Advertising creates awareness and interest in the new product.In the growth stage, most prospects have purchased the product at least once. Advertising becomes the dominant managerial decision variable. Advertising encourages customers to repurchase the brand. The quality has the next highest elasticity followed by price and service.At maturity, new customers can only come from price conscious segments. Furthermore, competitors seek to gain and maintain market position by pricing actions such as deals. Thus, both price elasticity and price gross-elasticity are high. By the saturation stage the customer has become insensitive to price changes. Product variation or differentiation is required to rekindle customer interest. Quasi-quality elasticity is now relatively most important. Service might also be relatively important. In the decline state, advertising may again possess the highest relative elasticity. The role of advertising at this late stage is to promote new product uses, this elasticity is now smaller than the other elasticities. But even advertising may not be profitable.

Time Varying

The in time and time factor in adjustment of consumption pattern for a product brand depending largely on price elasticity of demand, The time consumes needs to adjust their consumption pattern to a new price: the longer the time allowed the greater elasticity. The reason is that, over a period of time, consumers are able to adjust their expenditure pattern to price changes. For instance, if price of TV is decreased, demand will not increase immediately unless people possess excess purchasing power. But

overtime, people may be able to adjust their expenditure pattern so that they can buy a TV set at a lower (new) price. Consider another example, if price of petrol is reduced, the demand for petrol is unlikely to increase significantly. Overtime, however, people may be encouraged by low petrol prices to buy automobiles resulting in a significant rise in demand for petrol (Dwivedi, 2002).

Time Varying

Advertisement (Elasticity of Sales of Product Brand

Dwivedi (2000) assert that, the expenditure on advertisement and on other sales-promotion activities do help in promoting sales, but not in the same degree at all levels of the total sales. The concept of advertisement elasticity is useful in determining the optimum level of advertisement expenditure. The concept of advertisement elasticity assumes a greater significance in deciding on advertisement expenditure, particularly when government imposes restriction on advertisement cost or there is competitive advertising by the rival firms. Advertisement elasticity ($e\lambda$) of sales may be defined as:

$$e_{\lambda} = \frac{\Delta S/S}{\Delta A/A} = \frac{\Delta S}{\Delta R} \cdot \frac{A}{S}$$

Where S = Sales; ΔS = Increase in sales; A = Initial Advertisement cost, and ΔA = additional expenditure on advertisement.

Interpretation of advertisement–elasticity: Like measure of other elasticities, the advertisement elasticity of sales varies between $e_{\lambda} = 0$ and $e_{\lambda} = 00$. Interpretation of some measure of advertising elasticity is given:

Elasticities	Interpretation
$e_{\lambda} = 0$	Sales do not respond to the advertisement expenditure
$e_{\lambda} = > 0$ but < 1	Increase in total sales is less than proportionate to the increase in advertisement expenditure.
$e_{\lambda} = 1$	Sales increase in proportion to the increase in expenditure on advertisement.
$e_{\lambda} > 1$	Sales increase at higher rate than the rate of increase of advertisement expenditure.

Dimension of advertisement elasticity

Dwivedi (2000) advance some of the important factor with determine the advertisement elasticity such as:

(i) **Level of the total sales**: In the initial stages of sales of a product, particularly of one which is newly introduced in the market, the advertisement elasticity is greater than unity. As sales increase, the elasticity decrease. For instance, after the potential market is supplied, the function of advertisement is to create additional demand by attracting more consumers to the product, particularly those who are slow in adjusting their consumption expenditure to provide for new commodities. Therefore, demand increases at a rate lower than the rate of increase in advertisement expenditure.

(ii) **Advertisement by Rival Firms:** In a highly competitive market, the effectiveness of advertisement is determined also by the relative effectiveness of advertisement by the competing firms

(iii) **Cumulative effect of post advertisement:** In case expenditure incurred on advertisement in the initial stages is not adequate enough to be effective, elasticity may be very low. But over time, additional doses of advertisement expenditure may have cumulative effect on the promotion of sales and advertising elasticity may increase considerably.

(iv) **Advertising elasticity is also affected by other factors affecting demand for a product, e**.g. change in products' price, consumer income, growth of substitute and their prices

Theoretical Framework

The study is underpinned by the product life cycle theory propounded by MickwitzGosta (1959) a concept is marketing theory. The marketing theory was propounded by Mickwitz for instance, states that the demand elasticity of the managerial decision variables change over the product life cycle. The changes in elasticity over the product life cycle are both absolute and relative. In general, the absolute magnitude of these elasticities exhibit a non-linear decline overtime. Differential rates of change among the various elasticities mean that the relative importance of each of the decision variables is altered in successive periods.

Empirical Review

The growth of product sales is caused by rising demand as the product becomes known to people. The decline of sales may be caused by the growing possibilities for substitution through better products that come out as time passes (Brochoff, 1967)

Persons (1975) asserted that, the product life cycle theory does not make any statement about the behaviour of elasticities of environmental variables over time. He, however opined that a key environmental variable is buyer behaviour. The main factor of interest is habit patterns. At the aggregate level this factor is represented by sales is the previous period. A previous research on another, but somewhat similar, product category examined the marketing premise that the longer own lagged unit sales elasticity. Empirical evidence supported this premise (Bass, Frank and Parsons, 1969).

Brockhoff (1967), Buzzell (1966), Cox (1963; 1967) and Polli and cook (1969) attempted to test whether the product life cycle is validate model of sales trends. They assert that, there are problems in conducting such a test. And thus concludes that, some ambiguity exists about the level of aggregation at which the model holds. Alternative definitions of "product" include product class (such as ready-to-act cereal), product forms (such as presweetened cereals), and brands (such as lucky charms). Furthermore, stage identification is difficult because the sales curve is not a function of time alone. External environmental factors and controllable marketing instruments determine the shape of the sales response curve. Despite these difficulties, most products considered conformed reasonably well to the life-cycle hypothesis

However, this parents examine product life cycle and time varying advertising elasticities of product brand testing the dependent and independent variable product life cycle and level of total sale of a product band; advertisement by moral firms of a product brand; cumulative effects of post advertisement of a product brand and advertising elasticities affected by other factors affecting demand for a product brand.The paper posits that though there is a widespread knowledge and theories hypothesized on product life cycle as time passes on and the effect of advertisement and elasticities sequel to changes in the price(s) of product or commodities in the market.

Gap In literature

Product life cycle has been researched extensively in the academic space following its impact on organizational performance globally and management utilization of various marketing strategies in each stage to try to prolong the life cycle of products and exerting greater effort in trying to manage advertisement cost given elasticity of changes in the price of product or commodities in the market. Studies by Brockhoff Klaus 1967; Cox, William, E. 1963),Cox William, E. (1667); Buzzell Robert D. (1966); Kotler Philip (1965); Levitt Theodore (1965) and Parson Leonard, J. (1975) and several others has been conducted on this subject in different geographical locations across the globe in content and in variable. However, product life cycle and time-varying advertising elasticity has been conducted by eminent scholar person Leonard, J. but there is no study known to the researcher conducted in Port Harcourt metropolis of Rivers State and Nigeria indeed. It is a result of this, the researcher intend to carry-out the study to investigate any phenomenal change and reach a conclusion and where necessary make recommendation for the study.

METHODOLOGY

This study adopted the descriptive survey design. According to Gall cited in Jera (2016) opined that the purpose of the descriptive survey research design was to obtain pertinent and precise information concerning the current status of phenomenon and whenever possible to draw valid general conclusion from facts discovered.The population of the study consists of 10 Television dealers, 10 Food/Beverages distributors/dealers 5 Tobacco distributors/dealers, 10 Detergents/ Disinfectant distributors/dealers and 10 Foam, Mattresses and Bedding dealers and suppliers registered with the Rivers State Branch of chambers of commerce and industry and manufacturers Association of Nigeria as at November, 2020. The population of the study was chosen because consumers of such products are fairly sensitive and responsive to the effect of price elasticity, income elasticity and cross elasticity for demand for the product consequent upon changes in their taste, preference, income, fashion, etc, for substitute on demand given to the varying times of purchases/demand by consumers.

The sample size consisted of 40 firms based on Krejcie and Mongan (1970) table for determining the sample size of a given population as quoted by Amadi and Wali (2017). A total of 120 subjects made of owners, senior managers, sales representatives and marketing executives in the frame of three (3) respondents from each firm were surveyed through administration of questionnaire. The questionnaire was divided into three sections involving questions relating to respondents' profile questions relating to product life cycle and time varying advertising elasticities dimensions with relating questions. The items that were used to measure the variables with relating questions,the items that were used to measure the variables in the study were based on theory and largely drawn from literature. The instrument for data collection contains 4 questions for the independent variable and 20 questions for dependent variables. The instruments is titled: Product Life Cycle and Time Varying Advertising Elasticities Questionnaire" PLCTVAEQ) has a four point likert-scale ranging from (very High Extent (VHE) = 4; High Extent (HE) = 3; Low Extent (LE) = 2 and Very Low Extent (VLE) of making it a total of 10 points divide by 4 = 2.5) was used as bench mark for any decision reached. Responses below 2.5 were considered not significant, while 2.5 and above were deemed significant.

Specifically, product life cycle was measured with time varying advertising elasticity by level of total sales of a product brand, advertisement by rival firms, cumulative effect of past advertisement of product brand and advertising elasticities affected by other factors affecting demand for a product brand. the questions were pre-tested for comprehension, relevance of completeness and validity through 4 Television set dealers/suppliers, 3 food/beverages distributes/dealers; 2Tobacco(cigarette) distributors; 4 detergent/disinfectants dealers; and 10 Foam, Mattress and Bedding dealers and suppliers and two scholars in the field of marketing and sales vast with requisite in product life cycle of product brand, goods and services

The pilot survey participants were asked to identify possible problems as touching the content of the questionnaire for their adequacy and their response formed the bases for improving upon the final copies of the questionnaire. Cronbach alpha was calculated to confirm the reliability of the study construct. The reliability coefficient obtained was 0.82 which exceeded the rule of thumb cut-off mark of 0.70 as suggested by Hatcher (1994) cited in Amadi and Wali (2017). The data generated were analysed using mean and standard deviation scores to answer the 4 research questions. To determine the extent of significance that exist between the independent and depend variables of 0.05 level of significance the researcher used 2 Pearson Product Moment correlations (PPMC) to test the stated hypothesis. The SPSS (statistical package for social sciences) version 22.0 was used to correlate the data on the independent and dependent variables of the study.

RESULT OF FINDINGS

Research Question 1

To what extent does product life cycle has on level of the total sales of a product brand?

Table 1: Computation of Responses on the extent of product life cycle on level of the total sales of a product brand

S/No	Items	Mean	SD	Criterion mean	Remarks
1.	The longer a brand has been on the market (more mature) the greater the brand's own lagged unit elasticity	2.47	0.72	2.5	Low Extent
2.	The level-of sales of a product brand is determined by buyer's behaviour.	3.54	0.76		Very High Extent
3.	Habit pattern is a considerable factor of total sales overtime in the product life cycle of a product brand.	2.53	0.89		High Extent
4.	Product category in the marketing premise affects the level of the sales of a product life cycle.	2.786	0.63		High Extent
5.	Expenditure on advertisement increases, volume of sales increases too.	2.62	0.51		High Extent
6.	Advertisement costs are incurred with the objective of promoting sales of the product.	2.56	0.76		High Extent
7.	A product life cycle usually gives the functional relationship between the sales of a product, the dependent variable, and time, the independent variable.	2.67	0.78		High Extent
8.	The function of advertisement is to create additional demand by attracting more consumers to the product, particularly those who are slow in adjusting their consumption expenditure to provide for new commodities.	2.26	0.76		Low Extent
9.	The growth of product sales is caused by rising demand as the product becomes known to people	2.43	0.78		Low Extent
10.	The decline of sales may be caused by the growing possibilities for substitution through better product that come out as time passes	2.26	0.76		Low Extent
	Grand Mean	2.67	0.73		High Extent

Source: Field Survey, 2021

From table 1, the analysis showed that all items 1, 9 and 10 have score below the criterion mean while the rest have mean above scores where criterion mean of2.50 indicatingthat product life cycle has on the level of total sales of a product brand. In summary with a grand mean of 2.67, the respondents confirmed that the product life cycle has significant impact on the level of total sales of a product brand (TV, sets, foam, mattress and bedding, food and Beverages) in Rivers State to a high extent.

Research Question 2

To what extent does product life cycle has on advertisement by rival firm?

Table 2: Computation of Response on the extent of product life cycle on advertisement by rival firm

S/No	Items	Mean	SD	Criterion mean	Remarks
1.	Competitors seek to gain and maintain market position by pricing actions such as ideals for further innovation.	2.69	0.79	2.5	High Extent
2.	Advertising of product brand shows its superiority to the rival firm product.	2.72	0.71		High Extent
3.	Advertising influence consumers choice against the rival products.	2.57	0.78		High Extent
4.	Per unit cost of advertisement added to the price does not make the price prohibitive for consumers compared particularly to the product of substitute by rival firm	2.89	0.78		High Extent
5.	The rival firms do not react to the advertisement made by a firm to increases sales.	2.41	0.86		Low Extent
6.	The product life cycle is largely independent of the firm's marketing activities to make sales and not determined by advertisement by rival firm.	2.32	0.69		Low Extent
7.	The effectiveness of advertisement is determined also by the relative effectiveness of advertisement by the competition firms	2.47	0.723		Low Extent
8.	The decline of sales in the product life cycle of a product brand may be affected by the growing possibilities for substitution through better product by rival firms that come out as time passes.	2.22	0.64		Low Extent
9.	Product life cycle has no significant impact or dealings with advertisement made by rival firm.	2.26	0.76		Low Extent
10.	Better advertisement by rival firm can hedge-our competitors product brand at of market.	2.67	0.78		High Extent
	Grand Mean	2.77	0.83		High Extent

Source: Field Survey, 2020.

Analysis in table 2, showed that items 5, 6, 7, and 8 have mean score below the intention mean while the rest items have a mean above mean scores above the criterion mean of 2.50 indicating an acceptance decision that product life cycle has or advertisement by rival firm in Rivers State.In summary, with a grand mean of 2.77, the respondents confirmed that the product life cycle has impart on advertisement by rival firm of product brand in Rivers State to High extent.

Research Question 3

To what extent does product life cycle has on cumulative effects of past advertisement of a product brand?

Table 3: Computation of Response on the extent of product life cycle on cumulative effects of past advertisement of a product brand

S/No	Items	Mean	SD	Criterion mean	Remarks
1.	Advertising becomes the dominant managerial decision variable for most prospective customers to purchase the product at least once, twice, etc.	3.54	0.76	2.5	Very High Extent
2.	Advertising encourage customers to repurchase the brand.	2.72	0.71		High Extent
3.	The role of advertising at the least stage of the product life cycle is aimed to promote new product users	2.89	0.75		High Extent

4.	Advertisement informs the potential consumers about the availability of the product.	2.69	0.79		High Extent
5.	Advertising may not be profitable at the last stage of the product life cycle	2.47	0.78		Low Extent
6.	Product variation or differentiation is required to rekindle customer interest to repurchase a product brand.	2.62	0.71		High Extent
7.	Overtime, additional doses of advertisement expenditure may have cumulative effect on the promotion of sales and advertising elasticity may increase considerably	2.45	0.74		Low Extent
8.	Increase in advertising leads to arise in demand for the advertised good/product brand with its life cycle.	2.62	0.70		High Extent
9.	The growth of product sales is influenced by rising demand as the product becomes known to consumers	2.56	0.76		High Extent
10.	Cumulative effects of past advertisements does increase the customers patronage of a product brand and its life cycle	2.89	0.75		High Extent
	Grand Mean	2.75	0.75		High Extent

Source: Field Survey, 2020

From Table 3, the analysis showed that items, 5and 7 have mean score below the criterion mean while the rest items have a mean above mean scores above the criterion mean of 2.50 indicating an acceptance decision that product life cycle has on cumulative effect on post advertisement of a product brand.In summary, with a grand mean of 2.75, the respondents confirmed that the product life cycle has a cumulative effect on past advertisement of a product base in Rivers State to a high extent.

Research Question 4

To what extent does product life cycle has on advertising elasticities affect by other factors affecting demand for a product brand.

Table 4: **Computation of response on the extent of product life cycle on advertising elasticities affected by other factors affecting demand for a product brand**

S/No	Items	Mean	SD	Criterion mean	Remarks
1.	The quality of elasticity is high and so is the advertising elasticity for a product of different stages of the product life cycle.	2.89	0.75	2.5	High Extent
2.	The changes in elasticities over the product life cycle are both absolute and relative.	2.47	0.72		Low Extent
3.	Both price elasticity and price cross elasticity are high for product life cycle of a product brand given to advertisement expenditure.	2.67	0.78		High Extent
4.	Quality is important to new buyers who are considering adopting the innovation of a product brand.	2.56	0.76		High Extent
5.	Advertising may again possess the highest relative elasticity in the product life cycle.	2.43	0.79		Low Extent
6.	Charge in products price is affected by advertising elasticity	2.53	0.89		High Extent
7.	Consumers' income is influenced by advertising elasticity.	2.62	0.70		High Extent
8.	Growth of substitute and their prices is determined by advertising elasticity	2.62	0.71		High Extent
9.	The advertisement effect on sales may be unpredictable for a product brand within its life cycle.	2.43	0.78		Low Extent

10.	Advertising elasticity is a measure of an advertising campaign's effectiveness in generating new sales.	2.72	0.71		High Extent
	Grand Mean	2.60	0.76		High Extent

Source: Field Survey, 2020.

From table 4, the analysis showed that item 2, 5 and 9 have mean score below the criterion mean while the rest items have a mean above mean scores above the criterion mean of 2.50 indicating on acceptance decision that product life cycle has on advertising elasticities affected by other factors affecting demand for a product brand.In summary, with a grand mean of 2.60 the respondents confirmed that the product life cycle has on advertising elasticities affected by other factors affecting demand for a product brand in Rivers State to a high extent.

Hypothesis 1

There is no significant relationship between product life cycle and level of total sales of a product of a product brand.

Table 5: Computation of relationship between product life cycle and level of total sales of a product brand

Correlations			
		PRODUCT LIFE CYCLE	LEVEL OF TOTAL SALES OF PRODUCT BRAND
PRODUCT LIFE CYCLE	Pearson Correlation	1	. 639**
	Sig. (2-tailed)		.000
	N	120	120
LEVEL OF TOTAL SALES OF PRODUCT BRAND	Pearson Correlation	.639**	1
	Sig. (2-tailed)	.000	
	N	120	120

Source: SPSS Output Based on Questionnaire Data 2020

The result in Table 5, above shows that PPMC coefficient is calculated of 0.639, this is value is significant; hence it suggests that a very strong relationship exist between product life cycle and level of total sales of a product brand. The positive sign of this correlation coefficient gives the evidence that product life cycle is positively related to the level of total sales of product brand such as Television, Tobacco (cigarettes); food and beverages and detergent (Disinfectants) that are influence by price elasticity, income elasticity and cross elasticity on demand and the time consumers need to adjust their consumption pattern to new price and expenditure on advertisement incurred by firm. Given the significant 2-tail value (PV) = 0.000 < 0.0005. The researcher therefore rejects the null hypothesis which states that "there is no significant relationship between product life cycle and level of total sale of a product brand. Thus, conclusion is that, there is a significant relationship between product life cycle and level of total sales of a product brand.

Hypothesis 2

There is no significant relationship between product life cycle and advertisement by rival firm or product brand in Rivers State.

Table 6: **Computation of Relationship between Product Life Cycle and advertisement by rival firm of product brand in Rivers State**

Correlations			
		PRODUCT LIFE CYCLE	ADVERTISEMENT BY RIVAL FIRMS
PRODUCT LIFE CYCLE	Pearson Correlation	1	. 519**
	Sig. (2-tailed)		.000
	N	120	120
ADVERTISEMENT BY RIVAL FIRMS	Pearson Correlation	.519**	1
	Sig. (2-tailed)	.000	
	N	120	120

Source: SPSS Output Based on Questionnaire Data, 2020

The result in Table 6 above shows that PPMC coefficient is calculated of 0.519. This is value is significant; Hence, it suggests that strong relationship exist between product life cycle advertisement by rival firm of product brand in Rivers State. The positive sign of this correlation coefficient gives the evidence that product life cycle is positively related to advertisement by rival firm of product brand in Rivers State reason that commodities which are deed to be complementary or substitutes for each other if change in the price of one affects the demand for the other in the same direction consequent upon viable advertisement made by rival firm. This thus reveals that, the price demand relationship assumes a much greater significance in the oligopolistic market in which outcome of price-ware between a firm and its rivals determine the level of success of the firm. The firms have to be fully aware of price elasticity of demand for their own product and that of the product of the rival firms. Given the significance 2 – tail value (PV) = 0.000< 0.005. The researcher thus rejects the null hypothesis which states that "There is no significant relationship between product life cycle and advertisement by rival firm of product brand in Rivers State. And therefore concludes that, "There is a significant relationship between product life cycle and advertisement by rival firm of product brand in Rivers State.

Hypothesis 3

There is no significant relationship between product life cycle and cumulative effects of past advertisement of a product brand.

Table 7: **Computation of Response on the extent of product life cycle and cumulative effects of past advertisement of a product brand in Rivers State**

Correlations			
		PRODUCT LIFE CYCLE	CUMULATIVE EFFECTS OF PAST ADVERTISEMENT OF PRODUCT BRAND
PRODUCT LIFE CYCLE	Pearson Correlation	1	.813**
	Sig. (2-tailed)		.000
	N	120	120
CUMULATIVE EFFECTS OF PAST ADVERTISEMENT OF PRODUCT BRAND	Pearson Correlation	.813**	1
	Sig. (2-tailed)	.000	
	N	120	120

Source: SPSS output based on Questionnaire Data, 2020.

The result in table 7 above shows that PPMC coefficient is calculated at 0.813. The value is significant: hence it suggests a very strong relationship exist between product life cycle and cumulative effects of past advertisement of a product brand in Rivers State. The positive significance of this correlation coefficient gives the evidence that product life cycle is positively related to cumulative effect of past advertisement of a product brand in Rivers State for Television sets, food and beverages, Tobacco (cigarettes) and detergent (Disinfectant). Given the significant 2-tail value (PV) = 0.000 < 0.005. The researcher therefore rejects the Null hypothesis which state that "there is no significant relationship between product life cycle and cumulative effects of past advertisement of a product brand in Rivers State. The researcher thus concludes to accept the alternate hypothesis. There is a significant relationship between product life cycle and cumulative effects of past advertisement of a product brand.

Hypothesis 4

There is no significant relationship between product life cycle and advertising elasticities affected by other factors affecting demand for a product brand.

Table 8: **Computation of Relationship between product life cycle and advertising elasticities affected by other factors affecting demand for a product brand**

Correlations			
		PRODUCT LIFE CYCLE	ADVERTISING ELASTICITIES AFFECTED BY OTHER FACTOR AFFECTING DEMAND FOR A PRODUCT BRAND
PRODUCT LIFE CYCLE	Pearson Correlation	1	.591''
	Sig. (2-tailed)		.000
	N	120	120

ADVERTISING ELASTICITIES AFFECTED BY OTHER FACTOR AFFECTING DEMAND FOR A PRODUCT BRAND	Pearson Correlation	.591**	1
	Sig. (2-tailed)	.000	
	N	120	120

Source: SPSS Output based on Questionnaire Data, 2020.

The result in table 8 above shows that PPMC coefficient is calculated at 0.591. The value is significant: Hence, it suggests a very strong relationship exist between product life and advertisement elasticities affected by other factor affecting demand for a product brand, example, change in products' price, consumers' income, growth of substitute and their prices. The positive sign of the correlation coefficient shows the evidence that product life cycle is positively related to advertising elasticities affected by other factors affecting demand for a product brand for television sets, food and Beverages, Tobacco (cigarette and detergent/disinfectants. Given the significant 2-tail value (PV) = 0.000< 0.005. The researcher therefore rejects the null hypothesis which states that "There is no significant relationship between product life cycle and advertising elasticities affected by other factor affecting demand for a product brand. The conclusion reached therefore, is to accept the Alternate Hypothesis that "There is a significant relationship between product life cycle and advertising elasticities affected by other factors affecting demand for a product brand.

Discussion of Findings

This research which studies the product life cycle and Time varying Advertising Elasticity in Port Harcourt metropolis of Rivers State supports previous research conducted. The researcher's intention therefore was to ascertain if product life cycle correlates with time varying advertising elasticity dimensions such as level of total scales of a product brand; Advertised by rival firms, cumulative effects of past advertisement of a product brand and advertising elasticities affected by others affecting demand for a product brand in Port Harcourt, Rivers State.

Analysis of primary data collected from 120 respondents comparing 10 Television set distributors/dealers, 10 food and beverages distributors/dealers, 5 Tobacco (cigarette) distributors; 10 detergents/disinfectants dealers and distributors; and 10 foam, mattresses and bedding dealers and suppliers in Port Harcourt metropolis in Rivers State reveals that product life cycle is significantly associated time varying advertising elasticities of product brand.

CONCLUSION

The mean result of our respondents shows that product life cycle on level of total sales of a product brand; advertisement by rival firm of a product; cumulative effects of past advertisement of product brand and advertising elasticities affected by other factors affecting demand of product brand to a high extent. The Pearson Product Moment coefficient analysis result reveals a significant relationship between product life cycle and time varying advertising elasticities factors (level of total/sales; advertisement by rival firm; cumulative effects of past advertisement and advertising elasticities affected by other factors affecting demand of product brand in Rivers State to fully adopt product life cycle) and time varying advertising elasticities dimensions as key strategies for business cycle growth and continued survival.

RECOMMENDATIONS

Based on the finding of this study the following recommendations are made:

1. Marketing and sales managers should utilize the huge benefit in advertising elasticity to campaign effectively in generating new sales in line with the product life cycle of product life / brand.
2. Marketing and sales managers should reduce product cost so as to prevent potential competitors from entering the marketing in the short run and as well ensure that product brands have earned a strong brand loyalty to the consumers.
3. Marketing and sales executives should ensure the product should be reformulated and remodeled to suit the consumers' preferences.
4. Marketing and sales executives requires a strong will to drastically reduce or withdrawn completely advertisement expenditure and rely on the residual market.
5. Marketing and sales managers should take precaution in regard to product pricing policy but should rather more in the direction of "product improvement and market segmentation" within the product life cycle given to chances in time, advertising cost and elasticity of price, income and preference for substitute products in the market.

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