

**Eco-Product Packaging and Marketing Performance: A Study of Quoted Food and Beverages Firms in Nigeria**

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**Abstract**

In this empirical study, we investigated the relationship between eco-product packaging and marketing performance of 14 quoted food and beverage companies in Nigeria using the pooled least square regression method. Eco-product packaging is measured on an interval scale and data on it were collected primarily from 67 functional managers of the sampled companies based on a 5-point Likert type questions. The reliability of this scale is achieved using the Alpha method which gives a coefficient of 0.78. Marketing performance is defined in terms of sales growth and market share, and data on these variables are obtained from annual reports and accounts of the sampled companies covering a five-year period from 2012 to 2016. The results show that controlling for the influence of technology, eco-product packaging is positively related to both sales growth and market share. However, while the relationship with sales growth is weakly significant, the relationship with market share is insignificant. The effect of technology is also insignificant. It is therefore, our view that firms in the food and beverages sector can significantly increase their sales growth and market share by packaging their products with materials that are eco-friendly using the right technology or efficiently utilizing the existing technology.

Key words: eco-product packaging, marketing performance, market share, sales growth.

**1 Introduction**

In the recent past, firms have used the green marketing to achieve some business objectives. Eco-marketing is essentially practiced by companies that are committed to sustainable development and corporate social responsibility. Eco-marketing has become the order of the day as society becomes more complex with the environmental pollution and unethical business practices; hence consumers and business organizations are now concerned about the natural environment and businesses have begun to modify their behavior in an attempt to address society's "new" concerns (Ransure, 2017) Apparently, the global changes in the environment have become critical not only for the organizations but also for consumers across the globe (Saravanaraj & Pillai, 2017). As environmental consciousness makes waves into the corporate world, companies in the food and beverages industry are now taking necessary steps towards green consciousness. With this phenomenon, FuiYeng and Yazdanifard (2015), Katsikeas, Leonidou and Zeriti (2016) and Abdulrahman (2017) maintain that every business needs to develop an eco-based design and packaging which have the capability of minimizing pollution and hazards. To the extent that a product is manufactured as environmentally friendly and advertised as such, consumers would recognize it as one that is green marketing (Ottman, 2011). Hence, literature abounds on how firms have used green marketing to achieve optimal business performance (Katsikeas *et al*, 2016; Abdulrahman, 2017).

On the account of increasing ecological challenges and its unpleasant impact on the changing marketing landscape, firms across the globe are now increasingly seeking ways of improving their performance in the production and marketing of consumer goods. A marketing response in this direction have received widely spread marketing attention; where producers have modified existing or even introduced and re-introduced new production strategies to reduce ecological impact, as well as increase marketing achievement (Gbadayan & Omolekan, 2015).

Focusing on customer and total adherence to environmental issues has been adjudged to be a strong veritable tool for business success outcome (Ambler & Kokkinaki, 1997; Nwokah & Maclayton, 2006; Hasan & Ali, 2015; Katsikeas, Leonidou & Zeriti, 2016; Abdulrahman, 2017). However, what is observed in today's marketing endeavors is the poor performance of firms dealing in consumer goods. This perhaps could be attributed to non-adherence to regulatory laws and global best practices in the production of consumers goods. Food and beverages firms operating in Nigeria are not expected to experience poor performance if they apply their strategies correctly. Chukwu (2009) found there is an evidence of poor performance in the food and beverages firms and highlighted the negative impact of their activities on land use and land capability, noise and vibration, as well as environmental insensitivity which affected their performance. Interestingly, a look at the cream of literature however, appear to show that no empirical studies have investigated how eco-based product strategies influenced marketing performance. This study therefore fills this gap by considering how eco-product packaging strategy, with direct benefits on environmental protection (sustainability), influences firm's marketing performance in terms of increase in market share and sales growth. The study is informed by recognizing the unique nature of eco-based products that distinguishes itself from the conventional products and the critical role the strategies adopted in production have on the environment and the wellbeing of consumers. Hence, this study investigates the influence of eco-product packaging strategy on marketing performance of quoted food and beverages firms in Nigeria.

The paper is organized as follows: Relevant literature is reviewed and synthesized first to develop a conceptual model, followed by research methodology. The empirical analysis and results are then presented along with discussion.

## 2 Literature Review and Hypotheses

### 2.1 Eco-Product Packaging

Packaging can be defined as the container which conveys a product to the ultimate consumer, as contrasted with packaging (cartons, crates, etc.) that is required for bulk shipment. There are many ways to make businesses more environmentally friendly, with the choice of eco-packaging being the common focus for all businesses. The choice of packaging made from recycled, renewable material is a simple way to reduce negative environmental impact. For packaging to be considered eco-based, it must have a minimal impact on the environment during its life cycle (from the creation of the packaging to the recycling of the packaging) (Abdulrahman, 2017). There are several advantages to using eco-friendly packaging: According to Ward (2017) environmentally friendly packaging decreases firms' carbon footprint that are made from bio-degradable, recycled materials meaning there is less waste of natural resources. Another benefit of eco-packaging is the

ease of disposal, often costing a considerable amount to move and dispose of supplies. Eco-packaging on the other hand is compostable, reusable, and recyclable, meaning that after its original use, the packaging can be buried (compostable), recycled (broken down and made into more packaging) or re-used, which means it can either be re-used or recycled to be used again (Ward, 2017). One of the biggest benefits of using eco-packaging is how it reflects on firm's business. According to Ward (2017) when consumers learn firms are using eco-packaging, it reinforces the idea that their business is responsible and environment conscious. With companies reducing the materials used in their packaging, manufacturing the packaging ends up costing less. Lighter packaging makes transportation and distribution more efficient (Ward, 2017). The purpose of green or eco-packaging is to reduce the environmental impact and ecological footprint produced and used products (Gbadeyan & Omolekan 2015).

According to Ottman (1998) packaging efficiency means that manufacturers and vendors use minimal, reusable, recyclable, and bulk materials in packaging their products. Materials used for packaging, especially the ones made from plastic and which do not break down easily or the ones that are disposed of immediately can have huge impact on the environment. Implementing methods for eco-packaging include practices such as the use of biodegradable or recycled material, reducing the amount of material used for packing a product or using refillable or reusable packaging containers (Peattie & Crane, 2005). The raw materials component of a product must be obtained in such a way that natural resources are preserved. Peattie and Crane (2005) state companies must develop an eco-friendly design and a packaging that minimizes pollution and hazards. According to Chan and Lau (2005) green or eco-packaging involves not only the concept of reducing the amount of packaging used but more importantly, it deals with the processing, design, and the disposal conditions of the product's life cycle. Packaging of a product offers opportunities for improving the environmental performance of the tangible product without altering the core product (Peattie & Crane, 2005). In the strategic context, firms may opt to use eco-product design techniques, which often drive changes in the manufacturing processes.

## 2.2 Market Share

Market share is used by firms or businesses to determine their competitive strength in an industry as compared to other companies in the same industry, and it also allows organization to accurately assess their performance from year to year noting a particular company may be closing better or worse compared to other companies in the same industry. Similarly, Suttle (2017) sees market share as one of the primary indicators which companies use to measure how well they are doing among other competitors. Market share is the percentage of business or sales a company wields out of total business (market potential) or sales by all competitors combined in any given market. Market share is calculated by taking the company's sales over the period and dividing it by the total sales of the industry over the same period (Bilal *et al.*, 2016). A firm that is growing its market share will be growing its revenues faster than its competitors (Katsikeas, Leonidou & Zeriti, 2016). Some studies have used market share as an indicator of business performance in assessing the extent of customer focus on business performance of food and beverages firms in Nigeria (Nwokah & Maclayton, 2006). According to Nwokah (2008) and Nwokah and Ahiauzu (2008) market share is often used to describe the position of a firm within its industrial sector. They stated that the

implication is usually that the bigger the market share, the more successful the firm. Market share is the total purchases of a customer of a product or service that goes to a company. In other words, for a food and beverages firm, if consumers buy 100 tons of vegetable oil, and 40 of which are from one firm, that firm holds 40% market share. Value market share is based on the total share of a company out of total segment sales (Hasan & Ali, 2015). The value-volume market share equation is not usually linear: a unit may have high value and low numbers, which means that value market share, may be high, but volumes share may be low (Hasan & Ali, 2015).

### 2.3 Sales Growth

According to Whetten (1980) firm's growth is an implicit assumption in research studies because it is generally assumed that growth is synonymous with effectiveness. Bilal *et al* (2016) argues that "sales growth" usually means success, because a growing business is a thriving business. Bilal *et al* (2016) examined empirically the influence of green marketing strategy on sales growth of green cars in Jordan. The result revealed both positive (green product, green promotion and green process) and negative (green price, green physical evidence, green people, green distribution on sales growth) influence of green marketing strategy on sales growth. The adoption of green marketing strategies is essential for the growth in sales of green cars as suggested by the finding of the study of Eneizan *et al* (2016) on the effects of green marketing strategies on sales volume of green cars Singaporean. Effective sales growth can be achieved by implementing successful eco-based product strategies as it has strong evidence of relationship under the condition of adopting the eco-strategy by firms (Eneizan *et al*, 2016). The growth in harmful effects on bio-physical environment has been responsible for small enterprises to adopt sophisticated strategic stance in utilizing eco-related opportunities. Accordingly, firms will be motivated when they begin to adopt internal green-marketing strategies such as eco-product packaging, which may be a positive outcome of green marketing.

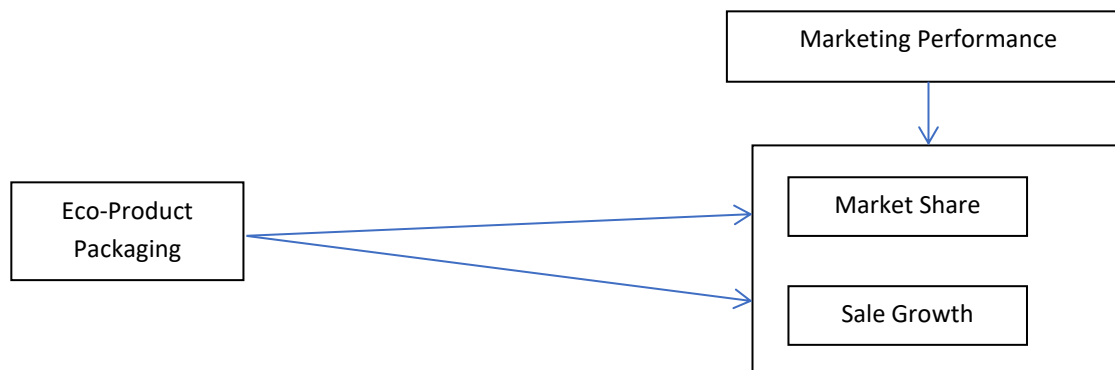
### 2.4 Eco-Product Packaging and Marketing Performance

Gbadeyan and Omolekan (2015) in their study found that the adoption of sustainable, eco-friendly, biodegradable or natural products and greener packaging, are ecological footprint and way of reducing the soil pollution, degradation or other environmental impacts associated with the previous emphasis on conventional packaging of products. Boye and Arcand (2013) reveal that packaging also provides a means of communication with consumers and allows foods to be portioned in convenient formats. Boye and Arcand (2013) stated that under-packaging puts foods at risk, whereas over-packaging has high environmental footprint. Earlier Simpson, Rui, and XiuJie, (2012) found greener packaging design considerations should include the maintenance of required functionality, material use minimization, increasing recycled content and use of recyclable materials, and avoidance of potentially toxic constituents. Taiye, Ogunaike, Dirisu and Onochie (2016) empirically studied packaging and its effect on consumer purchase decision in a food and beverages firm. The study was carried out to ascertain the impact of packaging on consumer purchase decision. and it was revealed that labeling can create consumer awareness. Taiye *et al* (2016) conclude that packaging plays a positive role in the consumer purchase decision. Similarly, Silayoi and Speece (2004) carried out a study on packaging and purchase decision using

an exploratory method and reports that the elements of packaging are the main factors in the assessment and decision of household product purchases. Nilsson and Ostrom (2005) in their study titled packaging as a brand communication vehicle, state in regard to packaging design there are no perceptual differences between men and women. Sambu (2016) added due to the influence of green packaging and the efforts that firms had put in place to conform to green packaging, made them realize increased performance in terms of creation of positive reputation, market size in new markets and improved efficiency.

Also, the study of Gbadeyan and Omolekan (2015) on the relevance of green marketing on environmental degradation: an empirical study of consumers of green products established adoption of product packaging in corporate financial decisions as well as their effect on market share of corporate organizations in Nigeria. The findings of Sambu (2016) showed that majority of the firms substitute their unfriendly packaging materials with friendly materials and package most of their products with recyclable materials. Their study found the extent of adoption of eco-product packaging ranges from 66.6% to 77.8% with the highest being product packaging that can be reused, renewed and recycled. The influence of eco-product packaging on market share of the firms was low at 11.6% they revealed. This was an indication that eco-product packaging tools under study were not necessarily being applied to influence market share. The findings of Gbadeyan and Omolekan (2015) shows that majority of the respondents are in support that products which are recyclable, reusable, biodegradable, products with natural ingredients, green technology, approved chemical which do not harm or pollute environment caused no environmental hazards and do not posed danger to the environment. With this, it shows that green marketing is crucial in preventing eco-harm and environmental degradation Gbadeyan and Omolekan (2015) revealed. Again, their finding shows product packages such as cans, tins, cellophane etc. are disposed by consumers. Gbadeyan and Omolekan (2015) also revealed most production process caused environmental pollution while most of the products manufactured without natural ingredients are not easily decomposed. Their findings also indicate majority of the products produced contribute to environmental degradation. Thus, green products are environmentally friendly. Their finding was in agreement with the work of Hise and McNeal (1988) that green products is a solution to the urban challenges of green space, air pollution, and flooding and energy conservation.

Firms wanting to improve their market share often start by proving themselves through their products. Mishra and Sharma (2010) findings revealed end-users are willing to patronize environmentally friendly products because of its effect on the environment. This shows that green consumers prefer recyclable, reusable and biodegradable products and they are even willing to pay a relative high price for eco-friendly products. According to the findings of Mishra and Sharma (2010) reducing waste in packaging, allows brands to feature their environmental benefits on the store shelf and in the home, and more importantly earn considerable market share. This is because consumers increasingly request for brands to substitute harmful packaging, such as for ecological and biodegradable materials. But, evidence from the empirical literature has shown that eco-based product packaging can enhance market share. Based on the above literature review, the study framework is drawn thus:



**Figure 2.1: Conceptual Framework of Eco-product Packaging and Marketing Performance**  
Source: Researcher's Conceptualization, 2018.

Based on the figure 1, eco-product packaging strategy (EPPS) has significant effect on marketing performance (MP) which encompasses market share (MSH) and sales growth (SG). Hence, the following hypotheses were tested:

**H<sub>01</sub>:** Eco-product packaging does not significantly influence market share.

**H<sub>02</sub>:** Eco-product packaging does not significantly influence sales growth.

### 3 Research Methodology

#### 3.1 Data and Sample

The data for this study were collected from both primary and secondary sources. Fourteen quoted food and beverage companies in Nigeria participated in the study. The data on eco-product packaging were collected from functional managers from these companies through a structured questionnaire instrument designed for this study. The instrument is titled Eco-Product Packaging Strategy Questionnaire (EPPSQ). The managers are from six functional departments; namely, marketing, production, customer care, procurement/purchasing, accounts and quality assurance. Although, 84 managers were selected for the study; 6 from each company and 1 from each functional department, 67 returned the completed questionnaire. Thus, the response rate is about 80%. A descriptive analysis of the data shows that 51% of the respondents were male, 70% are married and average work experience is 15 years. All respondents have at least attended secondary education. For secondary data, both sales growth and market share information were sourced from the annual reports and financial accounts of the 14 selected companies for a five-year period from 2012 to 2016. Thus, the data on the two dependent variables are panel. The data on both market share and sales growth are converted into logarithm to minimize the effect of outliers.

The mean plot of the raw data on market share and sales growth for the sampled companies is given in figure 2.

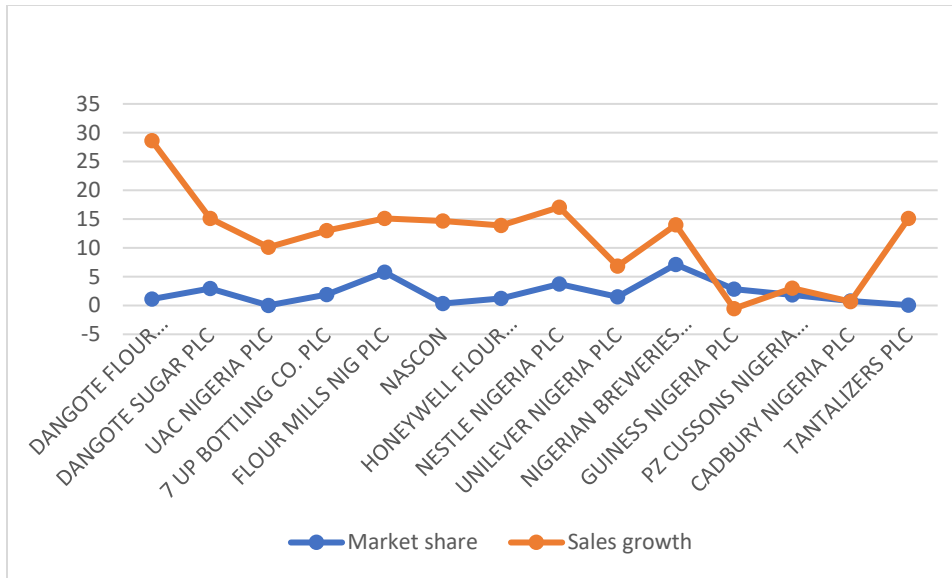


Figure 2: Mean market share and sales growth (2012 – 2016)

### 3.2 Measurement

**Eco-Product Packaging:** This variable is measured on a 5-point Likert scale. The scale contains 8 statement items adopted from different studies but modified for this study. The items in this scale describe a company’s use of materials that are eco-friendly to package their products and the participants were asked to rate the extent (from very low extent which is assigned 1point to very high extent which is assigned 5points) to which their product packaging is based on these materials. The responses on the eight items are converted into a variable (interval) scale in the usual way by taking the means through the SPSS variable transformation window.

**Technology:** This variable is measured on a 5-point Likert scale. The scale contains 5 statement items adopted from different studies but modified for this study. The items in this scale describe a company’s use of technology in the production of packaging materials and the participants were asked to rate the extent (from very low extent which is assigned 1point to very high extent which is assigned 5points) to which the production of their packaging materials is based on technology. The responses on the five items are converted into a variable (interval) scale in the usual way by taking the means through the SPSS variable transformation window.

**Market Share:** This variable is measured on a continuous or ratio scale. It is the contribution of a company’s sales to the aggregate sales in a given period and is computed as follows:

$$Market\ Share_{it} = \frac{Sales_{it}}{Aggregate\ Sales_t} \times 100$$

where the subscript  $i$  represents individual company and  $t$  represents current period. Aggregate sales = sum of the sales of the 14 companies in the sample.

**Sales Growth:** This variable is also measured on a continuous or ratio scale. It is a simple growth rate in sales and is computed as follows:

$$Sales\ growth_{it} = \frac{Sales_{it} - Sales_{it-1}}{Sales_{it-1}} \times 100$$

where the subscript  $i$  represents individual company,  $t$  represents current period and  $t - 1$  represents previous period.

### 3.3 Methods and Models

The pooled least square method (PLSM) is used for empirical analysis. The PLSM is one of the traditional panel data methods that allows cross-sectional data to be pooled together disregarding any unobserved heterogeneity in the panel. The other traditional panel data methods are fixed effects and random effects methods. Both methods recognized cross-sectional heterogeneity in the panel data set. The PLSM method is employed because we believe that the unobserved company-specific effects such as management culture and style are unimportant since the 14 sampled companies operate and compete in the same industry. Thus, they face same industry trend as any innovation that affects one company would concurrently affect others. Our pooled least square model is given as follows:

$$MSH_{it} = \alpha_0 + \alpha_1 EPP_i + \epsilon_{it} \quad 1$$

$$SG_{it} = \beta_0 + \beta_1 EPP_i + u_{it} \quad 2$$

where  $MSH$  = market share,  $SG$  = sales growth and  $EPP$  = eco-product packaging. The parameters,  $\alpha_0$  and  $\beta_0$  are the intercepts which respectively represent the market share and sales growth of the sampled companies that are independent of eco-product packaging strategy. The coefficients  $\alpha_1$  and  $\beta_1$  are the betas which capture the effect of eco-product packaging on market share and sales growth respectively. The subscript  $i$  represents the cross-sectional dimension of the data and the subscript  $t$  represents the time dimension. As we can see, both subscripts are attached to  $MSH$  and  $SG$  because both market share and sales growth data vary cross-sectionally and over time. On the other hand,  $EPP$  has only the subscript  $i$  since data on eco-product packaging are collected from study participants from different companies at a single period. Thus,  $EPP$  data are time invariant. It is worthy of note that statistically, variables measured at interval and ratio scales are called scale data and all scale data can be analyzed empirically in a classical regression framework, provided that the error term in that model is a white noise or meets classical regression assumptions. Here,  $\epsilon_{it}$  and  $u_{it}$  are error terms that are assumed to be white noises, i.e. they are identically and independently distributed around zero mean and constant variance. Therefore, models 1 and 2 are classical regression models and can be analyzed under the popular OLS framework.



## 4 Empirical Results

### 4.1 Influence of Eco-Product Packaging on Market Share

Table 1 shows the results of the estimated pooled least square model that allows market share to depend on eco-product packaging controlling for the effect of technology. From this table, although, the coefficient estimate on *EPP* is positive (beta = 0.1820), it is associated with a very high probability (p-value = 0.6369), indicating that the relationship between eco-product packaging and market share of the sampled firms is insignificant. The control variable is also associated with a very high probability, indicating that its effect on market share is insignificant. The R-squared is almost zero and the Adjusted R-squared is negative, indicating that there is almost a zero relationship between eco-product packaging and market share. This is confirmed by the F-statistic whose probability is very high at 0.8744, showing that the overall regression is insignificant.

Variable	Beta Coefficient	p-value
Constant	-0.156714	0.8919
<i>EPP</i>	0.182067	0.6369
<i>TECH</i>	-0.035188	0.9070
R-square 0.0418	Adj. R-squared 0.0132	Prob(F-statistic) 0.2386

**Table 1: Results of the estimated pooled model 1**

### 4.2 Influence of Eco-Product Packaging on Sales Growth

Table 2 shows the results of the estimated pooled least square model that allows sales growth to depend on eco-product packaging controlling for the effect of technology. From this table, we can see that the coefficient on *EPP* is also positive (beta = 0.3094) but now significant at 10% level (p-value = 0.0927). This indicates that the relationship between eco-product packaging and sales growth is positive and weakly significant. However, the direct relationship between technology and sales growth is insignificant (beta = -0.1648, p-value = 0.2589). Further, the R-square is very low at 0.0533, indicating that the estimated model has a very poor fit. The F-statistic shows that overall, the relationship between eco-product packaging and sales growth, controlling for the influence of technology, is insignificant.

Variable	Beta Coefficient	p-value
Constant	0.564712	0.3058
<i>EPP</i>	0.309473	0.0927
<i>TECH</i>	-0.164870	0.2589
R-square 0.0533	Adj. R-squared 0.0103	Prob(F-statistic) 0.3021

**Table 2: Results of the estimated pooled model 2**

### 4.3 Discussion

As an important dimension of eco-based product strategies, eco-product packaging shows positive but insignificant relationship with market share of companies in the food and beverages industry in Nigeria. This is evidenced by the results in tables 1, with the beta value of 0.1820 and an associated p-value of 0.6369, leading us not to reject the null hypothesis that eco-product

packaging and market share are not significantly related. The direct effect of technology on market share is also found to be insignificant. Although, the positive beta sign is expected *a priori* and agrees with the recent study of Sambu (2016), the main issue however, is the fact that the estimated relationship lacks significance, considering that our sample consists of firms in the consumer goods sector. Our expectation is that these companies should at least use eco-friendly materials in product packaging and as a competitive tool for market penetration in a 21<sup>st</sup> century business world that revolves around sophisticated technology and in which there is increasing emphasis on green environment. These results should however, be interpreted with caution, given the fact that our dataset is a combination of cross-sectional data that are obtained from primary sources and panel data that are obtained from secondary sources.

We also find that eco-product packaging and sales growth is positively but weakly significantly related. This is evidenced by the results in table 2, particularly the associated p-value which is very high at 0.0927, leading us to weakly reject the null hypothesis of no significant influence between these two variables. The direct effect of technology on market share is also found to be insignificant. Like the case of market share, our expectation *a priori* is that the eco-product packaging should directly and significantly influence the volume of sales since consumers are increasingly becoming conscious of green products and their positive effects on the environment. In terms of the direction of relationship, our findings are consistent with this *a priori* expectation, but the fact that the relationship is weakly significant is of great concern. Also, we are concerned about the negative and insignificant relationship between technology and sales growth. This may be case that firms in the consumer goods sector are not using the right technology in the production of their packaging materials or the existing technology is not being utilized in a manner that give them competitive advantage.

## 5 Conclusion

It is evident from our findings that eco-product packaging has positive influence on market share and sales growth. However, on the account of their relationship only sales growth is weakly significant, while the relationship with market share is insignificant. Therefore, firms in the food and beverages sector can significantly increase their sales growth and market share by packaging their products with materials that are eco-friendly using the right technology or efficiently utilizing the existing technology.

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