Consumer Preferences for Cigarettes in Sudan

A Conjoint Analysis Approach

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Abstract

Understanding Consumer's preferences on attributes of cigarettes market is the first step to successful marketing strategies. The goal of this article is to explore the preferences of the smokers and to determine the way consumers perceive the importance of cigarettes attributes using conjoint analysis. Research was conducted on a sample of 416 users of cigarettes in Sudan and data were collected using a structured questionnaire. By implementing conjoint analysis, the current study investigates how consumers do tradeoff between preferences of number of attributes and the importance they attached to each of these cigarettes' attributes. The four attributes that are dealt within this study are the social status, availability, quality and price of cigarettes. Though the preferences of the various consumers vary, the results show that while price, quality and availability are important attributes, the social status is the most preferred attribute in the cigarettes industry in Sudan. The findings of the current study provide essential implications for marketers in developing future marketing strategies and for investment in this sector.

Keywords: Consumer preference, Conjoint analysis, cigarettes, Sudan.

1. Introduction

Modern industry in Sudan started after the Second World War and very considerable fiscal concessions have been given to encourage the establishment of industry in both the public and private sectors of the economy. A number of institutions have been established by government to enhance industrialization, like Industrial Bank of Sudan and the Sudan Development Corporation. Industrial Development has largely concentrated on the processing of agricultural products and on textile production. So far it has been almost exclusively directed to imports substitution and to providing local needs. (Dagdeviren and Mahran, 2004)

At independence in 1956, the first national government embarked on industrialization as a means to broaden the economic base. An industrial policy was spelled out in the first Industrial Act in 1956. The principles of the industrial policy were further reinforced in the first "Ten Year Plan of Economic and Social Development of the Sudan (1961 - 1970)". According to this plan, the development of manufacturing was ranked third in sectoral development. In the early 1970s, the Industrial Investment Act was revised and in 1980 a new Investment Act was issued, unifying the incentives granted to all types of investment in all industrial sub-sectors. This Act had been implemented since then and until the issuance of the "Encouragement of Investment Act" in 1990. (Ministry of Finance, 2014).

Although manufacturing sector has been introduced only recently after Second World War in Sudan its contribution in economic activities is very significant. The contribution of the manufacturing sector in Gross Domestic Product (GDP) in Sudan is estimated at 24% (Bank of Sudan). However, this contribution is still relatively very minor in comparison to agricultural and service sectors. contributor to the overall economic activity with its share in GDP. (Bank of Sudan 2015).

Cigarettes industry in Sudan started with two national companies dealing in the production of local cigarettes as well as the distribution of both local and imported brands. These two companies are the National Cigarettes Company (N.C.C) and Haggar Cigarettes and Tobacco Factory (H.C.T.F). However, the first factory to start production of cigarettes in Sudan was Hagger Cigarettes and Tobacco factory in 1950. In 1957 the Blue Nile Company was formed. In 1958 the Blue Nile Company became a branch of the National Cigarettes Company which owned a factory in wad Medani producing local brands. (Timan,2005).

Despite the fact that, tobacco manufacturing is very limited, constituted of only three private sector operating factories, its capacity utilization is estimated at about 30% to 40% of their designed capacity. Nevertheless, it is considered the major sub – sector which is heavily taxed and contributes more than 30% of the total government excise revenue, (Ministry of Finance, 2014).

The present paper tries to get answers to the question as to what are the attributes that consumers desire while making their purchasing decisions of cigarettes?

Moreover, the paper tries to illustrate practical aspects of conjoint analysis on a case study dealing with preferences and evaluative criteria in purchasing cigarettes among smokers in

Sudan. More specifically this article aims to explore the preferences of the smokers and to determine the way consumers perceive the importance of cigarettes attributes using conjoint analysis.

The paper is a contextual study that focuses on consumers' preferences within the context of Sudan. Thus, it is expected to contribute significantly to the better understanding on the part of managers to develop more effective marketing strategies. Marketers will also be able to employ this information to communicate more effectively the cigarettes attributes that are most preferred by customers.

Many studies of a similar nature have been widely used in marketing to evaluate consumer preferences for products and services. Some of such studies were carried out in many countries of the region, examples of which are, Kwadzo et al (2013) who studied the consumer preferences for broiler meat in Ghana by using conjoint analysis approach, Nazari, & Elahi (2012), ' A Study of Consumer Preferences for Higher Education Institutes in Tehran through Conjoint Analysis' and Ibnu et al (2015) who studied the farmer preferences for coffee certification, by using a conjoint analysis of the Indonesian smallholders. Hair et al (2006) argue that, it is frequently applied in examining preferences for product attributes. Green and Krieger (1991) pointed out the usefulness of conjoint analysis for benefit segmentation. The necessary data to carry out conjoint analysis consist of consumer evaluations of alternative product concepts described as sets of attributes levels (Gil and Sanchez, 1997).

Although the conjoint analysis technique has now been used for almost four decades in the west and other developing countries, it has not been used in any research in Sudan to date in as far as the researcher knows. The current study to the knowledge of the author is the first study in determining the consumer preferences by using conjoint analysis in Sudan.

2. Review of Literature

In assessing consumer preference, traditional research techniques tend to treat each attribute independently. So far information on how consumers are likely to make a favorable or unfavorable buying decision is unearthed using old techniques. Consumers do not consider each attribute of a training course purchase singly and independently when making a choice. Instead they consider whole range of service attributes in totality.(Nazari & Elahi, 2012).

Conjoint analysis is a multivariate technique which has been widely used in marketing research to understand how consumers develop preferences for different products or services (Bonilla, 2010).

Kuzmanovic' (2008) states that conjoint analysis is a decomposition method which assumes that product/services can "break-down" into their attributive components and which implies the study of joint effects of products' variety attributes on their preference.

Manalo (1990) explains that conjoint analysis is a decomposite model of determining consumer preferences. It is based on the assumption that all products are composed of attributes which may have two or more levels. Respondents are usually presented with

different combinations of product attributes and attribute levels and asked to rank or rate them. Conjoint analysis is one of the terms used to describe a broad range of techniques for estimating the value people place on the attributes or features that define products and services.

Kwadzo et al (2013) argue that because the demand functions for the various categories of consumers differ, with households being driven by utility and restaurants by profit, it is expected that the relative importance that each category attached to the attributes will differ. Conjoint analysis is used to analyze consumer preference for the attributes of a product or a service and it enables trade-off between attributes to be established when multi attributes are taken together.

It could be judged that the goal of any conjoint analysis is to assign specific values to the range of options buyers consider when making a purchase decision. Armed with this knowledge, marketers can focus on the most important features of products or services and accordingly design their marketing strategies to address each and every niche of the market. (Malhotra, 2015).

Hu and Hiemstra(1996) state that conjoint analysis is a kind of multivariate statistical analysis method. The basic process of conjoint analysis can be described as follows: Firstly, products' attributes and their levels should be determined, so that consumers' preference could be simulated. Then, construction of a utility function through mathematical statistics method. Eventually, not only the relative importance of product' attributes, but also the utility of each level with respect to the product's attributes can be obtained from the utility function.

Orme (2010) states that attributes should cover the full range of possibilities for the product and they should be independent with no overlapping meanings.

Consequently, conjoint analysis is believed to be one of the most popular techniques for achieving this purpose. Conjoint analysis includes generating and conducting specific experiments on customers for modeling their purchasing decisions, so that their specific needs could be satisfied. (Kwadzo et al, 2013) and (Levy, 1995).

Manalo (1990) states that conjoint analysis is a procedure where each attribute level is assigned a value called part-worth that indicates the relative importance of that particular level to respondents. Total importance for an attribute is derived by calculating the range of part-worths across the levels of that particular attribute. When all part-worths for different combinations of attribute levels are summed up, total value of the product to consumers is found.

Kwadzo et al (2013) explain that with resource scarcity being an implicit factor in the real world, investment should be made to address those factors that matter most to the consumer. Conjoint analysis helps identify the factors that matter most to the different categories of consumers by estimating the relative importance that each attach to a given factor in making a purchasing decision.

Ighomereho (2011) states that the first step in conjoint analysis is to identify and choose

objective attributes that describe the product such as color, size or price. If a policy question is being addressed, the attributes will be predefined. Where the attributes are not predefined, literature reviews, group discussions and individual interviews will be necessary to identify the attributes.

According to Hair et al (2010) the main features of the conjoint analysis are as follows:

- Approaching method: decomposition;

- Decisions related to several attributes (features) are required;

- The general evaluation is the result of partial decisions additive combination;

- The dependent variables may have a metric, ordinal or nominal scale;

- The evaluated parameters (utility values) normally (approximately) show a range scale;

- With respect to items, one can determine aggregate utility values, useful for the market share and options ratio forecasts.

Hair et al.,(2006) indicate that there are two approaches to establishing consumer preference in conjoint analysis. These approaches are the rank ordering approach and the ratings approach. This study used the rank ordering approach, where the consumers were made to rank the product combination from the most preferred to the least preferred. This approach is more reliable and provides more flexibility in estimating different types of composition rule.

Utility is expressed in a relationship reflecting the manner in which the utility is formulated for any combination of attributes with the use of an additive model (Hair et al., 2010).

Conjoint analysis produces two important results(Levy, 1995):

1. Utility of attribute: It is a numerical expression of the value consumers place on an attribute level; It represents relative "worth" of the attribute. Low utility indicates less value and high utility indicates more value.

2. Importance of attribute; It can be calculated by examining the difference between lowest and highest utilities across levels of attributes.

Hair et al., (2006) suggest that to represent the respondent's judgment accurately, all attributes that create or detract the overall utility of the product must be included in the analysis.

3. Methodology

The Present study used conjoint analysis to examine the relative importance weights for

cigarettes attributes that might enhance consumer perception.

In order to conduct the research, a structured questionnaire was used, with several groups of questions: demographic characteristics, characteristics of buying behaviour, the importance of different attributes in buying cigarettes and the importance of information in buying cigarettes.

Besides the questions mentioned above, conjoint task was also a part of the questionnaire. Based on the data from previous research, four attributes of cigarettes were chosen to be included in the conjoint task. These attributes are quality, social status, price and availability. Each attribute had three levels as shown in Table (1).

The levels chosen for each of the attributes in this paper as illustrated in Table (1) were assumed to be reasonable, actionable and capable of being traded off as suggested by Pol and Ryan (1996) and communicable (Hair *et al.,* 2006). Hair *et al.,* (2006) suggest that to represent the respondent's judgment accurately, all attributes that create or detract the overall utility of the product must be included in the analysis. The levels of the attributes in the study were developed from previous researches as well as discussions with some academicians and knowledgeable persons in the industry.

Table 1. Conjoint attributes and attribute levels

Attribute	No	Level Description
1. The quality	1	High
	2	Medium
	3	Low
2. The social status	1	High
	2	Medium
	3	Low
3. The price	1	Expensive
	2	Moderate
	3	Cheap
4. Availability	1	Available
	2	Rare
	3	unavailable

Source: Developed by the Author, (2016).

The questionnaire was pre-tested on a small sample of consumers (33 respondents) prior to the main survey launch to identify possible problem areas such as respondent understanding of attributes, levels in conjoint profiles and preciseness of the instructions. Some questions and instructions in the questionnaire were reworded after the pre-test based on the feedback from the pre-test respondents.

The data collection method used in this research is full-profile method, where participants are required to evaluate a set of stimuli representing alternative combinations of all four attributes.

Respondents were simply asked to rate the importance of cigarettes attributes on a five-point Likert scale, where 1 indicates that the attribute is completely unimportant and 5 indicates that the attribute is very important.

The simple random sampling method was used in selecting the 416 respondents (smokers)included in this paper.

Cronbach's alpha was 0.8495 for the questionnaire of cigarettes, which indicates the items of the questionnaire were significantly related to each other.

The basic conjoint analysis model may be presented as the following formula:

$$U(x) = \sum_{i=1}^{m} \sum_{j=1}^{k} \alpha_{ij} x_{ij}$$

Where:

$U(x)$: Overall utility of an attribute.

α_{ij} : The part-worth contribution or utility associated with the jth level (j, j = 1, 2, …, Ki) of the ith attribute (i, i = 1,2, …, m)

k_{ij} : Number of levels of attributes.

m : number of attributes.

x_{ij} : 1 if the jth level of the ith attribute is present

: 0 otherwise.

The importance of an attribute, Ii, is defined in terms of the range of the part-worths, α_{ij}, across the levels of that attribute.

Ii = {max (α_{ij} - min α_{ij}} for each i.

The attribute's importance is normalized to ascertain its importance relative to other attributes, Wi:

$$W_i = \frac{I_i}{\sum_{i=1}^{m} I_i}$$

So that

$$\sum_{i=1}^{m} W_i = 1$$

The basic model is estimated using the dummy variable regression. In this case, the predictor variables consist of dummy variables for the attribute levels. The ratings, assumed to be interval scale, form the dependent variable.

4. Results and Discussion

In this section of the paper conjoint analysis will be used so as to determine the utility and the relative importance of each of the cigarettes attributes to the consumers in Sudan.

The results of the conjoint analysis are twofold. First, they indicate the strength of the preferences for each attribute, or in other words: they reveal which attributes are considered most important in preferring cigarettes.

Second, the analysis offers utility (part-worth) scores and standard errors for each attribute level. These part-worth scores provide quantitative

degrees of preference for each attribute level; the larger these values, the greater the preference for the specific attribute level. These two results combined, indicate which attributes are considered important and how the most preferred interpretation of these attributes looks according to the consumers. (Ibnu et al, 2015).

Table 2. Results of Conjoint Analysis for cigarettes

Attribute	No	Level Description	Utility	Importance
1. The quality	1	High	0.051	
	2	Medium	0.036	
	3	Low	-0.087	0.131
2. The social status	1	High	0.182	
	2	Medium	0.087	
	3	Low	-0.269	0.478
3. The price	1	Expensive	-0.069	
	2	Moderate	0.027	
	3	Cheap	0.042	0.118
	1	Available	0.140	
4. Availability	2	Rare	-0.022	0.274
	3	unavailable	-0.119	

Source: Developed by the Author, (2016).

Table (2) shows that the obtained results for the quality of cigarettes were 0.051, 0.036, and -0.087 as utilities for high, medium, and low quality in that order. It is clear that respondents have the greatest preference for high quality when evaluating the quality of cigarettes, then medium and low quality of cigarettes.

The high social status is the most preferred, followed by medium social status and low. And the results for these utilities were 0.182, 0.087 and -0.269 respectively.

Regarding the price attribute, the cheap price has the highest utility, then moderate price comes second, and the expensive price had the least utility. The results for price utilities were 0.042, 0.027 and -0.069 respectively. Although price is not the most preferred attribute for users of cigarettes, yet they prefer cheap prices compared to either expensive or moderate ones.

Consequently, for the availability attribute, respondents have the greatest preference for available brands of cigarettes, then for rare and the least preferred is the unavailable ones. The results of such utilities were 0.140, -0.022 and -0.119 respectively.

Average utility scores, shown in column number four of Table (2), describe desirability of the various aspects of an attribute. Higher scores suggest that respondents have greater preference for specified aspect. The scores are not only revealing the preference but also the level of the preference.

The fifth column of Table (2) shows the importance that an indication provides for each attribute relative to the other attributes. The major determinants of smokers in Sudan and their relative importance are social status with relative importance of0.478, availability with relative importance of 0.274, quality with relative importance of0.131and price with relative importance of0.118.

Overall, respondents' preferences were determined more by social status than other attributes. Consequently, customers in cigarettes sector in Sudan could be labeled as social-status sensitive customers. The importance of social status for smokers could be attributed to the fact that smokers are quite satisfied with the quality of cigarettes, in addition to the price reasonability of cigarettes. That is smokers are much interested in the social status or the prestige they could gain.

Smokers perceive social status as the most important attribute due to the satisfaction of smokers with the quality levels of cigarettes sold in Sudan. As manufacturers thought to be maintaining standardized level of quality for their products over years and the experience of companies producing such types of cigarettes is enormous so that smokers are not worried about the quality of cigarettes. (Timan, 2005).

The low quality products will not prevail in the market, especially in the presence of fierce competition between companies, as well as smokers being aware that smoking is a bad habit and is against their health, therefore they show reluctance touse poor quality cigarettes which will affect their general health conditions.

Smokers perceive availability as second in importance to social status, the relative importance of availability for those who smoke imported cigarettes brands could be attributed to the fact that imported brands of cigarettes witnessed unavailability, particularly during the regime of May (1969 – 1985). Of course, the policies of protection for local industry played a vital role in the nonexistence or rarity of foreign cigarettes types. Hence, smokers regard

availability as second important attribute immediately after social status.

The least preferred attribute is the price of cigarettes, because the proportion of the amount spent on smoking remains minimal and customers perceive prices of cigarettes as reasonable.

The prevailing situation of Sudanese cigarettes industry is that smokers prefer social status attribute, then availability, followed by quality and finally price as the least preferred attribute.

5. Conclusion

In conclusion, four most important determinants of cigarettes preference for customers are social status, availability, quality and price. Obviously, conjoint analysis can provide real insights into consumers' decision process and companies should consider its advantages much more than ever. It provides a reliable approach to understand the way consumers 'make trade-off between product attributes and the decision as to which company gives the optimum combination. Conjoint analysis also provides understanding of the attributes that are most likely to create positive preference.

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