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Full Length Research Paper

Structure and performance of formal retail market for bamboo products in Kenya

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In Kenya, bamboo is mostly found in Central, Western and Coastal provinces. It is mainly used in residential fencing, horticultural flower farming, handcrafts and minor cottage industry products. This study focused on bamboo market segments in Nairobi, Mombasa and Kisumu with the aim of addressing uncertainties in the market structure and lack of concrete information on market potentials of the products. A stratified random sample of 20 branches of major supermarkets (i.e.Uchumi Supermarket Limited and Nakumatt Holdings Limited) was conducted. Standard questionnaires, key-informant interviews and participant observation were used to obtain primary data. Secondary data were obtained from International Network for Bamboo and Rattan database, conferences/workshops proceedings reports, scientific journals, periodicals and textbooks. This study revealed that most bamboo products are imported, a scenario that results in high product prices and low demand. Thus, the need to encourage domestic production of the products. Conditions of imperfect competition with oligopolistic tendencies characterize the formal retail market, hence the need to strengthen its competition through consumer enlightenment and information dissemination.

Key words: Bamboo market, supermarkets, Kenya.

INTRODUCTION

Over 1200 species of bamboo grow worldwide. Of the total species, about 18 are regarded as commercial species due to their suitability for various uses (Farelly, 1984). Out of the world cover of 14 million hectares of bamboo (Sharma, 1980), 85% is distributed mainly in the Asian tropical region. India has about 8 million hectares that provide 60% of its massive population timber requirements and meet much of its commercial timber needs (ICRAF, 2004). On the other hand, Africa has a total of only 1.4 million hectares, much of which is distributed over Eastern Africa in which Kenya's share is about 150,000 hectares (Kigomo, 1988). Compared to Eucalyptus species, bamboo's growth rate is three times faster. Commercially important bamboo species usually mature in 3-5 years, after which multiple harvests are possible every second year for 80-120 years, a rare case in most trees (Relma, 2003).

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In Asia, over 1500 uses of bamboo have been recorded as opposed to Africa where its great potential is rarely exploited largely due to lack of awareness (Relma, 2003; Madhab, 2003). Bamboo can be used in the production of pulp and paper, brief cases, clothes, baskets, boats, bows and arrows, biomass fuel, handcrafts, ladders, mats, musical instruments, fencing, fibre, fans, spears, spoons, toys, toothpicks, recycling and filtration of domestic and industrial waste water (Bello and Espiloy, 1995; Jianzhun, 2001; INBAR, 2006). Bamboo leaves are used for animal fodder while the shoots are a good source of human food. For instance, over 2 million tons of edible bamboo shoots are consumed annually around the world (ICRAF, 2004). Kenya has so far recorded up to 48 local bamboo uses (Ongugo et al., 2000). The main uses are in fencing, construction, props in flower industries, bamboo shoots for food, toothpicks and skewers. Other items produced from bamboo are incense sticks, baskets and handcrafts (Latif and Liese, 1995; Kigomo, 2000). A lot of income is also obtained from the sale of various bamboo products. For example, global market for bamboo products is approximately $7 billion which is expect-

Table 1. Diffusion of Uchumi and Nakumatt supermarkets in Kenya.

Supermarket	Nairobi	Mombasa	Kisumu	Total
Nakumatt Holdings Limited	10	2	2	14
Uchumi Supermarket Limited	18	1	1	20
Total	28	3	3	34

ed to triple by the year 2017 (Smith and Marsh, 2005). China's annual export value from bamboo products is also estimated to be more than $ 600 million, with the total value of bamboo industries estimated at $ 12 billion (Smith and Marsh, 2005; Kirunda, 2005).

In Kenya, over 20 exotic bamboo species have been introduced during the last two decades through the support of Canadian International Development Research Centre (IDRC) and are yet to be planted by farmers (Kigomo, 2000). The Kenyan government has also put up measures such as the Presidential Ban of 1986 on the exploitation of forest resources (Matiru, 1999) and the forest policy of 1999 aimed at spurring growth and development in the bamboo sub-sector in Kenya (GOK, 1999). Despite these efforts, the bamboo sub-sector still appears less developed partly due to uncertainties in the market structure and lack of concrete information on the existing and potential market for bamboo products, a situation that discourages potential bamboo farmers in Kenya. Kibwage et al. (2005) indicate that lack of concrete information on the market for bamboo products constrains the adoption of bamboo as an alternative source of livelihood for local tobacco producers in the Lake Victoria region of Kenya. This study was formulated to fill this information gap. Findings of the study may be used as a basis for decision-making in bamboo industry and for further research in the development of bamboo sub-sector in Kenya.

The formal retail market of Kenya comprises numerous supermarkets. In East Africa, Kenya's supermarket industry is the most developed and rapidly expanding with an annual growth rate of 18% (Neven and Reardon, 2004). The major supermarkets are Uchumi Supermarket Limited and Nakumatt Holdings Limited (James et al., 2004). The two supermarkets have about 70% of Kenya's supermarket share in terms of volume of sales and network of retail outlets. Based on such characteristics, the study gave preference to Nakumatt and Uchumi supermarkets. Table 1 indicates details on the number of supermarkets selected from the three cities depending on the total number in a given area.

The overall objective of the study was to analyze the structure and performance of formal retail market for bamboo products in Kenya. Specifically the study sought to identify the major source of supply of bamboo products for the formal retail market in Kenya and to examine and compare demand for bamboo products in the formal retail market segments in Kenya. It also sought to assess structural characteristics of formal retail market for bamboo products in Kenya.

METHODOLOGY

The sampling frame was a list of 34 supermarket branches (Table 1). Of this group, a stratified simple random sample of 20 supermarket branches was conducted. Managers were interviewed from each of the supermarket branches and their head offices. Customers were also informally interviewed to get their views about the existing bamboo products in the formal retail market. The survey was carried out in the months of April and December, 2006. Primary data were collected using standard questionnaires-schedules, key informant interviews and photography. Secondary data were obtained from published and unpublished theses, conferences/workshops, proceedings reports, scientific journals, periodical reports and textbooks.

To detect product differentiation in the market, various bamboo products sold by the supermarkets were identified, recorded and examined. Customers' views about existence of bamboo products in the market, quality, affordability and preference in relation to competing non-bamboo products were recorded. Barriers to entry into the bamboo market were determined by establishing the possible factors hindering investment in the bamboo industry. Such included government licensing, capital requirements, customer loyalty and supply of desired quantities of the products. Market concentration was assessed by determining the major source of supply of the bamboo products and the number and size (percentage of sales) distribution of the supermarkets. Market performance was examined by establishing demand differences among the market segments and ranking the bamboo products based on the branch managers' views about the rate at which their stock got emptied. Analysis of Variance (ANOVA) was conducted at 0.05 level of significance to confirm the hypothesis that there was signifycant difference in the means of bamboo products sold in the three cities. Gini coefficient was also computed using Andic and Peacock model given as;

$$G = 1+1/n - 2/n^2 \square [y_1+2y_2+3y_3 \ldots+ny_n]$$

Where; G → Gini coefficient; $y_{1...}y_n$→ represent individual quantities in decreasing order of size; □ → Mean value of the output; and n → number of observations/individual firms.

The Gini coefficient was meant to confirm the hypothesis that conditions of imperfect competition with oligopolistic tendencies characterize formal retail market of bamboo products in Kenya.

RESULTS AND DISCUSSION

Market concentration

Table 2 shows major bamboo products sold in the formal retail market in Kenya and the major countries from where the products were imported. The countries were ranked by managers at the head office of Uchumi Super-

Table 2. Major sources of bamboo products sold in the formal retail market.

Major bamboo products	Supply sources	Supply ranking
Mats, plates, trays, bowls, baskets, toothpicks	China	1st
	India	2nd
	Thailand	3rd
	Kenya	4th
Bamboo flower vases and bamboo clay vases	China	1st
	India	2nd
	Thailand	3rd
Edible bamboo shoots	Thailand	1st
	China	2nd
	India	3rd

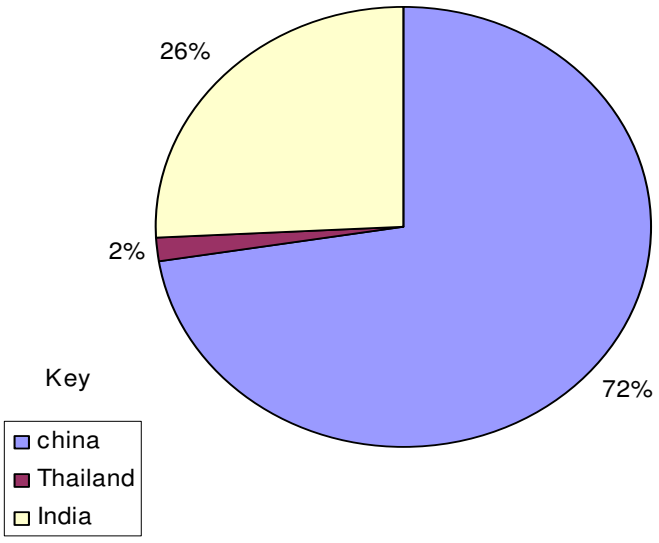

Figure 1. Percentages of bamboo and rattan products exported to Kenya by China, India and Thailand between 1989 and 2004.

market Limited and Nakumatt Holdings Limited on the basis of their products' dominance on the supermarket shelves. A country whose products dominated the shelves more than others was given the first rank while the other whose products least dominated the shelves was given the fourth rank. China was identified as the major source of the bamboo products followed by India and Thailand. The managers observed that local manufacturers supplied mainly toothpicks and baskets in small quantities. Thailand was pointed out as the major source of the edible bamboo shoots while China and India were ranked the 2nd and 3rd, respectively.

Although the managers did not indicate quantities of the bamboo products imported from each country due to lack of clear statistics ascribed to the difficulties in distinguishing between bamboo and rattan products (Wardle, 2002), they reiterated that import market constitutes the greatest market share in terms of supply of the bamboo products. This scenario implies that performance of bamboo products' market in Kenya is to some extent pegged on conduct of the foreign suppliers. Market prices are higher due to the inevitable importation costs that are transferred to the consumers within the marketing system of the bamboo products.

INBAR database available at <http://www.inbar.int/trade/main.asp> shows that between 1989 and 2004, China exported a total of 589 metric tons of bamboo and rattan products to Kenya while India and Thailand exported 209 and 14 metric tons, respectively. Analysis of the INBAR data shows that China sold the highest percentage (72%) of the two products followed by India (26%) and Thailand (2%) (Figure 1). The finding was a confirmation of the managers' ranking that most of the bamboo products sold in Kenya were imported from China followed by India and Thailand. This reinforces Wardle's (2003) findings that many bamboo products from China and South-East Asian countries are found in the International trade of those countries.

The Photographs (Plates 1 - 6) below show some of the imported bamboo products sold in the formal retail mar-ket of Kenya.

Sales from bamboo toothpicks, coffee trays and table mats, were used as proxies for determining bamboo products' market concentration. Their choice was based on the fact that they were being sold by most of the supermarket branches. The fewer the firms, the more concentrated is the market and vise versa (Ferguson and Glenys, 1994). Considering the idea of Ferguson and Glenys (1994) on the number of firms and the level of concentration in a given market, sales of the three bamboo products were the most desirable for analyzing concentration of the formal retail market for the bamboo products.

Figure 2 shows concentration curves drawn from cumulative percentages of the three bamboo products sold by the supermarket branches arranged from the largest to the smallest. The curves show considerable variability in quantities of the bamboo products sold by the individual

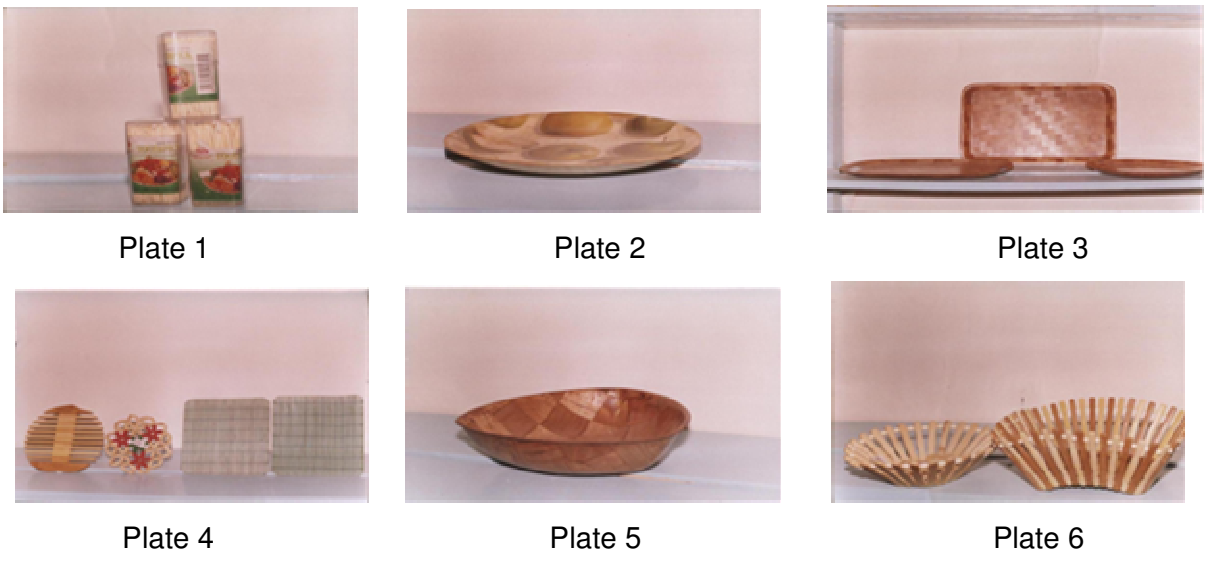

Plate 1. Imported bamboo toothpicks. **2.** Imported bamboo plate. **3.** Imported bamboo trays. **4.** Imported bamboo table mats. **5.** Imported bamboo bowl. **6.** Imported bamboo baskets. Courtesy, Odondo J. Alphonce (2006).

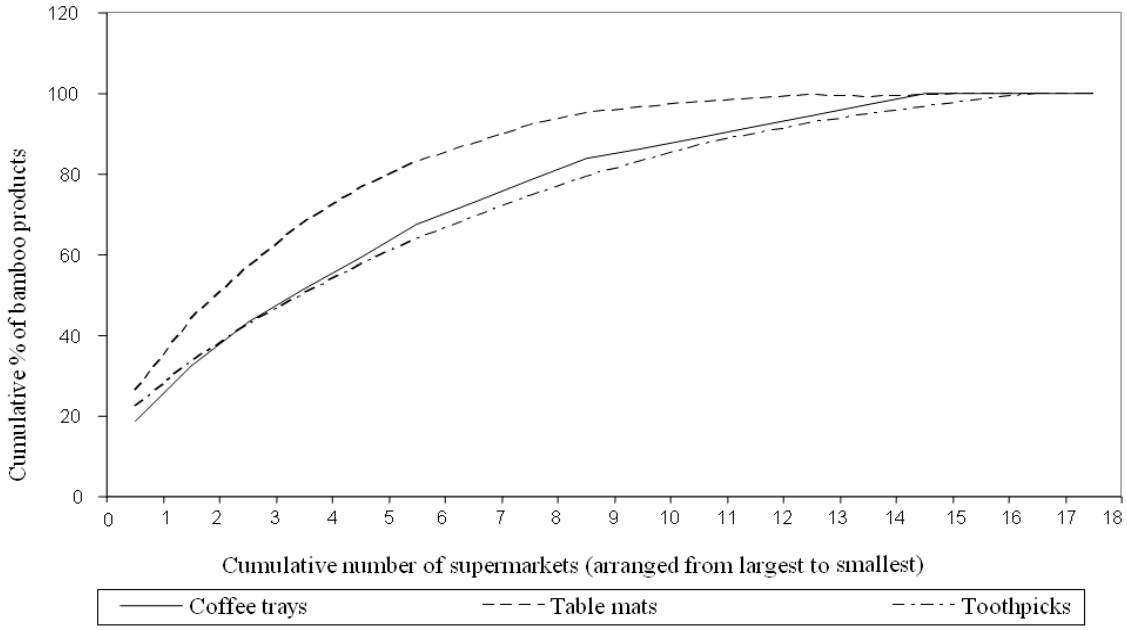

Figure 2. Concentration curves for toothpicks, coffee trays and table mats.

supermarket branches. Concentration curve for table mats lies above concentration curve for coffee trays and that for toothpicks. Similarly, concentration curve for the coffee trays lies above the concentration curve for toothpicks. This gives a visual impression that the market for table mats is of a higher degree of absolute concentration followed by coffee trays and toothpicks. The steep rising concentration curves generally depict higher degree of absolute concentration in the formal retail market for the bamboo products. This scenario concurs with the observation by Clarkson and LeRoy (1982) that a steeply rising concentration curve depicts a higher degree of absolute concentration relative to a gradual rising curve. Further variability in the sales is depicted in the Lorenz curves (Figure 3). The Lorenz curves were drawn from cumulative percentages of the bamboo products sold by the supermarket branches arranged from the smallest to the largest. According to Ferguson and Glenys (1994),the de-

Table 3. Concentration ratios of the first four and eight supermarket branches in the formal retail market.

Product	The first smallest 4 and 8 supermarket branches		The first largest 4 and 8 supermarket branches	
Coffee Trays	**CR_4**	**CR_8**	**CR_4**	**CR_8**
Table Mats	2.7	13.5	51.4	78.4
Toothpicks	0.4	3.3	68.0	92.0
Average	5.3	16.6	50.3	74.6

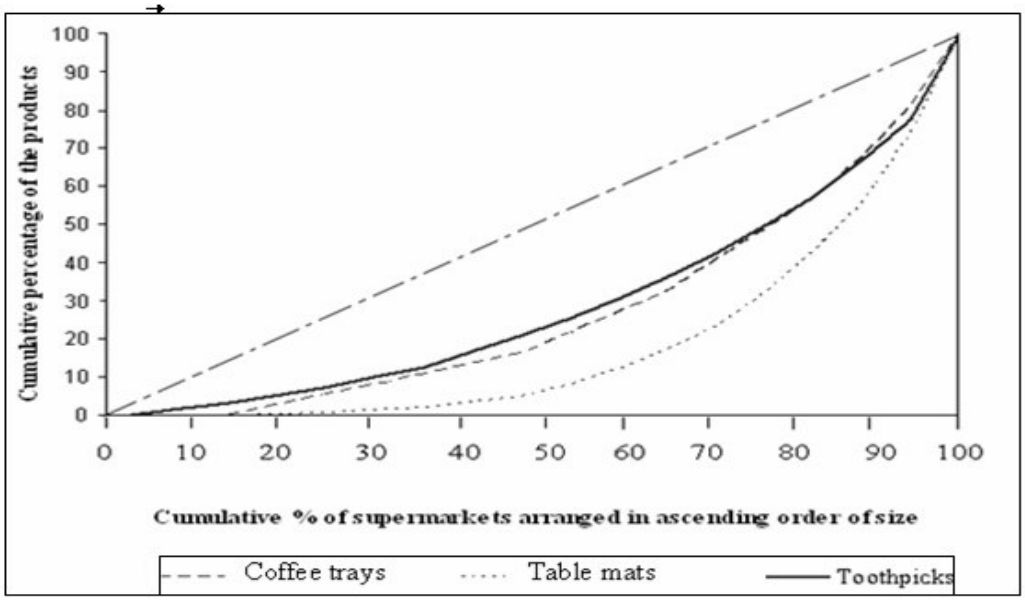

Figure 3. Lorenz curves for toothpicks, coffee trays and table mats.

gree of inequality in a given industry can be judged by the extent to which the Lorenz curve deviates from the diagonal line. The greater the degree of inequality, the greater the bend and closer to the bottom the horizontal axis the Lorenz curve will be. When the Lorenz curve is the same as the diagonal line, all firms in the industry are said to be equal in size. Deviations of the Lorenz curves from the diagonal line hence emphasize the inequality in the market for the bamboo products.

Empirical inequality in the market for bamboo products is shown in Table 3. From the table, CR_4 refers to concentration ratio of four supermarket branches grouped as an industry while CR_8 denotes concentration ratio of eight supermarket branches grouped as an industry. The first smallest four and eight supermarket branches have an average concentration ratio of 2.8 and 11.1%, respectively, while the first largest four and eight supermarket branches have an average concentration ratio of 56.6 and 81.7%, respectively. The average concentration ratio of 56.6% is relatively above the cut off point of 40% hence reflect effective competition (Byaruhanga, 2002). Similarly, the average concentration ratio of 81.7% lies above Chamberlin's (1933) critical value of 70%, thus suggests the presence of considerable barriers to entry into the formal retail market. Clarkson and LeRoy (1982) concur with this finding as they noted that a concentration ratio of more than 60% depicts the existence of signifycant barriers to entry into a market.

In order to test for oligopolistic tendencies in the market, Gini coefficients were computed and the results presented in Table 4. The table shows that concentration varies among the products. Although the Gini coefficient of toothpicks (0.43) is less than that of coffee trays (0.47) and table mats (0.64), they all depict an imperfect market situation and this translates into an average value of 0.51. Colander (2001) contends that, Gini coefficient greater than '0.5' depicts an imperfect market with oligopolistic tendencies. Parker and Cannon (1979) also noted that a market with a Gini coefficient higher than 0.4 can be considered as oligopolistic. Oligopoly is a market made of only a few sellers each of which recognizes its interdependence with others (Henderson and Poole, 1994). The study revealed that market prices offered by the entire supermarket branches were being set by managers at their head offices in collaboration with the suppliers of the bamboo products, a situation that ensured equal prices in all the three cities. Such joint decision making process suggests vertical co-ordination in

Table 4. Gini coefficients for toothpicks, coffee trays and table mats.

Bamboo product	Gini coefficients
Tooth picks	0.43
Coffee trays	0.47
Table mats	0.64
Average	0.51

which the sellers get the goods they need at their preferred prices and the suppliers receiving their desired market prices (Nyangito and Kimura, 1999). Despite equality in the prices of individual products sold at different supermarket branches in different market segments (Kisumu, Nairobi and Mombasa), it was realized that some supermarket branches sold more of the bamboo products than others. Such differences occurred due to locational differentiation and economies of large scale sales which made it possible for some of the bamboo products to be transferred from one branch to another where demand for such products was relatively higher.

Bamboo products' differentiation

The study revealed size, quality and shape as important factors of differentiation. Bigger bamboo products fetched higher prices while smaller ones fetched lower prices. For instance, Triangular bowl 16 cm was being sold at US$ 1.3 while Triangular bowl 30 cm was going for US$ 3.7. It was further revealed that imported bamboo products were of higher quality than locally manufactured ones. Quality variations were attributed to differences in the texture of products. For example, locally manufactured bamboo toothpicks and baskets were noted to have rougher surfaces due to poor finishing than the imported ones, implying lack of more efficient processing technologies in the local bamboo products' manufacturing sector. The supermarkets' branch managers asserted that low quality bamboo products were being sold at lower prices than those of higher quality, a scenario that depicts vertical form of co-ordination in which the bamboo products' retailers appreciate quality of the products and the consumers maximize their satisfaction by buying the bamboo products of their choice. Such a situation helps in the maximization of welfare of market participants (Nyangito and Kimura, 1999). Ongugo et al. (2000) observes that most of the Kenyan bamboo products are made manually and that the industry can best be improved through mechanization especially in the processes like splitting of bamboo, crosscutting and finishing thereby enhancing production capacity and adding value to the products. In Taiwan, most factories that were producing poor quality bamboo products were either closed down or shifted to other activities due to competition from high quality products from Japan and Korea (Liese, 1998).

Shape of the bamboo products could have affected consumers' preference of certain products. For instance, despite being equal in sizes (40 cm), rectangular bamboo tray which costs US$ 4.3 sells more than round bamboo tray costing US$ 4.2.

Colour was also pointed out as a significant factor of the products' differentiation. Some of the bamboo wares were observed to be brown with shiny surfaces while others appeared dark brown in colour. The products with brown and shiny surfaces were preferred to those with dark brown surfaces. Such product attributes, according to Henderson and Poole (1994) may influence a consumer's choice in the case of differentiated products.

Packaging and products' advertising were noted to be insignificant factors in the bamboo products' differentiation. Each of the supermarket branch managers reiterated that apart from the display of bamboo products on the shelves, there was no any other form of products' promotion aimed at enhancing consumer awareness on the existence of the bamboo products in the formal retail market, a likely justification for the response of 36 (45%) customers that they were not aware of the existence of bamboo products in the retail supermarkets (Table 5).

Despite lack of advertising, 55% of customers interviewed were aware of the existence of bamboo products in the supermarket branches. Out of the 55, 34% had bought bamboo products from the supermarkets while 21% asserted that despite their knowledge of the existence of bamboo products in the supermarkets, they were unable to buy the products because the products were expensive and could not fit within their household budget. Such customers resorted to alternative items made from plastics and metals.

Although plastics and metallic items were outside the scope of this study, their competition with the bamboo items was of great significance, hence an investigation into their ranking by consumers against the bamboo products was inevitable. Results of the ranking are displayed in Table 6. Basing their views on affordability of the products, 52% of the interviewed customers ranked plastic products the leading. Bamboo products were however ranked second by 45% of the customers followed by metallic products which were ranked the third by 61% of the customers. The 39% of the interviewed customers, who ranked bamboo products the leading, noted that the products were unique, attractive and stronger than plastic products. The few customers (16%) who ranked bamboo products the third based their ranking on durability in relation to metallic products. They noted that metallic products were more durable than bamboo products. A similar situation exists in Ethiopia where competition between bamboo, wooden and plastic commodities was identified by Ethiopian Cottage Industries Development Agency (ECIDA) as one of the bottlenecks for production and marketing of bamboo products (Liese, 1998). Despite such competition being identified as significant barriers to entry into the market, it is still overt that bamboo products are demanded in the market. Other market barriers identified

Table 5. Customers' views about bamboo products in the supermarkets.

Customer response	Number	Percentage (%)	Cumulative percentage (%)
Seen and bought bamboo products	27	34	34
Seen but had not bought bamboo products	17	21	55
Had not seen bamboo products	36	45	100
Total	80	100	

Table 6. Customers' preference ranking of bamboo products *vis a vis* plastic and metallic items.

Item	Rank			Highest frequency
	1st	2nd	3rd	
Bamboo	17 (39%)	**20 (45%)**	7 (16%)	20 (45%)
Plastic	**23 (52%)**	11 (25%)	10 (23%)	23 (52%)
Metallic	4 (9%)	13 (30%)	**27 (61%)**	27 (61%)
Total	44	44	44	

include lack of constant supply of the bamboo products, customer loyalty and inter-supermarket competition. Inter-supermarket competition was noticed among the market participants where Nakumatt and Uchumi were establishing new branches to capture a wider market space. Although this aspect of competition was not specifically aimed at promoting the sale of bamboo products, it could have spill over effects on the customers' awareness about the existence of bamboo products in the formal retail market since the bamboo products were being displayed on the shelves.

Although there were institutional requirements such as trade license, import tax and the value added tax (VAT), none of the supermarket branch managers identified them as obstacles to entry into the market. Perhaps the legal obstacles which could have multiplier effects on the formal retail market were being experienced by the local producers who had to extract raw bamboo materials. This follows Presidential ban on the exploitation of forest resources in Kenya (Kigomo, 2000).

Finally, capital requirement was observed to be an insignificant factor as far as entry barriers are concerned. The supermarket branch managers asserted that apart from the products they buy on their own from local manufacturers, payments for bamboo products from local importers are being made after 90-days period of their recaption at the head offices, during which some of the bamboo products shall have been sold.

In a nutshell, the existence of barriers to entry into the market, products' differentiation and the Gini coefficient of 0.51 are likely indications of an imperfect market situation existing in the formal retail market of the bamboo products in Kenya, a situation that confirms Koutsoyiannis's (1993) observation that no industry is perfectly competitive. Perfect competition requires that consumers must be aware of all the prices and no buyer can be large enough to wangle a better price from the seller than some other buyer. This scenario appears the reverse of the formal retail market of the bamboo products since some (45%) customers who responded were not even aware of the existence of the bamboo products in the supermarkets (Table 5).

Market performance of bamboo products

Empirical determination of disparities in the demand for bamboo products in the different market segments (Nairobi, Mombasa and Kisumu) was conducted using ANOVA as a statistical method for determining the existence of differences among several population means. An investigation into the differences was aimed at finding out whether or not the performance of bamboo products in terms of sales volume was equal in the market segments.

Table 7a shows that there was no significant difference in the means of bamboo bowls sold in the three cities at $P \leq 0.05$. However, significant differences were revealed in the mean sales of bamboo trays, decor baskets, table mats and fruit baskets (Tables 7b - 7e). Prices never led to such significant differences because the market price for each product was equal in all the cities unlike the case of North East India where prices of products especially bamboo shoots vary significantly within a district of a state and between states (Bhatt et al., 2003). This scenario suggests that the likely factors that led to such signifycant differences are locational differences such as the concentration of supermarkets in Nairobi, Mombasa and Kisumu. The large number of supermarkets in Nairobi than Mombasa and Kisumu could have led to the signifycant difference in the means of quantities sold among the cities because most of the customers were likely to reach the bamboo products easily. Henderson and Poole (1994) concedes that geography plays a significant role in the retailing of many goods and services as people tend to visit the nearest market places for convenience.

Table 7a. ANOVA results for the bamboo bowls.

Parameter	Sum of squares	Degree of freedom	Mean squares	F-Ratio
Factor	1620.4242	2	5810.2121	3.3104*
Error	52653.4546	30	1755.1152	
Total	54273.8788	32		

F = Fisher statistic value.
P ≤ 0.05 for statistical significance.
F-Ratio 3.3104* = No significant difference

Table 7b. ANOVA results for the bamboo trays.

Parameter	Sum of Squares	Degree of Freedom	Mean Squares	F-Ratio
Factor	9228.6061	2	4614.3030	16.5380**
Error	8370.3636	30	279.0121	
Total	17598.9697	32		

F = Fisher statistic value.
P ≤ 0.05 for statistical significance.
F-Ratio 16.5380** indicates that there is significant difference.

Table 7c. ANOVA results for the bamboo table mats.

Parameter	Sum of Squares	Degree of Freedom	Mean Squares	F-Ratio
Factor	13787957.55	2	6893978.7750	11.3708**
Error	3637712.67	6	606285.4450	
Total	17425670.22	8		

F = Fisher statistic value.
P ≤ 0.05 for statistical significance.
F- Ratio 11.3708** indicates that there is significant difference.

Table 7d. ANOVA results for the bamboo decor baskets.

Parameter	Sum of squares	Degree of freedom	Mean squares	F-Ratio
Factor	59101.7778	2	29550.8889	4.9825**
Error	88964.5000	15	5930.9667	
Total	148066.2778	17		

F = Fisher statistic value.
P ≤ 0.05 for statistical significance.
F- Ratio 4.9825** indicates that there is significant difference.

Table 7e. ANOVA results for the bamboo fruit baskets.

Parameter	Sum of Squares	Degree of Freedom	Mean Squares	F-Ratio
Factor	733131.0300	2	366565.5150	8.2275**
Error	2806888.9090	63	44553.79221	
Total	3540019.9390	65		

F = Fisher statistic value.
P ≤ 0.05 for statistical significance.
F- Ratio 8.2275** indicates that there is significant difference.

Examination of the supermarkets monthly sales of the various bamboo products in 2005 revealed that Nairobi sold the highest percentage of each type of bamboo products followed by Mombasa and Kisumu, respectively

Table 8. Quantities and percentages of major bamboo products sold in the cities for 12 months in the year 2005.

Product type	Nairobi		Mombasa		Kisumu	
	Qty	%	Qty	%	Qty	%
Bowl (pieces)	504	77.9	111	17.2	32	4.9
Trays (pieces)	460	76.2	96	15.9	48	7.9
Baskets (pieces)	6188	68.0	2240	24.6	678	7.4
Decor/Basket (pieces)	869	72.5	275	22.9	55	4.6
Table mats (pieces)	8576	85.0	1293	12.8	216	2.1
Flower vase (pieces)	250	79.4	55	17.5	60	19.0
Bamboo shoots (tins)	56	70.0	18	22.5	6	7.5
Plates (pieces)	24	61.5	10	25.6	5	12.8
Tooth picks (packets)	3044	40.3	2945	39.0	1563	20.7

Table 9. Ranking of different types of bamboo products in terms of their demand.

City	Toothpicks	Table mats	Baskets	Trays	Bowls	Flower vases	Shoots
Nairobi	1	2	3	4	5	6	7
Mombasa	1	2	3	4	5	6	7
Kisumu	1	2	4	3	5	6	7
Totals	3	6	10	11	15	18	21
Overall-Rank	1	2	3	4	5	6	7

1- Highest rank (Highest in demand), 2- Second highest in demand, 3- third highest in demand, 4- Moderate demand, 5- Low demand, 6- Very low, 7- Lowest in rank (least in demand).

(Table 8). Mombasa, despite having equal number of supermarkets as Kisumu, sold more of the bamboo products than Kisumu. This was probably due to the numerous tourists' activities at the Kenyan coast which Ongugo et al. (2000) point out to be significant in determining the demand for bamboo products particularly tooth picks which have high demand between July and November (tourists season in Kenya).

Table 9 shows that toothpicks, table mats, bowls, flower vases and bamboo shoots were ranked the first, second, fifth, sixth and the seventh respectively in terms of their demand in the three cities. Bamboo baskets and trays were given the third and fourth ranks respectively in both Nairobi and Mombasa. However, in Kisumu, bamboo trays seem to have high demand than bamboo baskets. Bamboo table mats, baskets, bowls, trays and bamboo flower vases were noted to have varied shapes and sizes which make them more attractive to the buyers. Bamboo shoots were ranked the seventh because most of the customers were not aware of their use and existence in the market. In general, bamboo toothpicks have the highest demand followed by table mats, trays, bowls, bamboo flower vases and edible shoots, respectively.

Some bamboo items also sell more than others across the cities. For instance, a 17 cm mango bowl sells more than other types of bamboo bowls while square fruit baskets sell more than the rest of the bamboo baskets. A similar situation exists among bamboo trays, flower vases and table mats. Other factors held constant, the differences in quantities sold could be attributed to the consumers' tastes and preference and price differences among substitute products. It was realized that most of the consumers prefer bamboo toothpicks to non-bamboo toothpicks due to their strength. For instance, they do not break easily and damage gums when being used. This finding emphasizes on the characteristic of bamboo that makes it suitable in the production of strong consumer goods. Paudel and Lobovikov (2003) noted that when bamboo is properly treated, it can provide a service life of up to 30 years, hence supports its use in the production of household goods.

Conclusions

Import market is the major source of supply of bamboo products in the formal retail market in Kenya. The importation costs are transferred to the local consumers in the form of high market prices, which have served as disincentives to the consumer, hence higher demand for alternative products. There is significant difference in the demand for bamboo products in the market segments. Market demand for the bamboo products was highest in Nairobi followed by Mombasa and Kisumu, respectively. The variations were attributed to locational differences such as tourists' activities at the Kenyan coast and inequality in the distribution of the supermarkets selling the

products in the cities. Demand differences among the products were partly ascribed to the products' differenttiation which affected consumers' tastes and preferences hence choice among competing bamboo products. Conditions of imperfect competition with oligopolistic tendencies characterize formal retail market of bamboo products in Kenya. Oligopoly is a market with a few sellers and significant barriers to entry. Entry barriers were attributed to lack of constant supply of bamboo products, customer loyalty and competition from substitute products.

Recommendations

Based on the findings of the study, we recommend the following: There is need to increase domestic supply of high quality bamboo products. Other factors held constant, this will help minimize supply shortages and ensure reduction in market prices which could be attributed to higher importation costs. Reduction in market prices may also lead to rise in the market demand for the bamboo products. Consumer enlightenment is required to strengthen competition in the formal retail market for bamboo products. In addition, information dissemination through mass media is required to enhance consumers' awareness on the existence of various types of bamboo products in the market. Ceteris paribus, this may boost the market demand for bamboo products in the formal retail market.

To understand more about the formal retail market of bamboo products in Kenya, there should be longitudinal studies of the factors affecting demand for the bamboo products. This will make it possible to identify factors that have long term effects on the demand for bamboo products and to understand how changes in the structural characteristics affect market performance of bamboo products over time. In addition, a detailed survey of the formal and informal retail market of bamboo products is required so that more statistics can be availed on the activities and operations of the market. This may provide a better understanding of the development of the formal retail market of bamboo products in Kenya and serve as a basis for subsequent assessments of marketing dynamics as a feedback to investment in the bamboo industry in Kenya. Research should also be carried out on characteristics of the existing and potential consumers of bamboo products in Kenya. Other factors held constant, findings of such studies may be of great significance to decision makers particularly the formal retailers who stock and sell the bamboo products to the final consumers.

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