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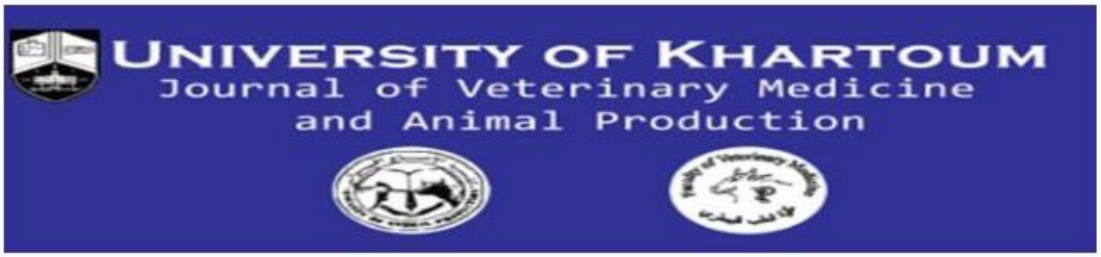

Creating Sustainable Food Markets (A Case Study of Urban Consumers' Camel Milk Consumption in Khartoum – Sudan)

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Abstract

This research aimed at elaborating consumer oriented scientifically based marketing strategies of camel milk ; based on strong market research data as a key factor for opening marketing opportunities to camel milk producers and creating consumer awareness about the nutritional and health benefits of camel milk. The study was performed in Khartoum North during the period 2014- 2015. A cross-sectional scientifically structured questionnaire based mainly on Likert scale was conducted where the study was based on primary data collected from the selected sample. Urban Camel milk consumers in Khartoum North were the population of this study. Sampling was limited to accessible consumers in Dairy products Distribution centers and five camel dairy farms found in Khartoum north the sampling included 60 consumers. Data was analyzed using the Statistical Package for Social Sciences (SPSS ver. 13) to obtain the frequency of distributions of the respondents with regard to the variables of the study.The research came to a main conclusion, that there is a high need to facilitate stakeholders support for increased resources for research and development on issues related to the camel industry in Sudan in order to facilitate development of marketing strategies for camel milk in domestic and International markets.

Keywords: Camel milk – Urban consumers – Marketing – Khartoum- Camel Industry- Dairy- Sudan.

المستخلص

هدفت هذه الدراسه إلى توضيح اهمية تطبيق استراتيجيات علميه محورها المستهلك كعامل اساسي في ترقية فرص تسويق البان النوق ومنتجاتها وخلق وعي لدي المستهلك بالقيمه الغذائية والفوائد الصحيه لالبان النوق. أُجريت هذه الدراسة في مدينة الخرطوم بحري، خلال الفترةمن -2014 2015. تم تصميم الاستبانه علي اساس علمي بناءا على نموذج "ليكارت" حيث قامت الدراسة على معلومات أساسية للعينه المنتقاة من المستهلكين حيث استهدفت مستهلكي البان النوق في المناطق الحضريه في مراكز توزيع منتجات الألبان وخمسة من مزارع الإبل الموجوده في منطقة الخرطوم بحري والذين ابدو استعدادا للمشاركة في الدراسةوشملت العينه عدد 60 مستهلك تم تحليل البيانات باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS ver. 13). خلصت الدراسة الى اهمية الحاجة الى دعم الشركاء فى العملية الانتاجية عن طريق دعم التطور والبحوث العلمية فى مجال صناعة البان الابل فى السودان بغرض تطوير استراتيجيات تسويقية للمنافسة فى السوق المحلى والعالمى.

Introduction

According to FAO statistics, camel population in Sudan ranks the second in the world after Somalia with 4.5 million heads (Faye *et al.*, 2011). The current 5.4 million tons of camel milk produced every year is not enough to meet the demand. The Food and Agriculture Organization (FAO, 2008) is confident, that with the right investment and innovation, camel milk has a potential market of a minimum 200 million people in the Arab world, and many millions more in Africa, Europe and the Americas. During the last few years, the awareness about nutritional and medicinal benefits of camel milk in the urban communities in Sudan has rabidly increased. Consequently, the market demand for the product has also increased. Nowadays, camel milk is available through different marketing channels in Khartoum State (Shuiep *et al.*, 2014). Camels' milk has played an important role in the nutrition of the population in arid zones of East African countries (Farah *et al.*, 2007). Camel milk and colostrum are known to be a rich source of bioactive proteins (Jrad *et al.*, 2014). Camel milk is one of the main components of the pastoral community's basic diet,

which contributes up to 30% of the annual caloric intake. The main component of milk which has a major impact on its nutritional value and technological suitability is protein, it is a good substitute for human milk , also many research findings proved that camel milk is easily digested by lactose-intolerant individuals and is rich in healthy vitamins and minerals, especially B vitamins, vitamin C and iron. (Gizachew *et al*., 2014).Most of the camel milk in Sudan is drunk fresh and sometimes sour (fermented) known locally as Garis or with tea. Processing and manufacturing of camel milk into milk products like butter, ghee, cheese, ice cream, etc. were not documented except in some limited research (Eisa and Mustafa, 2011). Value additions of camel milk can be an alternative to make it more important in daily life; products can be prepared and stored for longer period for transportation. Recently, camel milk skim cream has been developed and it can be used as an emollient agent (Mal and Pathak, 2010). Camel milk has a wide range of products that include the following: Fresh raw or pasteurized milk. Pasteurized camel milk is in only a few countries in the world; Fermented milk generally called *Susa* in North Eastern Africa (including Kenya); yoghurt, cheese, butter: made through centrifugation since camel milk does not cream up, ice creams, puddings and chocolates of different flavors' in addition to beauty products: anti-wrinkles creams; camel milk cleansing soap bars etc. (Musinga *et al*., 2008 and FAO, 2010). Dairy marketing is a key constraint to dairy development throughout Africa. Marketing problems must be addressed if dairying is to realize its full potential to provide food and stimulate broad-based agricultural and economic development (Brokken and Seyoum, 1990). Dairy farmers need immediate solutions to retain the competitiveness and access to global markets and for this innovation is needed which is important that the industry maintains a unified approach and adapts to the changing nature of the people involved. However, with increased pressure on local and central government on environmental management, there is need to recruit additional and more skilled people into the dairy industry. The longer-term success of the dairy industry will depend on attracting and retaining talented people and growing these individuals using effective skills development programmers especially for marketing strategies department. So present marketing Strategies which focus on the actions the dairy industry needs to take to influence perceptible from the dairy farming system to the world (Imam *et al*., 2011). This research aimed to elaborate the importance of the concept that marketing of camel milk through the implementation of scientifically based strategies that are consumer oriented based on strong market research data is the key factor to opening marketing opportunities to camel milk producers and creating consumer awareness of nutritional and health benefits of camel milk. The main objectives of the study were: to identify marketing strategies implemented in marketing camel milk in an effort to craft modern marketing strategies that will assist in opening new marketing opportunities to analyze consumer consumption patterns and trends of camel milk to identify constrains and helps raising awareness of camel milk benefits and to study the effect of culture on camel milk consumption to orient Institutions on raising consumer awareness via implementing scientific models.

Materials and methods

The study was performed in Khartoum North which is the third-largest city in the Republic of Sudan. It is located on the East bank of the Blue Nile and according to the 1993 Sudanese census its population was about 900,000. Geographically, the city of Khartoum lies between latitudes 8 degrees - 15 and 45 degrees - 16 latitude north and 36 degrees - 31 degrees and 25 degrees - 34 degrees east longitude (www. wikipedia.com).Khartoum north was chosen as an area for the research as it contains the majority of dairy farms and specially farms rearing camels for dairy purposes in Khartoum state due to its geographical location that renders it suitable for agricultural purposes. Dairy Products Distribution centers and camel dairy farms constituted the main theme for the research area. The study was conducted during the period 2014- 2015.Urban Camel milk consumers in Khartoum north were the population of this study. Due to the fact that there is no official estimate of camel milk consumers in addition to the fact that camel milk is consumed by a minor segment of consumers, sampling was limited to consumers who were willing to contribute and were available in Dairy products distribution centers and a number of five camel dairy farms found in Khartoum north, the sample included 60 consumers.

A cross-sectional questionnaire based on Likert scale was conducted where the study was mainly based on primary data collected from the selected sample. Due to contradicting answers that could statistically affect

the overall results of the study a number of five questioners were excluded leaving the statistically studied data with a total of 55 upon which the final results were concluded. Since the variables of the research were qualitative in nature, collected data was analyzed, with the aid of the computerized statistical package for social sciences (SPSS, ver. 13) to obtain the frequency distributions of the respondents with regard to the variables of the study.

Results and discussions

Analysis of the socio- economic profile of consumers under study was displayed as 80% being of secondary level, graduate level and post-graduates level education, while illiterate and primary education level represented 20%.Regarding professional occupation 30.9% of consumers were handy man; Officers were 30.4%, Academics were14.5% and 18.2% were Freelancers. Age of consumers of the range of 21-39 years were 50.9% ; whereas 32.7% were 40-60 years; 9.1% were ≥ 61years and ≤ 20 years (Table 1).

Table 1: Camel milk consumers' socio-economic profile

Item	Frequency	Percentage
Level of education		
Illiterate	2	**3.6**
Primary education	9	**17.3**
econdary education	17	**30.9**
Graduate	18	**32.7**
Post-graduate	9	**17.3**
Professional occupation		
Handy-man	20	**30.9**
Officer	17	**30.4**
Academic	8	**14.5**
Freelancer	10	**18.2**
Age range		
≤ 20	4	**7.4**
21 – 39	28	**50.9**
40 – 60	18	**32.7**
61≥	5	**9.1**

Source: Researcher data 2015

On studying the 4Ps effect on consumers purchase decision, 65.5% of the consumers indicated that price had a high effect on their purchase decision, while 23.6% illustrated that price exerted no effect on their purchase decision. According to Bao and Sheng (2011) price-quality relationship is the most important factor affecting consumer purchase decision regarding camel milk, some consumers might associate low price with low quality, those consumers who think price is an indicator of quality and companies might reduce the quality of the product to minimize the cost, thus to them the higher price is a signal of a better quality. Moreover consumers relate price and quality with self-esteems the increase in quality content and the higher price has a positive relation with self-esteems if the economic situation is good for all, majority want to consume high quality food. When studying the effect of product quality on purchase decision 90.9% of consumers under study indicated that milk quality highly affected their purchase decision, contrary to1.8% of consumers who indicated that milk quality did not affect their purchase decision. This result clearly showed the high awareness of most consumers regarding the importance of product quality, thus if consumer perception of quality and price matches their expectation they will be satisfied and will perceive high value for the products. However if the consumers are dissatisfied with the product, they perceive risk and that has negative impact on their purchase decision. . This result is in agreement with Vakrou *et al.* (1997) who reported that improvements in the living standards and increase in consumer's awareness of product quality and identity have driven the food industry to the creation of quality products that aimed at fulfilling a newly set of standards as well as consumers' perceptions about quality. About 56.4% of the consumers stressed that promotional efforts were effective while 12.7% indicated that promotion had no effect on their purchase decision. This result could further be elaborated by the findings of Sun (2005) who indicated that promotion can actually stimulate consumption in addition to causing brand switching and stockpiling. As for place effect 74.6% of consumer were highly affected by place of purchase while 7.3% were not affected such result explains that the place of purchase is a very influential parameter on consumer purchase decision, these results indicate the high awareness of most consumers regarding elements of the marketing mix and in particular, that concerning product quality, which is in agreement with Fawi and Abdul Rahim (2015).The result reveals that 54.5% of the consumers were affected by Trademark, while 10.9% were not affected, this result displays the awareness of most consumers about the importance of Trademark, this is in agreement with Bradford (2008) who stated that Trademark law has been especially

suspicious of the role that emotion plays in increasing demand for branded goods. Moreover 54.5% of the consumers showed that the main reason for their continuous purchase from one certain place was high milk quality, 23.6% purchased because of the suitable price and 21.8% purchased because of place convenience, this result clearly illustrates the extent of the consumer awareness regarding the importance of product quality, thus agreeing with Brady *et al*. (2000)who showed that the indirect effects of the service quality and value constructs enhanced their impact on behavioral intentions (Table 2).

Table 2: Effect of Marketing mix, Trademark on consumer's purchase decision and reason of consumers' loyalty to place of purchase

Item	Frequency	Percentage
Effect of price		
Effective	36	65.5
No-opinion	6	10.9
Not-effective	13	23.6
Effect of quality		
Effective	50	90.9
No-opinion	4	7.3
Not- effective	1	1.8
Effect of promotion		
Effective	31	56.4
No-opinion	17	30.9
Not-effective	7	12.7
Effect of place		
Effective	41	74.6
No-opinion	10	18.2
Not-effective	4	7.3
Effect of Trademark		
Effective	30	54.5
No-opinion	19	34.5
Not-effective	6	10.9
Reason for buying from one specific place		
Provides high mil quality	30	54.5
Suitable price	13	23.6
Convenience of pla	12	21.8

Source: Researcher data 2015

Urban consumers under study were found to consume small amounts of camel milk probably mainly to benefit from the nutritional properties of camel milk, this was concluded where results showed that 49.1% consumed less than 2Lb / day, 34.5% consumed 2 - 4Lb / day and 16.4% consumed more than 4Lb / day. This result is in contradiction with Musinga *et al*., (2008) who found that the average pastoralist households with camels requires about 7 liters / day. Regarding methods of milk consumption,30% of the consumers consumed milk after boiling, 65.4% consumed milk without boiling, and 3.6% used other unlisted methods (Garis). It was noted that most consumption of camel milk was without any thermal treatment and this indicates the strong effect of consumer culture on consumption methods of camel milk. The result is in agreement with Yagil (1982) and Seifu (2007) who showed that camel milk is mainly consumed in its raw state without being subjected to any sort of processing treatments. Furthermore 49.1% of consumers under study stated they used milk for their individual consumption and 50.9% for family consumption. Also 52.7% of consumers used camel milk for its nutritional value, while 38.2% used it for its medical value, 5.4% used it just for trial reasons and 3.6% had several other reasons not indicated in the survey. This result shows that the cause of consumption of camel milk for nutritional value and the impact of consumer culture and the environment are very important parameters that should be taken into consideration when crafting marketing strategies. This observation is in agreement with Podrabsky (1992) who pointed that from a nutritional point of view, 14 cups (1 cup equivalent to 245 mL) of camel milk can meet the daily energy requirements (2,300 or 2,200 Kcal) of an adult man or woman. Similarly, daily protein needs of a person can be met with 8 cups of camel milk. In case of minerals, such as calcium or phosphorus the minimum daily requirements are 800 mg, which can easily be obtained by 2.5 and 4 cups of camel milk for calcium and phosphorus respectively. Kamal *et al*. (2007) and Al-Hashem (2009) stated that the camel is of considerable socio-economic value in many arid and semi-arid areas of the world and its milk comprises a significant part of human dietary habits in these areas. Camel milk is unique from other ruminant milk in terms of composition as well as functionality as it contains high concentration of immunoglobulin and insulin. It is high in vitamins (A, B-2, C and E) and minerals (sodium, potassium, iron, copper, zinc and magnesium) and low in protein, sugar and cholesterol and is also used for its medical value, this result also agrees with Abbas *et al*. (2013) who stated that camel milk is full of evenly balanced nutritional constituents and also displays a wide variety of biological actions that influence growth and development of particular body organs,

metabolic responses towards nutrients absorption, digestion and fight against diseases (Table 3).

The fact that camel milk is unique in its chemical and nutritional characters drives urban consumers to perform different types of research to reinforce their buying decision process employing different sources, this fact was further elaborated via results obtained where 50.9% of consumers under study indicated that their source of information regarding camel milk comes from Reference groups (Friends, relatives, and family etc.), while 14% derive their information from Social media, and 6% form Scientific Journals. These results highlight the high influence of Reference groups translated in terms of consumer culture, on consumers' decision of camel milk purchase, this could be well understood when understanding the strong social structure of the Sudanese society. Research shows that culture, sub-culture, and social classes are particularly important on consumer buying behavior, such a result also strongly agreed with Gunaratne (2000) who reported that consumers are accustomed to the value systems, beliefs and perception processes in particular cultures in which they grow up. Regarding place of purchase, 81.8% of consumers under study derived their information also from Reference groups, 5.5% from Scientific Journals, and 5.5% from other sources, 3.6% from Social media; this result again reinforces the impact of consumer culture. As with consumer satisfaction with camel milk value 67.3% of consumers stated that they were highly satisfied, 23.6% said to some extent and 9.1% indicated they were not satisfied, this result showed that the consumer received the desired value of camel milk from the nutritional or medical side, which aligns with Farah *et al.*, (2007) who reported that the camels' milk had played an important role in the nutrition of the population in arid zones of East African countries.30.9% of consumers under study indicated that they follow Research regarding camel milk while 69.1% do not follow; this result could be explained taking into account that the majority of consumers under study were handy men who were not interested in research. Regarding the type of research followed by consumers 52.2% stated they followed research concerned with camel milk medical value, 23.5% stated they followed research concerned with camel production and17.6% stated they followed research concerned with milk technology and processing (Table 4).

Table 3: Amount, methods, household and reasons for camel milk consumption

Item	Frequenc	Percentage
Amount of camel milk consumption / day		
≤ 2Lb\day	27	49.1
2-4Lb\day	19	34.5
≥ 4Lb\day	9	16.4
Methods of consumption		
Consumed after boiling	17	30
Consumed without boiling	36	65.4
Other methods	2	3.6
Household consumption of camel milk		
Individual consumption	27	49.1
Family consumption	28	50.9
Reasons for consumption		
Medical value	21	38.2
Nutritional value	29	52.7
Just for trial	3	5.4
other	2	3.6

Source: Researcher data 2015

Table 4: Consumer's source of information, place of milk purchase, consumer's milk value satisfaction, consumer's research follow-up and type of research followed

Item	Frequency	Percentage
Source of Information regarding camel milk benefits		
Reference groups	28	50.9
Social media	14	25.5
Scientific Journal	6	10.9
Other	7	9.1
Source of information regarding place of purcha		
Reference groups	45	81.8
Social media	2	3.6
Scientific Journal	4	5.5
Other	4	5.5
Consumer satisfaction level with camel milk valu		
High satisfaction	37	67.3
No- satisfaction	5	9.1
To some extent	13	23.6
Consumer's research follow up		
Follow research	17	30.9
Do not follow research	38	69.1
Type of research followed		
Milk medical valu	10	52.2
Camel husbandry and production	4	23.5
Dairy technology and processing	3	17.6

Source: Researcher data 2015

Conclusion

There is a high need to facilitate stakeholder in the camel industry in Sudan in order to facilitate development of a market development strategy for camel milk in domestic and international markets, an aim that can be achieved via establishing strong farmer organizations for joint action in market access to justify investments towards increased milk production that could strongly contribute in camel milk value chain.

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