Review on Consumer Preference of Milk and Milk Product in Ethiopia

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Abstract— The aim of this review was to assesses consumer preferences and its determinates towards milk and milk product in Ethiopia. To do this review secondary data such as books, journals, and domestic and foreign published articles were used. According to different past studies result fresh milk, traditional butter, butter milk, cottage cheese, whey and ghee were the common products which consumed frequently in almost all part of the country. Fresh milk was the most preferable product in the country as compared to others due to high fat content, availability, taste and lower price. The review indicates that better educated household head, higher income households, younger and female household head and people who agree with "unpacked and unprocessed milk is not healthy" consume more packed and processed /pasteurized / milk than do others. Generally, consumer preference towards milk and milk product were significantly dependent on demographic, socioeconomic and psychological characteristics of household as well as market mixed variables includes product characteristics, pricing strategies, packaging, Promotion and place factors. thus, it is recommended that, milk producing and processing companies need to design better pricing, promotion and advertising strategies for different milk product consumption to attract consumers.

Keyword— Consumer preference, milk and milk product.

I. INTRODUCTION

Ethiopia has the largest cattle population in Africa, at 52 million, including 10.5 million dairy cattle (FAOSTAT,2011). Milk is a complex biological fluid and it is the largest source of animal-based protein used for improved nutritional and health outcomes in developing countries predominantly for children. it is playing a vital role in every body's life, for getting good health and give energy to work without getting tired. We can get more minerals, vitamins, calcium, from milk (Ezhil *et al.*, 2018). Ethiopia milk production has increased significantly since 2000. The Central Statistics Agency estimated that national milk production was 1.2 billion liters in 2000, 3.2 billion liters in 2007, and 3.3 billion liters in 2012 (Shapiro *et al.*, 2015). High amount of milk produced from cattle (81.2%) followed by goat (7.9%,) , camel (6.3%) and sheep (4.6%) (Hailemikael , 2019)) .

Even though, Ethiopia production of milk increased from time to time, the per capital milk consumption was much lower (19 kg/year kg) than other African countries (27kg/year). USAID (2013) report indicate that, in Ethiopia 68% of the total milk produced used for human consumption in the form of fresh milk, butter, cheese and yoghurt, while the remaining is given to calves and wasted in the process. Butter is the most widely consumed milk product in the country. Of the total milk produced, 40% is converted to butter while only 9% is reserved for cheese.

According to CSA(2011) report out of the total butter production in rural Ethiopia per year, 58.97% was used for household consumption and 36.58% was sold. Out of the total cottage cheese produced in rural Ethiopia per year, 81.85% was used for household consumption, 14.35% was sold and 3.8% was used for wage in kind and other purposes, however, consumption pattern and preference of consumers towards milk and milk product vary from culture to culture and rural and urban (Gatwech,2012;. Balakrishnan and Manimegalai,2019). For instance ,based on LMD (2013) report the average per capita Consumption in Addis Ababa was estimated 51.85 liters, Dire Dawa was 5.36 liters, Awassa was 4.92 liters

and Bahir Dar was 3.01 liters, the high per capita consumption in Addis Ababa may reflect the large number of number of higher income household and foreigners exist in the area.

Bousbia *et al.*, (2017) pointed out consumption of pasteurized packed and ultra high temperature milk higher in urban area than rural area, while consumption of raw milk higher in rural area than urban area. On the other hand, Iliriana (2009) proved that rural households buy significantly less milk, yoghurt, cream, curd, and cheese compared to the urban households milk consumption. Zelalem *et al.*, (2011) explained that in rural areas can be considered as a function of wealth or availability , while in urban areas , it can be determined by the purchasing power of the household, the level of awareness on its nutritive value and availability.

According to Hailemikael (2019) consumption patterns of milk and milk products depending up on the amount of milk produced per household, geographical setting of the area, dairy production system and market access, seasonality and fasting period (particularly for the followers of orthodox Christian). Similarly, Tinashe *et al.*, *2017 and* Kilic *et al.*,,2009 studies indicated that socio-economic and demographic characteristics of the households such as income, education, household head age, regional differences and occupation of household head, price of product, beliefs of a household influence preference of consumers towards milk and milk products

Consumer preference explains how a consumer ranks a collection of goods or services prefers one collection over another this definition assumes that consumers rank goods or services by the amount of satisfaction, or utility, afforded. it is subjective (individual) tastes, which is measured by utility of various bundles of goods (Balakrishnan and Manimegalai,2019).Deeper understanding of consumer preference can help marketers' better design marketing program and build a long term relationship with consumers. Thus ,this review focus on consumer preference of people towards milk and milk product in Ethiopia. To do this literature review we exploited a wide range of secondary data sources including vocational domestic and foreign articles, publications, reports, researches, studies, and statistics.

Specific Objective of the review

➢ To assess consumer preference of milk and milk product in Ethiopia
➢ To review factors affecting consumer preference to wards milk product in Ethiopia

II.   LITERATURE REVIEW

2.1. Consepts of Consumer Preference

Preferences represent attitude toward one object in relation to another. The word '"preferences" can be defined in different ways. One "preference" to mean evaluative judgment in the sense of liking or disliking an object (Jacob,2012). When a person likes one of the alternatives more than the other, he/she has developed preference for the one liked and is more likely to choose it. Second , Preference mean an option that has the greatest value among a number of options (Blackwell, 2006). This implies a choice between alternatives and the possibility of rank ordering of these alternatives, based on the degree of happiness, satisfaction, gratification, enjoyment, or utility they provide.

Consumers preference are influenced by psychological characteristics, personal situation, social forces, environmental influences and marketing programs (Betelhem, 2019;Petra and Zoltán ,2014 and Kotler *et* al.,2004).it can also be determined by observing his or her choice behavior. Several previous studies identified , different approaches for measuring consumer preferences for instance Green (1990) classified measurements of consumer preferences in to three approaches namely compositional, de compositional and hybrid approaches.

In the de-composition approach preference measures by ordinal, interval, or ratio scale; independent variables are experimentally manipulated and consumers comparatively evaluate several alternatives of configurations of products . From this evaluation the utilities of the attributes are obtained, which are utilized later for the calculation of the utility of a specific variant of the product (Martini and Forcellini,2014). Nares(1986) explained that in the compositional approach preferences measured on an interval scale and consumers comparatively evaluate the several levels of attributes of the products. From this evaluation one can estimate the utilities of these attributes that will later be utilized to compose the utility of a product in particular. On the other hand, the hybrid approach utilizes the measurements of the utility of the attributes that have been obtained in both compositional and de-compositional manners.(Greene 1983 ; Olsen 1980 and Amemiya 1973)

2.2. Major milk product utilized in Ethiopia

As pervious research result indicates that ,major milk products commonly consumed in Ethiopia includes traditional butter, butter milk, cottage cheese, whey and ghee (Belay and Janssens, 2014; Ayalew; 2017 and Kefyalew *et al.*, 2016).

Arrera (defatted sour milk), is a by-product of butter processing and used as a raw material for *Ayib* production. *Arrera* has a similar colour to *Ergo*, but its appearance is slightly smoother and its consistency thinner, although thicker than fresh milk, and has a pleasant smell and taste. *Arrera* is consumed in all parts of the country (Zelalem *et al.*, 2011).

Cottage- cheese *(Ayib);* is the buttermilk remaining after the butter has been separated from the whole milk is used to produce a cottage-type cheese (*ayib*) by heating the buttermilk (Tesfaye, 2007).

Aguat **(whey)** is the liquid that remains after most of the fat and the protein in the milk has been removed during the *Ayib* making process (Fikrineh *et* al.,2012 . its use varies from place to place and from society and society.

Butter is made by churning *Ergo* (sour milk) which has been collected over a few days. When sufficient amount of milk (7-8 liters) is collected, it is transferred to a churn made of gourd clay pot. Butter has additional functions besides its nutritional value (Ayalew,2017). Women use butter as hair oil, which is assumed to have dual functions for hairdressing and to cure headaches. Ghee is added to a variety of Ethiopian traditional dishes such as: *Kitifo* (minced beef served raw or half cooked) and a variety of cereal, pulse and meat based sauces. Ghee is also consumed with coffee and tea especially when important guests are received in a home and during major holidays (Eyassu Seifu and Asaminew Tassew, 2014).

2.3.Pervious literature review on consumer preference of milk and milk product

Lapar *et al.*, (2003) reported that fresh and powdered milk was preferred in Assam because fresh milk was preferred for mixing with tea drinking and making yoghurt. likewise , Gezu and Zelalem (2018) noted that unprocessed fluid milk was the most preferable product in Ethiopia due to high fat content, availability, taste and lower price .According to Mebrate *et* al**.,** (2019) in the rural areas, the consumption of milk will be determined by livestock ownership and season. During the dry season the consumption of milk within households decreases due to lack of feed and fodder resources as well as decline in the nutritional health of lactating animals

Gemechu and Amene (2014) realized a research on dairy cattle milk production, handling, processing, utilization and marketing system in Southwest Ethiopia, The research showed that raw milk, butter, Ayib (cottage cheese), whey (Aguate), Ergo (naturally fermented milk) and buttermilk (Arrera) were the common milk products manufactured and utilized in Bench Maji Zone, Southwest of Ethiopia. They also identified fresh whole milk was the most widely consumed dairy product (35.2%) and consumption of processed milk products was low in the study area. This might be the presence of proximate milk marketing place or product availability. Similar findings reported by Belay and Janssens (2014) indicates that fresh whole milk was the most consumed milk product in Jimma town of Oromia Regional State, Ethiopia.

Betelhem (2019) studied determinants of pasteurized milk brand preference of Addis Ababa milk brand customers. she found that 56.1% of the respondent consumed pasteurized milk all the times while 43.9% unpasteurized milk had consumed sometimes. Her study also revealed that marketing stimuli (product characteristics, pricing strategies, packaging ,promotion and place factors) , psychological factors (own needs at time of purchase and belief held about product and company.) and consumers' personal factors (age of household , knowledge held, occupation of household headed, family size and level of income) have the power to determine customer milk brand preference in the city.

In East Showa Zone of Oromia Region Agza *et al.*, (2013) reported that raw milk, pasteurized milk, fermented milk, skim milk, cottage type cheese and butter were the six most regularly consumed milk products by most households where powdered milk, table butter, soft cheese, cream and ghee very rarely consumed in the study area. The study also showed that price was the most important factor than safety and quality attributes to determine household consumption level and choice of product. Similarly, Ayalew (2017) study indicated that fresh milk, fermented milk, butter, buttermilk, traditional cottage cheese, whey, were the common milk products produced and consumed in Mecha and Bahir Dar zuria district, Ethiopia .

Kilic *et al.*, (2009) were analyzed consumer characteristics associated with unpacked and packed fluid milk pre-ferences using multinomial logit model in Turkey. Multinomial logit model results indicated that better educated household head, higher income households, younger and female household head and people who agree with "unpacked milk is not healthy" consume more packed fluid milk than do others. Moreover, consumers who agree with statement "price of packed milk is expensive compare to unpacked milk" were less likely to consume packed fluid milk than do others. Based on their findings the researcher also reported that fluid milk consumption decisions are influenced not only by the socio-economic and demographic factors but also habit formations, beliefs and attribute knowledge.

In similarly way Berhanu *et* al., (2012) examined factors affecting packed and unpacked fluid milk consumption

preferences of households in *Wolaita* Zone of Ethiopia by applied multinomial logit model. The result shows that 78.4% of the households consumed only unpacked fluid milk, 7.7% of households consumed only packed fluid milk and 13.9% of households consumed both unpacked and packed fluid milk. The model result indicates that age of household heads, income level of households, households with at least a child under six years of age and milking cow, households who disagree with the statement 'packed fluid milk fattens children' and advertisement influences people to buy more packed fluid milk than others,

Bhanu *et* al., (2017) studied consumers' preferences for milk products in Trivandrum city (India) and revealed that almost all the households in the sample, preferred whole fluid milk. the possible reason for preferring whole milk were taste, satisfaction, quality, availability, low price and bulkiness of the product. They also reported that yogurt was the most preferred milk product by all the sample households followed by Ice-cream , ghee, butter, and cheese in their study area.

Fadiga and Makokha (2014) described that and fresh milk was consumed mainly by low income households. They also found that consumers at the higher end of the low-income bracket and lower end of the middle-income bracket mainly prefer pasteurized milk, ultra heat-treated (UHT) milk, packed pasteurised low-fat milk, homemade fermented milk and skimmed milk while consumers at the higher end of the middle-income bracket mainly consume fermented packed milk, yoghurt, milk powder, ice cream and camel milk.

Another study conducted by Eline *et al.,* (2019) indicates that price and location of the area significantly influence consumption milk and milk product. They found that when milk prices increased by one Birr the probability to consume dropped by three percent. This implies there is negative price elasticity since milk is a luxurious product that is mostly consumed by the better of households. They also found that households in urban areas were more likely to consume milk and tended to rely more on local milk markets than on home milk production compared to their rural counterparts.

Bharat and Pradip (2017) have undertaken research on consumer preference towards packed and unpacked fluid milk with special reference to Veraval city. The result showed that 60.8% of respondents consumed unpacked fluid milk, 32.5% consumed packed fluid milk while 6.5% of respondents consumed both unpacked and packed fluid milk. The finding also indicates that standard quality of milk, fat level, price, freshness and availability of product were determine households' fluid milk consumption

choices among packed, unpacked and both packed-unpacked milk consumption choices. Bousbia *et al.,*(2017) investigate factors affecting consumer behavior of dairy products in Algeria using co-variance analysis. The study revealed that pasteurised milk and yoghurt have the biggest share in dairy product purchases. They also found that geographical location, number of children per household, price and monthly income were important factors driving milk consumption in Algeria.

Jayakumar and Loganathan (2015) study on consumer preference of milk at Edamalaippattipudur in Tiruchirappalli district. In the study, 80 % of respondents consumed Aavin milk, 8% consumed Arockiya milk and 12% of respondents consumed both Vijay and Cavin milk. The empirical results shows that better educated household heads, higher income and larger households, and households with children under seven years of age consumed more milk than others. This finding is in agreement with the findings of Phuong and Marcus (2013) they state that rural consumers who are more educated were more likely to consume more milk and milk products than less because educated consumers more conscious about health and wellness issues related to product choices and diet.

Addisu and Haile (2016) investigate handling, processing and utilization of milk and its products in Gondar town, Ethiopia. They found that skim milk, butter, cheese, whey and yogurt were preferred milk processed products. From the respondents 48.89 and 40% were highly preferring milk and butter for household consumption as wells as for marketing purposes respectively. And also the majority of respondents (51.11%) were preferred to use yogurt for consumption. This finding in line with the finding of Yilma *et al.*, (2011) and Belay and Janssens (2014).

Ahmadi *et.,al.,*(2019) applied nested logit model to analysis factors affecting consumers' preferences of dairy product in Sari, Iran . The results revealed that yoghurt, milk and cheese had the most preferences among the dairy products and consumers had more tendencies towards using low fat than full-fat dairy products. The results of factors affecting dairy products choice indicated that price and family cost decreased the probability of products being chosen, and age, education and attention to exercise variables increased this probability. Marketing mixed variable(4Ps) also had a significant effect on the choice of dairy products. Similarly, Chimboza and Mutandwa (2007) noted that marketing mixed variable such as promotion, price and availability of product, attractive packaging and product quality are key determinates of choice of dairy product.

Iliriana (2009) undertaken a research on kosovo consumer buying behavior preferences and demand for milk and dairy products. Their finding show that milk, yoghurt, cream, curd, and cheese were the main dairy products consumed by majority of Kosovo consumers. Product attributes such as quality, safety, taste, price and household's characteristics like income, employment, number of children, respondent's age, and education were significant in explaining variation in quantity consumed and expenditures on milk and other milk products. Allen and Goddard (2012) studied individual preferences for milk and yoghurt with specific attributes using ordered probit regressions. The results showed that purchasing and consumption intentions of milk and yoghurt products are influenced by some aspects of the health belief model and general nutrition knowledge.

Roy and Malhotra (2017) conducted a study on urban brand awareness and preferences for milk products in Kolkata Metropolitan. The study found that better educated consumers had higher preferences for sweet, butter and curd as compared to less educated consumers. the possible reason could be higher educated household head are more concerned about safety and hygienic conditions of milk products. The result also point out male respondents had higher preferences on butter and ghee than female respondents whereas female respondents were preferred more ice-creams and curd. Ananda and Babu. (2014) analysis factors influencing consumer buying behavior with special reference to dairy products in Pondicherry state. They conclude that variables such as packaging, cost, availability, ingredients, product popularity, product quality and product taste had significant effect on choice of a brand of milk and milk products.

Mohammad *et* al.,(nd) examined urban consumer preferences for quality and safety attributes of meat and milk in Bangladesh using conjoint analysis. The result shows that 'low priced, low-fat, unadulterated milk from a local cow' and full-cream milk were the most preferred profile in the case of raw and pasteurized milk respectively, while high-priced, low-fat, adulterated milk from a crossbred cow' and low fat milk in a paper carton' were the least preferred in the case of raw and pasteurized milk profile respectively The result also shows that freshness, taste and purity were the most important factor for determining the quality and safety of recently purchased raw and pasteurized milk while fat content was the least important factor for determining quality and safety of recently purchased raw and pasteurized milk.

Mohammad and Samuel (2007) studied on consumer preferences for quality and safety attributes of food in the absence of official standards: The case of beef, raw milk and local butter in Ethiopia. The author reported that whole milk was more preferred than skimmed milk in Ethiopia. They found that middle income consumers had a slightly higher preference for whole milk compared to their low and high income counterparts. The result also indicated that low income households were more sensitive to milk adulteration than their high income counterparts, the possible reason could be most poor consumers bought raw milk while most high income consumers bought pasteurized milk.

III.   CONCLUSION AND RECOMMENDATION

The main purpose of this review was to assess consumer preference of milk and milk product in Ethiopia. Specifically, the review intended to examine the most preferred milk product that is commonly consumed and identify factors that influenced choice of product. Based on different previous study results raw milk, butter, Ayib (cottage cheese), whey (Aguate), Ergo (naturally fermented milk) and buttermilk (Arrera) were the common milk product manufactured and utilized in almost all part of Ethiopia. Among those milk product raw milk was the most preferable product due to high fat content, availability, satisfaction, taste and lower price ,and it is important to drinking mix with tea and making Ergo .

The review conclude that variables such as education of household headed , family cost, age of household , knowledge held, occupation of household headed, family size, level of income , freshness, taste, purity and marketing mixed variables(pricing strategies, packaging ,promotion and place factors) were the most important factor for determining choice of milk and milk products. The review observe that better educated household head, higher income households, younger and female household head and consumers who agree with statement "packed milk is healthy more likely consume than others.

Moreover, better educated consumers had higher preferences for sweet, butter, yogurt pasteurized and packed milk as compared to less educated consumers. the possible reason could be higher educated household head are more concerned about safety and hygienic conditions of milk products, as well as more conscious about health and wellness issues related to product choices and diet. Generally , Based on different researcher findings report choice of milk and milk product of the people are influenced by not only the socio-economic and demographic factors but also habit formations, beliefs , attribute knowledge and marketing mixed variables (4ps). thus, based on the above conclusion the following recommendations were forwarded;

1. Milk producing and processing companies need to design better pricing, promotion and advertising strategies for different milk product consumption to attract consumers.
2. Marketing managers should improve their products based on consumers' preferences and increased availability at affordable prices.
3. The quality of milk may be improved and modified according to the taste of the consumers. Marketers need to pay attention to product attributes and specifically to quality, taste and thickness (fat content) of the brand.
4. The governments introduce new policy tools to improve the hygiene and quality of unpacked fluid milk.

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