

**PROBING UNDERLYING INTENTIONAL NON-COMPLIANCE BEHAVIOURS IN
INFORMAL MILK TRADING IN PERI –URBAN AREAS OF NAKURU TOWN,
KENYA**

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**A Thesis Submitted to the Graduate in Partial Fulfilment of the Requirements for the
Master of Arts Degree in Sociology (Community Development and Project Management
Option) of Egerton University**

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MAY, 2021

DECLARATION AND RECOMMENDATIONS

Declaration

This thesis is my original work and to the best of my knowledge has not been presented for the award of a degree in this or any institution

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DEDICATION

The thesis is dedicated to informal milk vendors of Kaptembwa and Rhonda in Nakuru West Sub County.

ACKNOWLEDGMENTS

First of all, I want to thank the Almighty God, the inner being that dwells in me, that guided and directed me to walk the right path. Without His constant love and never-ending grace this work would not have materialized. I owe much appreciation to Dr Eric K Bor and Prof Bocklines O Bebe for their immense support and guidance. They corrected me with grace and humor. I will always remain indebted to their wisdom. It is also worth appreciating members of the department of Peace Security and Social Studies (P.S.S.S) for their excellent criticism that shaped this work.

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ABSTRACT

Milk is a widely traded commodity in informal market outlets in Kenya for consumption and income. Over 70% of the domestic milk production is marketed through the informal market outlets. Milk trading is regulated using licensing, registration, certification, training of milk vendors on food quality, safety, hygiene standards and requirements. Though regulated, non-compliance behaviour is prevalent, includes intentional adulteration of milk with water, flour or with blue band, allowing contamination of milk with hazards including hydrogen peroxide, antibiotics, bacterial load, and aflatoxin. Intentional non-compliance as a behavioural practice constitutes trade malpractice that exposes consumers to health hazards and vendors to loss of customer confidence when milk is rejected by clients. It also attracts penalties from regulating authorities whenever detected, and eventual loss of business engagement altogether. However, the persistence of the practice, in spite of the risks involved, constitutes a knowledge gap that raises sociological questions on the underlying behavioural practices and motives of milk vendors. This study addressed knowledge gap with application of sociological rational choice theory to probe for the underlying intentional non-compliance behaviours in informal milk trading in peri-urban areas of Nakuru town, Kenya. Specifically, the study probed: milk vendors' level of awareness of the regulations in milk trade; frequent intentional non-compliance behaviours; reasons and motives for non-compliance; and the barriers to compliance with the regulations in milk trading. The study adopted survey research design, used snowball sampling, and interviewed 120 informal milk vendors with interview schedule with informal milk vendor as the unit of analysis. Quantitative data was analysed using arithmetic mean, presented using bar graphs and frequency tables. Qualitative data analysis used thematic narrative and excerpts. Results revealed that vendors had low awareness of the standards, regulations and requirements in milk trade. Milk adulteration was a frequent intentional non-compliance. The underlying motive was to increase sale volume and earn more. The behaviour exploited consumer preference for affordable milk over quality and safety standards. Vendors considered the regulator, Kenya Dairy Board, as a barrier to them in their bid to comply with the standard regulations and also observed that the standard regulations set ignored their local situational realities, making it impractical for them to comply. The study concluded that it is important to align food standard regulation to local situation and to involve the vendors in formation process. The study also recommends that it is necessary to actively sensitize milk vendors on compliance with food standard regulations to the benefit all stakeholders.

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LIST OF ABBREVIATIONS AND ACRONYMS

FAO: Food and Agriculture Organization

GDP: Gross Domestic Product

KDB: Kenya Dairy Board

SMEs: Small Medium Enterprises

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Food trade practices that expose milk consumers to health hazards and risk have increased (Jansen & Koech, 2016). In the late nineteenth and early twentieth centuries, food malpractice increased in the United States, Canada, and Australia, leading to the passage of anti-adulteration laws as a way of mitigating food crime (Cheng, 2012). In spite of the passage of anti-adulteration laws, milk and milk products have continued to face multifaceted challenges that go beyond the health, nutrition and safety issues. Today milk consumption involves social, political and ethical issues. Low-income consumers buy milk based on affordability not the quality or safety assurance as part of survival Yan study (as cited in Alonso et al., 2018).

Milk is an important component of the human diet (Hinrichs, 2000) , a livelihood strategy for dairy farmers and a traded commodity for vendors. Most of the vendors in developing countries trade milk in the informal market outlets. Compliance with food standards and regulations is a requirement in milk trade (Silva & Roberto, 2017). Non-compliance with the standards and regulation in milk trade exposes consumers to health hazards and risks. It also exposes vendors to loss of business and incomes when milk is rejected as well as to penalties from regulating authorities whenever they detect a case of non-compliance (Azevedo, 2017).

In Africa, the demand for milk and milk related products has increased. This has been attributed to government support on importance of milk in the human diet, rapid urbanization, economic growth, public awareness and increased availability of milk (Handford et al.,2016).However, more available milk is accompanied with unequal distribution of milk safety issues across different social groups (Yan, 2012). The poor urban dwellers bear the most brunt of unsafe, poor quality milk in their lives (UN, 2003). This has presented monumental difficulties for the governments to regulate the consumption of unsafe milk sold by informal milk vendors.

Kenya is a leading country in milk production, milk processing capacity and per capita milk consumption in Africa (Alonso et al., 2018). Small holder farms annually produces an estimated 4 million tonnes which feeds 46 million people (FAO, 2018). Smallholder producers and traders dominate milk production and distribution. Over the years, milk processing capacity has expanded at about 7 percent annually (Kenya Dairy Board, 2015). Per capita milk consumption is the highest in Africa and is growing, projected to reach 220 million liters by 2030 (Kenya National Dairy Master Plan, 2010). Over 70% of domestic milk is traded in the

informal supply chain (Alonso et al., 2018). This demonstrates the different socio-economic class in milk consumption (Dominguez-Salas et al., 2016). Low-income earners are reported to accept to consume milk of poor quality and unsafe standards (Brunori et al., 2013) because of the behaviour of rational maximization.

The growth of small scale milk vendors increased in Kenya after the government liberalized the dairy sector in 1992 (Muriuki & Thorpe, 2001). Since then, the milk vendors have marketed unprocessed milk directly to consumers. The direct sales have continued as vendors sell milk through mobile runs, kiosks, shops, and milk vending machine. These are milk retailing with prevalent non-compliance in quality, safety and hygiene standards (McDonald, 2015). Through offering consumers affordable milk, the milk can be adulterated with contaminated water to increase quantity, blue band to increase milk thickness, milk can also be contaminated with chemicals including hydrogen peroxide to increase shelf life (Handford et al., 2016). The act ignores the fact that adulterated and contaminated milk will fail to guarantee nutritional value, quality and safety to consumers. The behaviour is an exploitation of consumer low purchasing power and strong preference for affordable fresh raw milk.

As McDonald (2015) has observed, the idea of quality will vary based on an actor in the structure of the dairy value chain and economic benefit involved in pursuing the quality of milk. Hence, the government regulatory law for food safety impose standardized quality measures for all actors (Yan, 2012). Milk is a perishable commodity that is sold for income by farmers to local vendors who in turn sell to consumers. In this chain of trade, maintaining hygiene and assuring safety to consumers is important. Failure to maintain hygiene may mean milk spoilage, loss of income to farmers or vendors and hazard exposure to consumers. To address the potential hazards, government has set regulations governing milk trade. However, vendors engage in non-compliance with the regulations that are likely related to intentional behaviour and/or ignorance.

Despite the standards and regulation of milk trade, non-compliance is rampant among milk vendors within the informal market outlets in Kenya (Muriuki, 2003). Regardless of the laws enacted by government that are closely monitored by several agencies –in public health, violation remain high and a public concern (Simon, 2003). In Nakuru for example, milk production is not served by major milk processors but is sold by vendors through informal supply chains (Mailu et al., 2014). Over 70% of milk sold in peri urban areas is unprocessed recording high incidences of non-compliance in milk trade with most observed in Nakuru West (Simon, 2003).

1.2 Statement of the Problem

The bulk of milk trade in the peri-urban areas of Nakuru town is through informal market outlets. Milk vendors dominate these market outlets. Milk trading is regulated by licensing, registration, certification, training of vendors on food quality, safety, hygiene standards and requirements. Compliance with the regulations benefits the public in many ways. That include minimization of consumer exposure to health hazards, increased customer confidence in vendors, larger volume of trade low or even no penalties from regulating authorities, and generally, more vibrant milk trade. Despite regulations and associated benefits to consumers and vendors alike, intentional non-compliance behaviour is prevalent. Vendors adulterate milk with water, flour or blue band. They also contaminate milk with hazards such as hydrogen peroxide, antibiotics, bacterial load, and aflatoxin. The intriguing question here is whether or not these practices amount to unethical behaviour malpractices in milk trade, or ignorance. This study weighed in on the question by locating it within sociological inquiry to seek an explanation for the underlying behavioural practices and motives of the vendors. Of interest to the study are vendors' awareness of the regulations in milk trading, prevalent intentional non-compliance behaviours, underlying motives, and barriers to compliance.

1.3 Objectives

This section was guided by broad objective and specific objectives.

1.3.1 Broad Objective

The broad objective of the study was to probe underlying intentional non-compliance behaviours of vendors in informal milk trading in peri –urban areas of Nakuru town, Kenya.

1.3.2 Specific Objectives

The specific objectives that guided the study were

- i. To determine level of awareness among vendors of regulations in milk trade
- ii. To identify frequent intentional non-compliance behaviours by vendors in milk trade
- iii. To determine reasons and motives of vendors for non-compliance with regulations governing milk trade
- iv. To identify barriers to vendors for compliance with regulations governing milk trade.

1.4 Research Questions

The research questions that guided the study were:

- i. What is the level of awareness among vendors of regulations in milk trade?
- ii. Which are the prevalent intentional non-compliance behaviours by vendors in milk trade?
- iii. What are the underlying reasons and motives for vendors' non-compliance with regulations governing milk trade?
- iv. Which are the barriers to vendors' compliance with regulations governing milk trade?

1.5 Justification of the Study

About 70% of Kenya's milk is marketed and sold through the informal sector. This informal milk outlet sells milk that is of poor quality (USAID, 2018). In Nakuru, shops and mobile trader's compromise 52% and 31% purchase points for raw milk. Through liberalization of informal channels, there has been both positive and negative effect of the informal milk sector. It is thus important to investigate lack of awareness of standards and regulations among milk vendors. The Kenya Dairy Board and government officials' could put measures such as offering extension education to both the consumer and milk vendors in order to raise awareness levels in milk vendors. Further insight on the health risks associated with consumption of unsafe milk could be facilitated by field extension services.

Secondly, studying frequent intentional non-compliance behaviours by vendors in milk trade will give a new approach to what sustains milk fraud. The factors identified will help milk quality assurance bodies in identifying what sustain milk malpractices in low-income areas and to reformulate strategies in controlling the consumption of poor-quality milk. Thirdly, the study findings will assist in establishing the underlying reasons and motives for vendors' non-compliance with the regulations governing milk trade. This will enable policymakers to identify underlying issues behind milk malpractices and improve the safety of traded milk for consumers and trade opportunities for vendors.

Lastly, identification of barriers to compliance with standards and regulations governing milk trade will help the food justice organizations to ensure interventions put would match the need for consumption of quality milk. The identification of barriers will enable authorities to put measures that reduce the level of unhealthy milk consumption identified by regulatory milk bodies. This will aid in the realization of the 2nd SDG which advocates for safe and nutritious

access to foods by all individuals in order to end all forms of malnutrition and consumption of unsafe foods by 2030. Additionally, this will lay a foundation for further research in future.

1.6 Scope and Limitation of the Study

The study focused on the informal milk vendors within Kaptebwa and Rhonda in Nakuru West Sub-County and probed underlying intentional non-compliance behaviours of vendors in informal milk trading. The key respondents were informal milk vendors in the two wards. Due to the sensitive nature of the study, some respondents were unwilling to give detailed information for fear of victimizations. Accessibility of informal milk sellers was a challenge in some incidences since the study population was comprised of infinite informal milk vendors. In order to address the challenges stated above, the researcher assured respondents that data collected was for academic purposes only. Information collected was aimed at improving the state of informal milk sector in low income areas. The problem of accessibility was addressed by working closely with a community member to assist in reaching respondents and assuring confidentiality in the handling and sharing of any information given.

1.7 Definition of Terms

Economic Factors - this refers to a set of values or information that affects a particular business either negatively or positively. These economic factors such as, level of income, accessibility to financial empowerment, demand and supply, cost of the product, the rate of unemployment, tax rates and the laws created by the government are a contributing factor to milk malpractices in low income areas.

Informal Milk Trade - refers to trade that is not regulated by legislation and does not account annual balance sheet. In Nakuru West, the milk is distributed through milk kiosks, open air markets and it is run by self-employed people of urban areas of developing countries

Informal Milk Vendor - this is a person that interacts solely on selling raw milk or traditionally processed milk in small markets such as kiosks and open-air market that are not licensed or authorized by the government (Alonso et al.,2018).

Intentional – This is an act where milk quality is altered on purpose.

Milk Malpractice - this refers to an act where milk is subjected to various ways of adulteration such as the addition of water, extraction of fat and the addition of chemicals such as hydrogen peroxide to increase the shelf life and addition of flour to increase the value of total solids (FAO, 2018).

Milk trade - it is buying and selling dairy products such as milk by retail in kiosks and shop locally for the purpose of making a living out of the milk or making money.

Non-compliance - failure or refusal to act in accordance with the milk standards set forth by Kenya Dairy Board.

Peri Urban Area - an area that has both rural and urban characteristics.

Probing -This refers to an act where a researcher inquires closely into something.

Quality Milk, a condition where milk contains all valuable components such as fat, protein, and carbohydrates without the extraction or addition of substances to add on weight or decrease the weight of the milk and its safe for sale and consumption.

Social factors - variables such as religion, environment, culture, government, ideology, society, family, media, technology and education that influence a person's attitude and personality in shaping the way certain individuals act or behave. They help in identifying a person's character and identity (Hellmich, 2017).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is a review of works by different scholars in relation to the specific objective. It is thematically organized around level of awareness among vendors in milk trade, identification of frequent intentional non-compliance behaviours by vendors in milk trade, reasons and motives of vendors for non-compliance with the regulations, and barriers to vendors for compliance with the regulations governing milk trade in the country.

2.2 Level of Awareness among Vendors of the Regulations in Milk Trade

The dairy industry in Kenya has been influenced by different regulations over the years. These regulatory policies are divided into four phases namely, pre-independence, first administration after independence, second administration after independence and the period since 2003 (Muriuki, 2011) . The four phases have impacted on dairy industry positively and negatively. The pre-independence period dairy farming was practiced by large scale settlers. After independence, the government introduced policies that included indigenous Kenyans in market-oriented dairy (Muriuki, 2011). The policy shift also introduced the dairy market liberalization in 1992. After 2002, the administrative regime worked on perceived failures of the previous administrations. This effort yielded positive results as Kenyan milk market tripled in quantity. The policy and regulatory standards increased the rise of informal milk vending. Milk safety in Kenya is guided by different standards and regulation act by the Dairy Industry Act (CAP 336) and the Public Health Act (CAP 242). Other safety regulations also to influence these milk safety acts include Animal Diseases Act (CAP 364), Animal Feedstuffs Act (CAP 345), and the Standards Act (CAP 496)(USAID, 2018). These acts play different roles in ensuring the dairy industry meets safety requirements. This study sought to find out the effectiveness of Interventions measures put by government in curbing milk malpractices and how the lack of awareness of standards and regulations by milk vendors has hampered milk safety.

The Dairy Industry Act (CAP 336) enforces regulations such as milk licensing, quality surveillance and milk trading among others. The Public Health Acts (CAP 242) ensures the safety of consumption of all dairy products. The Dairy Industry Act focuses on formal milk sectors in Kenya despite 80% of informal milk market dominating dairy industry and also marketed through the informal sector. The government authorized the licensing of small scale

traders by formulating policies that support small scale milk traders of raw milk(USAID, 2018). In 2013, Kenya Dairy Board banned the hawking of milk citing public health concerns. However, there is a lack of awareness by the general public on milk trade compliance (Ledo et al.,2019). The study aimed at determining the impact of lack of awareness by the milk vendors on milk standards and regulation contributed to milk malpractices. It also investigated the impact of lack of awareness among milk handlers or sellers of the standards and quality milk consumption on developing countries (Rahmat et al ., 2016).

In most developing countries there is limited technological knowledge in handling milk. Traditional milk processing and storage continues to be a household activity for the poor people of Southern and Eastern African region. It revolves around natural fermentation of milk, traditional butter churning methods which are appropriate to small quantities of milk processed and ghee preparation (Mailu et al., 2014). Improvement level in technology of milk handling may be realized by the introduction of new, efficient milk processing techniques, equipment, modern products requires setting up of milk processing units at the village and community level (FAO, 2009). Village-based dairy processing units will enable economic processing of larger quantities of milk that is also more in line with the historical role of dairy in the process of development of the dairy industry in developed countries. Such a strategy has been applied in Ethiopia with some success and is thus worth emulating in different localities in Kenya after taking into account the particular cultural conditions of each community (FAO, 2009). Also we need to establish the impact of high milk standards and regulation put in place without consideration of the cultural conditions of different communities in Kenya. This has an effect of increasing ignorance among milk vendors.

2.3 Frequency Intentional Non-Compliance Behaviours by Vendors in Milk Trade

The Marxist idea of the sociology of agriculture says production is the soul of power and privileges the topography of political action. The commodities produced through production acts as a stepping stone that endorses exploitative social relations (Goodman & Dupuis, 2002). Consumption of food moves towards trends and direction in the agro-food sector. The extent of food trade today and in the future entirely depends on the development of social and political awareness of consumers. Consumer awareness will enhance the ability to overcome commoditized individualism and the position of food trade market. As Goodman and Dupuis (2002) further explain, collective awareness suppresses undeveloped consciousness that addresses effective challenge and solutions to the food systems. Hence, consumers are offered limited choices to food products. The limitation in food choices is either through affordability,

locality, or level of awareness. Options available to consumers contribute to the decline of quality foods (Allaire, 2009). Economic actors in the food industry favor alternatives that consumers find favorable and demanding. Lower pricing attracts more consumers from consuming cheaper and poor quality products. Low-income areas consume affordable foods and they have poor access to enough and safe foods, which limits their food choices.

Access to enough and safe foods is important in sustaining life and promoting good health (WHO, 2015). Food safety, nutrition, and food security are mutually inclusive although low-income areas have limited access to safe foods, hence an increase in malnutrition and food borne illnesses affecting children, elderly and the sick. Food malpractice has been a major concern globally over the years, especially commonly consumed foods increased in United States, Canada, and Australia which led to the passage of anti-adulteration laws, as a way of mitigating food crime (Cheng, 2012). Even after passing anti-adulteration laws, food malpractices seem to be on the rise as a result of increased informal food sectors. Informal food sectors in developing countries thrives intensifying food safety concerns. Milk is the most adulterated food substance after olive oil (Handford et al., 2016). Economic drive, pricing demand and supply are the major factors that result in milk malpractices. When gaps exist between physical product availability and market demand price increases or decreases due to regional or global food supply shortages and commonly consumed foods become vulnerable (Goodman & Dupuis, 2002). Even when global trade in the dairy sector can create thousands of jobs Kenya's milk faces rejection in the global market because milk exported does not meet international food standard (Rahmat et al., 2016). The dairy sector can increase Kenya's Gross Domestic Production (GDP) if milk quality meets the required standards (Omore et al., 2002). Meeting the required standards has to factor in policies that can be adhered to by informal sectors so as to increase milk in the market.

Food such as milk is adulterated through various ways which has introduced health risks to consumers. Water is the most common form of milk adulteration and reduces the nutritional quality and market value of milk (Handford et al., 2016). It is in this regard that the current study sought to explore this and other milk trade malpractices among milk vendors. Introduction of pathogens by informal sellers to milk also reduces milk quality. Informal milk sellers introduce pathogens to milk by scooping milk from a can and selling it to the consumers. Such malpractices among the informal milk sellers have been confirmed to contaminate the milk (USAID, 2018). Informal milk sellers also sell traditional fermented milk, yet fermented

milk has safety concerns as products used to ferment milk are not defined, and spoilt milk is also sold as fermented milk (USAID, 2018) .

Consumers are the final user in the milk value chain. Most Kenyan consumers consume milk through tea, although there is a growing consumption of fermented milk. Therefore, lack of adherence to safe milk consumption and handling malpractices risks low-income consumers to pathogenic diseases. These diseases, like faecal coliform which causes bloody diarrhoea and kidney damage, are preventable. The cost burden of consuming unsafe milk to both the government and consumers is estimated to be KES 44,515,053.18 annually (KDB, 2017). Understanding the role of food in this, especially milk malpractices, will lower the cost burden of consumer and government. Before examining the impact of milk malpractices, understanding factors underlying the engagement in milk trade is important.

2.4 Reasons and Motives of Vendors for Non-Compliance with the Regulations

Governing Milk Trade

Dairy entrepreneurship in Kenya presents substantial development. About 80% of the Kenyan milk is produced by smallholder farmers retailed formally and informally by the milk vendors (USAID, 2015). Various milk marketing channels increase the chances of milk deterioration as the milk reaches urban low-income areas. Milk trade in low-income areas falls under small and medium enterprises (SMEs). Small and medium enterprises play a huge role in countries' economic development, the success of SMEs reflects a countries performance in improving people's livelihood (Chittithaworn et al., 2011). Low-income dwellers have created local food systems tailored to community needs and affordability. These local food vendors are economically viable for consumers. In Kenya, dairy local systems have been embedded by local issues such as lack of formal food safety nets in informal settlements and lack of political goodwill to curb the milk malpractices in the Kenyan slums (Murage et al., 2014). This continuous problem has resulted in informal slum dwellers coming up with coping strategies in the face of milk demand by either reducing consumption or buying from informal milk vendors (Amendah et al., 2014). Therefore, this study aimed at identifying whether consumer economic vulnerability can be a factor underlying in the engagement of milk malpractices.

According to Omore et al. (2014) the supply of milk is dominated by the informal sector in Kenya and the informal milk trade continues to be favored by Kenyans. The prevalence of the milk informal sector is attributed to unattainable milk safety standards and policies by majority of Kenyans who wish to venture in formal milk trade business (Omoro et al., 2014). About

80% of the milk in Sub Saharan Africa, South Asia, and Latin America is marketed informally due to high poverty levels and rapid urbanization among the three continents. Hence, the application of internationally standardized milk safety measures becomes difficult to implement at the local level in developing countries (Omore et al., 2014). Kenya per capita consumption of informal milk is higher compared to other developing countries. This increases milk malpractices among vendors as most consumers find it easier to purchase milk through the informal sectors.

The leading determinant of dairy product consumption in urban lower-income households are affordability and level of income (Mumba et al., 2013). Raw milk is the most preferred as it is 60% cheaper than processed milk. The processed milk is of higher quality because government bodies seek to ensure that milk consumed by the mass is nutritious and healthy. As Kamau et al. (2011), have explained, an increase in milk consumption increases with an individual's social class: the higher the income the more emphasis on safety, health consciousness, and product quality. Every 10% increase in income milk consumption increased by 5% in the Nairobi low-income households. Therefore, the study endeavour's to find out whether consumer financial empowerment could reduce the purchasing of low-quality milk.

Due to rapid urbanization among the major towns in Kenya, there has been an increase in milk consumption. Failure by government institution to put proper measures on milk safety low-income dwellers have higher chances of consuming poor quality milk (Kamau et al., 2011). Although informal food trade thrives among the low-income groups, government policies have played a role in an increment of informal milk sector. As Pagliaro et al. (2011) suggests, different social groups adapt specific values with respect to a set of virtues held as a way of life by a culture or a subculture. By the same token, milk poor consumption in low-income areas can be a way of life.

Foods in Africa, especially in Kenya, rely on accessibility; accessibility of food depends on the household's income, food outlets and food price (Crush & Frayne, 2011). Kenya comes second after South Africa in terms of milk production and consumption. With the growing population and milk demand, milk faces challenges from the production to the consumption stage. These challenges are caused by poor roads and inaccessibility of milk retailers around residential areas, especially in the rural areas and low-income urban settlements. To avoid loss, the farmer and informal vendors sell milk that has not been poorly stored and exposed to bacteria's. This is due to lack proper cooling facilities in the informal milk selling joints. Milk is accessible with the springing of local milk vendors but economically inaccessible to low-income

households (Crush & Frayne, 2011). Hence, the study focused on how low incomes from the peri-urban dwellers act as underlying factor of milk vendors for engaging in milk malpractices. Low income settlement is also attributed to low levels of literacy, and lack of information and awareness. The question that begs here is whether or not these factors play a role in contribution to poor quality milk consumption.

2.5 Barriers to Compliance with Existing Regulations

The livestock sector accounts for 3% of the Gross Domestic Product (GDP) and 15 % of employment globally. The improvement result from of an increase in milk and meat consumption due to population growth and rapid urbanization in Latin America, Asia and Africa (Mohammad, 2010). Demand for milk consumption has improved income among smallholder farmers and small medium enterprises (SMEs). As a result, small scale milk vendors and farmers have been involved in milk processing and marketing from production to consumption level. Small scale commercial dairy production has created great potential for poverty alleviation and employment. But to further improve small scale production of milk, technological skills must be incorporated by actors in the dairy value chain (Masika, 2012). However, lack of finance and poor infrastructure inhibits the incorporation of modern technology to curb milk malpractices in the low –income areas in developing countries. This tends to act as a barrier to compliance of standards and regulation.

Informal milk trade consists of small scale producers who sell the milk to informal retailers. Consumers access the milk through milk bars and kiosks. These informal channels produce 86% sales of milk that reach the consumer without proper quality and pasteurization (Masika, 2012). The Government of Kenya through Kenya Dairy Board has tried to ensure the accessibility of safe milk by discouraging informal milk markets (Muriuki, 2011). This intervention has failed because the milk sold through the informal market is cheaper, small scale farmers are paid on time and relatively higher compared to formal milk markets (Omore *et al.*, 2014). The advantage that informal milk sector has in comparison to formal milk sector can prevent the provision of quality milk. Therefore, the study focused on how formal milk sectors have influenced the rise of poor quality milk consumption in Nakuru West Sub-County.

Food poverty has acted as a barrier to the provision of quality milk. Food poverty is explained as a failure by an individual to access the food which is necessary for a healthy life whose implication goes from the social interaction and health risks (Lansdowne, 2011). Food poverty has contributed to the consumption of unsafe milk contributing to diseases such as typhoid,

inflammation of kidneys and cholera. This is caused by the addition of contaminated water to add on volume, the addition of chemicals such as sodium chloride and hydrogen peroxide poor households suffering the most (Handford et al., 2016). Low-income households in Nakuru West have poor food intake, spend most of their incomes on food and have difficulties in accessing quality food such as milk (Lansdowne, 2011). However, the study does not explain whether food poverty leads to malpractices in the food sector. Hence, this study set out to establish the impact of the factors above on milk malpractices in the informal milk trade as a livelihood source.

Access to quality food that is healthy and affordable is of greater concern to the low-income groups (Lansdowne, 2011). The low incomes residents purchase foods at local shops due to proximity, since public transport to other options further away is limited or non-existent. As a result, the local milk vendors in low-income areas offer few varieties of dairy products. About 90% of prevalent diseases are caused by human exposure through food, such as dairy products, meat, fish and shellfish every year (WHO, 2014). High-income earners demand better foods, whose quality is standard and vice versa. More low-income milk vendors have limited access, capacity to learn the importance of selling quality milk due to inadequate resources and political exclusion. Thus, there is rampant consumption of unhealthy milk (Rahmat et al., 2016). Where consumption of foods is influenced by the social and cultural practices of low income areas such as Nakuru West (Hope et al., 2013). This study set out to determine to what extent cultural values act as a barrier to complying with standards and regulation governing milk trade.

Informal traders in low-income areas have poor access to water, shelter, and electricity. On the other hand, Ahmed et al. (2015), observed that informal milk retailers are affected by poor drainage systems and storage facilities. This poor infrastructure poses a significant risk to food safety and livelihoods. The risks identified are selling of milk at closer proximity of uncollected garbage, lack of adequate water, poor hygienic sanitation and improper storage for highly perishable goods. All these lead to food contamination (Lansdowne, 2011). To avoid incurring losses, informal food vendors sell perishable foods like milk to vulnerable low-income consumers whose economic status offers no opportunity to look for quality milk. The study focused on how the environmental set-up acts as a barrier to complying with standards and regulations in milk trade in Nakuru West Sub-County.

Low-income households have limited economic resources and consumption of safe foods is a major challenge (Lansdowne, 2011). Informal milk retailer's subject milk to low standards and consumers opt to purchase the milk despite the poor standards. When money used to purchase

food is limited, consumers will buy foods based on affordability and not quality (EU, 2011). Additionally, low-income households purchase milk frequently due to unpredictable income and lack of refrigerators to store milk which is perishable. Regardless of quality issues, the urban poor continue to purchase milk from informal retailers. Location convenience plays a significant role as low-income residents cannot incur transport charges in search of quality milk (Lansdowne, 2011). Informal retailers usually sell milk in smaller quantities that are affordable to the urban poor and can also be offered on credit. Whether the milk is good or bad, low-income residents have limited choice in accessing quality milk. Informal milk vendors in low-income areas have looked for a coping strategy for the high demand for cheap milk (Omore et al., 2014). Therefore, the study endeavoured to establish whether meeting the demand of milk with rapid urbanization in Nakuru has influenced milk malpractices in Nakuru West Sub County.

International food standard models have been used as a measuring tool by majority of the food sectors in Africa and Kenya in general (Mohammad, 2010). The application of international food standard model has ignored local realities and milk practices of low-income neighbourhoods in Kenya (Muriuki, 2003). Authorities have insisted on milk pasteurization and cold pathways without proper consideration of the poor traders who may not access these technological facilities(Mohammad, 2010) . After Kenya's liberalization of small scale milk markets, the Kenya Dairy Board has provided a relatively favourable environment for informal milk trade to occur (Muriuki, 2011). It was therefore necessary to come up with information that enhances local milk standards which also define the accepted institutional and technical changes. The study focuses on how international food standards have acted as a barrier to complying with milk standards and regulation. Engaging community milk vendors could lower milk malpractices in the informal milk sector.

2.6 Rational Choice Theory

This study is informed by rational choice theory, that which was first propounded by Peter Blau (1964) and George Homans (1969) and asserts that all complex social phenomena are driven by individual human actions. Therefore, understanding rational decisions of individual behaviour can better reveal the underlying behavioural actions. According to rational choice theory all actions are oriented towards goals and individuals choose means that are likely to enable them attain their desired objective (Stepnisky & Jeffrey, 2014)..The choices an individual makes stem from alternative course of action and calculation of the chances they

have of achieving their goals. In doing this, individuals tend to consider rewards and costs attached to each alternative chosen.

Individuals usually perform an action on their perceptions of their probability of success. Perceptions of whether chances of success are high or low are shaped by past successes and similarity of the present situation to past successful situations (Stepnisky & Jeffrey, 2014). Additionally, some of the actions chosen by an individual may gain monetary value while others gains are not. In this study informal milk sellers pick on different alternatives on how to increase their monetary gain shaped by past success. For example informal milk sellers may choose to add water to milk and mix morning and evening milk to avoid incurring losses. They also opt to purchase milk from unlicensed hawkers among other malpractices that subject milk to poor quality.

According to rational choice theory, while a milk vendor assumes alternatives and uses methods that are most effective towards attaining a set goal, some of the behaviour is not monetary oriented. Choosing whether to sell quality milk or not involves other factors such as amount of effort needed to sell quality milk, the cost involved in complying with the Kenya Dairy Board Standards, the environmental set up of consumers that prefer cheaper milk, and the cultural approval by both the vendors and consumer of what quality milk entails. This is rational as individuals always find a way of comparing different rewards and cost and deciding what course of action is rewarding and least costly to them (Homans 1961).

According to Blau (1964), some social interactions may involve unbalanced exchange. A particular individual may gain more than the other in a particular interaction. An individual may undertake a costly interaction if in the long run they can benefit in that particular rational choice interaction. In other scenarios, unbalanced exchange may continue in unprofitable situation if the possibilities of positive interactions have been shut down. Factors' contributing to milk trade malpractices is a good example. Milk sellers may sell poor quality milk to low income consumers because they have no means to consume quality milk. Low income earners live below one dollar a day and to own a cow or buy quality milk is not a realistic possibility. Due to economic difficulties they continue to consume poor quality milk. Moreover, milk seller's decisions may also be influenced by the norms, values and culture.

In conclusion, rational choice involves optimization approach like profit maximization. The theory has been used to analyze personal household choices about consumption and saving as well as business decision making. This theory is important in this study because its application

is relevant in probing underlying intentional non-compliance behaviour in informal milk trading in peri urban areas of Nakuru. The choice of milk sellers to sell poor quality milk can be based on rational thought. Alternatives of quality milk may incur more costs. At the same time, consumers may perpetuate this behaviour through unbalanced exchange due to limited possibilities.

2.7 Conceptual Framework

This section present a conceptual framework showing underlying intentional non-compliance behaviours of vendors in informal milk trading in peri-urban areas of Nakuru town, Kenya

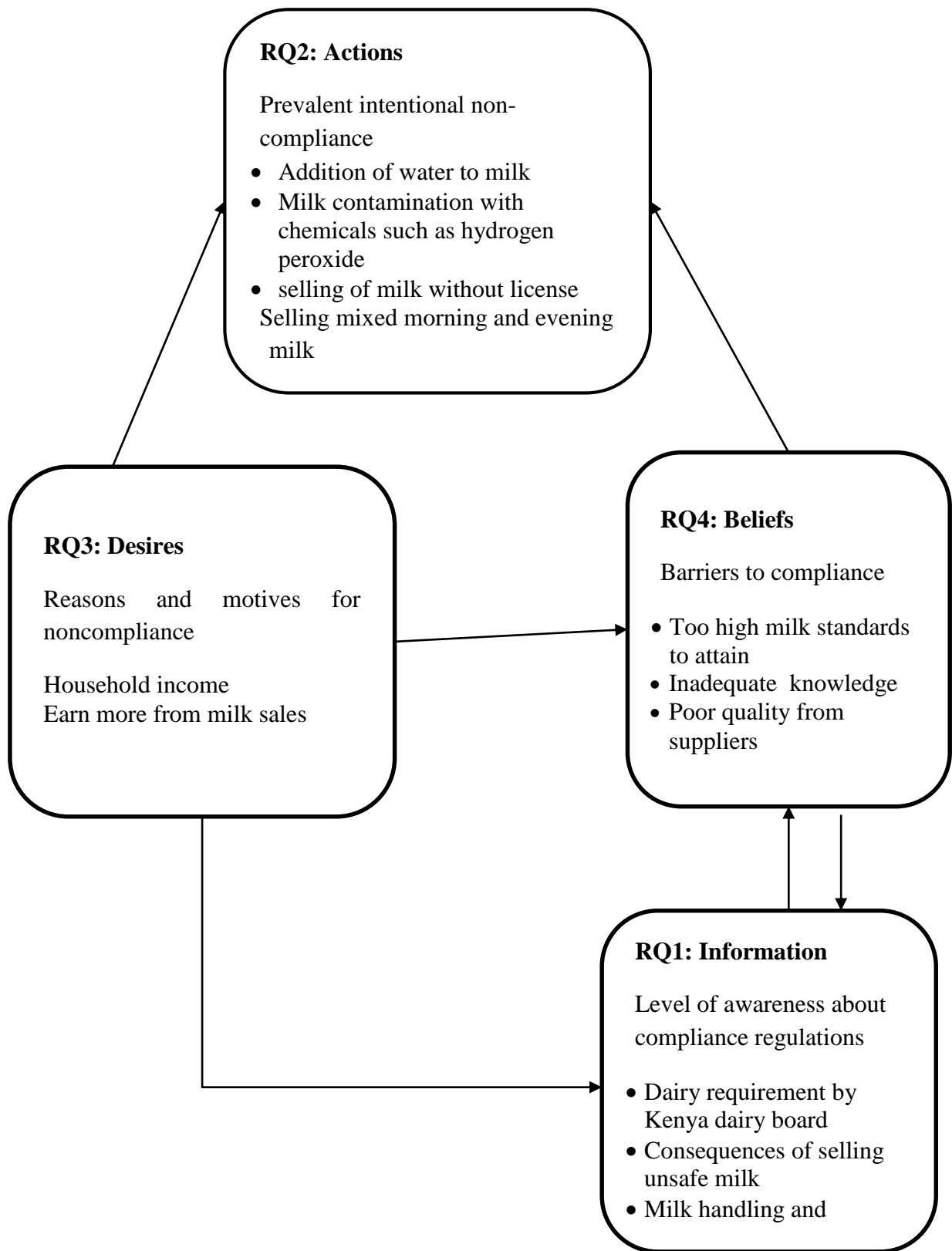


Figure 2.1: A Conceptual Framework of the Rational Choice Theory to Explain Intentional

Figure 2.1 shows a causal relationship between non-compliance with regulations set in milk trade in the informal milk outlets and the Rational Choice Theory.

The rational choice theory model explains social behavioural outcomes of individual vendor actions and their social context. The assumption is that actions of individual vendors and the social outcomes can be explained on the basis of goal-directed behaviour within social context of information, actions, desires and beliefs. The information concerns the level of awareness among vendors of the regulations in milk trade. The action of vendors focuses on the prevalent intentional non-compliance behaviours by vendors in milk trade. The desires reveal the underlying reasons for vendors not to comply with regulations governing milk trade. The beliefs that vendors hold represent the barriers to them for complying with the regulations governing milk trade.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

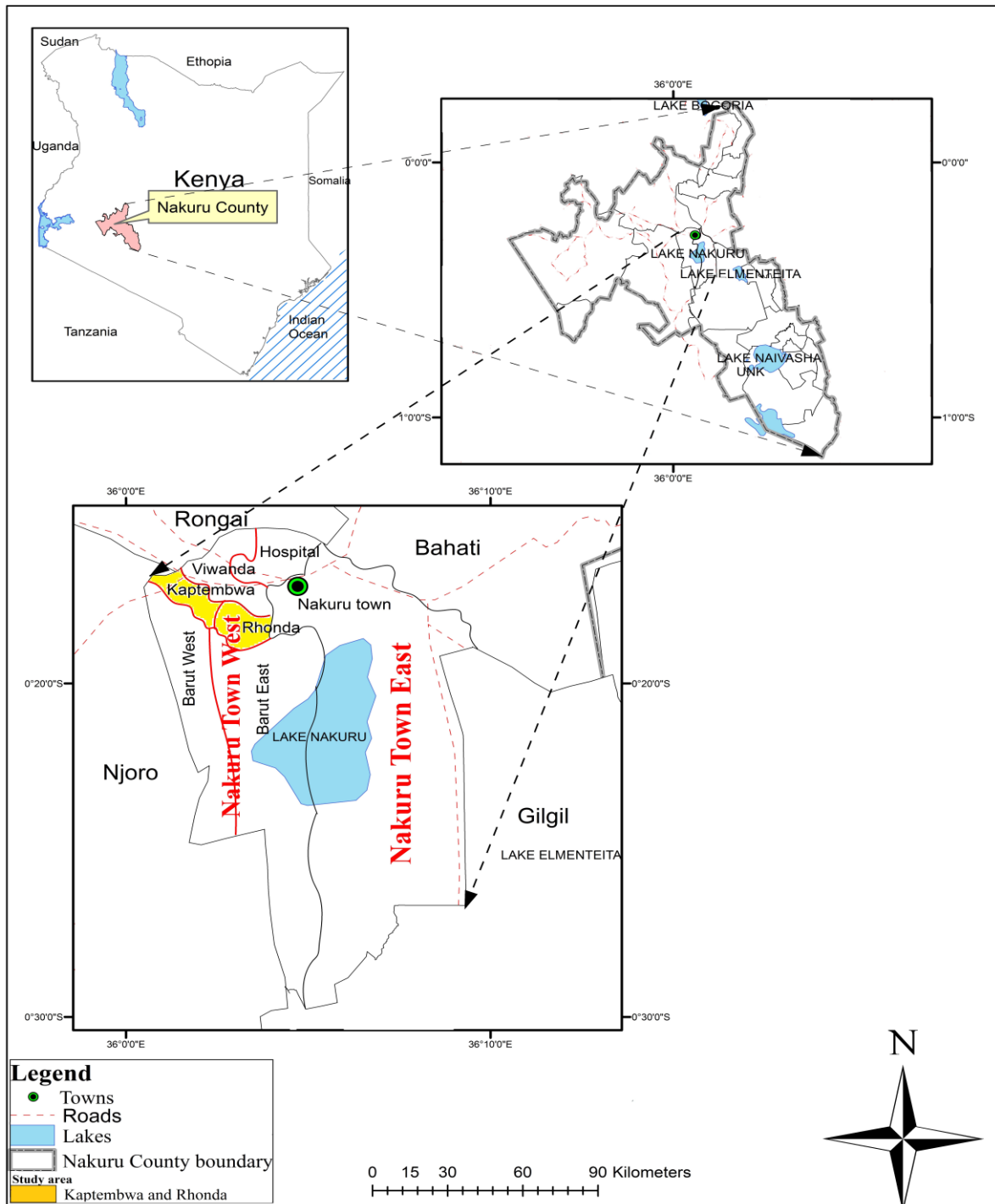
This chapter presents the, research design, study area, the study population, population sampling, and sampling procedure, how the data was collected, unit of analysis, data analysis and data analysis matrix. The map of the study area is also presented in this chapter.

3.2 Research Design

This study uses a survey research design. The design is suitable where subjects are expected to respond to a series of questions in a semi-structured interview.

3.3 Study Area

The study was conducted in Nakuru West Sub County in Nakuru as shown in Figure 3.1



Source: Author 2021

Figure 3.1: A Map of the Study Showing Nakuru West Sub County, Kaptembwa and Rhonda

The map presented in Figure 3.1 above shows that, Nakuru West Sub County is situated at latitude -1.2278 and 36.9057 longitudes respectively. Its population is 172,013 according to

the (2009) census and has an area of 251km². Nakuru serves both formal and informal businesses. The study chose peri-urban areas of Nakuru town because prior research in the area found adulterated milk samples with unsafe levels of coliform bacterial counts, (> 50,000 cfu/ml) (Omore *et al.*, 2004) and in some other slums unsafe levels of aflatoxin, hydrogen peroxide, antibacterial residues. Therefore, the study chose Nakuru West Sub County since it's a low-income area. It has six wards namely Barut, London, Kaptembwa, Kapkures, Rhonda and Shabab. The study sampled Kaptembwa and Rhonda as research sites in this particular study.

3.4 Unit of Analysis

The unit of analysis was informal milk vendors in both Kaptembwa and Rhonda Sub County

3.5 Population and Sampling Procedure

3.5.1 Population

The individual vendors were accessed through snowball sampling. The target populations were the informal milk vendors in Kaptembwa and Rhonda wards, which are peri-urban wards and low-income areas (Muchukuri & Grenier, 2009).

3.5.2 Sampling Procedure

The study used snowball sampling with an estimate sample size of 120 respondents because non-compliance in milk trade is socially unethical and legally unacceptable. Some people may get suspicious of the intentions of the research study. The study investigated intentional non-compliance behaviours in the dairy informal sector. The potential participants were wary of coming forward because the behaviour attracts penalties. However, participants were likely to know other people in the same situation as themselves and informed others about the benefits of the study and reassured them of confidentiality.

3.6 Methods of Data Collection

This study used both primary and secondary data. Primary data was obtained from the vendors using an interview schedule (Appendix A) and questions were both structured and semi structured. The interview schedule was administered by the researcher with help of a research assistant capturing both qualitative and quantitative aspect of the primary data. Qualitative data was obtained through narratives while quantitative data was captured using likert scale. Secondary data was obtained from journals and the library. A pilot test was administered to informal milk vendors in Mwariki, an area with low income residents in Nakuru East Sub County so as to test the research tool before using it (Wanjiku, 2010)

3.6.1 Interview Schedule

The interview schedule had five sections namely, general demographic information, level of awareness about standard regulations in milk trade, non-compliance behaviour in milk trade, reasons and motives for non-compliance, and the barriers to compliance. Level of awareness of the regulations in milk trade was measured in five-point ordinal likert scale of 1=strongly agree to 5=strongly disagree to specific statements on standards, regulations and requirements in milk trade. Intentional non-compliance behaviours, reasons and motives for not complying with the regulations governing milk trade the barriers to complying with the regulations governing milk trade were all measured in nominal and count data together with narrative information in open ended formulation. A summary of variables –dependent and independent for each research question is presented in (Appendix B) data collection matrix.

3.7 Reliability of Research Instruments Tools

The Interview schedule was pre tested in Mwariki area to ensure the questions were clear and measured the intended indicators. A pre-test conducted in Mwariki area was to determine the consistency and detect any challenges milk vendors would face while responding to the questions.

3.8 Data Analysis

Descriptive statistical analysis was employed to measure quantitative aspect of the study objectives. Quantitative data was summarized and presented in the form of frequency tables and bar graphs while text was provided to explain what the tables are showing, whereas qualitative narratives are provide upon which conclusions were drawn.

3.9 Ethical Consideration

Anonymity of participants and confidentiality of data was assured throughout the study. The study was done with the consent from graduate school and research authorization was processed by the National Commission of Science, Technology, and Innovation (NACOSTI) for research permit (Appendix E) (December 2019 reference number 205682).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter is based on results and discussion. The results are presented in 4 sections; demographic characteristic, level of awareness on the regulations in milk trade, frequency of intentional non-compliance, reasons and motives of vendors for non-compliance and barriers to vendors for compliance with the regulations governing milk trade in the country.

4.2. Response Rate

A total of 120 vendors were sampled and interviewed, thus accounting for 100% response rate. The study used snowball sampling thus able to interview 120 respondents.

4.3 Demographic Characteristics of the Sample Vendors

Table 4.1 presents the characteristics of the sample vendors.

Table 4. 1: Characteristics of the Sample Vendors

Characteristic	Description	Frequency	Percentage
Gender			
	Male	47	39.2
	Female	63	60.8
Age (years)			
	18 to 20	6	5.0
	20 to 40	101	84.2
	41 to 65	13	10.8
Education level			
	No formal education	2	1.7
	Primary	25	20.8
	Secondary	64	53.3
	Certificate training	8	6.7
	Diploma level	13	10.8
	Graduate level	8	6.7
Primary occupation			
	Farming	1	0.8
	Salaried employment	7	5.8
	Business	108	90.0
	Remittances	1	0.8
	Others	2	1.7
Milk vendors in the location			
	Myself only	7	5.8
	Many others	113	94.2
Milk volume sales (liters /day)			
	1-20	90	75.0
	21-40	18	15.0
	41-60	11	9.2
	61-80	1	0.8
Is there demand for your milk in the location			
	Yes	82	68.3
	No	38	31.7

Daily milk income (kshs)	1-200	90	75
	201-400	18	15
	401-600	11	9.2
	601-800	1	0.8

As shown in table 4.1, demographic characteristics of informal milk vendors were considered; the females at 60.8% were the majority respondent while the males accounted for 39.2%. Young people ranged between 20 and 40 years old (84.2 %) with a few older (10.8 %) and younger (5%). At least half of the vendors had secondary level education (53.3 %) and about a quarter with primary level education (20.8%). A few of the vendors had diploma level training (10.8%) and graduate level training (6.7%). In general, people without any formal education (1.7%) engaged in milk trade. Majority of the vendors (90%) were primarily engaged in Informal milk business while a few diversified into salaried employment (5.8%) or farming (0.8 %). A 94.2% claimed there are many vendors in the location while 5.8% were the only milk vendors in the location.

Milk sales per day varied as majority sold between 1-20 litres (75%), about a quarter sold 21-40 litres of milk (15%) a few sold 41-60 litres (9.2%) and (0.8%) sold 61-80 litres. A (68.3%) said there was milk demand in their location while 31.7% said milk demand in their location was low. Therefore, majority (75%) earned 1-200 shillings while a few (15%), (9.2%) and (0.8%) earned above 200 shillings. Having known who the respondent were the study focused on the first objective of awareness of vendors about standards regulations in milk trade.

4.4 The Awareness of Vendors about Standard Regulations in Milk Trade

The first objective of the study was to determine the awareness among milk vendors of the standards and regulations in milk trade in Nakuru West Sub –County. Hence, the study examined level of awareness on standards, regulations and how it influences malpractices in the informal milk trade. Results of the research questions both in Kaptembwa and Rhonda are presented in the following table for each question asked.

Table 4.2: Awareness of the Regulations, Standards and Requirements.

Regulations, standards and requirements in milk trade	Awareness of the regulations, standards and requirements (n=120)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Storing of milk does not interfere with the quality for Consumers	55.0	21.7	6.7	3.3	13.3
KDB regulations and standards are easily comprehensive	36.7	21.7	16.7	9.2	15.8
I attended Kenya Dairy Board meetings	21.7	6.7	26.7	10.8	34.2
I am aware of different milk regulations and standards for consumer safety	57.5	17.5	10.0	5.8	9.2
I understand safe milk	60.8	22.5	8.3	5.0	3.3
Unsafe milk cause illness to consumers- brucellosis, tuberculosis and cholera	58.3	22.5	7.5	5.0	6.7
Regulations, standards and requirements to protect consumers and milk business	57.5	21.7	9.2	5.8	5.8
I support implementation of the strong regulatory framework in the informal sector	57.5	20.0	10.0	5.8	6.7
KDB should involve stakeholders in formulation of the standards, regulations and requirements in milk trade	65.0	28.3	3.3	1.7	1.7
Non-involvement of the stakeholders contributes to non-compliance cases	69.2	20.8	4.2	3.3	2.5

4.4.1 Storing of Milk does not Interfere with the Quality Sold to Consumers

From the table above 55% respondents strongly agreed that storing of milk sold to consumers does not interfere with the quality of milk sold 21.7% agreed that how they stored milk quality is not interfered with while 6.7% of the respondents were neutral on the storage of milk and its interference with the quality of milk sold 3.3% and 13.3% both disagreed and strongly disagreed on the storage of milk. Majority regarded that the way milk is stored before selling it interferes with the quality sold to consumers. The study concluded that storing of milk sold to consumers by informal milk vendors interferes with the quality.

4.4.2 Kenya Dairy Board (KDB) Regulations and Standards Easily Comprehensive

The study showed that 36.7% of the respondents claimed that Kenya Dairy Board regulations are easily comprehensive, 21.7% also agreed that regulations and standards are easily comprehensive by the informal milk traders 16.7% that represented 20 respondents were neutral in understanding the regulations and standards put in place by Kenya Dairy Board. A 9.2% and 15.8% disagreed and strongly disagreed on the comprehensive nature of the regulations and standards set forth by the Kenya Dairy Board. Therefore, the study observed that informal milk vendors understood KDB regulations and standards.

4.4.3 As a Milk Vendor have Attended Kenya Dairy Board Meetings

With regards to the question in the table above majority of the respondents 34.2% claimed to never have attended KDB meetings, followed closely by 26.7% who were neutral on attending KDB meetings and when asked to elaborate the neutrality. They further explained one of the family members had attended the KDB meetings, 21.7% strongly agreed to have attended KDB meetings while 10.8% disagreed and 6.7% of the respondent agreed to have attended. The study was informed that informal milk vendors have not attended KDB meetings.

4.4.4 Aware of Different Milk Regulations and Standards put in Place for Consumer Safety

According to the results above 57.5% and 17.5% respondents strongly agreed and agreed of the awareness of different milk regulations and standards put in place for consumer safety 10% had no specific response while 5.8% and 9.2% stated they have no idea on the regulations and standards put in place to ensure consumer safety. Informal milk vendors were aware of

different milk regulations put in place. Therefore, concluding lack of proper adherence of milk regulations is intentional.

4.4.5 As Milk Vendor I Understand Safe Milk

Table 4.2 shows Kaptembwa and Rhonda informal milk vendors 60.8 % and 22.5% understand what entails safe milk while 3.3 % and 5% do not understand what safe milk is in spite them being in the informal milk industry while 8.3 % of the respondents were undecided or not willing to answer this particular question. These showed that informal milk vendors understand safe milk.

4.4.6 Unsafe Milk Causes Serious Diseases such as Brucellosis

Table 4.2 shows responses to whether unsafe milk can cause diseases or not. 58.3% and 22.5%, who were the majority, stated that consumption of poor quality milk can cause diseases among consumers, 7.5% remained neutral while 5% and 6.7% of the respondent claimed that consumption of unsafe milk cannot cause diseases because most consumers have to boil milk before consuming. The study established that respondents were aware that consumption of unsafe milk causes serious diseases.

4.4.7 Strong Dairy Regulatory Framework can Facilitate Compliance of Milk and Milk Products

In Table 4.2 found out that majority of the respondents 57.5% and 21.7% thought that enhancement of the dairy regulatory framework both at the national and county level can boost investment, consumption of safe milk and the thriving of the milk industry in informal sector 9.2% had no response while 5.8% and 5.8% both disagreed and strongly disagreed on the enforcement of the regulatory framework both at the national and county level would boost milk and dairy product business especially in the informal market. The study learnt that informal milk vendors thought enhancement of dairy regulatory framework could improve dairy investment.

4.4.8 Support Implementation of the Strong Regulatory Framework in the Informal Sector to Curb Milk Irregularities

The implementation of the regulatory framework 57.5% and 20% of the respondents were in support as this would help reduce milk malpractices in the informal milk trade. Those not in favor of the implementation of regulatory framework were 5.8% and 6.7%. Lastly 10% respondent remained neutral regarding implementation of rules that would reduce the rampant milk malpractices in informal milk trade. The study established that poor milk surveillance

from the government increased milk irregularities thus, respondent were in support of government measures.

4.4.9 KDB while Outlining Standards and Regulations as a Stakeholder should be involved

According to table 4.2, the response given by informal milk vendors 65% and 28.3% claimed that Kenya Dairy Board does not involve them in the creation of policies that govern the milk sector. Hence as stakeholders, they should be involved in the creation of policies with the aim of reducing the selling of adulterated milk that Kenya Dairy Board regards as unsafe while other 2 respondents both tied in their response representing 1.7% who claimed they should not be involved in contributing laws that govern milk industry. Lastly 3.3% were undecided in responding to this question. The study established that a vast majority of respondent have never been involved in creation of laws and policies by bodies governing milk industry such as KDB.

4.4.10 Noninvolvement of the Stakeholders Contributes to Non-compliance Cases

Finally, 83% strongly agreed, 20.8% agreed, 4.2 % were neutral, 3.3 % disagreed while 2.5% of the respondent strongly disagreed. That lack of involvement of informal milk sellers in contribution of standards and regulations by Kenya Dairy Board has aided the rise of malpractices in informal milk trade. Therefore, with the results above involvement of stakeholders in milk industry especially informal milk sellers would contribute selling of safe milk to consumers. From the result above the study shows lack of involvement of dairy stakeholders such as informal milk vendors have aided rampant milk malpractices. Involving all dairy stakeholders could decrease milk irregularities in informal areas.

4.5 Result Showing Frequent Non-compliance Behaviour by Vendors in Milk Trade

The second specific objective was to examine milk trade malpractices that vendors engage in. Milk is subjected to various methods that lower its quality. Therefore, the study aimed at identifying various adulteration processes. It was necessary to seek respondents input with regard to this specific objective so as to shed light on the issue of consumption of unsafe milk among low income consumers. A number of questions touching the aspect of non-compliance behaviour were posed, starting with substances added to alter milk quality by vendors.

4.5.1 Substances added to Milk to Alter the Quality Sold to Consumers

Table 4.3 below shows data of respondents from Kaptembwa and Rhonda Sub County on their knowledge of substances that lower milk quality:

Table 4. 3: Non Compliance in Milk Trade.

Description	Frequency	Percentage
Adulterating milk with water	33	27.5
Contaminating milk with chemicals	21	17.5
Adulterating milk with wheat flour	19	15.8
Adulterating milk with blue band	18	15
I don't know	13	10.8
Mixing morning and evening milk	7	5.8
Adulterating milk with raw eggs	5	4.2
Mixing diluted milk powder with raw milk	4	3.3

Water was the most commonly used substances to increase milk quantity at 27.5%, addition of chemicals at 17, 5% such as sodium, baking powder, and sodash to increase shelf life. Wheat Flour at 15.8% was added to increase milk weight, blue band with a response of 15.0% consumers prefer milk that they regarded as thick and since different cows produce different thickness in milk to appease customers informal vendors added wheat flour and blue band, additionally 5.8% of informal sellers gave mixing morning and evening milk as another method to increase milk volume, milk demand fluctuate to increases quantity informal vendor may opt to mix morning and evening milk. Addition of raw eggs is another factor observed by 4.2% respondents who claimed eggs increases milk thickness and not easily noticeable by consumers. Mixture of diluted milk powder to raw milk increases milk volume at 3.3% as some of the respondents who do it increase milk quantity as a result of high demand and low scarcity of milk during dry seasons. A 10.8% of respondents claimed they had no idea what substances are added to milk. Therefore, the study established that the most common malpractice was addition of water, chemicals and wheat flour.

Box 4.1 presents excerpts from various respondents in Kaptembwa and Rhonda Sub County

Box 4.1: Excerpt on substances added to milk to increase volume or prolong milk shelf life

“Wheat flour, Addition of chemicals and addition of water are the most commonly used methods, they are not easily noticeable by customers and such milk is sold at a lower price. Water is added to milk to increase its quantity; wheat flour is added to increase milk weight while chemicals are added to prolong its shelf life. Addition of chemicals is more unsafe because informal sellers are not equipped enough to measure the right amount of chemicals”. Source; Respondent December 21st 2019

“Addition of blue band and raw eggs, blue band and eggs increases milk thickness, to appease customers such substances are added. Some consumers do not know some cows produce light milk for customer satisfaction blue band and raw eggs are added”. Source; Respondent December 23rd 2019

“Daily I usually sell 5 litres of milk in case customers are few at a particular day. I can mix morning and evening milk. Also farmers do it to meet customers demand especially when milk is scarce. Mixing morning and evening is not dangerous as addition of chemicals because even after boiling milk one can consume”. Source; Respondent December 23rd 2019

The study concluded consumers have also led to rampant milk malpractices because they purchase milk based on affordability and not quality.

Box 4.1 shows that in the context of consumers limited purchasing power for quality milk, adulteration remains rampant because it is rides on the lower milk price that attract more customers.

4.5.2 Customer Complaints received after Purchasing Milk

The study aimed at identifying the number of customer complaints on milk sold to customers. The following are the results

Below in Box 4.2 shows excerpts on customer complaints received after purchasing milk

Box 4.2: Excerpts on Customers Complains received after Purchasing Milk

“Clotting of milk after boiling is problem often encountered by my customer’s. I purchase milk from different vendors and the milk quality is low. Customers have decreased drastically and I am even thinking of stopping the whole business of selling milk. Milk in informal markets is not safe for consumption not unless your milk is supplied directly from

the farm. Also the long marketing channels alters the quality of milk. Milk has various middle men before reaching consumers. Reduction of these long marketing channels could lower milk irregularities” Source; Respondent December 26th 2019

“During the dry season the industry is faced with problem of meeting demand due to milk scarcity. During this period there are too many customer complaints regarding the quality of milk. From the farmers to the informal seller all these channels are responsible for alteration of milk quality “Source Respondent December 27th 2019

“Milk suppliers do not clean milk containers properly and also prolonged hours before milk reaching to informal sellers. Milk quality is altered as sellers we have no modern equipment to measure its quality. We purchase the milk and customers will complain of poor quality milk.As an informal seller milk trade can be profitable but due to irregularities milk trade maybe a poor business venture” Source; Respondent December 27th 2019.

The excerpts above presents a case of dissatisfaction among informal milk vendors where milk is exposed to various adulteration processes reducing number of customers purchasing milk.

The result indicates various factors such as long milk marketing channels enhance adulteration before it reaches informal milk retailers. Informal milk vendors are not solely responsible for alteration of milk quality as there is addition of water and chemicals by farmers during dry season there is a drastic reduction of milk supplies to increase quantity. Below is a bar graph showing number of complaints from customers.

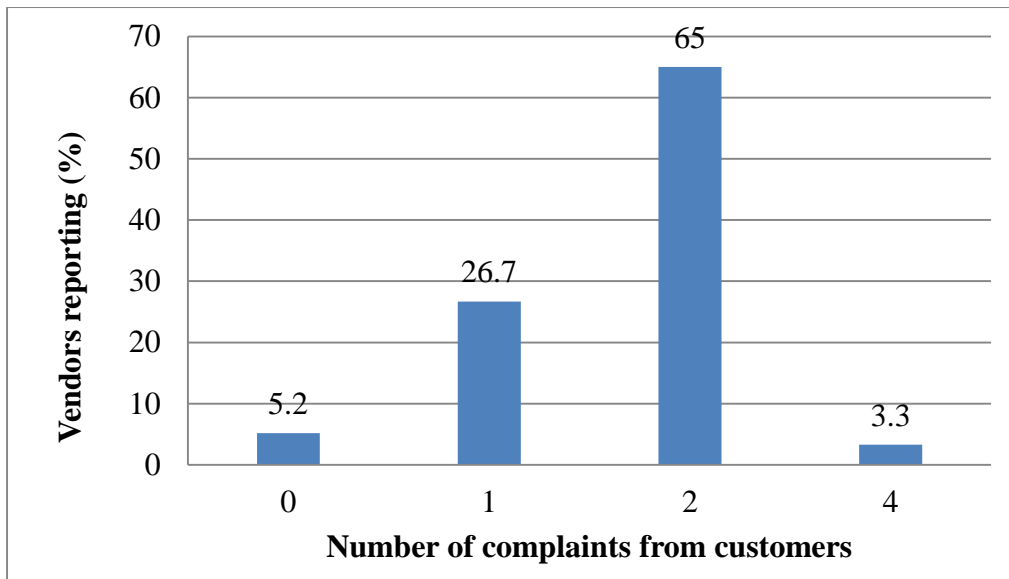


Figure 4.1: Number of Complaints from Customers

Figure 4.1 shows a total of 65% informal sellers receive 2 complaints monthly after selling milk 26.7% informal sellers receive 1 complaint monthly which sellers said that does not decrease number of customers buying milk. 3.3% of the respondent claimed they received 4 people monthly complaining on low quality of milk while 5.2% has no precise number on the number of complains citing too many customer complains due to poor milk surveillance by the government and lower milk demand hence selling unsafe milk to avoid loses .The study established that vendors sold poor quality milk.

4.5.3 Milk Trade Practices that would be Considered Trading Malpractices

With regards to informal milk vendors in Kaptembwa and Rhonda table 4.4 shows sentiments about different practices that are considered milk trade malpractice

Table 4.4: Milk Trade Practices that would be Considered Trading Malpractices by Informal Milk Vendors.

Description	Frequency	Percent
Addition of Water	33	27.5
Addition of Blue band	18	15.0
Addition of Wheat Flour	19	15.8
Addition of raw eggs to raw milk	5	4.2
I don't know	13	10.8
Mixing morning and evening milk	7	5.8
Addition of chemicals	21	17.5
Mixing diluted milk powder with raw milk	4	3.3
Total	120	100.0

According to table 4.4 addition of water was a common practice that milk traders considered as an act of adulteration 27.5% of this respondents claimed addition of water lowers the quality but also increases milk sold to consumers. Addition of blue band and wheat flour was the second act that was considered lowering milk quality sold to consumers which 15% and 15.8% of the respondent concluded. Mixing diluted milk powder and eggs with raw milk was a trade practice in milk trading considered as trading malpractices with a 3.3% and 4.2 % response. Some informal milk sellers 10.8% claimed not to know different milk adulteration methods. 5.8 % observed that mixing morning and evening milk also said it was a trading malpractice because milk spoils especially after a consumer has bought. Additionally, it was established that milk tend to have long marketing channels and informal milk vendor could not own up full responsibility of altering milk quality.

Box 4.3: Excerpts of Trading Malpractices that are considered by Vendors as Trading Malpractice

“Mixing morning and evening milk is an act I would consider as an adulterating practice. Farmers and vendors mix morning and evening milk to meet the purchaser’s quantity. Especially during dry seasons animals feeds are expensive so to meet demand a farmer usually mixes morning and evening milk” Source; Respondent December 22nd 2019

“Addition of raw eggs to increase milk cream, although this practice is not prevalent because with the addition of raw eggs milk easily spoils fast. Those who add raw eggs are shops that are close to roads and estates with high population. The sellers are guaranteed into selling all the adulterated milk”. Source; Respondent 3rd January 2020

“Addition of chemicals such as sodium peroxide and sodash to increase shelf life. The problem with this practice is young infants who are feed unsafe milk. That’s why nowadays cancer is on the rise due to chemicals in our foods. It sad even young infants are suffering. I prefer addition of blue band or water since it is not as dangerous as addition of chemicals. Though I would advocate for consumption of safe foods across all social classes” Source; Respondent December 27th 2019.

From the excerpts above in Box 4.3 informal vendors considered some practices as less harmful to the body like addition of water. Vendors considered addition of chemicals, eggs and mixing morning or evening milk as adulterating practices.

4.6 Reasons and Motives for Non-compliance Behaviour

Milk trade malpractices are rampant especially in informal settlements. This has hindered economic empowerment from informal milk vendors as a result of selling of low quality milk. Hence it was necessary to come explore detailed reasons as to why milk malpractices are on the rise in Kaptembwa and Rhonda Sub County. Respondents input were important to come up with measures that could improve the quality of milk sold to consumer.

4.6.1 Satisfaction with the Daily Amount Earned

Figure 4.2 shows result on satisfaction with daily amount earned after selling milk to consumers in Kaptembwa and Rhonda Sub County.

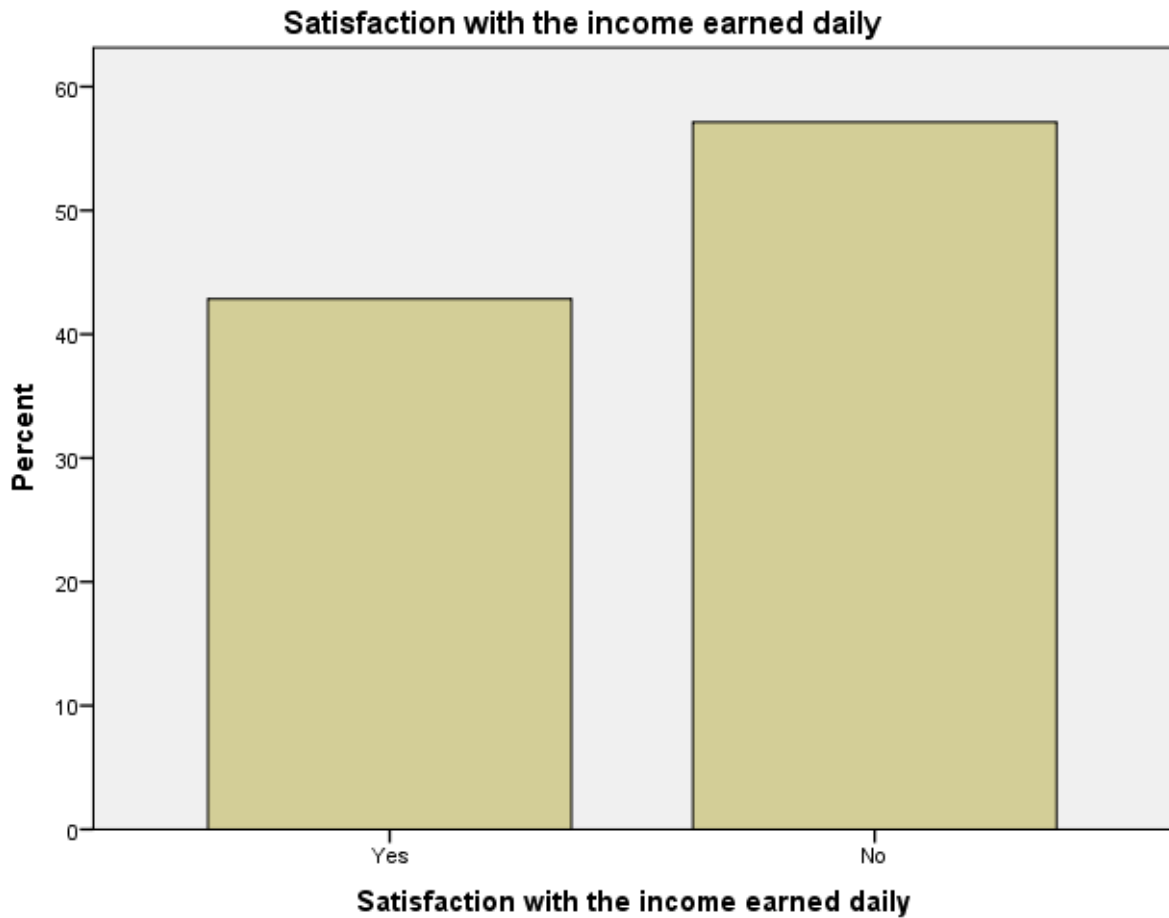


Figure 4.2: Satisfaction with the Income Earned Daily.

According to figure 4.2 above 42.9% of respondent were satisfied with the amount of money earned daily after selling milk. Another 57.1% held that they were not contented with the income earned. They further gave detailed explanation as to why they were or not satisfied with the money earned daily earned daily. The following is the 42.9% of respondent who were contented with their daily income.

4.6.2 Reasons to my Income Satisfaction

Below is box showing reasons to income satisfaction among informal milk vendors

Box 4.4 Reasons to Income Satisfaction after Daily Milk Sales

“My shop proximity is advantageous compared to other informal milk sellers. I have attracted more customers hence more money. Monthly I make KES 3500 profit on milk. I’m planning on saving to expand my business. Hopefully, as time goes by if milk continues to be profitable I can turn around my informal milk trade to formal milk trade” Source; Respondent January 5th 2020

“I believe in selling quality milk, due to our cultural and religious ethics one is not allowed to sell poor quality milk. As a seller I want to give my customers the best, with time God will bless me for my honesty and lack of greed. Today most vendors will ride on consumer’s low purchasing power; they alter milk, make more profit and harm consumers. Some of the consumers are young children, It is ethically and morally wrong to harm innocent consumers. It should be made clear to all milk sellers those who are found adulterating milk should attract heavy penalties. Without such warnings most sellers will continue selling unsafe milk to consumers” Source; Respondent December 27th 2019

“I have always purchased milk at a lower price because I directly purchase from farmers. Milk middlemen are quite expensive. I Purchase from farmers at a lower price KES 40 per litre then sells at KES 60 per litre. Thus, making KES 20 per litre seems profitable. Milk trade can be less profitable if one is purchasing from an expensive supplier” Source; Respondent December 27th 2019

The excerpts show a case of income satisfaction on informal milk sellers. Though pointing out reasons for milk irregularities in informal milk trade.

In figure 4.3 shows reasons to income satisfaction after daily milk sales

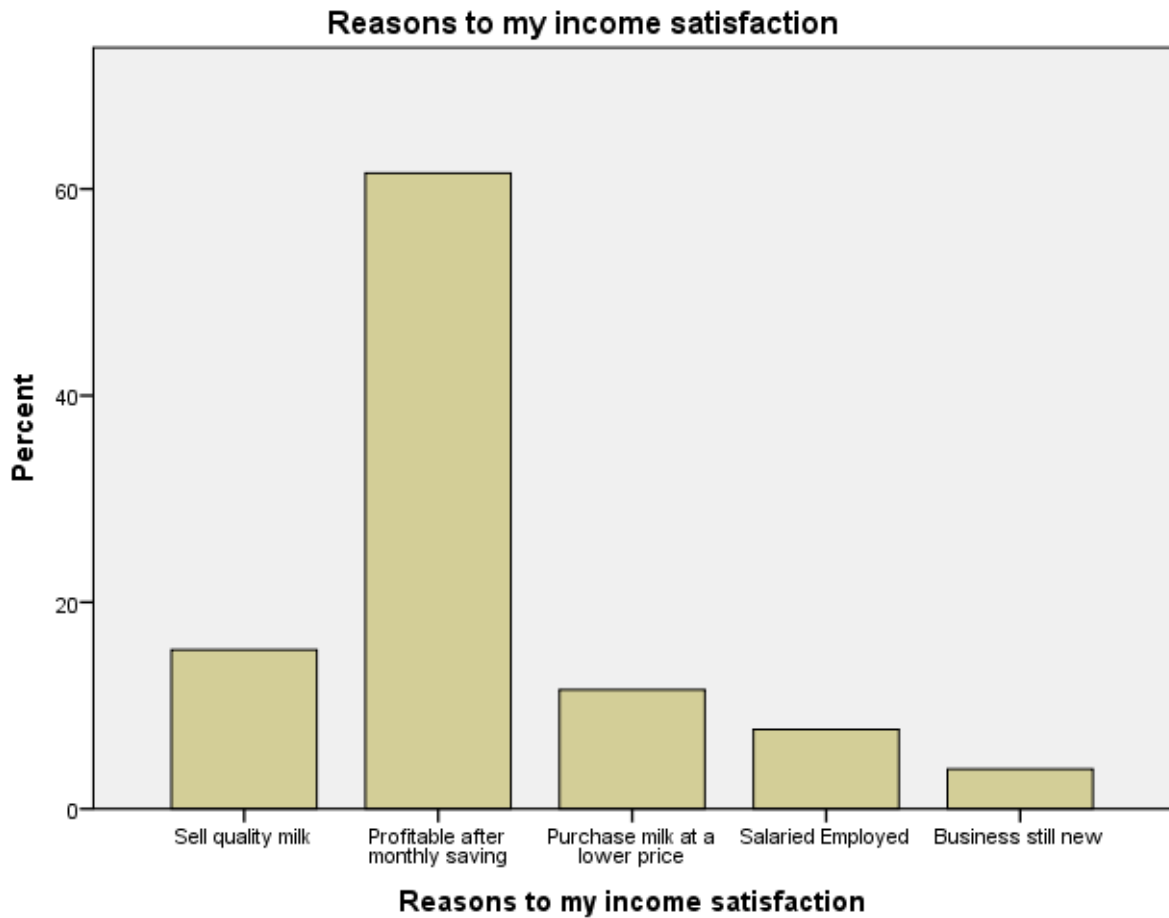


Figure 4.3: Reasons to my Income Satisfaction.

Figure 4.3 shows 61.5 % of those who responded yes claimed to make enough profit for monthly saving that can be used to expand the business and another 15.4% were satisfied as they sold quality milk. Informal milk vendors hold onto selling quality milk because it gives them satisfaction on the amount of money each one them make. 11.5% purchase milk at a lower price and sold at a lower price attracting more customers and making more profit. 7.7% that constituted salaried employed informal milk vendors were of satisfied with the amount earned daily because that did not influence end of month salary and lastly 3.8% of those who gave a yes response said that income from informal milk business was still enough.

4.6.3 Reason for Lack of Satisfaction with my Daily Milk Sale Income

Below are some excerpts from respondents from lack of income satisfaction

Box 4.5 Reasons for Lack of Satisfaction with my Daily Milk Sale Income

“I sell milk cheaply due to high competition, every shop you see around sells milk . In addition we have hawkers who hawk milk door to door. So when a customer’s comes to your shop, I have no choice other than selling milk cheap. Milk is very perishable to avoid milk spoilage I will sell milk as little as KES 10.If the area had fewer milk sellers maybe I would make more money” Source; Respondent December 31st 2019

“Selling milk is not profitable, most suppliers sell poor quality milk. After I purchase milk my customers complain of milk spoilage. At times milk can spoil even before selling though I usually sell such milk as ‘maziwa mala’ . I’m thinking of getting milk directly from farmers” Source; Respondent January 5th 2020

“I would love more profit to sustain my family, the high cost of living in Kenya makes selling of milk unreliable. You have to engage with other day to day activities. If milk selling was profitable then I wouldn’t have the need to look for another source of income” Source; Respondent January 5th 2020

From the excerpts above high competition and lack of profit are some of the key reasons to dissatisfaction among informal milk vendors

In figure 4.4 below shows those who gave a response of No 57.1% and cited various reason as to why they are not satisfied with their daily milk sale income.

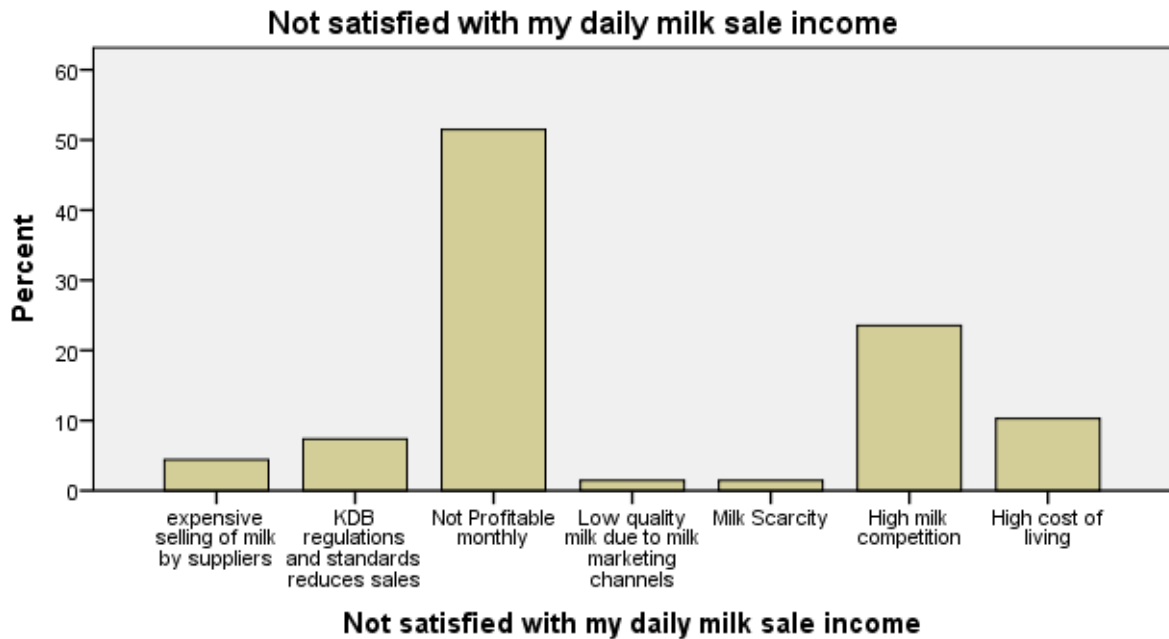


Figure 4.4: Reason for Lack of Satisfaction with my Daily Milk Sale Income.

Figure 4.4 shows majority of the respondent, 51.5%, held that daily income earned is not profitable and cannot be saved on a monthly basis. High competition in milk trade was another reason for lack of income satisfaction having 23.5% response; this was attributed to mobile milk traders who sold milk at a cheaper price. It was observed that this reduces the number of customers buying milk directly from shops. A further 10.3% claimed high cost of living made them not satisfied with the profit made after selling milk due to daily expenditure. Kenya Dairy boards standards and regulations reduced number of sales as 7.4% respondents have to sell milk very early in the morning or late in the evening due to the fact that informal milk vending is illegal and with harsh punishment on offenders. Milk suppliers sold milk expensively as 4.4% were not contented with the amount due to lower profit. Milk scarcity and low quality milk as result of long marketing channels was another reason of dissatisfaction at 1.5%.

4.6.4 Price Level as a Reason for Milk Malpractice

Table 4.5 shows price level as a reason for milk malpractice.

Table 4.5: Price Level as a Reason for Milk Malpractice.

Description	Frequency	Percent
Yes	85	70.8
No	35	29.2
Total	120	100.0

According to table 4.5 majority of the respondent 70.8% said high price of milk was a factor in the rampant milk malpractices in Kaptembwa and Rhonda and 29.2% claimed price level not a factor in the levels of milk malpractices. Each respondent gave various reasons as presented in the table below

4.6.5 Reason for Milk Malpractice

According to Box 4.6 the following are some excerpts from respondents on price level as factor in milk malpractice

Box 4.6: Excerpt on Price Level as a Reason for Malpractice

“Most vendors alter milk quality to increase profit. Generally milk is expensive more so quality milk. Raw milk consumption has high demand from consumers as a vendor addition of water increases quantity and meets high demand” Source; Respondent January 4th 2020.

“Suppliers usually sell milk expensive at the moment per litre is 45 shillings. As a vendor I am selling 50 shillings per litre thus making 5 shillings profit” Source; Respondent December 31st 2019.

“KDB has licensed few milk vendors to increase profit acquiring a milk license would lower my profit. I have to increase my prices, if all milk vendors had a KDB milk license milk malpractices could decrease drastically .KDB does inspections to all licensed milk suppliers. Thus, formal milk sellers are obliged into selling safe milk” Source; Respondent January 5th 2020.

From Box 4.4 Milk price level increases malpractices in peri-urban area. Vendors usually alter quality to meet milk demand and increase profit.

Table 4.6 shows price levels determined the addition of unsafe substances to milk as 85 respondents gave the following reasons illustrated below.

Table 4.6: Reason for Milk Malpractice.

Description	Frequency	Percent
Increase profit	35	41.2
Meet milk demand	22	25.9
Fewer licensed milk sellers	5	5.9
Milk scarcity in dry season	17	20.0
I don't know	2	2.4
Suppliers selling milk expensive	4	4.7
Total	85	100.0

Table 4.6 shows price levels determined the addition of unsafe substances to milk as 85 respondents gave various reasons. Majority, 41.2%, said they lower milk quality to increase profit. 25.9% answered yes to adulterating milk to meet its demand and 20% alter milk quality in the dry season due to milk scarcity. 5.9% claimed fewer licensed milk sellers as a result of expensive Kenya Dairy Board licenses, regulations and standards thus the rampant addition of substances in milk consumed by informal people in Kaptembwa and Rhonda. Another 4.7% of the respondents said milk suppliers sell milk expensively thus consumers in low income areas cannot afford quality milk. 2.4% were not aware if high level prices resulted in milk malpractice.

4.6.6 Price Level not a Reason for Milk Malpractice

The following are some accepts on price level as not a key factor in milk malpractices

Box 4.7: Excerpts on Price Level is not a Reason for Milk Malpractices.

“Consumers purchase milk based on preference not the quality. So if the quantity is more and sold at a cheaper price consumers purchase from that supplier” Source; Respondent December 21st 2019

“Quality milk price is affordable to most people here; due to its scarcity I will add water to meet my daily demand. Milk is consumed daily and sometimes it’s very scarce and in this area we have few shops that sells milk” Source ;Respondent December 20th 2019

“Low income consumers do not demand better .Consumers have accepted consumption of unsafe milk. Culturally it has been accepted, because unsafe milk is affordable. To consume safe milk not even milk all other foods .Consumers must demand better, they should also be willing to add more money”. Source; Respondent December 20th 2019

In this case Box 4.7 shows other factors considered to have an impact in milk malpractices. Informal milk vendors will adulterate milk and sell it to consumers due to the environmental set-up that allows alteration of milk quality. The following are other factor that leads to milk malpractices other than price level.

In table 4.7 respondent were of the opinion high milk price level determined malpractices in informal milk trade, 35 respondents were of a contrary opinion. Table 4.7 present responses from the 35 respondent:

Table 4.7: Price Level not a Reason for Milk Malpractice where else

Description	Frequency	Percent
Lack of integrity	11	31.4
More informal milk sellers in the market	4	11.4
Greed	4	11.4
Meet customer milk preference	6	17.1
Culture	5	14.3
Low milk demand hence mixing morning and evening milk	2	5.7
Milk scarcity	3	8.6
Total	35	100.0

Table 4.7 shows that 31.4% and 11.4% said lack of integrity and greed led to milk malpractice, and similarly said that informal milk vendors was the cause. It was established that most of the sellers are profit based with very few putting consumer safety into consideration. To curb this habits the government should enforce laws that ban mobile milk traders as more consumers prefer buying milk from them, reducing the number of customers purchasing from shops thus leading the vendors to alter milk quality. Customer preference especially on thick milk made informal vendors add blue band and wheat flour to thicken the milk yet some cows do not produce thick milk. It was established that customers are attracted to quantity and cheap milk and because safe milk is expensive more informal vendor’s adulterate milk, 14.3%, but it was also established that the culture of adulterating milk is common as consumers lack awareness on importance of safe consumption of milk other than quantity. Another 11.4% gave said that more informal milk vendors in the market contribute to lowering the quality, milk scarcity at 8.6% and 5.7% mixing of morning and evening milk.

4.6.7 Addition of Unsafe Substances do Milk Vendors Increase Profit

Here are the result shown below

Table 4. 8: Addition of Unsafe Substances do Milk Vendors Increase Profit.

Description	Frequency	Percent
Yes	102	85.0
No	18	15.0
Total	120	100.0

Table 4.8 shows 85% claiming that adulterating milk an informal milk vendor increases profit while 15% did not agree, citing the view that selling adulterated milk risks vendors from losing daily customers

In box 4.8 shows different excerpts from respondents in Kaptembwa and Rhonda

Box 4.8: Excerpts on Addition of Unsafe Substances to Milk Vendors Increase Profit.

“Long milk marketing channels alters the quality of milk before reaching informal milk vendors. Most informal milk vendors cooling facilities to prolong milk shelf life addition of preservative is ideal thus I avoid loss” Source Respondent January 3rd 2020

“In this area there are many milk vendors therefore; competition is high to attract more customers I sell milk at a cheaper price. My milk is cheap because. I add water increasing the quantity and meeting customers demand” Source ; Respondent December 30th 2019

“Some consumers purchase milk based on its thickness .Some sellers may add blue band to increase its thickness. Most consumers do not realize it, adulterating of milk is common to almost every milk seller. To maintain your customers one has to know the limits of adding unsafe substances to milk. If you add example water based on the amount of litres of milk one has. Consumers will not realize it, if you add excessively one can lose customers. It’s not easy but we have to make money” Source; Respondent January 5th 2020

This concludes adulteration of milk increases profit and most informal milk vendors practice this behaviour.

From the excerpt in Box 4.8 above it is established that a high population in Kaptembwa and Rhonda has increased informal milk vendors. Most consumers are low income earners and will purchase cheap milk. This proves to be an advantage to vendors as they sell adulterate milk to increase customers. Although these gains are short term due to frequent milk surveillance from KDB.

4.6.8 Reasons to Selling Unsafe Milk to Consumers

In table 4.9 shows reasons to selling unsafe milk to consumers.

Table 4. 9: Reasons to Selling Unsafe Milk to Consumers.

Description	Frequency	Percent
Avoid lose	32	62.7
Sell spoilt milk as fermented milk	4	7.8
Meet the high demand of milk	14	27.5
It is affordable	1	2.0
Total	51	100.0

From the table 4.9 above 62.7% respondent in Kaptembwa and Rhonda sold adulterated milk to avoid lose, 27.5% to meet the high milk demand, 7.8 % is sold as fermented milk fermented milk has safety concerns as products used to ferment milk are not defined and also spoilt milk is sold as fermented milk while 2% is sold as poor quality milk because is affordable to consumers in informal settlement. The study established that informal milk vendors sold unsafe milk to avoid making losses even though it doesn.t meet the standards and regulations set forth by KDB. The following section shows barriers to compliance of regulation and standards.

Box 4.9 Reasons to selling Unsafe Milk to Consumers

From Box4.9 respondents gave the following excerpts to selling unsafe milk

“As a business person i sell poor quality milk to avoid making loose. Due to heavy rains milk is in bulk I purchase milk from my supplier at 45 shillings per litre and in turn sell at 50 shillings. Adding water increases quantity and I make more money. Residents here want milk as little as 10 shillings selling safe milk means losses to my business” Source; Respondent January 4th 2020.

“During dry seasons there is milk scarcity increase in consumption of unsafe milk is usually in January and December. During these periods milk demand is usually high and yet the supply is low. To meet its demand most informal milk sellers will add water and other chemicals to prolong the shelf lives. In addition when there is milk scarcity milk is always expensive. Farmers, suppliers and informal milk sellers will take advantage and inflate the price”. Source; Respondent January 4th 2020.

“Unsafe milk is affordable to low income consumers in Kaptembwa. Majority of residents in Kaptembwa are low income earners they buy food stuffs including milk based on affordability. Therefore, selling milk at higher price would mean only those who can afford can purchase milk. Based on this area on few can actually afford” Source; Respondent December 27th 2019.

In the excerpt above shows reasons to selling unsafe milk. During dry seasons milk was cited to be unsafe relative to other seasons.

4.7 Results Showing Barriers to Complying with Standards and Regulations

The last objective examined barriers to complying with standards and regulations set forth by Kenya Dairy Board to protect consumers. Understanding the lack of compliance can build insights and measures that can be conducive for both consumers and milk vendor. All 120 respondents had no Kenya Dairy Board licenses

4.7.1 Reasons for not acquiring a Milk Selling License

Below are various excerpts cited by respondent on reasons for not acquiring a milk license.

Box 4.10: Excerpts Reasons for not acquiring a Milk Selling License

“Acquiring a milk license could lower milk malpractices among vendors. However, KDB process of acquiring milk license is extremely expensive for low income earners. Lowering the price level of acquiring a milk license may encourage most informal sellers to acquire one. Since the price is high we just prefer selling milk when KDB agents are not on the ground” Source; Respondent January 3rd 2020.

“KDB inspections are too high, for KDB to acquiring milk licenses milk vendors must meet the approved standards. For example, one must have cooling facility/refrigerators and sell only milk without including other items in the kiosks. Selling milk solely is not profitable. Having more suitable standards that can favour the local mwananchi may reduce milk irregularities” Source; Respondent December 30th 2019

“As a milk seller I have no knowledge on acquiring a milk selling license. Usually i acquire a business permit from the county government of Nakuru annually. The county has allowed me to venture into any business I would personally wish. I don’t know whether I need to acquire one. I also don’t find it’s important, this means more expense. The government should

have a license that caters for almost all low income business “Source; Respondent January 6th 2020

This concludes that milk regulating standards are not easy to meet increasing informal milk vendors in the country.

Reasons for not acquiring a Milk Selling License

Table 4.10 shows informal milk vendors’ reasons for not acquiring a milk selling license.

Table 4.10: Reasons for not acquiring a Milk Selling License.

Description	Frequency	Percent
Expensive to obtain milk selling license	38	31.7
Process is tedious as I have little technological skills	24	20.0
KDB inspection standards are too high to maintain	38	31.7
I don’t know of any milk selling license required	20	16.7
Total	120	100

In table 4.10, 31.7% respondent said that Kenya Dairy Board (KDB) licenses are expensive to obtain and the inspection standards are too high to maintain in case you want to acquire the license. Most respondents said Kenya Dairy Board (KDB) should allow other businesses to complement selling milk. Selling milk only could not be profitable without including other items. A 20% claimed the process of acquiring a milk license is tedious because of little skills in technological application while 16.7% had no idea if milk license was a requirement before venturing in trading milk therefore selling unlicensed milk to consumers without meeting Kenya Dairy Board (KDB) requirements.

4.7.2 Suggestion to Turning Informal Milk Trade to Formal Milk Trade

Box 4.11 shows various reasons to turning around informal milk trade to formal milk trade

Box 4.11 Suggestion to Turning Informal Milk Trade to Formal Milk Trade

“Milk vending can be profitable especially formal milk trade. More customers would gain trust especially while purchasing and consuming milk .Formal milk vendors are more expensive than informal milk vendors. To turn around informal milk sellers, KDB and the county government of Nakuru should prevent unlicensed milk sellers from selling milk. Prevention of informal milk vending could reduce milk irregularities and as vendors gain more profit” Source; Respondent January 4th 2020.

“Milk suppliers are not reliable, sometimes they supply fewer litres. Last week I ordered 15 litres. My supplier brought 5 litres milk was not enough for my daily customers. I can turn around my informal milk trade to formal if I had a reliable supplier. Milk suppliers especially in Rhonda are not to be trusted” Source; Respondent December 31st 2019.

“KDB should reduce its standards and regulations. These standards should be affordable. Informal milk traders would turn to formal milk trade. It is expensive on low income sellers to meet the required standards. Involving all milk stakeholders would reduce milk irregularities. KDB does not involve us, while informal milk sellers are the largest sellers of milk in Nakuru. They frustrate selling of milk as we can only sell milk very early in the morning or late in the evening” Source; Respondent December 31st 2019.

The excerpts above shows sellers who are willing to turn informal milk trade to formal. The challenges cited act as hindrances if supported some vendors would adhere to KDB regulations and standards.

In table 4.11 shows suggestions respondent gave to turning around informal milk trade to formal milk trade.

Table 4.11: Suggestion to Turning Informal Milk Trade to Formal Milk Trade.

Description	Frequency	Percent
I don't know	17	14.2
KDB to reduce high standards and regulations	75	62.5
Obtain a milk license	6	5.0
Have a reliable milk supplier	4	3.3
High milk demand and profit	9	7.5
Prevent all unlicensed milk vendors from selling milk	6	5.0
Sell quality milk	3	2.5
Total	120	100.0

In table 4.11, 62.5% of the respondents said they would turn around their informal milk business to formal KDB should reduce licenses fee, the long, tedious and expensive process of acquiring a license and also involve milk vendors in creation of the regulations and standards .Without this, standards and regulations put in place cannot be complied with informal milk vendors in Kaptembwa and Rhonda. Another 14.2% of informal milk vendors had no suggestion in turning their informal milk businesses to formal ones, 7.5% claimed turning to formal would be influenced by high milk demand and profit, 5% said they would turn to formal if they obtained a milk license and also prevent all unlicensed milk vendors from selling raw cheap milk and lastly 2.5% suggested they would sell quality milk if they turned around their informal milk trading to formal because of Kenya Dairy Board (KDB) milk monitoring and surveillance.

4.8 Discussion

This section presents a discussion on the underlying intentional non-compliance behaviours in informal milk trading in peri –urban areas of Nakuru town, Kenya. The discussion is based on the specific objectives of the study.

4.8.1 The Awareness of Vendors about Standards Regulation in Milk Trade

The first objective of this study was to determine awareness among milk vendors of the standards regulation in milk trade. According to the findings, 36.7% informal milk vendors are not aware of standards and regulations put in place for consumer safety, yet 91.6% were educated. They claimed storing of milk did not interfere with the quality but had not adhered to the regulations. They lacked cooling facilities and stored milk in plastic containers which altered milk quality. These milk centres were also not equipped with milk monitoring tools to verify the quality. Additionally, informal milk vendors held that Kenya Dairy Board (KDB) standards and regulations were easily comprehensible yet 34.2% had not attended Kenya Dairy Board (KDB) meetings. Therefore, they were not abreast with the regulations and standards a milk vendor must uphold before selling milk. This revelation was in line with the agreement of Mailu et al.(2014) that most developing countries there is limited knowledge in handling milk especially informal milk traders leading to high levels of milk malpractices that put consumers health at risk.

However, 57.5% informal milk vendors in Nakuru West Sub County agreed that enforcement of strong dairy regulatory framework would help curb milk irregularities, low quality milk and boost investment in the informal milk trade without necessarily turning around informal milk trade to formal milk trade. Milk trade malpractice is due to lack of involvement of stakeholders who are female at 60.8% in creation of laws and policies. Majority of the respondent 69.2% would wish the national and county government involve them in creating laws. There should be local involvement in creation of laws about milk trade. Policy makers would consider the culture of consumption of raw milk which is most preferred by informal milk consumers and setting up village based processing units. These findings are in agreement with FAO (2009) which states that setting village-based dairy processing units will enable more economic processing of larger quantities of milk and more in line with historical role of dairy development of developing countries. Such a strategy is being applied in Ethiopia with some success (FAO, 2009) and is thus worth emulating in different localities in Kenya after taking into account the particular cultural conditions of communities living in informal settlements.

4.8.2 Evaluate Frequent Non-Compliance Behaviour by Vendors in Milk Trade

The second objective sought to evaluate the frequency of non-compliance behaviour by milk vendors. In these findings, addition of water, chemicals, wheat flour and blue band were the most common form of milk adulteration. According to Handford et.al. (2016) water is the most

common method of adulterating milk. It is the easiest and most consumers do not notice it. These malpractices continued to happen as a result of consumer's preference on milk affordability, thickness and heavy cream. On the other hand, vendors altered quality to increase milk quantity and thus increase profit. These observations concurs with (Ledo and Luning, 2019) that have stated that in emerging economies such as African countries, there is dominance of informal milk vending. It is characterized by high risk of fresh milk contamination and proliferation of foodborne illnesses.

Informal milk vendors maintained that receiving complaints from consumers did not deter them from selling milk without proper milk regulations. Economic actors in the informal milk industry favour alternatives that consumers find favourable. Lower prices attracted more customers thereby purchasing cheaper and poor quality milk. Low- income areas consume affordable milk as they have poor access to enough and safe milk. Additionally WHO (2015) argues that when milk supply is not sufficient, low income consumers shift to consumption of adulterated milk that has been contaminated with chemicals and pathogens. This poses health risks to consumers and eventual vendors lose their business.

4.8.3 Reasons and Motives for Non-Compliance Behaviour

The third objective determined the reasons and motives for non-compliance behaviour governing milk trade. In this case 57.1% informal milk vendors in Kaptembwa and Rhonda were not satisfied with the daily income they earned after selling milk. They cited low profits that cannot sustain their businesses. The daily consumption of milk increased competition among milk vendors who wanted to increase profit. According to Omore et al. (2014) the prevalence of milk malpractices in the informal sector is attributed to unattainable high milk standards set forth by the government.

Informal milk vendors in Nakuru West Sub County maintained that the general price level of milk was high and very few people can afford it. Consumers prefer raw milk and are not willing to buy quality milk which is expensive, opting to buy adulterated milk that is cheaper. This is in agreement with Mumba et al. (2013) who have observed that consumers in low income areas consume dairy products based on affordability and level of household income. The predominance of the informal milk market has prevailed because of its lower cost, creation of employment and its easier accessibility by Kenyans (Omore et al., 2014). Since milk demand and competition is high. Attracting more customers' informal milk vendor's adulterate milk to increase quantity and sell it cheap. The study observed that 85% of the respondent stated when

milk quality is altered they increase profit .The prevalence of milk malpractices is mostly during dry seasons due to milk scarcity and high milk demand. Additionally, informal milk vendors would not purchase poor quality milk from milk suppliers. If an informal milk vendor purchased poor quality milk they would sell to consumers to meet high demand or not sell to customers to maintain business reputation. Moreover, 95% of informal milk vendors lacked access to funding and this restricted the required facilities to sell milk. This concurs with a study by UN (2003) view that financial inadequacy leads to stock insufficiency in quantity making informal milk vendors manage milk on a tight flow basis or interrupting its quality by adulterating milk and therefore affecting consumers.

4.8.4 The Barriers to Complying with Standards and Regulations

The final objective was to analyze barriers to complying with the standards and regulations governing milk trade. Informal milk vendors responded that acquiring a milk selling license was expensive and Kenya Dairy Board (KDB) inspection standards were too high to maintain. This acts as barrier in complying with the standards. Informal milk vendors further complained Kenya Dairy Board (KDB) agents are too strict on informal vendors. These factors discourage most vendors in acquiring a milk license. A major challenge was when one acquires a milk selling license the requirement given by Kenya Dairy Board (KDB) to sell milk only. Informal milk vendors rely on other business entities to make profit and cannot only rely on selling milk. Turning around informal milk vending to formal so as to improve milk quality Kenya Dairy Board (KDB) should reduce the regulations rules which are expensive to sustain. KDB can also come up with local standardized model to match local realities other than using international models. The findings concur with Mohammad (2010) who argued that international food standard models have been used as a measuring tool by the majority of the food sectors in Africa and Kenya in general. This has given rise to the continuous consumption of unsafe milk which is a consequence of the exclusion of informal milk vendors on information about milk safety. The application of international food standard model has ignored local realities and milk practices of low-income neighbourhoods in Kenya (Muriuki, 2003). According to Mohammad (2010) the authorities have insisted on milk pasteurization and cold pathways without proper consideration of the poor traders who may not access these technological facilities. This has created barriers to complying with standards and regulations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, theoretical and empirical conclusions as well as recommendations for further research.

5.2 Summary

The broad objective of the study was to probe underlying intentional non-compliance behaviours of vendors in informal milk trading in peri –urban areas of Nakuru town, Kenya. The specific objectives of the study were to determine the awareness among vendors of the regulations in milk trade, to identify the frequent intentional non-compliance behaviours by vendors in milk trade, to determine the reasons and motives of vendors for non-compliance with the regulations governing milk trade, and to identify the barriers to vendors for compliance with the regulations governing milk trade in the country.

5.2.1 The Lack Awareness of Vendors about Standards Regulation in Milk Trade

Findings of the study as presented in chapter four have shown that informal milk vendors lacked awareness of standards regulation put in place to maintain milk quality. As a result, they stored milk in plastic containers, lacked cooling facilities, and sold milk in open air markets. Yet 58.4% claimed KDB standards regulation were easily comprehensible. It is worth noting that milk has long marketing channels before and runs the risk of alteration in quality along the way before it finally reaches consumers. Informal milk vendors were in support of implementation of regulatory framework but complained that they have not been involved as stakeholders in the process of setting up and maintaining regulations. This lack of involvement has hindered selling of quality milk and aided rampant informal milk trade malpractice. Involving all stakeholders can facilitate a sense of compliance of attainable standards regulation and this would tailor a sense of inclusion among all stakeholders.

5.2.2 Evaluate Frequent Non-compliance Behaviour by Vendors in Milk Trade

In summary the most frequent non-compliance of milk was addition of water at 27.5% to increase quantity; 17.5% added chemicals such as sodium chloride to prolong shelf life while 20.5% added blue band and wheat flour to increase cream or thickness. The behaviour was as a result of long milk marketing channels, poor road infrastructure, and milk scarcity especially in dry seasons. The persistence of non-compliance was attributed to consumer preference for cheap milk and the need to gain more profit by informal milk vendors.

5.2.3 Reasons and Motives for Non-Compliance Behaviour

Based on the results, it was evident that informal milk vendors engaged in milk malpractices. Respondents had various reasons for the persistent non-compliance behaviour in milk trade such as increase profit, meeting milk demand by mixing morning and evening milk, fewer licensed milk sellers, milk scarcity in dry seasons and expensive selling of milk by milk suppliers. It reveals that consumers are subjected to consumption of poor quality milk. Low income areas have limited accessibility to safe milk. Consumers purchase milk from informal milk vendors who sell the milk in small amounts at an affordable price.

5.2.4 The Barriers to Complying with Standards and Regulations

Findings showed that standards and regulation put in place by KDB acted as hindrance to compliance. Informal milk vendors complained of the unattainable regulations that motivate informal milk trade. Hence turning around informal milk trade to formal would require KDB standards reviewed to match local realities and culture. Attainable milk standards can create jobs in informal settlements since milk demand is high and this would promote social, economic and financial development.

5.3 Conclusions

5.3.1 Theoretical Conclusion

The theoretical framework that informed the study was Rational Choice theory. Rational Choice theory stipulates that all complex social phenomena are driven by individual human actions. According to rational choice theory, all actions are oriented towards goals and individuals choose means that are likely to be most effective in attaining a desired objective. The choices of individuals range from an alternative course of action by calculating the chances they have of achieving their goals.

Informal milk vendor's main goal is to increase milk sales and meet milk demand. Therefore, after past success with milk adulteration the behaviour is perpetuated to gain motives. Consumers are attracted to affordable creamy and thick milk. This preference is exploited by vendors in informal milk trade. The informal milk vendors somewhat compute and compare different rewards and cost of their non-compliance behaviour.

5.3.2 Empirical Conclusions

- i. The first objective of this study was to determine the level of awareness among vendors of the regulations in milk trade. Majority, 58.4%, of the informal milk vendors are not quite conversant with standards put in place by Kenya Dairy Board (KDB). This lack of awareness has prevented them from achieving an increase in milk sales. A Poor relation with Kenya Dairy Board (KDB) agents and informal milk vendors is another problem leading to increase in informal milk vendors. However, informal milk vendors concluded that poor quality milk also affects their small medium milk enterprises.
- ii. The second objective intended to evaluate the frequent intentional non-compliance behaviours by vendors in milk trade. Milk is adulterated through various ways and the most frequent non-compliance was addition of water, chemicals, blue band and wheat flour. Most informal milk vendors sold milk before boiling it. Addition of these unsafe substances goes unnoticed by most consumers. However, some informal milk vendors are opting to not selling raw milk because quality raw milk is scarce.
- iii. The third objective sought to determine the reasons and motives of vendors for non-compliance with the regulations governing milk trade. Milk is an important component in the human diet. Daily consumption of milk has created jobs in informal settlements. Poor income has made informal milk vendors adulterate milk. Most informal vendors get profit after selling cheap milk to consumers. Consumer preference for cheap milk sold in small quantities, but that is thick and creamy as well is a motivating factor to informal milk vendors. Milk scarcity and long marketing channels are factors in the engagement of milk trade malpractices. Milk quality is altered during dry seasons either to increase quantity by adding water or to increase shelf life by adding chemical that facilitate that, which is as a result of lack of cooling facilities in informal milk trade.
- iv. The last objective of this study was to analyze the barriers to vendors for compliance with the regulations governing milk trade in the country. The study revealed that the standards and regulation put in place by the government are not attainable considering the local realities of informal milk trade.

5.4 Recommendations

- i. The result from the study shows informal milk vendors lacked awareness on standards regulation in milk trade. Therefore, it is necessary for KDB to actively sensitize milk vendors by engaging all milk stakeholders involved in the dairy value chain and by creating regulatory framework that will facilitate compliance of milk and milk products.

- ii. Frequent intentional non-compliance was caused by poor milk surveillance. Hence it is important for the government and KDB to enforce high milk surveillance from the producer to consumer. This is necessary because informal milk vendors have invented methods that alter milk quality.
- iii. KDB should make it clear to milk vendors that compliance with food standard regulations is to benefit the public – consumers, vendors, authorities and producers. It should also be made clear to vendors that non-compliance attracts penalties and they need to know the specific penalties.
- iv. To turn around informal milk trade informal milk vendors suggest Kenya Dairy Board (KDB) should review the laws governing milk trade to more suitable one that are easily attainable.

5.4.1 Areas for Further Research

In regards to the findings here are areas that require further research

- i. There is need for further research on the level of awareness on milk standards and regulations among informal milk consumers.
- ii. The findings on this study points out frequent non-compliance is as a result of poor milk surveillance from the farmer to informal vendors. Therefore, there is need to study effect of high milk surveillance from farmers to informal retailers in reduction of frequent informal milk non-compliance

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APPENDICES

Appendix A: An Interview Schedule of Probing Underlying Intentional Non-Compliance Behaviours in Informal Milk Trading in Peri – Urban Areas of Nakuru Town, Kenya

Introduction

I am a post graduate student and a researcher from the Department of Peace Social and Security Studies in Egerton University conducting a survey that probed underlying intentional non-compliance behaviours in informal milk trading in peri –urban areas of Nakuru town, Kenya . In partial fulfilment for a master’s degree in sociology (community development and project management).The information provided is solely for academic research.

- All information will be treated confidentially
- I am kindly asking for your consent to be part of the study
- **Household consent obtained** [Yes_____] [No_____] **Thank you.**

General Information:

NO 1

3. Gender of the respondent <i>01=Male, 02=Female</i>	[_ _]
4. Age of respondent in year	[_ _]
6. Highest level of education of household head	[_ _]

<i>00= no formal education; 01= Primary; 02 = Secondary; 03=Certificate level training; 04=Diploma level training; 05=Graduate level training</i>		
7. Primary occupation or source of livelihood		[_ _]
<i>01=Farming; 02=Salaried employment; 03=Business ; 04=Remittances; 05=others (specify)</i>		
8. Milk vendors in the location	<i>Myself only=01</i> <i>Many others-=02</i>	[_ _]
9. Milk Volume Sales(litres/day)		[_ _]
10.Demand for your milk in the location		[_ _]
<i>01=yes 02= no</i>		
11.Daily milk Income		[_ _]

SECTION B

THE LEVEL OF AWARENESS OF VENDORS ABOUT STANDARDS REGULATION IN MILK TRADE

1. The storing of milk does not interfere with the quality of milk sold to consumers

Strongly Agree Agree Neutral Disagree strongly disagree

2. The Kenya Dairy board has regulations and standards that are easily comprehensive

Strongly Agree Agree Neutral Disagree strongly disagree

3. As a milk seller I have attended Kenya Dairy Board meetings

Strongly Agree Agree Neutral Disagree Strongly disagree

4. The Kenya dairy board outline the milk standards and regulations I must uphold as a milk seller during the meeting

Strongly Agree Agree Neutral Disagree Strongly disagree

5. As a milk seller I am aware of the different milk regulations and standards put in place for consumer safety

Strongly Agree Agree Neutral Disagree Strongly disagree

6. As a milk seller do you understand what is safe milk

Strongly Agree Agree Neutral Disagree Strongly disagree

7. Unsafe milk is a cause of microorganism which can cause serious diseases such as brucellosis, tuberculosis and cholera

Strongly Agree Agree Neutral Disagree Strongly disagree

8. A strong dairy regulatory framework both at the national and county level that facilitate compliance of milk and milk products can protect consumer, enhance private sector participation and boost investments.

Strongly Agree Agree Neutral Disagree Strongly disagree

9. Are you in support of the implementation of the strong regulatory framework in the informal sector to curb milk irregularities

Strongly Agree Agree Neutral Disagree Strongly disagree

10. When Kenya Dairy Board outline standards and regulations .As a stakeholder in the milk industry I should be involved in the contribution of the creation of laws and policies in the milk sector

Strongly Agree Agree Neutral Disagree Strongly disagree

Do you think lack of enough involvement by those on the ground in contribution of the standards and regulations of milk has aided the rampant malpractices in the informal sector?

Strongly Agree Agree Neutral Disagree Strongly disagree

SECTION C

EVALUATE FREQUENT NON-COMPLIANCE BEHAVIOUR BY VENDORS IN MILK TRADE

1. Based on your own assumption and observation what kind of substance is added to milk to alter the quality of milk sold to consumers?

Explain

2. How many customer complaints have you received after purchasing milk from your shop, please mention some of them?

3. In your opinion, what trade practices in milk trading would you consider trading malpractices, list and briefly explain why?

SECTION D

REASONS AND MOTIVES FOR NON COMPLIANCE BEHAVIOUR

1. Are you satisfied with the amount?
 - a) If yes, why?
 - b) If no, why?
2. Is the price level of milk a reason that make the sellers add unsafe substances to milk,
 - a) Yes, explain?
 - b) No, explain?
3. With the addition of unsafe substances to milk, do the sellers increases the profit
 - a) If no explain?

SECTION E

BARRIERS TO COMPLYING WITH STANDARDS AND REGULATION

1. Have you ever acquired a milk selling license?
2. If no why don't you have a milk selling license?
 - a) It is expensive to obtain a milk selling license
 - b) The process is tedious as I have little skills in technological application
 - c) Kenya Dairy Board inspection standards are too high to maintain in case you want to acquire the license
 - d) I do not know of any milk selling license that is required
3. What is your suggestion if you were to turn your informal milk trade to formal milk trade?

Appendix B : Data Collection Matrix

Research questions	Variables	Measurement scale
What is the level of awareness among vendors of the regulations in milk trade?	<p>Dependent variable</p> <p>Level of awareness of standards and regulations in milk trade</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Dairy requirement by Kenya dairy board • Consequences of selling unsafe milk • Milk handling and storage 	<p>Ordinal</p> <p>likert scale</p> <p>Nominal scale</p>
Which are the prevalent intentional non-compliance behaviours by vendors in milk trade?	<p>Dependent variable</p> <p>intentional non-compliance behaviours</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Addition of water to milk • Milk contamination with chemicals such as hydrogen peroxide • selling of milk without license • Selling mixed morning and evening milk 	<p>Nominal scale</p> <p>Count data</p>
What are the reasons and motives for vendors to not comply with the regulations governing milk trade?	<p>Dependent variable</p> <p>reasons for not to comply with the regulations governing milk trade</p> <p>Independent variables</p> <ul style="list-style-type: none"> • household income • earn more from milk sales 	<p>Nominal scale</p> <p>Count data</p>
Which are the barriers to vendors for complying with the regulations governing milk trade?	<p>Dependent variable</p> <p>Barriers to complying with standards and regulations</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Too high milk standards to attain • Inadequate knowledge • Poor quality from suppliers 	<p>Nominal scale</p> <p>Count data</p>

Appendix C: Data Analysis Matrix

Research Question	Variables	Measurement Scale	Method of analysis	Forms of presentation
What is the level of awareness among vendors of the regulations in milk trade?	<p>Dependent variable</p> <p>Level of awareness of standards and regulations in milk trade</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Dairy requirement by Kenya dairy board • Consequences of selling unsafe milk • Milk handling and storage 	<p>Ordinal likert scale</p> <p>Nominal Scale</p>	Quantitative method	Frequency tables
Which are the prevalent intentional non-compliance behaviours by vendors in mild trade?	<p>Dependent variable</p> <p>intentional non-compliance behaviours</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Addition of water to milk • Milk contamination with chemicals such as hydrogen peroxide • selling of milk without license • Selling mixed morning and evening milk 	<p>Nominal scale</p> <p>Count data</p>	Qualitative and quantitative	Frequency tables and narratives explanation

<p>What are the reasons and motives for vendors to not comply with the regulations governing milk trade?</p>	<p>Dependent variable reasons for not to comply with the regulations governing milk trade</p> <p>Independent variables</p> <ul style="list-style-type: none"> • household income • earn more from milk sales 	<p>Nominal scale Count data</p>	<p>Qualitative and quantitative</p>	<p>Frequency tables and narratives explanation</p>
<p>Which are the barriers to vendors for complying with the regulations governing milk trade?</p>	<p>Dependent variable Barriers to complying with standards and regulations</p> <p>Independent variables</p> <ul style="list-style-type: none"> • Too high milk standards to attain • Inadequate knowledge Poor quality from suppliers 	<p>Nominal scale Count data</p>	<p>Quantitative and qualitative</p>	<p>Frequency tables and narrative explanation</p>

Appendix D: Publication Abstract

ABSTRACT

Milk commodity trading is regulated with licensing, registration, certification and food standards to assure product safety as well as quality to the public. In Kenya milk is traded in both formal and informal market outlets. But, in the latter, noncompliance behavior is more prevalent in form of adulteration with water, flour and blue band margarine. This also includes other hazardous elements such as hydrogen peroxide, antibiotics, and harmful bacterial load levels. Therefore, trade malpractices that expose consumers to health hazards attracts penalties from regulating authorities and vendors also risk the loss of customer confidence in business as consumers reject milk. However, the underlying sociological explanation of this behavioral practice and motives of the milk vendors in reviewed literature reveals a knowledge gap required to inform how to address the implications to public food safety. This study applied sociological rational choice theory to inform the underlying intentional noncompliance behaviors in informal milk trading in peri-urban areas of Nakuru town, Kenya. Specifically, the study probed for milk vendors' level of awareness of the regulations in milk trade in a survey research, with snowball sampling to access 120 informal milk vendors for interviews. Data collected and analyzed were quantitative and qualitative. The results revealed that vendors had low level of awareness of the food standards, regulations and requirements in milk trade yet vendors argued that the standard regulations set ignored their local situational realities, making it impractical for them to comply. The findings imply that it is important to align food standard regulations to local situation, educate vendors in food standards and involve them in food policy dialogue processes. Education should continuously sensitize milk vendors that compliance with food standard regulations is to benefit the public – consumers, vendors, and producers. In education, vendors need to know the specific penalties that noncompliance attracts.

Key Words: Informal Milk Trade, Informal Milk Vendor, Milk Malpractice, Probing, Non Compliance, Rational Choice Theory

1. INTRODUCTION

Food trade practices that expose milk consumers to health hazards and risk have been the basis for the passage of anti-adulteration laws to mitigate food crimes (Cheng, 2012). In spite of the passage of anti-adulteration laws, milk and milk products have continued to face multifaceted challenges that go beyond the health, nutrition and safety issues. Today, milk consumption is linked to trade which introduce social, political and ethical issues. Low-income consumers buy milk based on affordability, not on the quality or safety assurance as part of their survival (Yan, 2012; Blackmore and Grace, 2018).

Milk is an important component of the human diet (Handford, Campbell, and Elliott, 2016a), a livelihood strategy for dairy farmers and a traded commodity for vendors. In low income countries like Kenya, most of the vendors trade milk in the informal market outlets. Compliance with food standards and regulations is a

Appendix E: Research Permit Nacosti

 <p>REPUBLIC OF KENYA</p>	 <p>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
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This is to Certify that Ms.. Mercy Wairimu of Egerton University, has been licensed to conduct research in Barotia MALPRACTICES IN THE INFORMAL MILK TRADE IN NAKURU WEST SUB COUNTY, NAKURU COUNTY, KENYA ending : 18/December/2020.	
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