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Navigating Inventory Management as a Determinant for Improvement of Customer Service in Malawi's Small Agricultural Manufacturing Organizations (Agricultural Cooperatives) in Mchinji.

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Introduction

The agricultural manufacturing organizations also known as Agricultural Cooperatives, which comprise of smallholder farmers, in Malawi play a great role in the heart of Africa, where agriculture is essential for many communities. Many of these organizations act as the connection in the supply chain ensuring that necessary agricultural supplies like seeds, fertilizers, pesticides and processed foods are efficiently delivered to both farmers and market. In this network, effective inventory management is a factor for enhancing customer service within these organizations.

Malawi often referred to as the "Warm Heart of Africa" relies greatly on Agriculture sector as a cornerstone of its economy. These small agricultural manufacturing organizations in districts such as Kasungu, Zomba, Dowa, Lilongwe among others and Mchinji being the prime and study focus serve farmers with agricultural supplies, produce cooking oil among other products contributing to food security and promoting the country's economic growth. As the demand increases, so do the challenges and expectations on these manufacturing cooperatives.

Cooperatives in Malawi, with support from a seed development project and government initiatives, have over the years successfully set up groundnuts and sunflower oil producing enterprises, thereby boosting incomes and opening up market opportunities. There are so many cooperatives in Malawi however this article focuses on Mchinji that has many cooking oil manufacturing cooperatives, which includes Kamwendo, Mthiramsembe and Machichi Cooperatives. On average, these cooperatives have around 118 members each and produce, on average, 6,000 litres of cooking oil, translating to MK 7,200,000 (equiv-to-US$ 4,235.29 now) in sales per month holding all factors equal. Almost 2,000 farmers have been linked to markets so far via these manufacturing agricultural groups.

Mthiramsembe, serving as an exemplary cooperative group, currently comprises 120 members, with 59 women and 61 men. Its formation dates back to 2016. This cooperative like the rest has been a recipient of comprehensive support from various organizations, including the Malawi Seed Industry Development Project (MSIDP) and the Legume Development Trust (LDT), a subsidiary of the African Institute of Corporate Citizenship. The support has encompassed a spectrum of initiatives, such as training and access to profitable market opportunities. Notably, the LDT played a pivotal role in equipping these groups with valuable knowledge and skills in the domains of oil processing and marketing. Additionally, they facilitated the cooperative's participation in the 'One Village One Product' program, a government initiative aimed at enhancing local production by providing essential oil processing machinery.

Since its establishment, the oil press, which produces 200 litres of cooking oil, has become a stable market for groundnut farmers in the area, most of whom used to sell their produce to intermediary agents at giveaway prices. The cooking oil made from sunflower and groundnuts is sold to grocery shops within the community and bigger shops in Lilongwe among others, at MK 1,200 (about US$ 1.07) for sunflower and MK1,500 (about US$ 1.34) per litre, and dividends are shared annually, among members of the cooperative.

Problem Statement.

The trend has it that, impediments such as limited access to well-organized markets have excluded smallholder farmers in Malawi from actively engaging in its profitable market economy. Nonetheless, the industrious members of cooperatives like Mthiransembe, Kamwendo, and Machichi Oil-producing Cooperatives, situated in the heart of Mchinji district in Central Malawi, have demonstrated the resourcefulness of smallholder farmers in overcoming their development challenges. Regrettably, a turning point occurred in 2021 when reports surfaced regarding customer service dissatisfaction. This predicament is attributed to suboptimal inventory management practices, among other contributing factors, which collectively resulted in a less-than-satisfactory experience for the customers. Therefore, this research intends to circumnavigate and understand the ultimate level to which inventory management can affect customer service of cooking oil producing agricultural organizations in Mchinji district

Inventory refers to all the items, goods, merchandise, and materials held by a business for selling in the market to earn a profit. In addition, when it comes to Manufacturing businesses, inventory is a great deal for successful business operations (Hassan, et. al 2012). In the context of working capital management, inventories hold a pivotal position for the majority of business enterprises. They consistently constitute the most substantial component within current assets. Within the realm of working capital dynamics, effective inventory control and management presents a significant challenge, particularly evident many Malawian manufacturing businesses including agriculture cooperatives. Here, the issue is especially pronounced, with roughly two-thirds of organizations having their current assets entangled in inventories. The ebb and flow of working capital are intricately tied to inventory turnover. Thus, it is only natural that inventory, known for its profit-maximizing potential, commands the utmost significance among current assets.

The Inventory Management Challenge.

Efficient inventory management is central to these organizations' operational effectiveness and competitiveness. Inventory management encompasses procurement of groundnuts and sunflower seeds, storage, order processing, and distribution. These cooperatives must ensure that essential products are readily available to meet customer demands.

The challenge lies in striking a balance. Inefficient inventory management can result in stockouts, overstocking, delayed order fulfillment, and increased operational costs. Stockouts, where essential products are unavailable when needed, can result in customer dissatisfaction and lost business. Overstocking can tie up financial resources that could be allocated elsewhere. Delays in order processing and fulfillment can further exacerbate customer dissatisfaction.

Inventory Management and Working Capital.

Working Capital: Working capital refers to the capital used in the day-to-day trading operations of a business. It signifies the variance between a company's present assets and existing liabilities. Current assets include cash, accounts receivable, and inventory, while current liabilities comprise accounts payable, short-term debt, and other obligations that are due in the short term (usually within one year).

Effective working capital management is essential to ensure a company's liquidity, meet its short-term financial obligations, and maintain operational efficiency. It involves optimizing the balance between current assets and current liabilities to minimize financial risk while maximizing operational efficiency.

Inventory Management: Inventory management focuses specifically on the control and optimization of a company's inventory or stock of goods. Inventory includes raw materials, work-in-progress, and finished goods that a business holds for various purposes, such as production, sale, or customer service.

Proper inventory management aims to strike a balance between carrying enough inventory to meet customer demand without holding excess stock, which ties up working capital and can lead to increased carrying costs and the risk of obsolescence. Key aspects of inventory management include setting reorder points, economic order quantity (EOQ) calculations, safety stock levels, and just-in-time (JIT) inventory systems.

The Relationship between Inventory Management and Customer Service.

A significant and complex relationship exists between inventory management practices and customer service quality. Efficient inventory management can significantly improve customer service quality by ensuring product availability, accurate order fulfillment, and prompt deliveries. In contrast, inadequate inventory management practices can lead to customer service challenges, hindering the competitiveness of these organizations.

To understand this relationship better, researchers have delved into the world of small agricultural manufacturing organizations in Malawi, with a particular focus on Mchinji. The goal is to navigate the role of inventory management in improving customer service.

Literature Review

Agriculture plays a pivotal role in Malawi's economy, contributing 23 percent to the total GDP in 2020. The majority of households depend on farming for their livelihoods, with over 80 percent of the population engaged in agricultural activities (World Bank 2022). The typical smallholder farming household operates on a modest scale, cultivating an average of just 0.65 hectares of land. Notably, 75 percent of these farmers have access to less than one hectare of cropland. Consequently, the formation of cooperatives and other farmer organizations offers a promising avenue to attain economies of scale and enhance efficiency in both the production and marketing of agricultural goods in Malawi. By working collectively, participating farmers stand to realize increased returns from their farming endeavors.

Historical Development of Cooperatives in Malawi

A Financial Cooperative Act, 2010 (FCA, 2010) was enacted in April 2011 for the oversight of financial cooperatives due to proliferation of savings & credit cooperatives (SACCOs). Recently, in 2018, Cooperative Development policy was reviewed alongside the development of Farmer Organizations Development Strategy.

Cooperative Development in Malawi

For the Government of Malawi, the role of cooperatives development is largely managed by the Cooperative Division under the Department of SMEs and Cooperatives in the Ministry of Industry, Trade and Tourism. However, other government Ministries especially Ministry of Agriculture, Irrigation

and Water Development (MoAIWD) also play a pivotal role in cooperative development in liaison with the Ministry of Trade. Additionally, development partners and other stakeholders like the secondary and tertiary cooperatives also compliment the efforts of government in cooperative development.

Current Regulatory Reforms

Malawi in its recently launched vision corded MW2063 particularly Pillar #2 in the Industrialization of Malawi section emphasizes and presents three key pillars that guide the focus of the vision. These three pillars are meant to build on each other to create the inclusively wealth and self-reliant nation that they envision. Agricultural manufacturing cooperatives fall in this important pillar of industrialization. The importance of industrialization cannot be overemphasized because Industrialization leads to economic growth and improved human development. Industrialization represents a country's capacity to produce or manufacture products enough for themselves and for export to the world market instead of relying on imports from other countries. Industrialization is a key factor in Malawi's transformation into a more developed and self-reliant nation.

The research literature on primary agricultural cooperatives.

Through increased economies of scale, cooperatives help farmers achieve several agricultural production or marketing objectives more efficiently or profitably than individual farmers would be able to achieve on their own (Wiggins & Keats 2013). However, cooperatives must have good performance and be commercially successful to provide benefits to their members. Examining the theoretical literature on cooperatives and their performance is fundamental guiding us and establish an understanding of the modulus operand of cooperatives original establishment intent.

To comprehend the factors contributing to the success of cooperatives, insights can be drawn from the cost-benefit framework proposed by Johnston and Clark (1982). This framework emphasizes that the advantages derived by a farmer from participating in cooperative activities should surpass the benefits they could achieve individually (Curtis 1991; Wiggins & Keats 2013). Many factors contribute to the success, performance, or "health" including inventory management (Cook & Burress 2009) of cooperatives. Sexton and Iskow (1988) identified several organizational, financial, and operational factors as correlates of successful agricultural manufacturing cooperatives in the United States. These included open membership and full-time management.

In Poland, success was associated with leadership strength, group size, business relationships among members, and member selection processes (Banaszak 2008). The "structure-conduct-performance" paradigm is useful for this study: market structure, which is an external factor, affects the organization and conduct of a firm, of which cooperatives are a type. The conduct of the firm in turn affects its performance (Tan 2016). With regards to primary agricultural cooperatives, the types of conduct of interest are the actions of the cooperative regarding price taking or collusion. For farmer cooperatives, like many other businesses, their performance can be evaluated based on factors such as profitability and efficiency indicators, among various other metrics (Tan 2014).

Similarly, Richard et al. (2009) state that organizational performance is based on three outcomes: financial, such as profits; product market, such as sales or market share; and shareholder return. Shiferaw, Hellin, and Muricho (2011) used profitability as an indicator of the success of agricultural cooperatives across Africa, alongside their degree of autonomy and level of member participation. In Ethiopia, Bernard et al. (2010), examining how successful cooperatives were in staple crop marketing, used as success indicators marketing performance, which included the value of produce sold by each cooperative studied, knowledge of prices in cities by cooperative leaders, and the degree to which intermediaries were used for commercial transactions.

Also in Africa, Francesconi and Wouterse (2017), in a study aimed at optimizing and scaling up the impact of cooperative development interventions, note several principles that contribute to the success of primary agricultural cooperatives. The authors link these to the universal cooperative principles of the International Cooperative Alliance (2015). The principles the authors highlighted include regulated entry of new members in the cooperative, exit bonuses to prevent side selling, a democratic cooperative governance structure, voluntary tradable investments, visionary leadership, and socioeconomic balance in the membership. Interestingly, not much was dealt with on inventory management practices affecting cooperative success and the potent to influence customer service.

Data and Methodology

This research paper adopted a mixed-methods approach where both quantitative and qualitative research methods were employed. Both Questionnaires and interviews were used to evaluate the effectiveness of inventory management practices being used and to measure the satisfaction level of customers. Key persons, which includes cooperative members (inventory manager, custodian production team and cooperative committee inclusive) the cooking, oil regular customers, off-takers and supermarkets. Questionnaire was based on the personal preferences which help us to know how much they are satisfied with cooperatives' service and products and what the important of their products in their life are and how often they visit their outlets. Through questionnaires, we came to know that how can these agricultural cooking oil producing organizations can bring continuous improvements in their products and customer service experience.

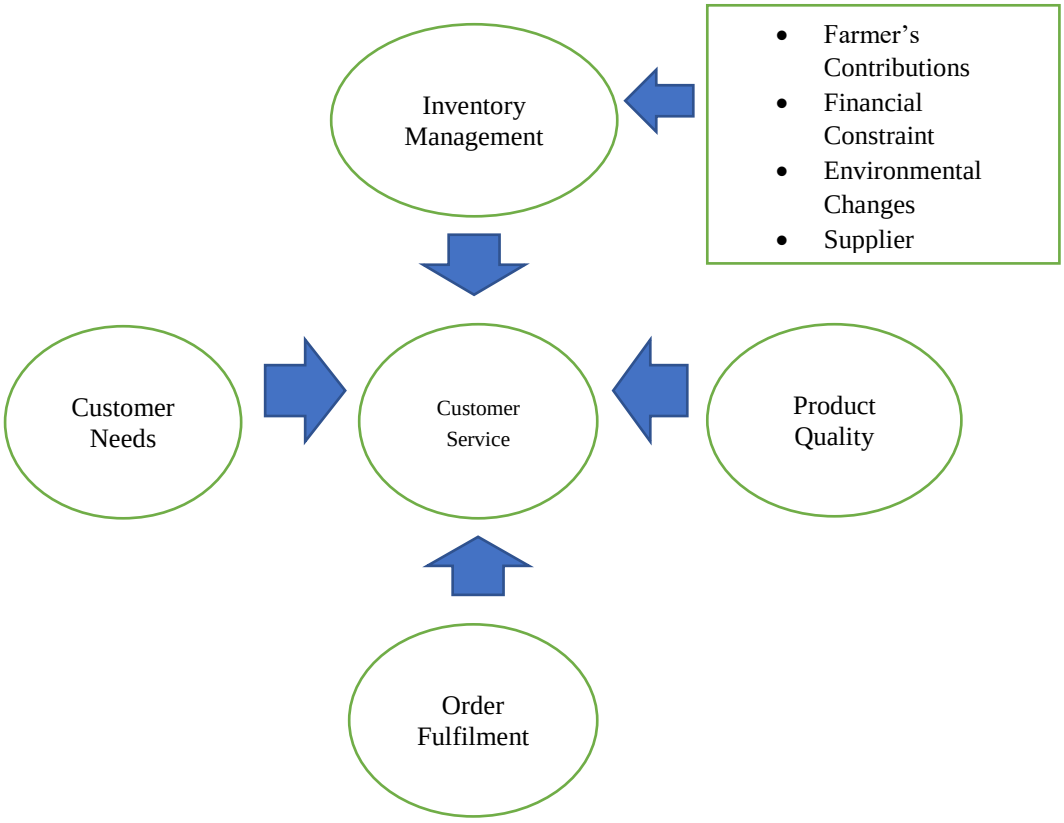
To analyse the inventory management practices of the agricultural cooperatives we conducted interviews. This unstructured interview was based on the management of inventories. How the cooperatives manage inventory to fulfill the demand of the customers. Customer satisfaction can be explored by using customer satisfaction performance surveys. The type of survey has to be qualitative, because it is difficult to use quantitative research methods for customer satisfaction. Open-ended questions help to discover if there is any other issue that may be causing problems with customer satisfaction.

Variables

The research encompasses several explanatory variables: Inventory Management (to investigate the practices, systems, and techniques employed), Customer Needs (for market analysis and understanding customer requirements), Product Quality (for assessing the quality of products concerning inventory management), and Order Fulfillment (to gauge the cooperatives' ability to meet order deadlines). This study employs customer satisfaction as the dependent variable.

Theoretical Framework

The theoretical framework is explained with the help of the following figure.



Survey and Questionnaire

Measuring customer service satisfaction is inherently imprecise due to its subjective and non-quantitative nature. However, it necessitates sampling and statistical analysis.

As suggested by Kathleen McCallops (2023), researchers can enhance the robustness of their study and provide more compelling evidence by combining qualitative and quantitative methods. This research therefore, such an approach is feasible due to the hypothesis that were formulated. As much as the study has employed the mean as a measurement to assess the influence of independent variables on dependent ones based on the sample data, it was necessary to come up with empirical findings.

Findings

This study utilized a combination of questionnaires and interviews to assess the effects of independent variables, facilitating an in-depth exploration of customer expectations and needs. The questionnaires employed a Likert scale, with options as follows: A) Strongly Disagree, Bg) Disagree, C) Neutral, D) Agree, and E) Strongly Agree, corresponding to the following percentage scale: A=0%, B=25%, C=50%, D=75%, and E=100%.

Table 1: Customer Satisfaction Results

Independent Variables	**Mean**
Customer Needs	*80%*
Product Quality	*69%*
Order Fulfilment	*77%*

The questionnaires were distributed among 100 cooperative's members, 90 were submitted but 80 only could be used. 20 random customers in Mchinji were interviewed to testify their experience with the agricultural manufacturing cooperatives during the time when they were under a funding project in the previous years. This was done to measure the **first thesis hypothesis** that stated:

"Effective inventory management practices positively impact customer service quality in small agricultural manufacturing organizations in Mchinji, Malawi."

Results outline/depict that the efficient and effective management of inventories leads towards higher satisfaction level in customers. According to the responses, we can conclude that customers' needs play key role in shaping customer satisfaction. 80% of the respondents considered customers need are to be addressed while setting any inventory management being followed in an organization. Respondents were sensitive regarding price, promotion, product, seasonal demand and placement. Results indicates if products are according to customer needs and wants, reasonable price and provided on convenient places must be considered. According to the results of questionnaires and interviews 77%, respondents considered it a significant dimension that brings variation in the level of customer satisfaction. A result also indicates that their menus have desired quality products listed on them. As 77% should be more than 90% to have strongly satisfied customer based via quality. They may increase their product lines to have better quality perception among customers. Order fulfilment has a slightly positive relationship with inventory management according to the sample results. It has been graded as 69% showing neutral response by respondents. Even when order fulfilment individually has a low relationship with customer satisfaction but it integrated with customer needs and product quality have reasonable impact.

Customer needs and quality has a strong link with inventory management while order fulfilment has poor or no link with inventory management according to the results of study conducted.

The same was used to compare with the recent years when agricultural manufacturing cooperatives during the time that they were not under funding project and the following were the results:

Table 2: Customer Satisfaction Results

Independent Variables	**Mean**
Customer Needs	*80%*
Product Quality	*40%*
Order Fulfilment	*30%*

Customer needs were still high 80% exhibition but product quality of cooking oil produced shows a mean of 40% and order fulfilment exhibited 30% failure with which the agricultural cooking oil producing cooperatives were not able to fulfil the customer orders.

To measure the second Hypothesis which was to establish:

"The extent to which inventory management practices of Agricultural cooperatives influence customer service quality is influenced by factors such as market demand, farmer's contributions, environmental changes, supplier relationships, and resource constraints."

Regression model was used and the following were the outcome:

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_p X_p$$

Customer Service Quality = β0 + β1 (Inventory Management Practices) + β2 (Farmer's Contribution) + β3 (Environmental Changes) + β4 (Supplier Relationships) + β5 (Financial Resource Constraints) + ε

Where:

- β0 is the intercept.
- β1 to β5 are the coefficients that represent the impact of each independent variable.
- ε is the error term.

After running the regression;

Table 3: Regression Analysis

Independent Variable	**Regression Coefficient**	**Std. Err**	**T-Value**	**P-Value**
Intercept	69.10	2.62	26.33	0.0001
Inventory_Management_Practices	0.60	0.058	10.30	0.0001

Farmer's_Contribution	0.58	0.048	12.02	0.0001
Environmetal_Changes	0.80	0.421	1.90	0.02
Supplier's_Relationship	-0.56	0.055	10.20	0.0001
Financial_Resource_Constraints	0.94	0.470	2.00	0.0001

1. **Inventory Management**: The regression analysis indicates a statistically significant positive relationship between inventory management practices and customer service with a P-value that is <0.05 and a coefficient of 0.60. As inventory management improves, customer service scores tend to increase. This suggests that effective control of inventory positively influences the quality of customer service.
2. **Farmers' Contributions**: The analysis shows a statistically significant positive association between farmers' contributions and customer service with a P-value of 0.0001 and a coefficient of 0.58. As farmers contribute more actively, customer service tends to improve since there is inventory enough to keep production happening. This highlights the importance of the engagement of the farming community in enhancing customer service.
3. **Environmental Changes**: The analysis shows a positive correlation between environmental changes and customer service, which is statistically significant with a P-Value of 0.0001 and a positive coefficient of 0.80. When the agricultural cooperatives are faced with significant environmental challenges, customer service tends to negatively affected. This implies that adaptability and mitigation strategies in response to environmental changes are critical for maintaining high-quality customer service.
4. **Suppliers Relationships**: The regression results reveal a statistically significant negative relationship between the involvement of suppliers and customer service. The results shows a P-Value of 0.06 with a negative coefficient of -0.58. This is because there is no constant engagement with suppliers only one time when needed. In addition, the members make a great contribution of inventory therefore, there is no contracted suppliers. This suggests that strong supplier relationships does not significantly affect customer service.
5. **Financial Resource Constraint:** The analysis shows a statistically significant positive association between the limited financial resource and customer service with a P-value of 0.0001 and a coefficient of 0.94. This is evident when you compare the customer service quality when the Agricultural cooperatives are under a funded project and when they are not. Whenever financial resources are available, customer service quality is high and when there is limited financial resources, the customer service quality is low. This highlights the importance of the sufficient financial resources of the cooking oil producing cooperatives in enhancing high quality customer service.

Discussions.

The research findings indicate that effective inventory management practices positively influence customer service quality within these organizations. Organizations that maintain accurate records of inventory levels, employ demand forecasting methods, ensure efficient order processing, and monitor inventory turnover tend to provide higher levels of customer satisfaction. When customer orders are fulfilled accurately and on time, communication is effective, and responsiveness to customer needs is prioritized, organizations are better positioned to meet customer expectations.

However, the research also highlights the importance of considering moderating factors. Market demand variability, environmental changes, financial resource constraints, and supplier relationships, farmer's contributions play significant roles in the relationship between inventory management and customer service quality. These contextual factors influence the extent to which inventory management practices affect customer service quality.

Recommendation.

The research provides a foundation for small agricultural manufacturing organizations in Malawi, particularly in Mchinji, to enhance their inventory management practices and, consequently, customer service quality. The recommendations stemming from this study can help these organizations become more competitive and sustainable.

Implementing practical changes in inventory management practices based on research findings can lead to a measurable improvement in customer service quality. Such changes may involve technology adoption, enhanced forecasting methods, streamlined order processing, and strengthened supplier relationships.

Inventory Management Best Practices For Business Success.

The following are some of the inventory management best practices that the agricultural cooking oil manufacturing cooperatives can use to succeed in providing best customer service and succeed in their business;

- Categorize Inventory Using ABC Analysis.
- Optimize Pick and Pack Process.

- Establish Inventory KPIs.
- Use Batch Tracking.
- Use an Accurate Reorder Point Formula.
- Carry Safety Stock Inventory.
- Optimize Inventory Turnover Rates.
- Streamline Stocktake
- Reduce Inventory
- Use a Cloud-Based Inventory Management Systems

Conclusion.

The primary objective of this paper was to study and establish the navigated extremes that could be found to be great determinants of inventory management for the improvement of customer service quality by the agricultural cooking oil producing organizations in Mchinji district. The impact on customer service satisfaction arising from inventory management practices and how it has a bearing on the performance of cooperatives has been appreciated. Specifically, we tested the impact of a number of Customer satisfaction parameters, which are customer needs, order fulfilment and product quality on the customer satisfaction. The results indicate that all the three parameters have a significant effect on Customer satisfaction.

As Malawi's small agricultural manufacturing organizations navigate the challenges of inventory management, they are also charting a path toward improved customer service. In a country where agriculture is the backbone, it is not just about supplying inputs, processing products and selling any way; it is about doing so efficiently, accurately, and with an unwavering commitment to customer satisfaction.

As these manufacturing agricultural cooperatives implement the recommendations, they are not just serving their customers; they are nurturing the growth of the country, ensuring that its agricultural sector thrives, and the nation flourishes. Navigating inventory management as a determinant for the improvement of customer service is not only a pathway to business success but also a way to uplift communities and the nation as a whole.

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