Effects of Cotton Market Instability on Primary Agricultural Marketing Co-operative Societies: A Case of Meatu District, Simiyu Region, Tanzania

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Abstract

This paper assesses the effects of cotton market instability on Agriculture Marketing Co-operative Society (AMCOS) in Tanzania. Specific objectives of the study were to examine the effect of instability of cotton farmers' revenue in AMCOS, evaluate the effect of decline in cotton farmers' income in AMCOS, investigates the effect of cotton market instability in AMCOS, and analysing the factors contributing to cotton market instability. To gather data for the study, 207 respondents from ten AMCOS in Meatu District were interviewed. Questionnaires and interviews were the methods of data collection used. Descriptive statistics and inferential statistics were used to analyse data. The findings of the study reveal that market instability is directly related to fluctuations in crop prices, a decline in cotton production, and a poor input supply system, which in turn leads to poor crop quality. These factors significantly impact the prices and hence revenue that cotton farmers receive. Therefore concluded that, the existing cotton market leads to instability in AMCOS. The instability in revenue and decline in income lead to cotton market instability. Six factors have been concluded to contribute significantly to market instability and they include competition with other crops, low demand in the world market, low price levels, poor climatic conditions, poor input supply, and low production levels. This study recommends that AMCOS should provide up-to-date educational support to its members to enhance their understanding of the activities required to produce high-quality crops. There should be an emphasis on increasing cotton production through the effective use of extension services and the adoption of improved quality inputs. Finally, the government should continue to revise agricultural policies to address the issue of inadequate input supply, thus mitigating the risk of low production. This paper provides insights into cotton market instability ending interventions.

Keywords: *Effect, Cotton, Market instability, Agriculture Marketing Co-operative Society*

1.0   Introduction

Co-operatives have improved the lives of many societies worldwide. Depending on the country, co-operatives may be considered as a form of economic system, a community development organisation, or a form of business (Coley, 2000). Their history can be traced way back to the 1840s when the Rochdale pioneers founded the first modern co-operative movement in Lancashire, England, to provide

an affordable alternative to poor-quality and adulterated food staff (Adam, 2011). The starting of the modern co-operatives triggered the establishment of an apex organ, the International Co-operative Alliance (ICA) by the year 1895 in London with the principle aim of providing a global voice and forum for co-operative knowledge and information, defining and defending the Co-operative Principles (CP) and develop international trade. Practising under the CP, co-operatives have played an important role in various economic systems over time. They have become important entities in our economic systems, especially in agriculture relevant to smallholder producers of various crops such as cotton (Skolastika, 2020).

Cotton is produced in more than 100 countries around the globe and its cultivation represents over 31 million hectares or 2.4% of global arable land. Cotton is cropped over large areas in many subtropical and tropical countries, involving about 20 million farmers who completely depend on cotton production and another 30 million farmers who include cotton in their rotation scheme (Smith and Stewart, 2012). The most important countries are: China (24%) of global cotton production), the USA (19%), India (16%), Pakistan (10%), Brazil (5%), and Uzbekistan (4%) (Shugan, 2013). Studies have shown a positive relationship between political instability and stock market performance in Organisation of Islamic Cooperation countries, indicating a potential ripple effect on Agricultural Marketing Cooperative Societies (AMCOS) operating in politically unstable regions (Kais *et al.,* 2021). Additionally, domestic instability, caused by socio-economic and political issues, has been found to have a significant negative effect on the stock returns of industries like textiles, which could extend to AMCOS operating in similar conditions (Ghazia *et al.*, 2014).

In Africa, cotton is a staple textile of the fashion industry in North African countries (TCB, 2012). Regarding East African Countries, cotton is ideal for making cloth because its fibers bond and interlock when spun into long strands that can be easily dyed. In Uganda, Kenya, and Tanzania, the marketing of agricultural produce has been facing a recurrent problem and affects many farmers in most parts of these contries. In addition, there is a problem of high transaction costs, inadequate information concerning market opportunities, lack of credit facilities, and other market imperfections to smallholder producers (Rwela, 2023; Bjornlund *et al.*, 2020).

Most of the cotton produced by smallholder farmers is exported, contributing around 24 percent and 4 percent of total agricultural and all exports respectively. In Tanzania, the national newspaper, Daily News, Dar Es Salaam, (13 November, 2018) reported that five regions in Tanzania's were giant producers of cotton in the country. The regions were Singida, Simiyu, Shinyanga, Mwanza, and Mara regions. These regions produce 90 percent of Tanzania's cotton (TCB, 2018).

By 1968 Tanzania had the largest co-operative movement in Africa. It was observed that the co-operative movement in Tanzania was expansive co-operatives handling £27.5 million worth of business or 49 percent of the country's annual exports (Maghimbi, 2018). Co-operatives including those which handled cotton increased rapidly in the country with firm support from the government (Maghimbi, 2018). The support given by the government were in form of the supply of inputs and finding better prices of cotton in international markets. After the government of Tanzania de-registered the co-operatives in 1976, all the processes of cotton marketing were delegated to the Tanzania Cotton Authiority. In the early 1980s, however, the government re-registered the co-operatives by modifying the Co-operative Policy, Regulations, and Act. Primary cooperatives were now the ones coordinating cotton farming and marketing.

Despite all the efforts made by the government such as the provision of inputs, looking for better prices of cotton products, and better supervision through amendment of the Cooperative Act, Regulation and Co-operative Policy, still there is recurring marketing instability which affects the sustainability of AMCOS causing them to operate at high risk (Semelius *et al.,* 2013). The cotton market instability can significantly impact AMCOS' performance. Cotton market instability, characterised by disease outbreaks, erratic weather patterns, and price fluctuations can lead to challenges in production, yield, and overall economic performance of cotton cultivation (Thamires *et al*, 2019; Seidu and Sanjay, 2018). Political instability in cotton-producing countries can further exacerbate these challenges, affecting international trade and market performance (Cornelia *et al,.* 2015). Another challenge is the price-cost squeeze that the textiles and manufacturers face because of stagnant retail prices and rising production costs in cotton agribusiness. Cotton farmers have limited alternatives and hence innovative technologies and resources need to be mobilized to ensure that the sector remains viable and continues to be a good source of income (FAO, 2021). This source of income assumed to be unstable given the stagnant retail prices and price-cost squeeze to cotton farmers.The net revenue to farmers (members of AMCOS) is assumed to be under instability condition). Thus, there is a need to research for a better understanding of how market instability affects cotton production and operations of AMCOS; thus a research was needed on the effects of cotton market instability on the sustainability of AMCOS in Meatu District, Tanzania. Thus, the main objective of this study was to assess the effects of cotton market instability on primary agricultural marketing co-operative societies in Meatu district in Simiyu region, Tanzania. Specifically, the study examined the effect of instability of cotton farmer's revenue on AMCOS; evaluates the effect of farmers' income decline on AMCOS; investigates the size of cotton market instability on AMCOS in the study area; and analyses the factors contributing to cotton market instability.

The study is guided by Market Information Services Theory (MIST). The MIST was propounded by Shepherd in 1997. This theory reflects the movement away from state-sponsored marketing in many countries. This is especially those that have been undergoing structural adjustment. The theory argues that there is underground structural adjustment which is accompanied by the recognition that if marketing activities formally carried out by the state are taken over by the private sector. Some government support needs to be provided to promote the creation of a competitive market (Gerber, 2012).According to this theory, primary AMCOS can be shown to have positive benefits for farmers, traders, and policymakers. The weakness of this theory is that prices move too rapidly for available information to serve as more than a guide to likely returns.

The applicability of Market Information Services theory for researchers and authors who are using it results in attention that is given to quality parameters in market information and if this is done, the link between price and quality would strengthen the process of cotton production as a result of a competitive marketing environment. In the future, provision in combination with farmer groups and associations could be an effective strategy for linking farmers to more remunerative markets.

2.0   Study Methodology

The study adopted a cross-sectional research design. The target population for this study is composed of the 83 AMCOS that produce cotton in the Meatu district. The study was conducted in Meatu District in Simiyu Region. The district has the highest cotton production in Tanzania as shown in Figure 1. The study was conducted in three villages (Bulyashi, Bulyanoga and Mwanyahina) in wards (Mwanhuzi, Mwamishali and Mwanyahina) respectively in Meatu Disrict, Simiyu Region in North Western Tanzania. The District has a conducive geographical, soil and adequate rainfall for Cotton growing. The District was selected because it was the largest producer of cotton in the country, it has about 12,617 farmers.
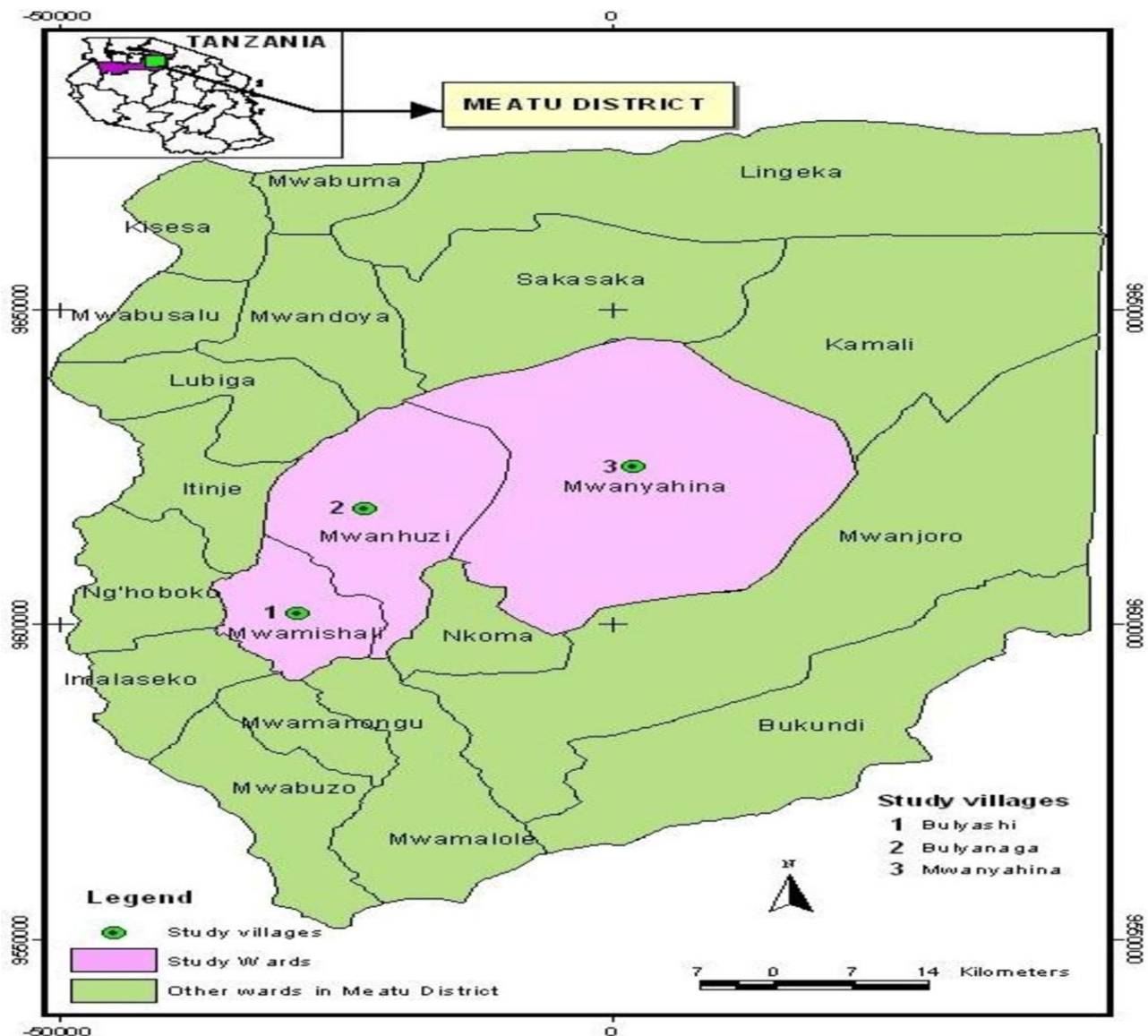
Figure 1:   **Map of Meatu district showing study wards and villages**

Meatu District can be classified as semi-arid, with a decrease in rainfall distribution from north to south. The southern half of the district receives a mean annual rainfall of 400 mm, while the Northern half receives up to 900 mm per year. The rainfall pattern is bimodal, with most rain in November-December and March-April. A constraint, especially for the agricultural sector, is the great variance of rainfall in space and time. It tends to fall in heavy localized rainstorms separated by dry spells. As a result, rainfall in one area differs tremendously from year to year.

In Meatu District cotton is a plant that needs a long frost-free period, a lot of heat and plenty of sunshine. It prefers warm and humid climate. Cotton seeds will have a small germination rate, if the soil temperature is below 60°F (15°C). During active growth, the ideal air temperature is 70 to 100°F (21-37°C). Dry weather is what you're after, the months with the lowest chance of significant precipitation in Meatu are July, August, and then June. Note that we define "significant precipitation" as 1 inches or more in this section. The lowest chance of rain or snow occurs around early to mid July. For example, on the week of July 9th there are no days of precipitation on average. By contrast, it's most likely to rain or snow in early November with an average of 3 days of significant precipitation.

Regarding sampling and sample size, the study used Yamane's (1967) formulae to select a representative sample. Meatu district has 83 Primary AMCOS. As such, 69 societies were selected using Yamane's formulae.

n= N/1+N(e)² ....(i)

Where: -
n- Sample size
N- Total number of Population
e- Marginal Error
n= 83/1+83(0.05)²
n= 68.7 societies
Thus: n= 69 societies

Simple random sampling was used to select 69 societies out of the available 83 with a total of 12617 members. The technique was used to achieve a high level of population representation. The other 14 AMCOS were not considered due to the formulae of Yamane. Finally, one leader and two members were selected randomly from each of the 69 societies to give a total sample of (1+2)*69= 207 respondents which were enough to give a full picture of the cotton market instability in Meatu District. The researchers therefore obtained data from 207 respondents of the respective AMCOS. Regarding data, primary and secondary data were used for this article. Questionnaires and interview guides were used as methods of data collection.

Descriptive statistics were used to analyse quantitative data using SPSS software version 25 to examine the fragility of cotton as a source of farmer's income on AMCOS sustainability; evaluate the effect of farmers' income decline on AMCOS' sustainability; investigate the effect of cotton market instability on AMCOS in the study area. Then, a Binary Logistic Regression Model (BLRM) was used to analyse the factors affecting cotton market instability. The data analysis of this study adopted descriptive statistics and BLRM, towards the literature review as it is concerned with phenomena that can be observed, measured, and validated (Mkumbo, 2014).

Farmers ignorance, poor markets, low levels of production, low price levels, poor climatic conditions, competition from other cash crops, poor demand from the world market, poor input supply and poor government supply were the independent variables while the dependent variable was cotton market instability. They are independent variables because they appeared many times in literature. The number of farmers participating in cotton production hence membership in AMCOS, production in tons, sales revenue and gross sales turnover can be used as some of indicators to measure market instability (Anjum & Zia, 2020). In this study the cotton market instability was measured by the low level of cotton farmers' participation in cotton farming hence AMCOS membership.

The Logistic Regression Model expressed in the equation below was used;

$$L_i = 1n\left\{\frac{Pi}{1-p^i}\right\} = \beta + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \beta_4\chi_4 + \beta_5\chi_5 + \beta_6\chi_6 + B_7\chi_7 + B_8\chi_8 + B_8\chi_8 + \beta_9\chi_9 + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots(ii)$$

Where; L_i = Cotton market instability measured by the low level of AMCOS participation in cotton production; B_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9, = coefficients measuring the probability likelihood of market

instability; χ_1 = FAI, χ_2 = POM, χ_3 =LCP, χ_4 = PRL, χ_5 = PCC, χ_6 = CMP, χ_7 = DWM, χ_8 =PIS, χ_9 = PGS and Ɛ is error term. Table 1 shows the definition of variables and the expected signs.

Table 1:   Dependent variable and independent variables included in the logit model

Variable	Variables definition and unit of measurement
Dependent variable	
Market Instability (Y); (market stability =1, market instability =0)	Expected signs
Independent variables (X's)	
FAI Farmers understanding (issues in the export market)	(+ve)
POM Domestic market enablers (1= yes, 0= no)	(-ve)
LCP Low cotton production (number of tones in the past 5 years)	(-ve)
PRL Price levels (1= good, 0= poor)	(-ve)
PCC Poor climatic condition (1= Yes; 0 = No)	(+ve)
CMP Competition with other products (1= Yes; 0 = Otherwise)	(+ve)
DWM Demand for cotton in world market (1 = Yes; 0 = Otherwise)	(+ve)
PIS Poor input supply (1 = Yes; 0 = Otherwise)	(-ve)
PGS Poor government support (1=Yes, 0 = Otherwise)	(-ve)

Source: Prepared by the Lugunyu and Malamsha (authors), 2021

Six AMCOS and hence 18 respondents were piloted to pre-test the questionnaire before being administered to the entire group of respondents in order to ensure validity and reliability of data. Pre-testing allows errors to be discovered before the actual data collection begins. Items that proved to be ambiguous and did not address the issue under investigation were dropped. This ensured the reliability of the questions to be asked. Validity implies the ability of research instruments to measure what it is supposed to measure (Sarantakos, 2012). To measure validity, the researcher conducted a pilot study where the interviews and observation checklist were validated. As far as the reliability of data or findings is concerned, the researcher involved those key informants who are, in one way or another, involved in cotton production. At the same time, various data collection methods were used including interviews, documentary review, and observation.

3.0   Findings and Discussions

The socioeconomic characteristics of respondents were categorised in terms of sex, age, level of education, and working experience. Concerning the sex of respondents, findings from the field revealed that among the 207 respondents who participated in the study, 132 respondents were male, while 75 were female. This finding is an indication that the majority of cotton farmers in Meatu District are male, with few females participating in cotton farming. This is relevant to the study done by Mkumbo (2014) who found a larger number of men being highly involved in cotton production than women. Generally, although male respondents dominated the study and outweighed female respondents, the opinions of both genders were considered equally in examining the cotton market instability's effect on Primary AMCOS. Likewise, the findings obtained from the field on demographic statistics of respondents in terms of age show that 27 respondents were aged between 18-35 years, 78 were aged between 36-45 years, and 102 had an age above 46 years. Study findings revealed that, a large number of respondents from selected entities aged above 46 years. These findings justify that, most cotton farmers involve in co-operatives through cotton production because they have responsibilities in their families like paying school fees, food, and health care for their children.

3.1   Effect of instability of cotton farmers' revenue on AMCOS

AMCOS perform a big task in the production of the crop including provision for co-operative education, agricultural inputs supply, access for credits and extension services. Therefore, based on the role of co-

operatives to their members, the study was interested in knowing how those could impact the production of cotton.

Agricultural Inputs

The co-operative agricultural inputs supply were revealed as shown in Table 2. The study found that agricultural inputs were provided by AMCOS to farmers on the agreement that during harvest they should bring all the produce to the respective AMCOS where after selling the produce (cotton) they would deduct the cost of inputs covered by AMCOS and pay the remainder to the farmer as farmer's revenue.

Table 2: Co-operative Agricultural Inputs Supply

	Frequency	Percent
Strongly Agree	78	37.7
Agree	48	23.2
Neutral	5	7.2
Disagree	66	31.9
Total	207	100.0

Source: Research findings, 2021

For cotton growers in the study area, the AMCOS are responsible for supplying necessary agricultural inputs. However, there is a lot to be desired in this area. In most cases, the input supply for agriculture is inadequate. These are those who say strongly that the agriculture inputs supply is inadequate were 78 while about 48 agree that the agricultural inputs supply by AMCOS is important in knowing the production of cotton for both AMCOS and individual farmers. It adversely affects cotton production and hence impacts AMCOS and farmers' revenue and therefore, AMCOS's sustainability

Access to Credit

Table 3 shows that more than 108 farmers had access to credit whereas 99 farmers had no access to credit facilities. Access to credit helps farmers increase their productivity because they will have the necessary needs that would increase their ability to work hard such as access to food and other wellbeing materials. It would also encourage other non-members joining AMCOS. This is based on the fact AMCOS can enable cheap, easy and reliable credit than other lending institutions. Furthermore, the presence of agricultural credits plays a major role in the socio-economic transformation of the rural economies.

Table 3: Access to Credit

	Frequency	Percent
Yes	108	52.2
No	99	47.8
Total	207	100.0

Source: Research findings, 2021

Extension Service

The study findings showed that 50.7% of respondents strongly agreed, 34.8% agreed and 14.5% disagreed that farmers had access to extension services in the study area as indicated in Table 4.

Table 4:   Access to Extension of services

	Frequency	Percent
Strongly Agree	105	50.7
Agree	72	34.8
Disagree	60	14.5
Total	207	100.0

Source: Research findings, 2021

Extension services help farmers to understand necessary expert advice that they should follow every time in due course of crop development stages. The study, therefore, was interested in understanding whether cotton farmers in the selected area access the required extension services.

Education to Members

Table 5 shows results on provision of education to members on cotton handling. As provided or enshrined in the fifth principle of co-operatives, education services must be provided to leaders, members, employees of AMCOS. The education services such as training and seminars to its members and other stakeholders. In this article, farmers were asked whether education services and training for co-operative members were provided. It was found that the selected AMCOS provide education through seminars and also during the annual general meetings. On-farm training was provided through visits by extension officers. It was found that 147 respondents strongly agreed, 51 respondents agreed and 9 respondents were neutral on whether they obtained education from their respective AMCOS.

Table 5:   Provision of Education to Members on Cotton Handling

	Frequency	Percent
Strongly Agree	147	71.01
Agree	51	24.6
Neutral	9	4.39
Disagree	-	-
Total	207	100.0

Source: Research findings, 2021

As a co-operative society, the main aim is to have a collective bargain of the crops produced by farmers as members of respective society. To equip members with adequate knowledge, co-operative leadership must provide education to its members to enable these co-operative societies, to collect produce from farmers and look for a better market which could yield a better price.

3.2   Effect of Farmers' Income Decline on AMCOS

The stability of AMCOS business lines around its members' income from healthy cotton production storage and sale of the product after value addition to produce. When there is a decline in production, the implication is that both farmers (members) and AMCOS lose income. It was observed that cotton production sales have been fluctuating over time. At the same time, cotton prices have been in change over the years concerning inflation and input price. This means that both farmers income and revenue lose its adverse share. Table 6 shows the levels of farmers' income (members of AMCOS income) in the study area.

One of the key informants also confirmed by saying that

> *''it has been difficult for some of the AMCOS to operate as a result of poor members' contribution to the societies. Some members have become dormant as a result poor participation in cotton growing which is basically doing business for the co-operative society as the principles require''.*

This confirms that AMCOS has been affected by a fall in farmers' cotton production resulting in a decline in their incomes.

Table 6:   Farmers' Income decline within AMCOS in the study area

	Income of Cotton Farmers (Tsh)	Cotton Farmers	Percentage of Cotton Farmers
1	5,000,000 above	2202	16.03
2	1,000,000-5,000,000	5463	43.3
3	500,001-1,000,000	1363	10.8
4	100,001-500,000	3125	24.8
5	10,000-100,000	463	5.07
	Total	**12617**	**100**

Source: *Research findings, 2021*

3.3   Effect of Cotton Market Instability on AMCOS

The study revealed that AMCOS perform various marketing activities of cotton crop. They include storage, transportation and market of cotton products.

Transport and Storage

After collecting members' produce (cotton), the AMCOS provide the storage where farmers are given a note indicating kilograms (kg), deductions and the expected amount to be received after a sale is done. The AMCOS has the responsibility of storing and transporting the cotton to the secondary society called the union where cotton is kept until the buyer comes to buy using auction.

Table 7:   Storage and transportation of members produce

	Frequency	Percent
Strongly Agree	75	36.2
Agree	30	14.5
Neutral	18	8.7
Disagree	60	11.6
Strongly Disagree	24	29
Total	**207**	**100.0**

Source: *Research findings, 2021*

The study in lieu of this statement sought to investigate the reality if this is how it is done. As shown in Table 7, it was found that, 105 (75 and 30) respondents agreed that their co-operative society is responsible for storing and transporting of their cotton to where the market takes place. It was also found that, 18 respondents were neutral and 84 (60 +24) disagreed.

Market for farmers products

This article revealed that 84 respondents agreed the AMCOS as a key player in the marketing of their cotton. It was found that, 84 respondents strongly agreed or agreed that AMCOS market their produce while 39 respondents were neutral as indicated in Table 8.

Table 8:   Marketing of members (farmers) product

	Frequency	Percent
Strongly Agree	84	40.6
Agree	84	40.6
Neutral	39	18.8
Total	**207**	**100.0**

Source: *Research findings, 2021*

Since the sustainability of AMCOS operations depends on the marketing of its members' produce, any instability in the cotton market will pose adverse impacts on its viability. Table 9 shows that 54 (26.1%) respondents strongly agree that there is a direct relationship to the operation of the AMCOS, 129 (62.3%) respondents agree that there is a direct relationship to the operation of the AMCOS while 24 (11.6%) respondents said that there is no relationship to the operation of the AMCOS as with regards to the market instability of cotton. The study was interested in understanding the effects of market instability on AMCOS operations that respondents were asked to indicate. From the results in Table 9, it can be observed that 88.4 % of respondents agree that there is an effect of the cotton market on the operation of the AMCOS while 11.6% of respondents disagree. It can be said that whenever there is instability in the marketing of cotton there is a direct relationship to the activities of the co-operative society because most of the co-operative societies have no internal source of funds that generate income for the co-operative society.

Table 9: **Size of Effect of Cotton Market Instability on AMCOS**

	Frequency	**Percent**
Strongly Agree	54	26.1
Agree	129	62.3
Disagree	24	11.6
Total	**207**	**100.0**

Source: Research findings, 2021

The study was interested in understanding how marketing instability causes unemployment among the people working with co-operatives. It was found that, 57.1% of respondents were in disagreement with the motion, the study believes that those who commented no have their reasons because some of the staff of co-operative societies are also farmers. This could be the reason why they commented no but on the other hand, those who commented yes amounted to 42.9% which means for others it may be redundant to their work because they depend on the activities of the co-operative society.

3.4   Factors Influencing Cotton Market Instability

The study's objective four is on factors that influence cotton market instability. To arrive at this, binary logistic regression analysis was conducted. Results from the regression analysis indicate that farmers' ignorance and market unavailability have a negative influence on market instability as far as cotton is concerned. However, low price levels and government support have shown more negative effects on market instability (-0.351, $p < 0.05$ and 0.316, $p < 0.05$) compared to ignorance and unavailability of markets. This can be explained by a combination of different other factors such as geographical conditions and emerging new cash crops in the study area. Table 10 shows the binary logistic regression model results.

Low price levels and competition with other cash crops were the most influencing factors to market instability. The results were statistically significant at p-value< 0.05 and Exp (B) = 8.690 and 7.396 respectively. Furthermore, a Wald of 6.434 and 27.101 indicates that both price levels and competition from other cash crops command as strong predictors.

Table 10: Binary Logistic Regression Model Results

Variables	B	S.E.	Wald	Df	Sig.	Exp(B)
Farmers ignorance	-0.062	0.613	0.064	1	0.844	0.831
Market unavailability	-0.123	0.103	1.252	1	0.163	0.793
Low production levels	1.004	0.260	4.925	1	0.007	2.929
Low Price levels	-0.351	0.374	6.434	1	0.000	8.690
Poor Climatic Condition	1.226	0.361	5.912	1	0.004	4.766
Competition with other crops	2.001	0.334	27.101	1	0.000	7.396
Low demandd in the world Market	3.019	0.541	12.022	1	0.002	7.508
Poor Input Supply	1.022	0.451	5.120	1	0.005	2.778
Poor Govt. Support	-0.316	0.113	0.732	1	0.001	0.984
Constant	3.012	1.081	11.993	1	0.000	6.478

Source: Research findings, 2021

Hosmer and Lemeshow Test (Chi-Square = 8.775; sig. = 0.436); Nagelkerke R Square = 0.386

HH= Household; Omnibus Test of Model Coefficient (Chi-square =78.021; sig. = 0.000); Cox & Snell R Square = 0.312

The results also show that the probability of cotton market instability will increase by 37% and 33% respectively due to competition from other cash crops. Scholars like Khalid et al. (2021), Hlophe et al. (2021) and Maqbool and Mahmood (2020) all confirm that price levels of cotton especially in sub-Saharan Africa have been facing a problem of unstable prices and alternative crops competing with cotton in the markets. Price levels were justified by one of the key informants who said *"We are discouraged from concentrating on cotton growing because the price has been decreasing all the time….'.* This confirms that cotton farmers in the study area are aware of the price offered per unit of cotton produce in the market.

Moreover, another key informant said that
> *"It is fortunate that cash crops are currently many acting as alternatives to cotton. Farmers now are switching to crops like simsim, sunflower, groundnuts and keeping livestock productively as an alternative".*

This is another confirmation that cotton farmers are replacing the product with other cash crops or livestock commercial keeping.

Findings indicate that low production levels were another factor that was statistically positively significant at p-value < 0.05 and Exp (B) = 2.929. The Wald of 4.925 signifies the direction of strength of factor production levels. The results also indicate that the probability of cotton market instability will increase by 26% due to low production levels in the study area. As a result, producers and buyers may not be sure at different times if a cotton business may become a reality. Hence, market instability may happen.

The findings are in contention with Shugan (2013) who put forward that, cotton futures surged past $97 a bushel for the first time since March 2014 amid expectations of lower supply and increased demand from the textile industry as countries continue re-opening efforts. World cotton stocks are projected at 89.3 million bales at the end of 2021/22, the lowest in three years. Meanwhile, global production is forecast 5% higher at 118.9 million bales but still set to remain below 2019 record levels. Output is expected to decline in China as the industry becomes less competitive with rising labour costs. On the

other hand, high cotton yields are projected to be achieved in the US, Brazil, Australia and Pakistan due to favourable weather conditions and the increasing harvested area.

Poor climatic condition is another factor that was found to be statistically significant. This is because the results for this factor were p-value < 0.05 and Exp (B) = 4.766. The probability that market instability will increase due to poor climatic conditions is 36%. Furthermore, the direction of strength for the factor of poor climatic conditions to influence cotton market instability is also indicated by the Wald of 5.912. Studies in cotton production confirm that climate is one of the key aspects to stabilise markets (Shi *et al.,* 2021; Abbas, 2020; Rahman *et al.,* 2018).

Low demand in the world market and poor government support were found to be other factors that significantly influence the market instability of cotton at a p-value < 0.05 in the study area. Even though the two factors both influence cotton market instability, the findings indicate that low demand in the world market has more influence with the probability of rising market instability at 54% compared to an 11% increase of market instability as a result of poor government support on cotton production in Meatu District.

The finding may also be indicating that, if there is market insecurity it is difficult for the farmers to respond to producing more or the same tonnage because they know they will encounter losses and hence reduce the production scales. On the other hand, a few number of farmers may continue to produce as this could be their tradition to produce cotton to earn a life whether there is a good price or not. But, in this study, the findings have revealed that there is a direct relationship between market instability and the demand for cotton in the world market as also said by one of the key informants that ''*the demand of Tanzania cotton in the world market has persistently been decreasing due to low quality and competition from other cotton-producing states around the world*''. This confirms that cotton from Tanzania has not been of good quality compared to other countries producing the same product. Other studies indicate that the demand for cotton in the world market has been rising years over years (Tiwari, 2019). This means that it is a very important raw material in the textile industry for the production of fibre for cloth processing.

Moreover, the Tanzania Government has been insisting on strategic crops for the country as part of the strategies for implementing the Tanzania Vision 2025 (URT, 2020). The government of Tanzania has also invested heavily in the agriculture sector and other organs to support its operation such as the enactment of Cooperative Act No. 6 of 2013. This has given birth to the Tanzania Cooperative Development Commission which sits as a regulator of issues of agriculture such as collection and marketing of cash crops through AMCOS.

Another support by the government is through extension services provided by the agriculture department in every district and region. However, the findings further indicate that there is poor government support resulting in cotton market instability. This may be an indication that AMCOS need to be supported at a far higher level in terms of how the markets are organised and how sales take place.

The findings for input supply were p-value < 0.05 and Exp (B) = 2.778 and therefore this factor was also found to be statistically significant. The direction of strength for this factor was also found to be strong as indicated by the Wald of 5.120. Furthermore, findings from the study indicate that the probability that market instability will increase as a result of poor input supply is at 45%. One of the key informants also said that *"input supply has not been sufficient for farmers to come out with quality and bumper harvest. As a result, the market has not been unstable for us"*. This means that AMCOS has not been able

to plan well for input supply of their members. Inadequate input supply influences the low production of cotton. This may be true based on the fact that when the required inputs delay in reaching the farmer it causes a delay in the timing of the farm activities which is very important in the consideration of the time required for planting and harvesting of cotton. Also, it was understood that due to the nature of activities of the cooperative societies to be seasonal if the markets are unstable, the society surfers meet financial obligations in their day-to-day activities.

4.0   Conclusions

It is concluded that the existing cotton market leads to instability in AMCOS. Similarly, the instability in cotton farmer's revenue and decline in farmer's income lead to cotton market instability. Six factors have been found to contribute significantly to market instability in the study area and they include competition with other crops, low demand in the world market, low price levels, poor climatic conditions, poor input supply, and low production levels.

Based on the study conclusions, the following recommendations are put forward; For AMCOS to attain sustainability, they must build capacity of their members by providing the right knowledge, skills and information about modern cotton husbandry, that can help farmers to produce enough quality cotton products. Cotton-based AMCOS and others must provide adequate and standard storage, transportation and a proper procurement system to attract its members. Proper farm inputs must be made available at the right time to cotton farmers through affordable to attract cotton farmers than other crops. The local cotton market should be increased which will enhance production under economies of scale and climate change control measures should be taken into consideration to improve cotton production. To maintain sustainability, AMCOS must provide education and training to its cotton farmers (members). To attract members increase in number rather than discourage them through extension services provision and attract new members.

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