

Development and Validation of a Scale of Influence of Cotton Associations on Territorial Governance in Nampula – Mozambique

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Abstract:- The objective of this research was to develop and validate a scale of the influence of cotton production associations in territorial governance in the Nampula region of Mozambique. The process was divided into two stages. In the first stage, items were produced after a broad review of the literature and electronic platforms of civil society organizations, NGOs and cotton farmers' associations operating in the study region. After that, these statements were submitted to a panel of experts for content and face validity. While in the second stage, a cross-sectional survey was conducted with cotton producers organized in associations of thirteen districts of Nampula province in northern Mozambique, for construct validity and reliability. A paper survey was carried out on producers with the authorization of the competent authorities. A total of 250 responses were received, imported into the SPSS for data analysis. To evaluate the construct validity, an exploratory factor analysis was performed, while the reliability of the instrument was determined by Cronbach's alpha coefficient. The results indicated a scale of 25 items structured in five dimensions, namely, district performance (5 items), political participation of associates (5 items), impact of associationism on district performance (5 items), productive efficiency of associates (5 items) and cotton associations as agents of territorial governance (5 items), each statement presented load forces greater than 0.50 and the model explained 62.71% of the total variance. The values of the reliability coefficient for the global scale (CA = 0.827), as well as for both subdimensions, such as "district performance" (CA = 0.949), "political participation of associates" (CA = 0.705), "impact of associationism on district performance" (CA = 0.500), "productive efficiency of associates" (CA = 0.543) and "cotton associations as agents of territorial governance" (CA = 0.556) were excellent. The correlation coefficients of the retest ranged from 0.813 to 0.917, which also appeared at a satisfactory level. Thus, the newly developed instrument emerged as a reliable and valid measure for the evaluation of the influence of cotton associations on territorial governance in Nampula. This research makes a valid contribution to the analysis of the influence of cotton associations in the province of Nampula in particular, since such a scale is not available in the existing literature.

Keywords:- Cotton associations; content validity; construct validity; Cotton influence scale, Mozambique.

I. INTRODUCTION

In the nineteenth century, the cotton crop was introduced in Mozambique and over the years went through different production models, as mentioned by Arlindo (2010). At present, cotton production is carried out mainly by small producers, who may or may not be organized in associations, based on the system of concessions of areas to cotton ginning companies. These companies are responsible for fostering and extending the cultivation of cotton, which leads to a monopsony market in this subsector, as pointed out by Mosca (2011)

The cotton subsector is a significant source of income for rural areas in Mozambique. This is reflected not only in the local economy, but also in the weight of cotton in the country's trade balance, since it is one of the most exported agricultural products in recent decades, as pointed out by Bruna (2017).

In developing countries, including Mozambique, agriculture is still the foundation of the rural economy, with approximately 2.6 billion people directly dependent on agriculture for their livelihoods. (Gil et al., 2019). But in the current neoliberal economic model, there are market barriers associated with price and quota instability and imbalances in bargaining power, which prevent agriculture from contributing enough to overcome the levels of poverty that characterize these populations (Alain & Sadoule, 2007; Arbolino et al., 2018). Based on theories of endogenous development and social capital, it has been argued that the qualities associated with territorial identity, shared landscape and leadership are intangible assets that could be mobilized to stimulate associativity and mutual collaboration around common interests (Dale et al., 2020; Leonard, 2019). The aspirations to quality of life and the predominant sources of wealth in each territory are the attractions that can motivate the organization of people. These networks of interaction are the muscle of Territorial Governance (TG) (Abel et al., 2019; Plata, 2013)

Recent studies recognize the importance of rural cooperatives and producer associations as sources of social capital, in terms of cohesion, knowledge exchange and mutual collaboration networks (Bernard & Spielman, 2009; Pappalardo et al., 2018). These rural alliances between producers have a significant influence on many associated farmers, who can thus benefit from reduced transaction costs, greater bargaining power and better access to financial resources; also, through training to achieve greater

administrative capacity of their holdings (Donovan & Poole, 2014; Gallego, 2008; Markelova et al., 2009; Schmit & Gomez, 2011). Cooperative links are not limited to the associated group because, in their management of new markets and benefits, they build alliances both with the private sector (wholesalers and intermediaries) and with government entities (Lan & Peng, 2018; Promme et al., 2017). In addition, because they have solidarity community purposes, these organizations go beyond the merely productive and commercial to assume objectives of the common well-being of their territories of influence, something that leads them to join social networks that acquire shared views on community development issues (Michalek, 2018; Torfing, 2012).

The interaction between different actors, including the government, in projects with collective benefits is referred to by several authors as Territorial Governance. It is, therefore, a network of collaboration between those involved in the management of a given territory. (Herrera Hernández, 2012; Mangnus, 2019). It contains the idea of governance because consensus and objectives achieved because of coordinating multisectoral efforts remain in the political arena (Aguilar, 2010; Jorquera, 2011). Then, it is territorial because most of the actors who manage to join the networks have the feeling of belonging to the territories where they live or work (Ansell & Gash, 2018; Saner et al., n.d.).

In rural areas, local cooperatives and producer associations are among the traditional institutions with great influence on exercise leadership and intermediation with and through local authorities (Da Silva & Salanek Filho, 2009; Triboulet, 2015). The success of these organizations associated with the predominant productive fabric in each territory encourages the formation of other networks of community actors who seek access to better conditions of well-being (Freire, 2019; Wan et al., 2020). For this reason, this network of actors is defined as the agent of governance. Since, in this way, resources or knowledge can be shared through mechanisms of daily interaction and trust that lead community groups to cooperate with each other, beyond formal procedures or frameworks (Lan & Peng, 2018).

The success of governance reported in various territorial contexts has led to the realization of different studies that seek to characterize this social phenomenon (Sathapatyanon et al., 2018). Traditionally, these studies have focused on measuring the contributions and impact left by governance processes. These evaluations were based on performance or progress indicators of certain factors associated with the social or economic well-being of a particular place or territory. More recently, some authors have recognized the systemic nature of governance, in terms of the different economic, social, political, and cultural dimensions of the territory that are influenced during and through the processes of governance construction (Fischer & Chhatre, 2016; Martínez et al., 2019). This new line of research recognizes TG as a complex phenomenon where different variables and factors interact with each other and affect each other in the relationships of dependence and interdependence (Stoker, 2018).

To understand how cotton activity influences other dimensions of territorial development and how these dimensions interact to form a territorial governance model that promotes local development, this research was planned to develop and, therefore, validate a scale of measurement of the influence of cotton associations on territorial governance in Nampula. It is important to highlight that the cotton economy is the central point of socio-cultural relations in the territory of cultivation, and the results obtained from this measurement can better clarify the externalities generated in favor of local development.

This study contributes to the existing literature on territorial governance in general and local development, since such an instrument is not available in any literature to date. It will also help professionals in the analysis of mechanisms to promote local development and the promotion of community well-being, in making decisions about which models endogenous to each rural reality should be better adjusted to boost development using local capacities.

The subsequent exposition is organized into three distinct parts, preceded by an introductory chapter. The first part addresses the materials and methods used in conducting this study. The second part focuses on the presentation and discussion of the results obtained. Finally, the third part is aimed at the conclusions of the research.

II. MATERIALS AND METHODS

The present study was conducted in two distinct stages. In the first stage, items with the potential to measure the influence of cotton growers' associations in Nampula province on territorial governance in Mozambique were generated. These items were developed based on a broad literature review, as well as on the electronic platforms of civil society organizations, NGOs and cotton growers' associations operating in the study region. These items were then submitted to a panel of experts for content validity. In the second stage, a cross-sectional survey was conducted with two hundred and fifty participants, members of twenty-three associations located in the thirteen cotton-producing districts of Nampula Province, in northern Mozambique. The objective of this step was to investigate the metric properties of the items generated in the first stage, such as construct validity and reliability.

➤ *Step 1: Scale development - item generation*

This study used both deductive and inductive approaches for item generations. The development of the deductive scale requires an extensive review of the related literature along with a clear understanding of the constructs, while the development of the inductive scale involves the generation of items asking participants for descriptions related to the phenomenon under investigation (Hinkin, 1995).

A bottom-up approach was employed in the generation of the items for this study, using the literature review and the platforms of interaction with the public of civil society organizations, NGOs, cotton producer associations, district governments and concession companies for the promotion of cotton in the study area, to identify the relevant

constructs. In addition, group interviews were conducted with the two hundred and fifty members of the cotton growers' associations of the districts of Eráti (19), Lalaua (20), Malema (19), Meconta (19), Mecuburi (20), Malema (18), Monapo (19), Mugovolas (16), Muecate (21), Murrupula (20), Nacaroa (22), Rapale (19), Ribaué (18), involved in cotton production in the 2022/2023 season in the form of associates, for reconceptualization and discovery of the constructs not yet identified in the existing literature. The responses of the participants were examined using the thematic analysis technique. To capture the scope of territorial governance in Mozambique, the Scale of influence of cotton farmers' associations in Nampula province was created from a broad review of the literature and the results of focus group interviews. The initial set of 30 items was generated based on this process. An initial set of 30 items was examined to avoid duplication and merging of some items, if possible, which resulted in a final list of 27 items to measure the influence of cotton growers' associations in Nampula province on territorial governance in Mozambique on a 5-point Likert scale namely 1=strongly disagree, 2=disagree, 3=indifferent, 4=agree and 5=strongly agree, has been finalized.

- Appropriateness of content

Once the items were generated to measure the influence of cotton associations on territorial governance, the next step was to examine how well these items explore their conceptual domain (Podsakoff et al., 2003). Therefore, the items initially generated evaluated the extent to which the generated influence scale was able to adequately measure the construct it proposes to measure. Five experts (e.g., three PhDs, a pedagogue, and a researcher with extensive research experience around rural development) were invited to review the initial 27 items for both content and structure validity. The appropriateness of content (McCallum et al., 2022; Upadhyaya et al., 2022), content validity (Supo, 2020) refers to whether the content of the scale is capable of measuring what is intended to be measured, that is, the defined construct (Firouzbakht et al., 2018; Fornaciari et al., 2005). This study adopted a matrix method for content validity of the influence scale. A matrix method reports the relationship of the items with the dimensions of the construct (Podsakoff et al., 2003). Experts were asked to classify randomly ordered items into one of several categories (e.g., dimension participation in political decision-making processes at district level and 'other' dimensions). The expert panel examined whether each item fits into each category through the matrix method. Of the 27 items, 25 items were assigned to the proper category with 90% or more by the panel of experts. The remaining two items were deleted to ensure that the measure was neither deficient nor comminate, resulting in a revised scale composed of 25 items to measure the influence of cotton associations on territorial governance in Nampula. After verifying the content validity, the face validity was evaluated to determine whether the appearance of the items was adequate or not. Overall, the expert panel reported the facial validity of the 25 as being good, adequate, and clear. In addition, the pilot test for facial validity was performed with 35 participants, which was not included in the study sample and slightly revised in a few grammatical aspects.

➤ *Step 2: Validation of the construct validity and reliability scale.*

To evaluate the construct validity of the instrument, analyses of the composition and of the instrument itself were performed. These analyses were conducted by calculating the variability of the items and the exploratory factor analysis of all 25 items. The software used for this process was SPSS® for Windows® version 22.0 and principal component analysis with varimax rotation was applied. The adequacy of the sample was assessed using the Kaiser-Meyer-Olkin (KMO) statistic, while the presence of correlation between the statements was tested by Bartlett's sphericity test. To evaluate the reliability of the instrument, Cronbach's alpha coefficient values were calculated for each item of the instrument, as well as for the global scale and its sub-dimensions.

III. POPULATION AND DATA COLLECTION

This study selected thirteen cotton-producing districts of Nampula Province. The selection of districts was not only limited to the evaluation of the productive capacity of cotton, but also considered the production rates of the last five years. These indices represented more than 50% of the total national cotton production in Mozambique, which influenced the final decision.

In addition, in many cases, the average annual cotton production of each district exceeds the average of several Mozambican provinces that produce this crop. For example, the thirteen districts together were able to produce in the 2017/18 agricultural season with the involvement of 61,794 producers, an amount of about 24,043 tons of cotton seed in an area of 46,985 Ha; 19,588 tons in an area of 91,111 Ha in the 2018/19 season, with the involvement of 95,488 producers; 15,800 tons in an area of 80,214 Ha in the 2019/20 season with the involvement of 70,838 producers and 16,953 tons in an area of 66,993 Ha involving 70,838 producers in the 2020/21 season and 10,113 tons in an area of 65,816 Ha in the 2021/22 season with involvement of 68,086 producers (CAP, 2022).

Cotton production in the study region is an important source of income for more than 1.5 million rural inhabitants, representing an economic activity practiced by more than 300,000 peasant families (Mosca, 2011). On average, these families have five members. The sale of cotton provides these families with resources to acquire food, clothing, necessities, as well as agricultural instruments and inputs. In addition, the income also helps to pay for the education of children, the health of families, especially the health care of pregnant women and children, as well as other facilities. For all these reasons, cotton production is seen as an important tool in the fight against rural poverty in producing regions (MOÇAMBIQUE, n.d.; MTESS & UEM, 2017).

The cotton production and handling chain generates more than 20,000 salaried jobs, including those that are temporary. This economic activity is an important source of subsistence for thousands of families, who can enjoy the same advantages described above. In addition, for the country, about 10 companies have cotton as their main

activity, being responsible for offices, means of transport and equipment for agricultural production (MTESS & UEM, 2017).

In this sense, data had to be collected from at least 250 respondents, as recommended by the criterion of Munro (2005), that is, 10 respondents needed for each item to be studied. Therefore, all producers associated and exercising their agricultural activities in one of the thirteen districts were considered as the population of this study. The research instrument, containing 25 items on the influence of cotton associations on territorial governance in Nampula along with some socioeconomic variables, created on paper forms, administered with the permission of the authorities involved in January-February 2023. The producers were invited to participate in the research voluntarily. A total of 250 responses were received, which were imported into the SPSS for data analysis.

IV. PRESENTATION AND DISCUSSION OF RESULTS

A. Construct validity using exploratory factor analysis.

Before factor analysis, the sample adequacy, and the presence of correlation in the statements needed to be examined. The Kaiser-Meyer-Olkin (KMO) sample adequacy measure was used to verify whether the sampling was appropriate. The KMO measure produced a value .816 that was closer to 1.0, which is excellent (Field, 2009; Hutcheson & Sofroniou, 1999; Kaiser, 1981; Tabachnick & Fidell, 2007). Additionally, to evaluate the correlation between the statements, we proceeded with the Bartlett sphericity test. The test result was statistically significant ($\chi^2 = 1882.347$, $df = 300$, $p = 0.000 < 0.05$), which suggested the presence of correlation between the statements and indicated that the data were not

homogeneous. The results obtained from the Kaiser-Meyer-Olkin (KMO) sample adequacy measure and Bartlett's sphericity test proved that the data set was appropriate for the application of factor analysis. These values met the essential requirements for factor analysis, such as sample adequacy and homogeneity of variance.

Exploratory factor analysis with varimax rotation was used to determine the number of appropriate factors and the grouping of items in each factor. This technique is widely used in exploratory factor analysis because it maximizes the variance of the factor load. (Field, 2009; Tabachnick & Fidell, 2007). The initial analysis resulted in five factorial solutions with eigenvalues more than one, since the eigenvalue criterion was common to identify useful factors (Churchill et al., 1995; Straub et al., 2004; Supo, 2020). These factors explained 75.888% of the total variance observed. The criterion of the sedimentation plot, retaining all factors within the sharp descent before the eigenvalues are leveled (Johnson, 1998; Rencher, 1998; Tabachnick & Fidell, 2007), also corroborated the five-factor solution, as shown in Figure 1.

The graph shows the line that goes down from component 1 to component 2 and the more abrupt the descent demonstrates that component 1 contributes greater variability and the same is true from component 2 to component 3. However, it is noted that from component 3 to component 4 there is not much variability, however from component 4 to component 5 brings a good variability. This graph will show us the proportion of variance that explains each of the dimensions in our total result. It's a quick way to take the SPSS suggestion to know how many dimensions the instrument should have.

B. Sedimentation chart

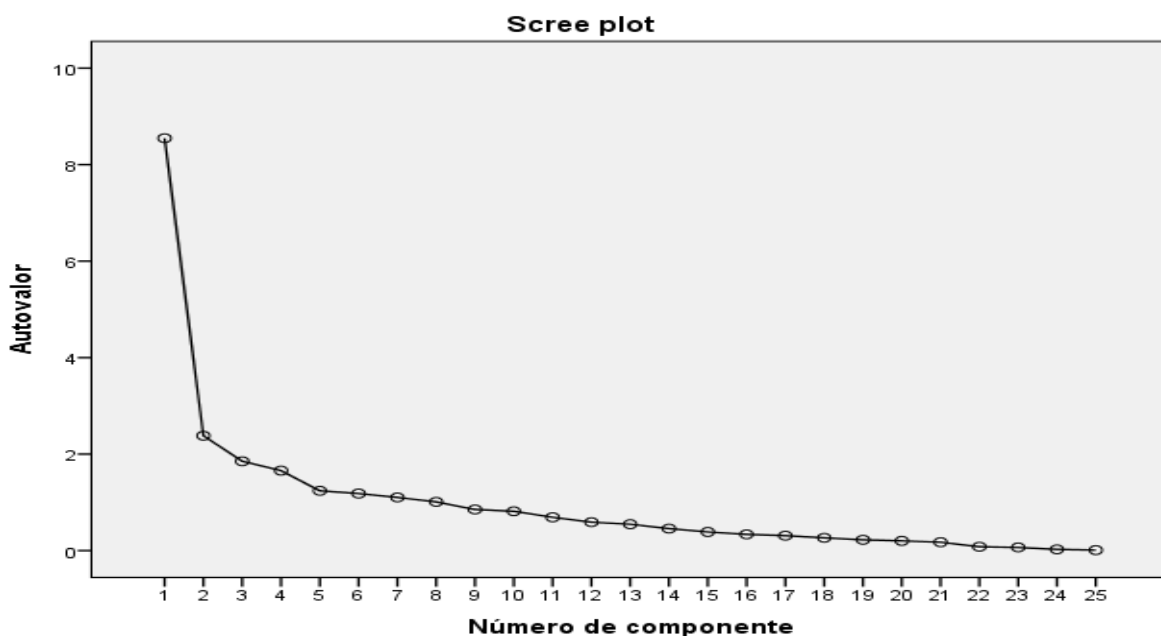


Fig. 1: Sedimentation plot for ACP solution with varimax rotation

The results of the exploratory factor analysis with varimax rotation are presented in Table 1. The first factor, labeled "Political participation of the associates", was composed of five statements that explained 34.190% of the total variance with an eigenvalue of 8.548. The rotating factor loadings ranged from 0.563 to 0.839. The second factor, called "Cotton associations as agents of territorial governance", consisted of five statements that were responsible for 9.523% of the total variance with an eigenvalue of 2.381. The rotating factor loadings ranged from 0.565 to 0.841. The third factor, called "Productive

efficiency of the associates", was composed of five statements that explained 7.405% of the total variance with an eigenvalue of 1.851. The rotating load ranged from 0.138 to 0.927. The fourth factor, labeled "District performance," was composed of five statements that explained 6.633% of the total variance with an eigenvalue of 1.658. The rotating factor loadings ranged from 0.076 to 0.817. The fifth and final factor, called "Impact of associationism on district performance", consisted of five statements that accounted for 4.957% of the total variance with an eigenvalue of 1.239. The rotating factor loadings ranged from 0.239 to 0.655.

Table 1: Rotating factor loadings for each component of Influence of cotton associations on territorial governance in Nampula

N/O	ID*	Statements	F1	F2	F3	F4	F5
		Thanks to the negotiations of the Cotton Growers Association with the district government / Agree that the Cotton Growers Association...					
1	Item04	... It was possible to electrify the neighborhoods of our community to boost their activities.	,746				
2	Item07	... A hospital was built to improve the quality of services at the level of our district.	,720				
3	Item01	... Our community has a school for our children.	,716				
4	Item06	... The road connecting my community to the district headquarters village was built/rehabilitated.	,715				
5	Item08	... He built a courthouse to improve the quality of justice services at our district level.	,704				
6	Item10	... legalize my field of cultivation, and today, I have the Right of Use and Exploitation of Land (RUEL).		,770			
7	Item09	... The Government has set up birth and death registration brigades at our community level.		,651			
8	Item15	... Are you exposed to political requests?		,635			
9	Item14	... He has built a district jail for the seclusion of the criminals who terrorize our community.		,532			
10	Item22	... Do you work with others to solve local problems?		,505			
11	Item21	Does it convince others to vote?				,927	
12	Item16	... Do you participate in the political discussions initiated by the district government?				,895	
13	Item20	... Do you solicit cash contributions to political causes?				,387	
14	Item13	... We have access to mobile phone network and internet in our communities				,283	
15	Item18	... Are you engaged in a political campaign?				,138	
16	Item11	... We can negotiate and sell our products at the right price.					,817
17	Item12	... we have access to radio and TV in our communities					,772
18	Item23i	... Did it play a major role in accessing credit to boost its agricultural activities?					,318
19	Item05	... The district government decided to build the police station in our neighborhood to ensure public safety.					,086
20	Item03	... the district government has opened drinking water sources for our community.					,076

21	Item25	... Maintains contact with national leaders – social reference?	,655
22	Item02	... Our community has a public transport system that allows us to move freely.	,366
23	Item24i	... Maintains contact with local leaders – social reference?	,372
24	Item19	... participates in meetings where political issues are discussed and defined?	,467
25	Item17	... Are you trying to persuade someone to vote a certain way?	,239

C. Reliability Analysis

The reliability of the Scale of Influence of cotton associations on territorial governance in Nampula was determined using both types, i.e., internal reliability and external reliability. Internal reliability refers to the consistency of scores between items within a test, while external reliability refers to the stability of a test and assesses the extent to which a test varies from one use to another (McLeod, 2007).

➤ **Internal reliability**

The internal consistency of the Scale of Influence of cotton associations on territorial governance in Nampula as a whole, as well as of each domain, was determined by calculating the values of Cronbach's alpha (CA), the internal reliability coefficient, since it is the most widely used and accepted measure of internal consistency. The value of CA ranges from zero to one. The value closest to one indicates the highest level of reliability, while the value closest to zero

indicates the lowest level of reliability (Field, 2009). The proposed value of Cronbach's alpha is 0.8 to be the minimum acceptable standard for internal consistency (Nunnally, 1978; Nunnally & Bernstein, 1994). The table of DOMAIN-TOTAL with rotation outlined the details of the reliability analysis of the statements loaded global factor while the table ITEM-DOMAIN with rotation presents the Cronbach's alpha coefficients of each of the domains labeled "district performance" (CA = 0.949), "political participation of the associates" (CA = 0.705), "impact of associativism on district performance" (CA = 0.500), "productive efficiency of the associates" (CA = 0.543) and "cotton associations as agents of territorial governance" (CA = 0.556). The reliability coefficient range ranged from 0.949 to 0.500 for each instruction loaded in this factor. As the values of Cronbach's alpha were high and acceptable, we chose to keep all these statements in this factor.

Table 3: Internal reliability analysis for the dimension of cotton associations as agents of territorial governance "

N/	Statements	Cronbach's alpha if the item is deleted
O	Thanks to the negotiations of the Cotton Growers Association with the district government / *Agrees that the Cotton Growers Association...	
1	... legalize my field of cultivation, and today, I have the Right of Use and Exploitation of Land (RUEL).	0,770
2	... The Government has set up birth and death registration brigades at our community level.	0,651
3	*... Are you exposed to political requests?	0,635
4	... He has built a district jail for the seclusion of the criminals who terrorize our community.	0,532
5	... Do you work with others to solve local problems?	0,505
Cotton associations as agents of territorial governance		0,556

*Reading the reactive makes sense starting here

Table 4: Internal reliability analysis for the dimension "productive efficiency of the associates"

N/O	Statements	Cronbach's alpha if the item is deleted
	Agree that the Cotton Growers Association...	
1	... Persuade others to vote?	0,927
2	... Do you participate in the political discussions initiated by the district government?	0,895
3	...Do you solicit cash contributions to political causes?	0,387
4	...We have access to mobile phone network and internet in our communities	0,283
5	...Are you engaged in a political campaign?	0,138
Productive efficiency of associates		0,543

Table 5: Internal reliability analysis for the district performance dimension

N/O	Statements	Cronbach's alpha if the item is deleted
Thanks to the negotiations of the Cotton Growers Association with the district government / *Agrees that the Cotton Growers Association...		
1	...We are able to negotiate and sell our products at the right price.	0,817
2	...we have access to radio and TV in our communities	0,772
3	*...played a leading role in accessing credit to boost its agricultural activities?	0,318
4	...The district government decided to build the police station in our neighborhood to ensure public safety.	0,086
5	...the district government has opened drinking water sources for our community.	0,076
District performance		0,949

*Reading the reactive makes sense starting with...

Table 6: Internal reliability analysis for the dimension 'Impact of associations on district performance'

N/O	Statements	Cronbach's alpha if the item is deleted
*Thanks to the negotiations of the Cotton Growers Association with the district government / Agree that the Cotton Growers Association...		
1	...Maintains contact with national leaders – social reference?	0,655
2	*...Our community has a public transport system that allows us to move freely.	0,366
3	...Maintains contact with local leaders – social reference?	0,372
4	... participates in meetings where political issues are discussed and defined?	0,467
5	... seeks to persuade someone to vote a certain way	0,239
Impact of associations on district performance		0,500

*Reading the reactive makes sense starting here

Tables 3, 4, 5 and 6 presented the reliability analyses for factors two, three, four and five with the labels of 'Productive efficiency of associates', 'District performance' and 'Impact of associationism on district performance'. The reliability coefficient interval ranged from 0.505 to 0.770 for each instruction loaded in the dimension "Cotton associations as agents of territorial governance", from 0.138 to 0.927 for the instructions loaded in the dimension "Productive efficiency of associates", from 0.076 to 0.817 for the instructions loaded in the dimension "District performance" and finally from 0.239 to 0.655 in the instructions loaded in the dimension "Impact of associationism on district performance". Because these values were also high and acceptable, none of these items were excluded (Amini et al., 2022; Herring Watson & Rockinson-Szapkiw, n.d.; Lee & Cha, 2021). The reliability coefficient values for factors two, three, four and five were 0.556, 0.543, 0.949 and 0.500. In addition, the reliability coefficient for the global scale of Influence of cotton associations on territorial governance in Nampula was also calculated. The results indicated a very high value of the reliability coefficients for the Scale of Influence of cotton associations on territorial governance in Nampula,

that is, 0.827. Thus, it can be concluded that the newly developed scale presented sufficient internal reliability.

➤ External reliability

The external reliability of the Scale of influence of cotton associations in Nampula province on territorial governance was evaluated through a test re-test. In this strategy, reliability is estimated by calculating the correlation between two sets of scores obtained by administering the measurement in two occasions (Anyz et al., 2021; Muscat et al., 2021). Thus, the instrument was applied twice in the same group of cotton producers, by the same surveyors and in the same places with an interval of two weeks. The questionnaires completed in two sessions were compared through their identification numbers, resulting in 250 corresponding cases. The influence scores of cotton associations in Nampula province on territorial governance in Mozambique were calculated for the two sets of 250 cotton producers. The results indicated the correlation between the scores of influence of cotton associations in the province of Nampula in the territorial governance of the test and the re-test, ranging from 0.813 to 0.917, which was acceptable (Housen et al., 2018).

V. CONCLUSION

This research developed and validated a scale with desirable psychometric properties with the potential to measure the influence of cotton associations in Nampula province on territorial governance. The development and validation of this scale was completed in two phases. In the first phase, items related to the influence of cotton associations in Nampula province on territorial governance were generated based on an extensive and careful review of the related literature and information on different electronic platforms from different stakeholders in territorial governance in Mozambique, resulting in 27 potential items. Subsequently, these statements were submitted to a panel of experts for content and face validity. Based on the advice received from the expert panel, 25 items were finalized and piloted with 250 cotton farmers redistributed in thirteen cotton-producing districts of Nampula province in Mozambique. In the second phase, a cross-sectional survey was conducted in the same places and in the same number of participants using a questionnaire printed on paper for construct validity and reliability. The process of importing 250 questionnaires into the SPSS software was carried out to be submitted to exploratory factor analysis. Before this analysis, evaluations of sample adequacy were performed, using the Kaiser-Meyer-Olkin index (KMO) for this purpose. Additionally, the Bartlett sphericity test was performed to determine the presence of correlation between the items, which confirmed that the data set was appropriate for factor analysis. Five factors were obtained through principal component analysis using the varimax rotation technique. The dimensions were identified as: "district performance" (CA = 0.949), "political participation of associates" (CA = 0.705), "impact of associationism on district performance" (CA = 0.500), "productive efficiency of associates" (CA = 0.543) and "associations of cotton producers as agents of territorial governance" (CA = 0.556). Each statement presented load resistances greater than 0.50 and the model explained 75.888% of the total variance. The values of the internal consistency coefficients for the global scale (AC = 0.827), as well as for the sub-dimensions and the correlation coefficients for external consistency (re-test test) ranged from 0.71 to .87 and were satisfactory. The newly developed Scale of influence of cotton associations in Nampula province on territorial governance had satisfactory content, facial and construct validity, along with high internal and external consistency. Thus, it can be concluded that the instrument has the capacity to produce valid and reliable measures for the evaluation of the influence of cotton associations in the province of Nampula on territorial governance in Mozambique.

The use of an appropriate instrument to assess the influence of cotton associations in the province of Nampula on territorial governance in different social groups from different geographical locations can help researchers to establish studies with reliable measures. The instrument has the potential to be a useful tool to assess the influence of cotton associations in Nampula province on territorial governance that can be used in future investigations to determine the influence that another social group can establish over other territories and contexts. In terms of

limitations, the instrument lacks evaluation of its psychometric properties, such as validity and reliability in other sociocultural, educational, and geographical contexts, to decide whether it is a valid and reliable measure on a scale of time and space. In addition, future research should examine the nature of the relationship with different personal, socio-academic, and psychological variables. This research would make a valid contribution to the context of territorial governance in general and to cotton governance, since such a scale was not available in the existing literature. The results and implications drawn in this research should not be easily generalized to other population groups, as this study collected one-time data from cotton farmers in Nampula province, Mozambique. In addition, there may be sampling bias, because the sample was not randomly drawn, and cotton producers filled out this questionnaire in a domestic environment capable of suffering influence from their relatives.

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