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CONTRACT FARMING IN SOUTH MOZAMBIQUE: SMALL OUTGROWER FAMILY FARMERS' PERCEPTION IN THE SUGAR VALUE CHAIN

A subcontratação no sul de Moçambique: a percepção dos pequenos produtores familiares na cadeia de valor do açúcar

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Abstract
Since the end of the twentieth Century, Mozambique has registered important foreign investments in agriculture, especially in the implantation of agribusiness. In the sugar sector, there were investments in large monoculture companies, and the first transformation supported by a subcontracting system for small family producers with positive, and negative effects in rural areas. The knowledge of perceptions that small out-grower family farmers attribute to their effective experience with these companies is relevant for the consolidation of this form of integration in the market. The study aims to assess the Perceptions of Value that small out-grower family farmers attribute to the relationship they establish with an agribusiness in the production of sugarcane in the sugar value chain. The study was carried out applying Confirmatory Factor Analysis to a reduced version of a scale of values, which relates four constructs underlying the concept of value. The results indicate that the judgment evaluated by the small out-grower family farmers is multidimensional focused on utilitarian (performance/cost), emotional and social aspects, with a greater magnitude of monetary dimension (cost). The study highlights the significance of cognitive/economic judgment as a crucial factor in the creation of relational value in farming context and of dependence of affective and social aspects on the utilitarian aspects of the relationship. In this study, the concept of Perceived Value, which determines the adequacy of customer/consumer retention/loyalty strategies in the context of consumption, has been extended to the study of a relationship in the context of the provision of agricultural services.

Keywords: Agribusiness, sugar sector, sonfirmatory factor analysis, Africa.

Resumo
Desde finais do século XX Moçambique tem registado importantes investimentos externos na agricultura, sobretudo na implantação do agronegócio. No setor do açúcar, verificaram-se investimentos em grandes empresas de monocultura e na primeira transformação, apoiados em sistema de subcontratação dos pequenos produtores familiares, com efeitos positivos e negativos nas áreas rurais. O conhecimento das perceções que os pequenos produtores familiares subcontratados atribuem à sua experiência efetiva com estas empresas é relevante para a consolidação desta forma de integração no mercado. O estudo visa avaliar as perceções de valor dos pequenos produtores familiares que atribuem à sua relação com uma agroindústria na produção da cana-de-açúcar na cadeia de valor do açúcar. O estudo é realizado aplicando a Análise Fatorial Confirmatória a uma versão reduzida de uma escala de valores, que relaciona quatro constructos subjacentes ao conceito abstrato de Valor. Os resultados indicam que os julgamentos avaliados pelos produtores são multidimensionais, focados nos aspectos utilitários (desempenho/custo), emocionais e sociais, com maior magnitude da dimensão monetária (custos). O estudo destaca a importância do julgamento cognitivo/econômico como fator crucial na criação de valor relacional no contexto agrícola e da dependência dos aspectos afetivos e sociais aos aspectos utilitários da relação. Neste estudo, o conceito de Valor Percebido, determinante na adequação das estratégias de retenção/fidelização de clientes/consumidores em contexto de consumo foi estendido ao estudo de uma relação, em contexto de prestação de serviços agrícolas.

Palavras-chave: Agronegócio, setor do açúcar, análise fatorial confirmatória, África.

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1. INTRODUCTION

The growing pressure on natural resources and the consequent negative repercussions on the climate that threaten the sustainability of ecosystems, impose the challenge of changing the production paradigm. This challenge should be based mainly on improving agricultural productivity instead of expanding production areas (OECD/FAO, 2019). The answer to the challenge of improving agricultural productivity involves strengthening the productive capacities of small family farmers with more productive production technologies (OECD/FAO, 2016; United Nations, 2020). The production of agricultural commodities in the context of value-chains linked to international agribusiness coordinated vertically through contracts with processing companies, and distribution/commercial companies has been identified as an effective way to strengthen the productive capacities of small family farmers (FAO, 2017; Yumkella, Kormawa, Roepstorff & Hawkins, 2011). The reasons for choosing the international agribusiness route are justified by their benefits, connected to the added value of products with technological strengthening, increased productivity, improved infrastructure, the promotion of innovative sources of financing, competitiveness via the supply of higher quality agricultural products to the market and profitable opportunities (Yumkella *et al.*, 2011). Agro-industrial companies generally provide crucial inputs and services to the agricultural sector, induce improvements in productivity and product quality, stimulate market-induced innovation through product value chains and facilitate linkages (FAO, 2007).

On the international agribusiness route, contract farming (or out-growers) has attracted special attention as an institutional innovation, within the scope of the functionalist approach, which helps to reduce market imperfections regarding the absence of agricultural extension services, the lack of adoption of new technologies, and the absence of financial markets, among other variables. Furthermore, it offers possibilities for improving agricultural efficiency and welfare (Grosh, 1994). The functionalist approach conceives contract farming as a means of lowering transaction costs, bringing modern technologies and services to small farmers, increasing producers' incomes, and generating positive externalities for rural development (Hennessy, 1996; Eaton & Shepherd, 2001; Kirsten & Sartorius, 2002; Warning & Key, 2002). Therefore, companies avoid direct involvement in the supervision of production and labor, while producers access reliable markets, credit, and technologies that would be otherwise out of their reach (Oya, 2012).

In Mozambique, the sugar sector stands out for being one of the few sectors of the economy that integrates small outgrower family farmers through contract farming in the sugar value chain oriented to the domestic (national) and the external (export) markets. The adoption of tax incentives by the government of Mozambique for the protection of the sugar industry (INA, 2000), reinforced with the search for preferential markets for sugar exports and with the accompanying sugar protocol measures, the latter designed by the European Union, were central and determining factors for the spread of contract farming in this sector.

This study seeks to contribute to the knowledge of how small outgrower family farmers perceive changes in the traditional framework of the sector, concerning the benefits/gains that the implementation of agribusiness, essentially turned to the market (local and global) brings, and also regarding sacrifices/losses that occur from that relationship. This assessment of the perception of value is decisive for the understanding of the impact of the implantation of international agribusiness in a rural environment where about 70% of the population lives and where about 70% of their income comes from agricultural

activity. The assessment of the perception of the value of small out-grower family farmers regarding their relationship with agribusiness has implications not only in terms of the sustainability of the productive structure of the agribusiness itself but also in terms of support for decision-making by public authorities in the design of governance strategies.

The small out-grower family farmers in agribusiness value chains, based on specialized production in higher-value crops, are seen as an alternative capable of strengthening the productive capacity, in an inclusive and fast manner. But some studies (Ali and Muianga, 2017; Mosca, 2019) in Mozambique indicate that the presence of agribusiness through outgrowing family farmers is limited to export products, creation of unstable and precarious employment, the extraction of productive and economic surpluses for accumulation abroad. What generates the transformations occurs from the small outgrower family farmers. So, the 0.6.question that arises is:

- How do small outgrower family farmers perceive their relationship with agribusiness in the sugar value chain?

The study focuses on the sugar sector in Mozambique, specifically on the foreign-owned agro-food and industrial company (Tongaat Hulett), called Xinavane Sugar (ADX). ADX is one of the four sugar production and processing agro-industries in Mozambique for commercialization in the national and international markets. ADX operates in an area of about 20,000 hectares, with a production capacity of 234,000 tons of sugar/year. Small outgrower farmers contribute about 28% in terms of the production area of sugarcane (the raw material used for the production of sugar) and about 21% of crushed tons of sugarcane (Departamento Adjunto da Agricultura, 2018).

This study aims to evaluate the perceptions of value that small outgrower farmers ascribe to the relationship with ADX in the production of an agricultural commodity, sugarcane, in the sugar value chain oriented to the domestic and international markets.

2. THEORETICAL REFERENCE

2.1 Characterization of the Sugar Value Chain

The sugar value chain is characterized by five connecting steps, namely, production, storage, processing, distribution, and consumption (Nova, 2018). Figure 1 illustrates the structure of the sugar value chain in the sugar sector in Mozambique. The sugar industry is recognized for its role in the country's economy as an important source of income for different economic agents (small outgrower family farmers, agricultural workers, and other economic agents) and also for its contribution to the entry of foreign exchange through exports. Sugarcane production, storage, and processing are concentrated in the four existing agro-industries.

Processing factories obtain sugarcane from a combination of the production on the agro-industrial plantations, small outgrower family farmers' plantations, and plantations of other companies. Support services (equipment, maintenance, machinery, supplies, transport) are provided by foreign companies, particularly South Africans, due to the limited technical capabilities of Mozambican companies (Mula, 2008).

The processing of sugarcane results in the production of brown and white sugar and other derivatives (bagasse and molasses). Sugarcane derivatives, in addition to being consumed in the national market, are also exported, mainly to Europe (Nova, 2018). The sugar produced by the four agro-industries is traded under the commercial monopoly of National Sugar Distributor, for the national market (wholesalers and retailers) and abroad. The National Sugar Distributor is an entity created and constituted by the four agro-industries, in which each holds a 25% interest.

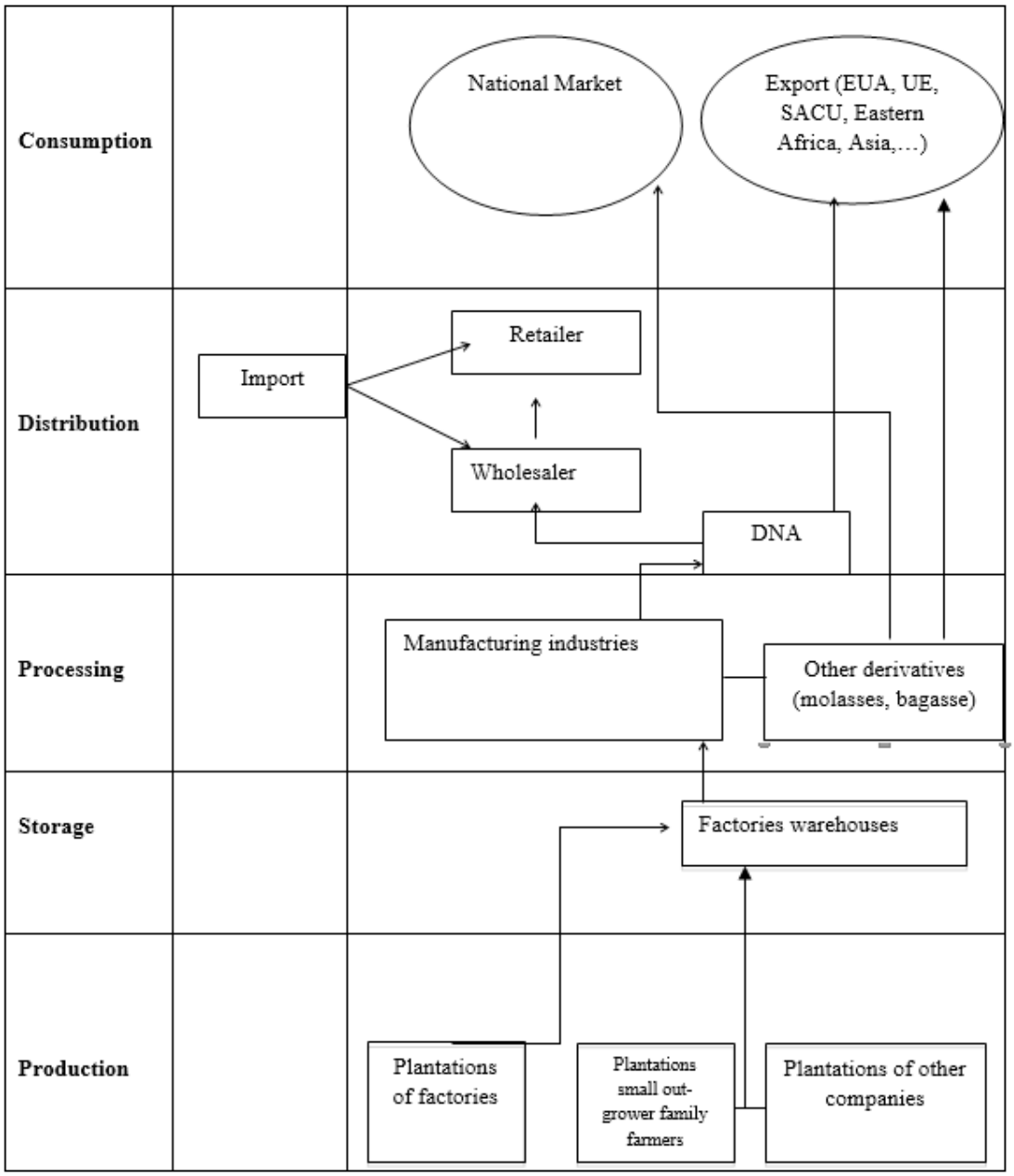

FIGURE 1 – Sugar Value Chain in Mozambique
Source: Adapted from Nova (2018) and FDA (2018)

This type of sugar market structure is characterized by the restriction of competition to a single-phase (processing and distribution), retaining the accumulation of added value in that same phase, to the detriment, for example, of the production phase in the sugar value chain (Nova, 2018).

2.2 Conceptual Development of Perceived Value (PV)

Research into the underlying complexity of conceptualization of Perceived Value (PV) has received increasing attention from researchers, as the strategic role that the PV of a service/product has in attracting and retaining new customers has been recognized in the context of the market/consumers. For example, studies by Sweeney, Soutar, and Johnson (1997) on the quality of service in retail trade have recognized the leading role of PV in the economic development of the sector over the last decade of the 20th century.

According to the literature, the history of the development of the concept (Zauner, Koller & Hatak,

2015) involved an initial conceptualization of one-dimensional consumer PV (Bolton & Drew, 1991; Sweeney, Soutar & Johnson, 1999; Dodds & Monroe, 1985; Zeithaml, 1988), merely associated with economic and cognitive aspects of value. For example, for Dodds, Monroe, and Grewal (1991, p. 308), value is "the cognitive trade-off between perceptions of quality and sacrifice results in perceptions of value"; for Lichtenstein, Netemeyer, and Burton (1990, p. 54), value is the "ratio of quality to price"; for Monroe (1990, p. 51), "Buyers' perceptions of value represent the balance between the quality or perceived benefits of the product compared to the perceived sacrifice by the payment of the price".

Subsequently, the identification of additional dimensions to the concept of hedonic and aesthetic value led to the development of a multidimensional structure of the construct during later stages (Sheth, Newman & Gross, 1991; Holbrook, 1994; Babin, Darden & Griffin, 1994) and also at different hierarchical levels of conceptualization and operationalized from reflective and formative models (Mathwick, Malhotra & Rigdon, 2001; Sánchez-Fernández & Iniesta-Bonillo, 2009; Lin, Sher & Shih, 2005; Ruiz, Gremler, Washburn & Carrin, 2008). Research into the one-dimensionality of the concept of consumer PV, which takes place during the first phase of the development of the construct, explored the quality-price relationship inherent in the concept of value (Dodds & Monroe, 1985). The PV results from a comparison between the perceived benefits (economic, social, and relational) and the perceived sacrifices (price, time, risk, convenience, and effort) by the consumer. This cost-benefit perspective – or the trade-off perspective between quality and price resulting from the first approach to the concept of value – was developed by Dodds et al. (1991, p. 308), who understood perceived value to be "[...] the cognitive trade-off between perceptions of quality and sacrifice [...]", and also by Zeithaml (1988), for whom the PV results from an overall consumer assessment of the utility of the product (or service) from the perception of what is received and given. Zeithaml (1988) proposed four definitions of value (value is reduced price, value is what I get from what I give, value is the quality I get from what I pay, and value is anything I want from a product/service), based on individual perceptions of consumers and the relevance of the cognitive and economic attributes of the concept. From this perspective, consumers behave rationally to maximize the utility of their choices (Sánchez-Fernández & Iniesta-Bonillo, 2007).

Much research has focussed on the one-dimensional operationalization of the latent construct (Sweeney et al., 1999), whether from a single item (Cronin, Brady & Hult, 2000; Bolton & Drew, 1991) or multiple items (Teas & Agarwal, 2000). This excessive concentration on the economic utility of value or the sustaining of value perceived only in the economic theory of utility, which is envisioned in Zeithaml's (1988) research, has given rise to a certain amount of discussion and the recognition of the implied limitations of the one-dimensional construct profile (Bolton & Drew, 1991; Lapierre, 2000; Sweeney et al., 1999).

At a later stage, the criticism of the simplicity of the one-dimensional model (Sánchez-Fernández & Iniesta-Bonillo, 2009), together with the identification of hedonic and aesthetic aspects underlying the consumption process and the assessment of the perceived value by the consumer of the product and/or service, increased interest in research within the multidimensional aspect of this concept. Developments in this field have resulted in studies that have highlighted the importance of including affective or emotional aspects experienced by consumers in the market context – in addition to cognitive and economic aspects. Precious contributions have originated from this phase of the conceptual development of the PV (Sánchez-Fernández & Iniesta-Bonillo, 2006; Pura,

2005; Sweeney & Soutar, 2001; Lin et al., 2005; Ruiz et al., 2008; Mathwick et al., 2001; Wang, Lo, Chi & Yang, 2004), which have been conceptually supported by various sources, such as Sheth et al. (1991), Holbrook (1994) and Zeithaml (1988).

Currently, the concept of perceived value continues to be in understanding the motivations and intentions of use in consumption and service contexts, with some incidence in the areas of robotics and electronics (Li & Shang, 2020; Samudro, Sumarwan, Simanjuntak & Yusuf, 2020; Kervenoael, Hasan, Schwob & Goh, 2020).

3. METHODOLOGY

3.1. The PERVAL Scale

Using a multidimensional approach, Sweeney, and Soutar (2001) developed an instrument for measuring consumer perceptions of the value of durable goods before and after purchase. These authors had the objective of understanding how consumers value products and services, i.e., the consumer decision-making processes and choice behaviour. This measure of value perception is called the PERVAL scale, or the Perceived Value Scale, with 24 items. When examining the perceptions of individuals in the context of consumption, Sweeney and Soutar (2001) first identified a first-order tetra-factorial structure for PV, i.e., Functional Value (FV), Emotional Value (EV), Social Value (SV), and Monetary Value (or price) (MV). The scale demonstrates that consumers evaluate products, not only in functional and economical terms (Functional Value and Monetary Value, or FV) but also in terms of product-derived pleasure (Emotional Value, or EV), and also the social consequences of communicating the product with others (Social Value, or SV).

In adapting Sweeney and Soutar's (2001) original version to the context of trade in goods and services, the following definitions are proposed: FV regards the utility that results from perceived consumer quality and expected performance and the relationship with the service provider/product; EV regards feelings or affective states with the supplier, or the balance between the mental and psychological needs of the consumer and the advantages that emerge from the affective effect caused by the relationship; SV regards the prestige underlying a given relationship and the feeling of belonging to a specific group, and, finally, MV regards the cost or effort underlying the relationship (Sweeney & Soutar, 2001; Monroe, 1990).

The short version of the PERVAL scale (Walsh Shiu & Hassan, 2014) is used in the context of this study. This shortened version includes 12 items, which are related to four constructs, dimensions, or latent variables, all of which underlie the abstract and multidimensional concept of Value, namely FV, EV, SV, and MV. Figure 2 depicts the reduced scale adopted to operationalize the proposed reflective factor model.

In this study, the four dimensions of PV, which were originally directed to the research of psychological determinants and antecedents/explanations of consumption options, are adapted to the agricultural context for the evaluation of the multidimensionality of value that small outgrower farmers ascribe to the relationship with ADX. From the adaptation of the scale to the assessment of the value of the relationship that the small out-grower farmers perceive concerning agri-business installed in the traditional agriculture zone, the main aim of this analysis is to study the multidimensional aspect of the value, taking into account that the individual characteristics of small outgrower farmers are reflected in the value they attach to their relationship with ADX. An essential component of this research is the examination of the prominence that small outgrower farmers ascribe to one dimension over the others when making evaluative judgments of the multidimensional value of this relationship.

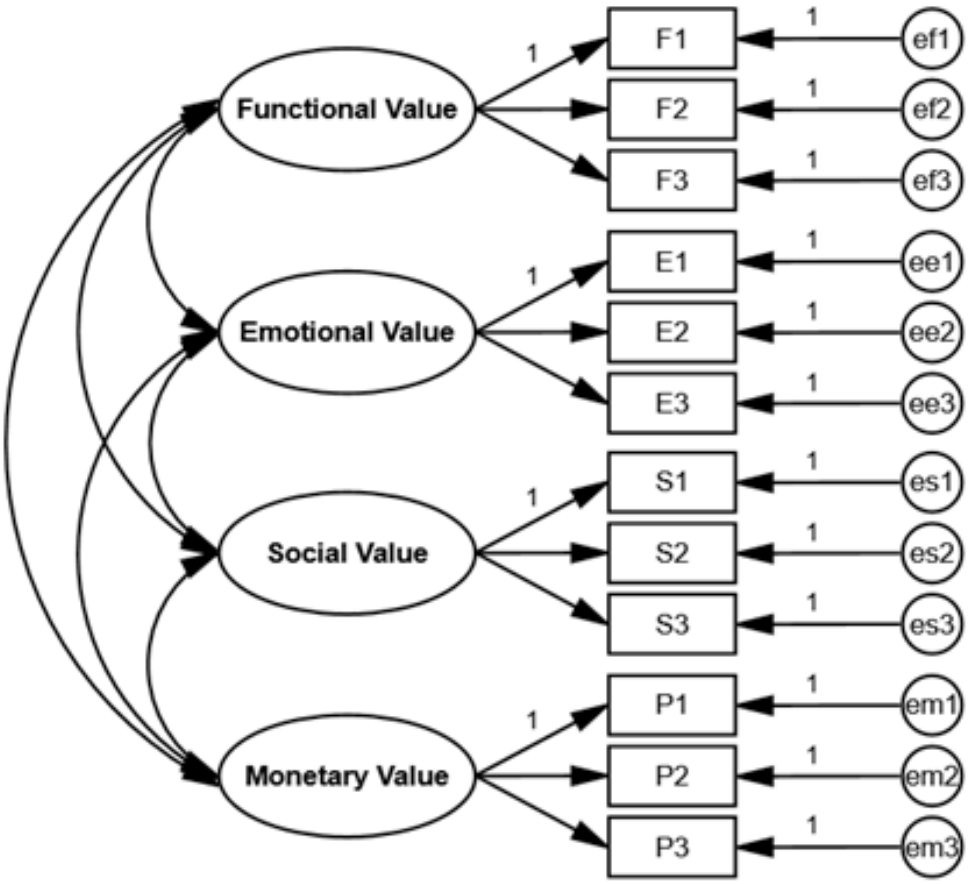

FIGURE 2 – Confirmatory Tetra-Factorial Reflective Measurement Model: Reduced PERVAL Scale (4 constructs – Functional Value, Emotional Value, Social Value, and Monetary Value – and 12 items)
Source: Walsh *et al*. (2014), adapted from Sweeney & Soutar (2001)

Table 1 shows the distribution of the 12 items by the four dimensions of PV and also the definition of each item/indicator or manifest variable.

Each construct or dimension has constituted for 3 items or indicators. These items have been adapted to the context of local communities (after translation and adaptation).

3.2. Sample and Questionnaire

Perceptions of small outgrower family farmers regarding the different value dimensions of the relationship with ADX were obtained from a survey using a structured questionnaire, which included questions about the participants' profile and questions on their perceptions about the relationship with the ADX agro-industrial company.

Using this shortened 7-point Likert-type response, which ranged from 1 (very much disagree) to 7 (very much agree), respondents were asked to answer the 12 items using the same Likert-like agreement scale with 7 categories. An answer of 1 represents the greatest degree of disagreement and 7 the greatest degree of agreement.

213 small outgrower family farmers in 2.547 dimension of the population of small outgrower family farmers (Departamento Adjunto de Agricultura, 2017, 2018) who produce on their land and supply sugarcane to ADX were surveyed. The study was carried out in Mozambique, in Maputo Province, Manhiça and Magude districts, from February to April 2018.

3.3. Method of Analysis

The quantitative assessment of the perceptions about the value of the relationship with ADX ascribed by the small outgrower farmers was carried out based on a Confirmatory Factor Analysis (CFA), based on the use of the 1st order PERVAL scale, in its reduced version (12 items) proposed by Walsh *et al*. (2014)

and resulting from an adaptation of the original version (24 items), developed by Sweeney and Soutar (2001).

CFA is a method used when prior information on the factorial structure needs to be confirmed. This method essentially serves to investigate whether certain latent factors are responsible for the behavior of certain specific manifest variables, under a pre-established pattern from another study or theory (Schumacker & Lomax, 2004; Byrne, 2010; Kline, 2011). In this study, CFA was used to evaluate how well the PERVAL scale, in its reduced version (12 items), was able to reproduce the correlational structure of manifest variables included in the sample under study.

The evaluation of the global suitability of the PERVAL reduced scale to analyze the perceptions of the small out-grower farmers was supported using absolute adjustment measures, incremental adjustment quality measures/indices and a measure of parsimony (Schumacker & Lomax, 2004): three measures of absolute adjustment, the Goodness-of-fit Index (GFI), introduced by Joreskorg and Sorbom (1983), the Root Mean Square Error of Approximation (RMSEA), developed by Browne and Cudeck (1993) and the Chi-square test; three incremental adjustment quality measures/indices, namely the Normed Fit Index (NFI),

Questionnaires were applied in paper format, with closed questions and validated through a pilot study in a sample with the same characteristics of the research in question. Small out-grower family farmers were selected through a probabilistic randomness sample. Data processing was performed using IBM SPSS statistics 24 and data analysis using Amos graphics 24 using confirmatory factor analysis and descriptive statistics.

The Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI), developed by Bentler (1990), and one measure of parsimony, or the value of the Chi-Square statistic to be divided by degrees of freedom.

GFI varies between zero (bad adjustment) and one (perfect adjustment) and measures the variance explained by the proposed model. RMSEA (Brown & Cudeck, 1993) is a measure of the discrepancy that assesses the magnitude of the precision achieved during the adjustment process of the two matrices: values below 0.05 indicate a good adjustment, although values up to 0.08 still reveal satisfactory adjustments. NFI, proposed by Bentler and Bonett (1980), measures the improvement obtained in the adjustment when going from a null model to the proposed model. This index varies between 0 and 1; the closer to the unit, the better the adjustment. The Tucker-Lewis index also varies between 0 and the

TABLE 1 – Reduced PERVAL Scale (12 items): Constructs, items, and items definition

Constructs/ Dimensions	Items	Definition of the Items/Indicators
Functional (FV)	F_1	Working with Xinavane Sugar Works is in accordance with the terms of the agreement
	F_2	Working with Xinavane Sugarcane was well designed
	F_3	The working model with Xinavane Sugarcane is acceptable
Emotional (EV)	E_1	Working with Xinavane Sugar is what I like
	E_2	Working with Xinavane Sugarcane makes me want to continue there
	E_3	Working with Xinavane Sugarcane makes me feel good
Social (SV)	S_1	Working with Xinavane Sugarcane helps me feel more accepted by other people
	S_2	Working with Xinavane Sugarcane improves the way I am perceived by others
	S_3	Working with Xinavane Sugarcane gives a good opinion in other people
Monetary (MV)	P_1	What I get from the Xinavane Sugar Works compensates for what I give (time, effort)
	P_2	Working with Xinavane Sugarcane increases benefits over costs
	P_3	Working with Xinavane Sugar is good for the price (cost) that I have to bear

Source: Authors' production

unit, with values close to the desired unit. CFI, similar to NFI and TLI, assumes values greater than 0.90 for good adjustments. The measure of parsimony used considers the degree of simplicity of the model and the number of parameters to be estimated, with values below 3 being desirable, in order to conclude that the model under analysis reproduces well the population variance-covariance matrix.

The evaluation of the local suitability of the PERVAL reduced scale to the perceptions of the small outgrower farmers was based on procedures related to the evaluation of the validity and reliability of a measurement instrument (Brown, 2006): Composite reliability of constructs (FC), Cronbach Alfas (CA), factorial validity (λ) and individual item validity (R^2), convergent validity and discriminant validity.

Composite reliability is an indicator of the construct's reliability that estimates the internal consistency of the reflective items. Values higher than or equal to 0.7 are indicators of the reliability of the construct. Cronbach's Alphas is also a measure to assess the reliability of a construct regarding its internal consistency. Values superior to 0.5 are indicators of adequate internal consistency. Factorial validity is a measurement that assesses whether the specification of the items for a given construct is correct, that is, whether the items reflect the construct being measured. Factorial validity is assessed by the standardized factorial weights (λ) of the items and by the individual reliability (R^2) of the items, which must be higher than or equal to 0.5 and 0.25, respectively. Convergent validity assesses whether the behaviour of reflective items in a construct is explained essentially by that construct. Mean Extracted Variance (MEV) is an indicator of convergent validity, indicating the amount of variance captured by the construct regarding the amount of variance due to the measurement error (Forner & Larcker, 1981). MEV values higher than 0.5 suggest that the latent variable explains a higher proportion of the variance of the indicators/items/manifest variables than the variance explained by the measurement error component. Discriminant validity is a measurement indicator that assesses whether the construct under study is not significantly correlated with the other constructs under analysis. The discriminating validity of the constructs is assessed by comparing the MEVs for each construct with the square of the correlation between the constructs whose discriminating validity is intended to be evaluated.

The evaluation of the quality of the PERVAL scale adjustment was estimated using the Maximum Likelihood (ML) estimation method. The verification of the assumption of multivariate normality followed the criterion, as suggested by Kline (2011) and Finney and DiStefano (2006), for the characterization of the deviations of the items with univariate normality, that is, when the items present absolute values of asymmetry below 3 and absolute values of kurtosis below 7, it is considered that there are no severe violations to normality.

The preliminary analysis performed on the data revealed that all items had absolute values of asymmetry less than 3 and absolute values of kurtosis less than 7, so it was considered that there were no severe violations to the normality of the small outgrower farmers' sample data. The existence of extreme observations (outliers) was also assessed using the square of the Mahalanobis D2 distance, and anomalous values were not recorded.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Regarding the socio-demographic characteristics of the small out-grower farmers concerning gender, age, level of education, subcontracting benefits and income expenditure of subcontracting, the sample data show that the majority of respondents are male (55.9%) and are

aged between 30 and 60 years old (67.8%). Thus, men are more represented than women and there are also more adults. Regarding the level of education, 5.3% and 3.8% of small outgrower farmers reported having completed basic and secondary education, respectively. 15.9% of small outgrower farmers have no education or have never had a formal education. There are more people without education. No small outgrower farmers reported having completed high school, and only 0.5% of small outgrower farmers had completed graduation. Regarding outgrower benefits, the agricultural income (29.4%) and the development of agricultural cultivation (22%) are the most expressive benefits. Income expenditure of outgrower is spent essentially on food (81.2%), construction and improvement of housing (5.5%), on the acquisition of household goods and savings/ *Xitique* (1.8%).

The results of the evaluation of the quality of the global adjustment revealed the existence of a very satisfactory global adjustment to the sample data of the small outgrower family farmers, corroborating this evaluation by the values obtained for the absolute adjustment measures (GFI=0.943, RMSEA=0.056, X^2=79,948), for incremental adjustment quality measures/indices (NFI=0.959, CFI=0.983, TLI=0.977) and a measure of parsimony (X^2/df): values for GFI, NFI, CFI, TLI all higher than 0.9, values for RMSEA values below 0.05 indicate a good adjustment, although values up to 0.08 still reveal satisfactory adjustments and, finally, values obtained for X^2/df always below 3 (X^2/df=1.666).

According to the results obtained, the adaptation of the reduced 1st order PERVAL scale, in its reduced version (12 items) proposed by Walsh et al. (2014) and resulting from an adaptation of the original version (24 items) developed by Sweeney and Soutar (2001), was appropriate to assess the perceptions of value that the small outgrower family farmers ascribe to the relationship with the ADX agroindustry.

The results of the evaluation of the quality of the local adjustment of the scale to the sample data of the small outgrower family farmers revealed, in general, a satisfactory local adjustment, as confirmed by the values obtained in the scope of the procedures for evaluating the validity and reliability of the measurement scale: values of Composite Reliability (FC) and CA higher than 0.7, factorial validity (λ) of items higher than 0.5, individual reliability (R^2) of items higher than 0.25, MEV's) greater than 0.5 (Table 2) and MEVs higher than the square of the correlations between the constructs (Table 3). The exceptions occurred in the comparison of MEVs for the FV and EV with the square of the correlations between the constructs (Table 3) since it was obtained with values lower than the square of the correlations between the constructs ($r^2_{\text{Functional Value/Emotional Value}}$=0.81).

Table 2 also presents the results obtained for CA/construct and the standardized factorial weights of the items, within the scope of the studies by Sweeney and Soutar (2001), with the original scale of 19 items, and by Walsh et al. (2014), with a reduced scale of 12 items. The results obtained in the two studies mentioned are in parentheses.

The comparison of the results obtained for the CA with the results of the studies by Sweeney and Soutar (2001) (19 items) and by Walsh et al. (2014) (12 items) reveal that the values obtained for CA do not differ significantly from the values found by Sweeney and Soutar (19 items) and by Walsh et al. (2014). The CA for FV (0.786) and EV (0.794) were slightly lower than the CA for the respective functional and emotional values in the two studies (0.93 and 0.93 for the study by Sweeney and Soutar, 2001 and 0.92 and 0.92 for the study by Walsh *et al*., 2014). The CA for SV (0.91) and MV (0.93) were slightly higher than the CA for the respective social and monetary values in the two studies (0.80 and 0.87 for the study by Sweeney and Soutar, 2001, and 0.81 and 0.88 for the study by Walsh *et al*., 2014).

TABLE 2 – Standardized Regression Weights and Psychometric Properties of Reduced PERVAL Scale in Small Outgrower Family Farmers

Constructs/ Item[1]	Cronbach's Alphas (CA)	Standardized Regression Weights[2] (λ)	Individual Reliability (R^2)	Means Extracted Variance (MEV)	Composite Reliability (CR)
Functional	0.786 (0.93;0.92)			0.561	0.787
F_1		0.725 (0.86; 0.98)	0.525625		
F_2		0.569 (0.74; "-")	0.323761		
F_3		0.913 (0.92; 0.96)	0.833569		
Emotional	0.794 (0.93;0.92)			0.614	0.819
E_1		0.817 (0.91; 0.89)	0.667489		
E_2		0.524 (0.94; 0.97)	0.274576		
E_3		0.948 (0.79; "-")	0.898704		
Social	0.919 (0.80;0.81)			0.791	0.919
S_1		0.865 (0.73; 0.89)	0.748225		
S_2		0.925 (0.71; 0.95)	0.855625		
S_3		0.877 (0.84; 0.85)	0.769129		
Monetary	0.938 (0.87;0.88)			0.836	0.939
P_1		0.905 (0.88; 0.97)	.0819025		
P_2		0.933 (0.75; 0.88)	0.870489		
P_3		0.905 (0.87; 0.97)	0.819025		

Source: Authors' production

TABLE 3 – Correlations and MEV between PV Sub-dimensions in Small Outgrower Family Farmers

	Social Value (SV)	Monetary Value (MV)	Emotional Value (EV)	Functional Value (FV)
Social Value (SV)	0.791[3]			
Monetary Value (MV)	0.454	0.836		
Emotional Value (EV)	0.433	0.669	0.614	
Functional Value (FV)	0.329	0.647	0.900	0.561

Source: Authors' production

Regarding the factor weights, the differences are not very significant vis-a-vis the results of the studies by Sweeney and Soutar (2001) (19 items) and Walsh *et al*., (2014) (12 items), with factorial weights of SV and MV slightly higher than the results obtained in both studies, and with factor weights of FV and EV slightly lower than the results obtained in both studies.

The differences found may be justified by the fact that it is a psychometric instrument adapted to the agricultural context in the scope of this study.

The quality of global and local adjustment revealed the adequacy of the scale to the small out-grower family farmers' sample data. This indicates that the PV of the small out-grower family

farmers ascribed to the relationship with the ADX agribusiness has a four-dimensional pattern. In other words, the PV expressed by the small out-grower family farmers can be explained in terms of four dimensions: in functional/performance terms (FV), in terms of pleasure derived from the relationship (EV), in terms of the social benefit that the relationship can bring about (SV) and in monetary terms (MV). Therefore, in the perceptions of value that the small out-grower family farmers ascribe to the relationship with ADX, the cognitive-active judgment underlies and is essentially focused on the utilitarian strategies (performance and costs) and the hedonic aspects (affective and prestige) derived from the exchange relationship in the production of an agricultural commodity (sugarcane for the production of sugar and its derivatives).

This means that the out-grower of small out-grower family farmers by ADX in the sugar value chain linked to international agribusiness has a multidimensional value. Although the production link is, in the sugar value chain, a stage of less accumulation of added value of the product, according to Nova (2018), the out-grower by ADX in the sugar value chain linked to the international agribusiness creates new functionalities for the small out-grower family farmers, with productive logics, which are distinct from traditional logics, within the functional perspective of contract agriculture (Grosh, 1994), generating emotional feelings that go beyond production relationships that are merely technical. They generate social prestige for being linked to value chains with a scope of performance that crosses national borders and provides monetary benefits from the production of the agricultural commodity (Eaton & Shepherd, 2001; Kirsten & Sartorius, 2002).

Since the regression weights estimates (non-standardized) were significantly different from zero at the 0.001 level, that is, statistically significant ($p < 0.001$), the four dimensions of PV, namely FV, EV, SV, and MV differed from each other. The sum of the standardized regression weights showed different factor weights between the Value dimensions (FV=2.207; EV=2.289; SV=2.677 and MV=2.743).

This study carried out the comparison of the four dimensions of the evaluative judgments of the small out-grower family farmers' value perceptions ascribed to the relationship with the agro-industry ADX, based on the analysis of the statistical significance of the differences in the non-standardized regression weights. These non-standardized regression weights showed significant differences between the dimensions of value in the tetrafactorial structure of the PERVAL scale or revealed different magnitudes in the evaluative judgment of PV by small out-grower family farmers. Based on the sum of the standardized factor weights, the Monetary Value indicates that it is the most valuable dimension (2,743) for the small out-grower family farmers about the ADX agribusiness. SV follows with 2,667, EV with 2.289 and, finally, FV with 2.207. Therefore, the CFPs attach higher importance to the monetary dimension and lower importance to the functional dimension.

Differences in the magnitudes of the value dimensions can be explained by the socio-demographic characteristics of small out-grower family farmers. The illiteracy of most small out-grower family farmers (15.9%) may be an obstacle in the development of functional skills in the production of sugarcane, which may justify a smaller magnitude of the functional dimension of the PV by the small out-grower family farmers. The greater magnitude of the MV dimension seems to be justified by the fact that this is one of the most prominent benefits in the relationship of small out-grower family farmers with the agro-industry ADX, where 29.4% of the small out-grower family farmers affirm that the agricultural income is the main benefit of out-grower in the production of the agricultural commodity.

The MV magnitude may be related to the issue of subsistence of small farmers, who cannot have a surplus of income and, therefore, the monetary value is the main focus of perception.

5. CONCLUSIONS

The correlational structure of the 1st order PERVAL, in its reduced version (12 items) proposed by Walsh et al. (2014) resulting from an adaptation of the original version (24 items), developed by Sweeney and Soutar (2001), was adequate to evaluate small out-grower farmers' perceptions of value that they ascribed to the relationship established with foreign capital agroindustry in the production of agricultural commodities in value chains linked to international agribusiness.

This study, which used the PV scale that relates four constructs underlying the abstract and multidimensional concept of Value (FV, EV, SV and MV), provides evidence that the evaluative judgment of small out-grower family farmers are multidimensional and focused on utilitarian aspects (performance/cost), emotional and social benefits underlying that relationship.

The factor weights between the Value dimensions allow concluding that the cognitive or economic aspects, in utilitarian terms, of a relationship, particularly concerning the aggregate utility of the relationship derived from the monetary benefit, are preponderant in the subcontracting of small out-grower family farmers. It turns the utility derived from the social benefit (prestige underlying the relationship) depending on the monetary benefits that the relationship generates. The utility derived from the feelings or affective states of a relationship depends on the social benefits that can be obtained from a relationship. The technical benefits that can be obtained from a relationship depend on the affective and emotional usefulness of that relationship.

The nature of the perceptions of the value of small out-grower family farmers demonstrates that the agroindustry generates multidimensional patterns of value and that it should focus, above all, on the utilitarian aspects (monetary dimension) better collaborative use of small out-grower family farmers and for the improvement of its image.

Evaluative judgments in creating value in a relationship can be a critical business management tool. The knowledge of the nature of the perceptions in terms of value, resulting from the relationship with the company, makes it possible to discover the value standards generated by it, and, based on this knowledge, act to improve the relationship and image. It also avoids wasting resources (time, money, effort) on less relevant aspects.

For small out-grower family farmers, the knowledge of the nature of the value derived from the relationship with the agribusiness can contribute to clarifying the benefits/gains and/or sacrifices/losses resulting from the relationship with the agribusiness. They can also direct efforts towards the most prevalent value dimensions and determine whether or not to continue the relationship with the agribusiness.

This study extends the applicability of a concept from a specific area to other fields of knowledge. The concept of PV, an original term in the context of consumption of products and services due to its determining role in the adequacy of customer/consumer retention/loyalty strategies, namely in the areas of Management, Marketing, and Psychology, was, in this study extends to a relationship between the provision of agricultural services.

While this study offers some contributions and practical implications, several limitations should be taken into account when conducting future research. In this study, small out-grower family farmers were not broken down into different profiles according to the modalities and forms of integration in the relationship with the agribusiness.

Accordingly, future research should target small out-grower family farmers according to gender, age, and level of education in assessing the perceptions of value to study the influence of these variables on different dimensions of value.

ENDNOTES

[1]Values in parentheses refer to the magnitudes of Cronbach's alphas and standardised factor weights obtained in Sweeney and Soutar (2001) with the original 19-item scale and then with the small 12-item scale of Walsh et al. (2014).

[2]The regression weights (not standardized) were significantly different from zero at the 0.001 level, that is, the factorial weight estimates were statistically significant ($p < 0.001$).

[3]The values highlighted in bold regard to the values of MEV; non-highlighted values are correlations between the constructs.

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