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Integrative and Exclusionary Roles of Trust in Timber Value Chain in the Southern Highlands of Tanzania

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Abstract Contract and trust are the two main governance mechanisms that influence actors' integration into value chains. Nevertheless, most studies treat trust as a complement to formal contract, paying less attention on the circumstances in which trust becomes a sole mechanism of governance. The aim of this article is to examine how trust shapes integration in the non-industrial timber value chain in the Southern Highlands of Tanzania. Timber, which is the pillar of the districts' revenue in the area, contributes significantly to the income of smallholder households. The study adopted an exploratory cross-sectional study design whereby data were collected mainly through in-depth interviews and focus group discussions with actors of the timber value chain. The findings showed that spot market and relational governance were the two main linkages in the timber value chain. Spot market linkage is characterized by absence or little trust, while some trust is present in relational linkage. In relational linkage, trust helps integration of actors in the value chain through enabling them access market information, capital in the form of credit, technology for processing timber, and coordination and collaboration among the actors. However, trust is associated with some challenges and to some actors, it plays an exclusionary role. The study recommends for the promotion of trust along with other social control mechanisms such as social knowledge in order to address these challenges.

Keywords: trust; timber; value chain; integration; Tanzania

1. Introduction

Donors, development agencies, and policy-makers are now promoting a value chain approach as a pro-poor development strategy (Bolwig et al., 2010; Degrande et al., 2014; Humphrey and Navas-Alemán, 2010; Mungandia et al., 2012). The proponents of the approach argue that by integration in the value chains, smallholder farmers are linked to high value markets and hence improving their livelihoods (Chamberlain and Anseeuw, 2019). They argue further that integration in a domestic value chain is a precursor for participation in the global value chains (Beverelli et al., 2017). Despite these observations, there have been concerns regarding integrating smallholder farmers into

a value chain, with the caveat that integration exposes smallholders to risks that might outweigh the benefits (Ricketts et al., 2014). In the study of charcoal value chains in Senegal, Ribot (1998) shows that a value chain integration (VCI) can result into both positive and negative impacts on producers. Generally, literature shows that governance of a value chain is the relationship between actors of the value chain and the mechanisms used to control the chain (Gereffi et al., 2005; Ingram et al., 2014), influencing both the VCI and its outcome (Watabaji et al., 2016). However, a host of other factors (see Gramzow et al., 2018; Kilelu et al., 2017; Trebbin, 2014) also influences VCI.

Literature identifies five types of value chain governance that exist on a continuum (Gereffi et al., 2005). At the extreme end of the continuum is the market, which is characterized by arms-length transactions and the hierarchy, which is characterized by vertical integration and managerial control. The three governance types in the middle are referred to as network governance; and they include modular, captive, and relational governance. In terms of governing mechanism, modular and captive governance use more contracts as their mechanisms than the use of trust. On the other hand, relational governance relies heavily on trust and social ties (Altenburg, 2006; Gereffi et al., 2005) in governing transactions.

In Tanzania, as in other developing countries in Africa most transactions of agricultural commodities, including forest products, occur through social relations embodied in trust (Murith et al., 2019; Saka-Helmhout et al., 2019; Wang et al., 2014). Nevertheless, most studies on agricultural value chains have focused on the role of contract in integrating smallholders in the value chains (Gramzow et al., 2018; Kuzilwa et al., 2017; Martin and Sharp, 2016). When the role of trust is analysed, it is with regard to how trust complements the formal contract in integrating smallholders in the value chains (for instance, see Brønd, 2014; Watabaji et al., 2016). These studies attach greater importance to contract and use the term institutional void to describe the market environment where formal contracts are absent or not prevalent (Murith et al., 2019; Trienekens, 2011). More broadly, these studies overlook the context in which trust serves as a sole mechanism of governance and thereby undermining its importance. This has important implications on how trust is promoted in the value chains. Therefore, the goal of this article is to examine the integrative and/or exclusive roles of trust in timber value chain in the Southern Highlands of Tanzania. Since trust is built in relationships (Hilary et al., 2017), the study aims at (1) identifying the types of linkages present in the timber value chain, (2) determining the level of trust in the linkages, and (3) examining how trust shapes integration in these linkages.

The significance of this study is twofold. First, it is based on the economic importance of Non-Industrial Private Forestry (NIPF) in the Southern Highlands of Tanzania. Research shows that NIPF from which timber is obtained accounts for 72 per cent of the tree planted area and 88 per cent of the private forest plantation area in Tanzania (Asiad, 2016). The contribution of NIPF to livelihood is also substantial; for instance,

according to Nkwera (2010), NIPF contributed 61 per cent of the households' income and 73 per cent of the households' physical assets in Mufindi District. Thus, a study on how smallholder tree growers and other value chain actors are integrated or excluded in the NIPF value chain is important in order to identify leverage points for improvement. Secondly, the study contributes to the literature on value chain governance by unpacking the role of informal institutions in governing value chains. The rest of the article is structured as follows. Section 1.1 explains the two key concepts of trust and VCI. This is followed by Section 1.2 that links the two concepts. Section 2 presents the methodology of the study. This is followed by the presentation and discussion of the findings in Section 3. Section 4 presents the conclusion and recommendations based on the findings of the study.

1.1. *Trust and VCI explained*

Researchers in different disciplines have defined trust differently. As McKnight and Chervany (2001) observe, 'trust' elicits confusion because every discipline views trust from its own unique perspective. In this regard, the consensus among scholars is that trust is a complex construct, which is difficult to define and operationalize (Nunkoo, 2017; Robbins, 2016). In the analysis of definitions across disciplines Rousseau and colleagues, observe that, trust widely refers to a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another (Rousseau et al., 1998, p. 395). However, Akrouit and Diallo (2017) argue that defining trust based on a psychological viewpoint captures only the cognitive dimension of the construct, ignoring its emotional, and social dimensions. As Li (2012) maintains, it is insufficient to define trust as a psychological attitude. Accordingly, Li (2012) considers trust as a choice or decision about trust behaviour. Li (2012) highlights further that, trust can only matter if it results in specific trusting behaviours that make the one who trusts vulnerable to the trustee, for instance engaging in exchange for co-operation via an informal handshake rather than a formal contract. In this article, trust describes a long-term business relationship between actors of the value chain where parties know each other better such that transactions are based on informal agreement and no party exploits another's vulnerability (Sabel, 1993).

Like trust, VCI, also referred to as participation or inclusion in other studies (Tobin et al., 2016), has been conceptualized differently. Consequently, it elicits different meanings to different people and contexts (Chamberlain and Anseeuw, 2019; Fernandez-Stark et al., 2012; Watabaji et al., 2016). As suggested by Rousseau et al. (1998), a complex concept can be well studied by examining its different dimensions. Accordingly, I conceptualize integration based on a four pillars model for sustainable integration of smallholders in the value chain proposed by Fernandez-Stark et al. (2012). This 'holistic' model is geared at overcoming major constraints that limit the competitiveness of small and medium-sized producers in value chains. The

dimensions of the model include access to market, access to training, building collaboration and coordination, and access to finance (Fernandez-Stark et al., 2012). Fernandez-Stark et al. (2012) argue that access to these pillars, creates an opportunity for smallholders to become competitive and participate in value chains in a sustainable manner. The next section briefly explains the four pillars.

Access to market: The model describes access to market as the presence of value chain linkages between producers and buyers; and how the linkages are established. It is argued that building linkages between producers and buyers enables producers to capture as much value as possible. However, due to various factors such as geographic, cultural, and education smallholders are not directly linked to the final buyers. As Humphrey and Navas-Alemán (2010) observe, effective intermediary plays an important role such as translating buyer's needs for the small producers and facilitating a relationship where social, economic, and language barriers may prevent direct interaction. They suggest that the proximity with the final buyer depends on the level of development of producers. This implies that intermediaries can be bypassed in the value chains where producers have a high level of expertise and where they are well organized.

Access to training: The model emphasizes on specific training to improve productivity, product quality, comply with standards and other certification requirements. These would help smallholders gain access to national and international markets (Fernandez-Stark et al., 2012). In the context of this article, access to strategic information that improves competitive advantage of tree growers was used as a proxy indicator of access to training.

Coordination and collaboration building: Horizontal coordination and collaboration and vertical coordination and collaboration play an important role. Among others, the horizontal coordination and collaboration helps smallholders achieve economies of scale and sharing of information among themselves. On the other hand, vertical coordination and collaboration help organized producers to interact with other chain actors and understand how the chain is structured and what role the actors play. Furthermore, vertical coordination and collaboration can reduce information asymmetry (Fernandez-Stark et al., 2012).

Access to finance: Fernandez-Stark et al. (2012) argue that access to finance is important in gaining entry into a value chain. This is because of the required investments including infrastructure, buying equipment, and obtaining the necessary documents. Most smallholders lack or have limited access to finance; therefore, it becomes difficult for them to be integrated into the value chains. Hence, access to finance is required to overcome the limitation (Fernandez-Stark et al., 2012).

1.2. *The role of trust in value chains*

Like formal institutions, informal institutions influence the environment in which business relationships occur (Marosevic and Jurkovic, 2013; Saka-Helmhout et al.,

2019). The institutional context and social relationships shape both distributive and regulatory outcomes (Degrande et al., 2014; Hamilton-Hart and Stringer, 2016). Literature (e.g. Li, 2007; 2008; 2012) shows that the role of informal institutions becomes important in an environment with high business uncertainty, high chances of failure of a formal contract and long-term interdependence. However, there exists a tension between sociologists and economists regarding how the informal institutions influence production and exchange in the value chain. Rooted in the work of Granovetter (1985), sociologists posit that any economic exchange is embedded within the social structures and relationships where trust plays a fundamental role for the transaction to occur. It is therefore important to consider these relationships when analysing transactions.

On the other hand, the economic conceptualization of the role of institutions is influenced by the work of Williamson (1981), where the relationships between buyers and sellers do not result in trust but rather provide an institutional mechanism through which the behaviour can be monitored (Hamilton-Hart and Stringer, 2016). In other words, in economics, trust is treated as a rational choice. The tension between the two disciplines is rooted in the main dimensions of trust – relational, affective, and cognitive. While sociologists emphasize on relational dimension, the economists base their arguments on cognitive dimension. However, studies have shown that in most circumstances, trust is a blend of these dimensions (Lewis and Weigert, 1985). As Lewicki and Wiethoff (2000) have shown, in the beginning, calculus-based (rational) trust dominates. Rational trust is grounded on the rewards to be derived from maintaining trust and fear of punishment upon its violation. However, after repeated transactions, calculus-based trust leads to relational trust where there is little or no need for monitoring behaviour of each other (Lewicki and Wiethoff, 2000). For the purpose of this article, trust is conceptualized as a relational phenomenon. The next sections highlight the role of trust in VCI, and the way trust is empirically approached.

Literature shows that trust serves important roles in VCI. According to Humphrey and Schmitz (2001), any transaction is associated with costs, and trust reduces such costs. The cost may be related to negotiation, information sharing, designing, and enforcement of contract (Gulati and Nickerson, 2008). Higher transaction cost limit smallholders' integration into value chain due to low economies of scale, poor connectivity to markets, and information asymmetry (Pingali et al., 2019). Therefore, by reducing such costs, trust facilitates integration in the value chain, by enabling collaboration between actors (Akrouit and Diallo, 2017). A value chain, which is characterized by a high level of trust, actors share knowledge, information, and reduces opportunistic behaviour (Gërdoçi et al., 2016). Furthermore, trust aids access to finance by the chain actors (Heikkilä et al., 2016; Mohammed et al., 2013). As Fernandez-Stark et al. (2012) point out, finance can be used for investing in the value chain for instance buying necessary equipment for producing various products or moving into higher-value activities. Broadly, studies show that a high level of trust helps

strategic alliances to flourish and makes the value chain more competitive (Barney and Hansen, 1994; Hardman et al., 2002). However, trust can also lead to the exclusion of some actors from the value chain. In this case, exclusion is not the opposite of inclusion but of access (Hall et al., 2011). Literature on integrating actors into value chains suggests three kinds of exclusion. Expelled actors – those who withdraw from the value chain due to pressure or coercion; excluded actors – those who never participated in the value chain either by choice or lack of capability (Bolwig et al., 2010), and those who continue participating under adverse terms (Hospes and Clancy, 2011). In this article, the role of trust in VCI is examined by analysing how relational governance influences actors' access to market, finance, information sharing and in building collaboration and coordination between actors of the timber value chain.

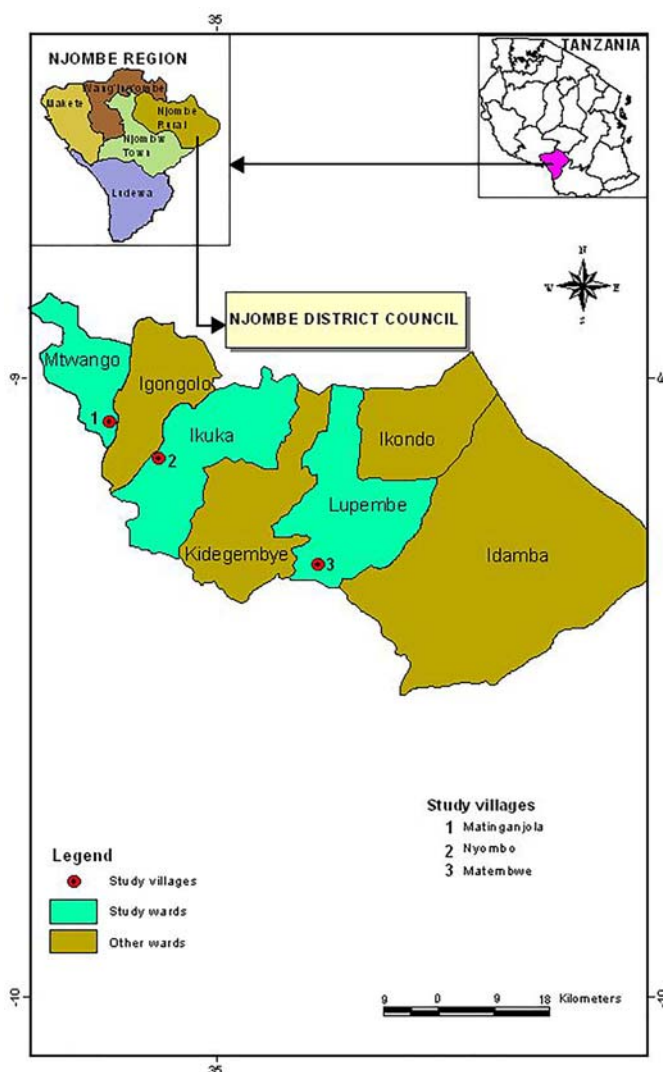
2. Methodology

2.1. *The context of the study area*

The study was conducted in the Southern Highlands of Tanzania, specifically, in Njombe District in Njombe region. Both the region and the district were purposively selected based on the presence of many NIPF plantations. The same criterion was also used to select three study villages. Statistics show that between the two leading regions, Njombe has about 78,065 ha while Iringa has 46,593 ha of NIPF plantations (Private Forestry Programme [PFP], 2017). In terms of NIPF planted areas, Njombe and Makete are the leading districts with 36,449 ha and 27,696 ha, respectively. Other districts have less than 20,000 ha of NIPF plantations each. Although most of the interviews (9 Focus Group Discussions [FGDs] and 48 in-depth interviews) took place in the three villages of Matembwe, Matiganjola, and Nyombo (see Figure 1), other interviewed value chain actors came from outside the three villages. It is also important to note that most of the timber from Southern Highlands of Tanzania is consumed within the country. Thus, local linkages are predominant in the timber value chain. In these linkages, there are no written contracts.¹ The lack of written contracts provides a good environment for relational mechanism to thrive.

1 Experience shows that in Tanzania contracts arrangements that involve smallholder farmers (for instance contracts in sugarcane, cotton, sisal, tobacco, and sunflower production) were initiated by contracting firms, farmer organizations and development agents. NIPF is a new phenomenon in Tanzania thus; tree grower organizations are at an infancy stage. In addition, firms that buy timber products rely on government plantations regarding NIPF as their secondary source of sawn timber. However, this research did not explore how tree growers and contracting firms perceive contracts in timber business. This suggests another study to explore the perceptions of actors of timber value chain regarding the needs of written contracts in timber business.

Figure 1: The map showing study district and villages



2.1.1. Actors in NIPFs in the Southern Highlands of Tanzania

The value chain of NIPF in the Southern Highlands of Tanzania comprises many actors. This article describes six main actors including nursery operators, tree growers, transporters, sawmillers, timber traders, and consumers.

2.1.1.1. Owners of tree nurseries. Owners of tree nurseries produce seedlings for their own requirements and for selling to other tree growers. Individual tree growers, Tree Grower Associations (TGAs), institutions such as non-governmental organizations,

primary schools, and village councils, own the nurseries. In the study area, most tree growers rely on either their own source or buying from other growers.

2.1.1.2. Tree growers. Tree growers are the second category of actors directly involved in the NIPF value chain. The majority of tree growers in the Southern Highlands grow *Pinus patula*. A survey conducted in the study area by FDT (Forest Development Trust) (2015) shows that the median land holdings of tree growers are about 2.4 ha and only 1 in 10 tree growers own landholdings greater than 8 ha. In some villages, tree growers are organized in groups that together form TGAs. Members of TGAs work together in carrying out such activities as nursery preparation, planting, and tree husbandry. However, few villages have TGAs thus, in most cases tree growers work individually. There is varied access to the market across tree growers. Akin to what Perdana and Roshetko (2015) report in Gunungkidul, Indonesia, the majority of tree growers in the Southern Highlands of Tanzania access the market by selling mature standing trees. However, some sell sawn timber, while others sell premature trees termed *miti ya kufuga*.

2.1.1.3. Transporters. Private entrepreneurs or some timber traders who own trucks provide transportation service. There are two categories of transporters in the non-industrial timber value chain. The first category uses trucks or tractors to transport sawn timber from remote areas with poor roads to areas with good roads. Sometimes these trucks are not serviced and lack legal documents such as insurance; thus, they cannot transport timber to distant markets. The second category of transporters is those who use trucks that are regularly serviced and have required documents that allow them to transport timber from village markets or areas with good roads to regional markets. These trucks pass through various checkpoints, notably the Tanzania Forest Services checkpoints where cess is collected, and the weighbridges where the weight of the cargo is assessed. The cost of transport varies depending on the distance; for example, for those who transport timber from Njombe to Dar es Salaam, a distance of 714 km, the cost is about 2.5 million TAS (1667 USD) per trip.

2.1.1.4. Sawmillers. Sawmillers process timber and their presence has been regarded by other scholars (e.g. Ghosh and Sinha, 2018) as an indication of a developed timber market, which motivates farmers to engage in tree growing (Versteeg et al., 2017). In the Southern Highlands, the majority of sawmillers own locally fabricated machines referred to as dingdongs. Tree growers who do not own these machines can access them through hiring. In some cases, sawmillers act as intermediaries between tree growers and traders. In this regard, they buy standing trees from which they get timber for selling to traders who, in turn, deliver timber to local or regional markets. Therefore, in addition to offering sawmilling services, some sawmillers are also engaged in timber trading.

2.1.1.5. Timber traders. There are four main categories of timber traders in the value chain of NIPF in the Southern Highlands of Tanzania. The first category includes traders who buy timber from the village collection centres or sometimes from remote areas of the villages. These traders usually sell timber to other traders found in the district centres. Because of their relatively small capital, they transport few pieces of sawn timber from the village centre to the village markets or district centres; therefore, they usually use trucks of not more than seven tons as a means of transport. The second category includes traders who buy timber from the first category of timber traders. These are found either in the village timber markets or at the district centres. They possess relatively higher capital compared to the first category. From the village markets or district centres, timber either is sold to the final consumers or is transported to the regional centres, including big cities. Because of their relatively higher capital, traders use trucks of 47 tons to carry timber from the district to the regional centres. The third category includes those based in the regional centres who buy timber from either the village markets or district centres. In most cases, this type of traders sells the timber to the final consumers in the regional centres, thus, are timber retailers. The last category of timber traders is those who export timber outside the country. Although some individuals are involved, companies are the main players in timber export. It is worth noting that although the value chain actors are described under distinct categories, in practice, at the village and district levels some actors are engaged in all the nodes of the value chain (i.e. production, processing, and marketing). Their main activity in the NIPF value chain was the criterion used to place them under respective category.

2.1.1.6. Consumers of sawn timber. The construction industry consumes about two-thirds of the sawn timber produced in the country. The buyers are companies, government departments and individuals. Private entrepreneurs such as artisans, carpenters, and furniture manufactures consume the remaining one-third. The customer's scale of operations defines the category of timber retailer he deals with (PFP, 2016).

2.2. Research design and methods for data collection

Trust is one of the many concepts that are not easily quantifiable and, therefore, they can be studied well through qualitative methods (Seppänen et al., 2007). In this regard, I adopted an exploratory cross-sectional research design, which is well suited for understanding the phenomena within their context. The design was considered appropriate in uncovering how trust shapes the integration of actors in the timber value chain (Campbell and Gregor, 2002). The main methods used for data collection were Key informant interviews, FGDs, and individual in-depth interviews with the main actors of the timber value chain comprising tree growers, saw millers, timber traders, and retailers. A slightly different semi-structured interview guide was used to collect the data from each category of chain actor. The discussion guide included

topics, which sought to uncover the forms of linkages, and the actors involved in these linkages, the governance mechanisms, the reasons for engaging in the linkages and the benefits/cost accrued, the duration of these linkages, and the level of trust in the linkages. Except for retailers, all other interviews were conducted in Njombe District. Interviews for timber retailers were conducted in Morogoro Region because most of the interviewed timber traders reported to have business relations with retailers in Morogoro.

2.3. *Sampling and data collection*

Purposive and snowballing samplings were used to get respondents. The number of respondents for each category of actors was determined by the saturation point – a stage where more data do not necessarily lead to more information (Mason, 2010). Since good cooperation between the researcher and the respondents improves the information collected, a rapport was built and maintained with the respondents by adopting the tactics suggested by Abbe and Brandon (2014). Some of the adopted tactics include explaining the goal of the research and the manner in which data would be used, and continued contact (the researcher stayed for one month in Matembwe village), followed by four rounds of visits in the study villages. Others include active listening, mimicry (for instance, mirroring speech rate and linguistic patterns), and self-disclosures to help establish common ground.

Furthermore, the validity of research findings was enhanced by triangulating the data collected (Mathison, 1988). As suggested by Schaefer and Alvesson (2017), the researcher adopted an intra and extra source critique methods of triangulation. This implies that where the information gathered from informal talks or from FGDs contradicted information gathered through semi-structured interviews, a call was made to the respondent to seek for more clarification on the issue and when similar information was given, the issue was explored in detail in the following interviews with key informants and other respondents. When the issue was also confirmed through either of the methods, it was regarded as a new insight.

Key informants interviewed were leaders of grower organization, Field Forest Officer in Matembwe village, the Manager of Matembwe Timber Market and the Manager of Matembwe Village Company. Also, nine (9) FGDs, three (3) for tree growers, three (3) for timber traders, and three (3) for saw millers were held in the study villages. Recruitment of FGD participants was based on the experience of the member in a node. Although deliberate efforts were made to include men and women for each FGD, in the three study villages, no women were reported to be involved in sawmilling; thus, all FGD participants for saw millers were men. In each category, FGD participants ranged from 7 to 15. All FGDs were conducted at village offices and the time taken for each FGD ranged from 45 to 90 min.

About 25 interviews were held with tree growers, 13 of whom had membership in the Grower Association and 12 were not members of the association. Each category of tree growers consisted of small, medium, and large tree growers² who were selected based on the size of their woodlots. For timber traders, a list of timber traders with timber yard was obtained from the manager of Matembwe timber market. Accordingly, interviews were held with 23 traders, 12 of them owned timber yard at Matembwe village market and the rest (11) did not own timber yard. The names of traders without timber yard were obtained through snowballing. Similarly, traders were purposively recruited based on their level of capital. During discussion with timber traders, it was explained that the level of capital determines the type of market accessed. That is, traders with smaller capital sell timber at the village market while those with average capital sell at the district hub and those with larger capital sell at the regional markets. Therefore, the place of selling and the frequency of supplying timber in the respective markets were regarded as the proxy indicators for capital.

All saw millers found in the three villages were contacted and interviewed because they were very few. Saw millers play double roles in the timber value chain: they provide the services of sawmilling but also, serve as middlemen between tree growers and timber traders. The names of the saw millers were obtained from the village leaders and others were obtained by snowballing. Thus, about 11 saw millers, three (3) from Matembwe village, five (5) from Nyombo, and three (3) from Matiganjola village were interviewed.

Semi-structured individual interviews were also held with timber retailers in Morogoro Municipality. In order to interview retailers who received timber from the study area, the research adopted Ekici's (2013) approach. In this case, timber traders were asked for the names and contacts of retailers in Morogoro Region to whom they supply the timber. By using this strategy, nine (9) retailers were contacted and interviewed whereby eight (8) were from Fire timber Market, and one (1) retailer was from Kwa Chambo. Furthermore, informal interviews were held with two friends who are also timber retailers at Nanenane ground.

2.4. *Measuring trust in timber value chain linkages*

Questions about assessing trust were adapted from a Handbook for Value Chain Research by Kaplinsky and Morris (2001, p. 74). According to Kaplinsky and Morris (2001, p. 74), a value chain, which is characterized by high level of trust there is long-term³ trading relationship between parties. In addition, there is limited

2 Based on FDT (Forest Development Trust) (2015) baseline survey that indicated total land size owned by tree growers, those with less than 5 acres were regarded as small, 5–20 acres as medium and more than 20 acres as large tree growers (FDT, 2015, p. 17).

3 In the context of this paper long term relationship was intuitively regarded to be three years and above.

or no competition for buyers (no bidding); the contract is informal and flexible. With respect to inspection of the cargo, there is little or no inspection of the delivered cargo. Regarding the degree of dependence, there are fewer customers for suppliers, hence sellers are dependent on their customers. In addition, buyers provide technical assistance to the suppliers, for instance, the technology required to produce a quality product. Furthermore, buyers extend soft credit or cash advances to sellers and in turn, sellers supply the products on credit because they trust the buyers. Besides, communication between parties is usually informal, price determination is non-adversarial, and payment is on time.⁴ These characteristics resonate with the definition of trust used in this article because they are grounded on long-term informal relationship and on the belief that the interest of each party is protected despite the informality guiding the transactions. Therefore, the level of trust was measured by exploring the respondents' perceptions regarding each characteristic in the linkages of the timber value chain.

There are two strategies suitable for measuring perceptions. Taber (1991) demonstrates that in the deductive or positivist strategy the researcher specifies constructs in advance and the respondents are given standardized instruments to operationalize the constructs. On the other hand, in inductive (also referred to as interpretive) the researcher develops a theoretical construct from the respondents' interpretations of their experiences (Taber, 1991, p. 579). Evered and Louis (1981) describe the former strategy as inquiry from the outside and the latter as inquiry from the inside. In this study, open-ended questions to explore the respondents' perceptions were set from the 10 indicators of trust.

Next, textual responses were coded following steps of coding open-ended questions as suggested by Braun and Clarke (2006). Following M4P (2008), the responses were assigned numerical levels that represent the level of trust as follows: 1 represents distrust, 0 – no trust, 1 – little trust, 2 – some trust, and 3 – full trust. The levels of trust were assigned following established criteria. For instance, for the indicator of length of trading relationship, 0 was assigned if no relationship existed, 1 was assigned if the relationship was between 0 and three years, 2 if it was 3 years, and less than 5 years, and 3 if the relationship was 5 years and above. The length of the trading relationship was not expected to be negative. Therefore, negative numbers were not assigned for this indicator. As suggested by Boone and Boone (2012), after assigning the numbers, the mean scores of responses at various interfaces were computed. To get the level of trust at each interface, the mean scores were compared with the four levels of trust.

2.5. *Data processing and analysis*

Other qualitative data were transcribed, after which a thematic analysis was done by following the steps as described by Braun and Clarke (2006). After familiarization

⁴ In this paper, supplying timber on credit was regarded as timely payment if the agreed period of payment was observed. In situations where the agreed period of payment was not honoured, this was regarded as delayed payment, an indication of low trust.

with the data through reading and re-reading, a non-systematic labelling of data was adopted (i.e. in some instances, sentences were labelled whereas in other sections or paragraphs were labelled). This process generated 66 labels (referred to as codes in this article). The coding process was done at a semantic level that is the codes communicate explicit meaning of the sentences, paragraphs, or sections. Similar codes were grouped together to generate themes and sub-themes. The generation of themes used a deductive or top-down approach (Braun and Clarke, 2006; Hayes and Hayes, 1997; Maguire and Delahunt, 2017), whereby the identification of themes was driven by the researcher's theoretical interest (a theory-led thematic analysis). However, this was carefully done to allow new insights, which might not be explained by the guiding theoretical framework. Theme mapping resulting into thematic matrix allowed descriptive analysis of relationships between and among themes.

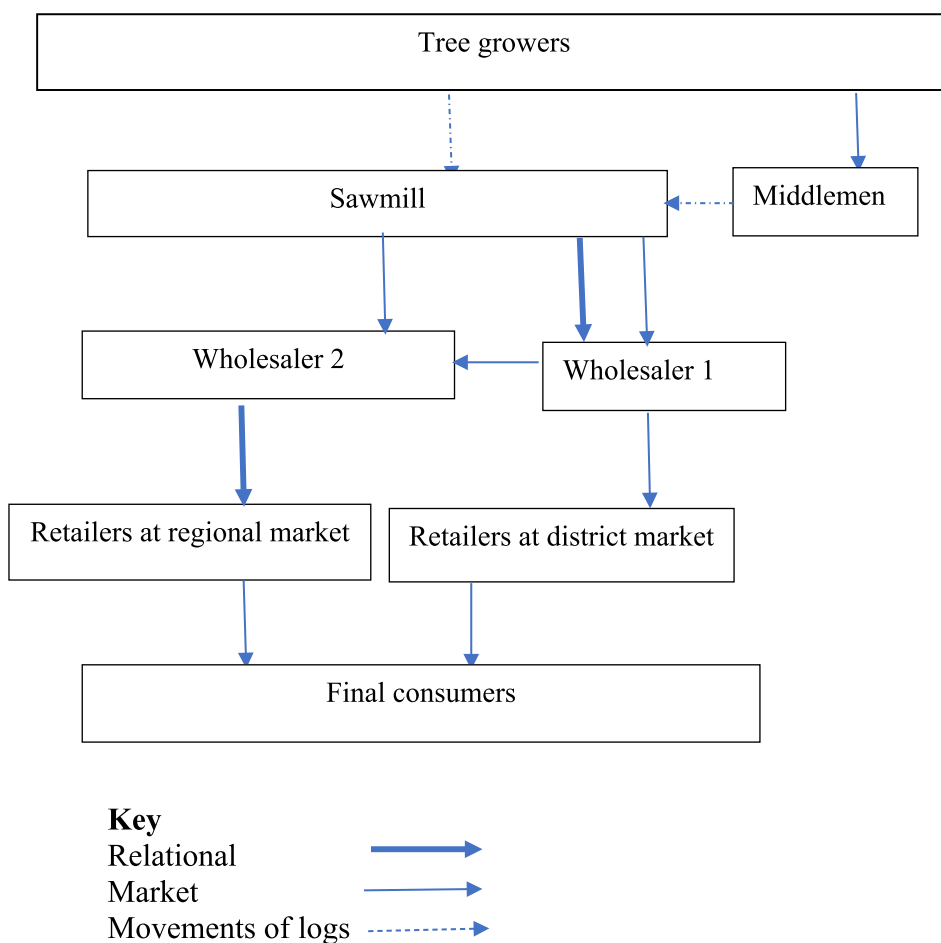
3. Results and discussion

3.1 *Forms of linkages*

In this subsection, linkages for different value chain actors are identified and discussed. As indicated in Figure 2, two main forms of market linkages were found in the timber value chain. The thin solid arrows illustrate spot market relationships, whereas the thick solid arrow illustrates areas where transactions are performed through relational governance. The thin dotted arrows indicate the movements of logs.

3.1.1. *Linkages of tree growers*

Figure 2 shows that tree growers were in a relationship with middlemen and wholesalers (category 1) through market and relational linkages. The findings show that market relationship was dominant between tree growers who sold standing trees and middlemen or wholesalers. In this case, tree growers sold standing trees by selling either a whole compartment or individual trees (selective harvesting). However, it is also worth noting that some middlemen operated as saw millers, therefore they provided sawmilling services and bought standing trees from the growers. The findings from in-depth interviews with tree growers indicated that tree growers who sold standing trees were free to sell to anybody and the price was the final determinant of transaction. Tree growers also sold sawn timber to wholesalers and these were linked by both market and relational governance. In-depth interviews with tree growers revealed that those who sold sawn timber were those who could afford the cost associated with timber processing, including payment for labourers and hiring mobile sawmill. The findings showed further that selling sawn timber required some knowledge of the market. That is, before harvesting trees, one needed to know where and to whom timber would be sold because keeping sawn timber for a long time leads to quality deterioration resulting in lowering of the price of sawn timber. As Ribot and Peluso (2003), pointed out, the findings of the study underscore

Figure 2: Linkages in timber value chain

the importance of capital in getting access to benefits. Furthermore, the findings imply that although capital is required, it is not sufficient for accessing the market – other factors, for instance, access to market information is equally important (Fernandez-Stark et al., 2012).

The findings showed further that in some cases, tree growers who sold sawn timber were those who had relatives dealing with timber business. Their relatives gave them credit for processing trees, guaranteed them market for sawn timber or both. These findings were partly confirmed by the findings of one of the key informants who reported to have sold sawn timber because her son was a wholesaler and her young brother was a retailer.

For me, I have no problem with selling trees because I have my son who is a wholesaler and my young brother is a retailer who operates timber yards in different regions. When I want to sell my trees, I call my son to buy my trees or help me process them. The sawn

timber is sold to his uncle who owns timber yards in Morogoro and Dar es Salaam. (A key informant in Matembwe village 22 November 2017)

This observation implies that social relations were used for getting access to market and value addition to trees. The use of social relations in gaining access to benefits was also observed by Ribot (1998) in his study on forest profits along Senegal's charcoal commodity chain. It was found that merchants used their social ties with powerful individuals who exerted influence on Forest Service to deliver extra quotas to the merchants.

In terms of cost and benefits accrued, the findings from FGDs with tree growers showed that growers who sold sawn timber to wholesalers gained more income than those selling standing trees to middlemen. More income was gained due to valued addition obtained by processing the trees. Nevertheless, the findings showed that most of the tree growers were linked to middlemen due to factors such as limitation of capital for processing their trees. Similarly, it was reported that although selling sawn timber through relational linkage provided more income, growers engaged in this linkage could not sell sawn timber to any person except to those with capital. Sometimes other traders offered higher prices than the price offered by a relative, this would tempt grower to sell timber to such traders. If this happens, the result is family conflicts.

Apart from vertical linkages, the findings showed existence of horizontal linkages through tree grower association (this is not indicated in Figure 2). Growers with membership in grower association reported to have benefited more from linkages through associations than linkages through middlemen and wholesalers. Notwithstanding the benefits of horizontal linkages, few tree growers had membership with grower associations. For instance, in Matembwe village, records showed that out of 675 households, only 75 (11.1%) households had a membership with Matembwe Tree Grower Association (UWAMIMA) in the village. In-depth interviews with growers without membership in the association suggest the existence of barriers that discourage them from joining. The most important barrier mentioned was the subscription fee, which is set at 50,000 TAS (USD 33.3) and a monthly fee of 1000 TAS (USD 0.7). Furthermore, a new member was supposed to pay all monthly fees equivalent to 1000 times the number of months since the existence of the association.⁵ In addition, low number of tree growers joining the association could be associated with history of cooperatives whereby due to spots of discouragements, farmers had become sceptical of joining cooperatives (Mruma, 2014). These findings imply that Forest Extension Agents had not done enough promotion of farmer organizations and their benefits.

⁵ The association was found in 2009 thus at the time of this research it had nine (9) years of existence. This implies that in order to join the association a new member was supposed to pay 59,000 TAS (USD 39.3). Those who wanted to become members of the association perceived this amount as unaffordable.

3.1.2. *Linkages of wholesalers*

The findings show that, the first category of wholesalers was linked to both retailers in the district market and to the second category of wholesalers through market relationships. However, in contrast with the market-based linkage for tree growers, sawn timber was the only item transacted. It was reported that selling sawn timber to the second category of wholesalers generated less profit than selling it to retailers in district markets. However, those who were linked to the second category of wholesalers reported to have done so to avoid the cost of transport, transit pass, and tax clearance. These costs were avoided because transactions were done at the village level implying that category 2 of wholesalers paid them when they transported timber to the regional markets. Timely payment where payment is done promptly after the cargo was delivered, was among the reported advantages of selling sawn timber both to the second category of wholesalers and to retailers in the district market. Wholesalers demanded prompt payment because they have less capital, that is, selling timber on credit would mean being out of the business for some time. On the other hand, the buyers could afford to pay them because sellers in the district market supplied few pieces of timber unlike sellers supplying timber in the regional market.

The findings of in-depth interviews with the first category of wholesalers revealed that they would like to sell timber to the regional market, but they were limited by low capital. One needs to have enough capital to buy about 3500 pieces of timber that can fill the track. This implies that due to long distance to the regional markets, economies of scale must be achieved in order to get profit. In addition, high working capital is required because timber is supplied on credit and payment is by instalment. A wholesaler without enough capital must wait at least for two to four months before supplying another consignment.

Regarding the linkages of the second category of wholesalers, these were linked to regional markets through relational governance characterized by informal agreements, which is based on mutual trust and ethnic ties. Timber was sold to retailers who finally delivered it to the final consumers. The findings from secondary sources showed that about two-thirds of timber is consumed in the construction industry while the rest goes to the furniture industry (PFP, 2016).

The findings from in-depth interviews with wholesalers and retailers showed that relational linkage provided benefits to both. The benefits obtained by the wholesalers were good price for timber in regional markets compared to any other domestic market. In addition, selling sawn timber to the regional market assured wholesalers of the reliable market due to informal agreement with retailers to supply them timber. Furthermore, occasionally retailers provided credit to their suppliers and the repayment is made by supplying timber. Besides, wholesalers received market information regarding the type of timber mostly demanded by the consumers. Apart from the benefits enjoyed, timber was supplied on credit and the payment was by instalment. Another concern was delayed payment, where it was reported that it could take two to

four months to receive the whole payment. The third concern was related to losses resulting from unfaithful retailers who decide to relocate to unknown places to evade timber debt payment. Losses were incurred through enforcement of informal quality standards that lead to the rejection or receiving lower prices for some timber. On the other hand, retailers reported to have been receiving reliable source of timber supplied on credit through relational linkage. As reported in other studies (Vieira and Traill, 2008), a long-term relationship between retailers and wholesalers helped to build trust which in turn helped the retailers to lower transaction costs and more importantly to get quality timber.

3.2 The levels of trust in timber value chain

This section discusses the level of trust at three interfaces: between tree growers and middlemen, between tree growers and wholesalers, and between wholesalers and retailers. The 10 indicators of trust highlighted in the previous section were used to calculate the level of trust at each interface. Although the level of trust was assessed using a five-point scale, only three levels were found.

At the interface of tree growers and middlemen, the findings showed that only one indicator of trust related to the payment had a positive value. The findings of in-depth interviews with tree growers revealed that payment was done in time because middlemen were only allowed to harvest trees after paying the agreed amount. The rest of the indicators had zero or negative values leading to a zero mean score for all observable indicators of trust. This implies the absence of trust at the interface of growers and middlemen. The findings showed negative value regarding price determination perhaps because the interface was characterized by opportunistic behaviour by middlemen.

At the interface of tree growers and wholesalers, the findings of the in-depth interviews with tree growers and wholesalers showed a mean score of one for all observable indicators of trust. This indicates that this interface was characterized by little trust; which could be explained by a mix of market and relational linkages found at this interface. While relational linkages provide good environment for building trust, market relationships do not offer enough time for building trust, and as already explained, it is associated with opportunistic behaviour.

Regarding the interface of wholesalers and retailers in regional markets, the findings showed a mean score of 2 for all observable indicators of trust. This indicates that there was some trust at this interface except for three indicators including contractual relationship, provision of technical assistance, and duration of payment. The presence of some trust might be associated with the nature of the relationship between the wholesalers and regional market retailers. Relational linkage was dominant and was characterized by trust and ethnic ties where most of the wholesalers and retailers reported to originate from either Iringa or Njombe regions. Domination of some ethnic groups in relational linkage might be explained by the fact that sharing the same ethnicity favours the establishment of trust, thus facilitating smooth transactions

(Altinay et al., 2014; Chao and Moon, 2005; Werbner, 1990). In sum, the findings showed that at the interface characterized by spot market there was absence or low level of trust, but there was some trust with the interface dominated by relational linkage. The next section discusses the implication of the level of trust by analysing the association between trust and VCI. In other words, it analyses how trust is related to access to market, finance, information, and collaboration and coordination.

3.3 *The role of trust in timber VCI*

The findings showed that the level of trust in the timber value chain ranged from an absence of some trust to the existence of some trust. At the interface of the grower and middlemen, the findings showed that there was no trust. FGDs of tree growers and middlemen confirmed this by showing how the relationship between tree growers and middlemen is characterized by opportunistic behaviour and distortion of market information. Tree growers explained how middlemen misinform them about the price of standing trees in order to increase their negotiation power and gain more income.

On the other hand, saw millers, who also operated as middlemen revealed that not only do middlemen distort price information when they approach growers to buy their trees, but also they charge high price for tree growers who seek to lease their sawmill for processing standing trees. In line with the four-pillar model, it is argued that tree growers are theoretically integrated into the value chain because of limited participation in higher-value chain activities. Although limited participation is associated with many factors, adversarial price determination and limited or distortion of market information which are the salient features of mistrust or absence of trust aggravate the situation. These findings are in line with the findings in a study by Nguni (2014), who found that growers of fresh fruits and vegetables in Zanzibar suffer from limited information that could help them to upgrade from market to long-term cooperation with buyers.

At the interface of tree growers and wholesalers, the study also showed the presence of little trust. The study found that tree growers who sell sawn timber have, in most cases at least one member of their family engaged either in timber processing, wholesaling, or retailing. These family members act as a source of market information and in some cases facilitate timber processing by providing credit or offering to process timber without overcharging the grower as highlighted in the following quotation.

As a strategy to make good profit we undervalue the woodlots. However, I cannot cheat my mother about the price of woodlot; but also, I cannot pay beyond the normal price because I also want to stay in business. Also, this applies when she wants to sell sawn timber, I would charge her the market price for timber processing. (A saw miller in Matiganjola village, 21 July 2017)

Although the above quote was given by the saw miller, he also operates as a middleman by buying trees from growers, process them, and sell sawn timber to wholesalers.

Various implications can be inferred from this quotation. First, it shows the existence of cheating practices as an indication of low level of trust. Secondly, it shows how collaboration and transparency among actors, an indication of high level of trust, can benefit the value chain actors. In addition, it shows how limited access to market information maintains the existing power relations among actors. Akin to the findings of Agyekumhenea et al. (2018) who observed that access to credit in maize value chain in Ghana were highly influenced by trust between actors, the quotation of the saw miller also implies that, trust is a social capital which facilitates access to credit and technology for processing timber.

At the interface of wholesalers and retailers, the findings showed that some trust exists. Retailers explained how trust helps them to remain competitive in business by avoiding various transaction costs. Getting timber on credit is perceived by the retailers as a loan without interest. This is indicated in the following quotation from the retailer during interviews

I receive timber on credit and pay as the cargo is sold out. With this kind of arrangement, I have no need to take a load because my supplier is reliable. Upon delivery of the cargo, I pay only the cost of transport and a return fare for my supplier ... (A timber retailer from the Fire timber market in Morogoro on 17 November 2019)

On the side of the wholesalers, the long-term relationship with retailers has resulted in building trust that ensures reliable access to 'profitable' market. However, in some cases, trust as a tool for timber value chain governance, has excluded some wholesalers from supplying timber in the regional market under the guise of lacking or having low level of trust. In-depth interviews with wholesalers revealed that although some trust exists, retailers are more powerful than are wholesalers. Therefore, in some cases, wholesalers need to agree what the retailers' decisions without much negotiation. Explaining how he was retrenched from supplying timber in Morogoro, the wholesaler pointed out the following:

I was retrenched from supplying timber to two retailers in Morogoro because I wanted them to increase the price of timber. When I approached other retailers at the Fire timber market, I was told that the former retailers informed them that I couldn't be trusted. I have therefore decided to start supplying timber at the village and district markets. (Interviews with a wholesaler at Matembwe timber Market in Njombe, 20 July 2018)

A follow-up question that sought to understand why the wholesaler did not think about supplying timber in Dar es Salaam revealed that it is not easy to find a retailer who can be trusted for supplying timber on credit. This implies that some wholesalers may be supplying timber under adversarial terms due to limited alternatives. Further discussion with the retrenched wholesaler revealed that some have incurred a loss by supplying timber to retailers who are not trustworthy. This was confirmed by another wholesaler in Matembwe village who was supplying timber in Dar es

Salaam but stopped supplying timber because the capital was lost after the retailer relocated to an unknown place. The two cases show that although trust in value chain offers many advantages, it is also associated with potential risks (dark side), which should not be ignored. This, points to the fact that promotion of trust as a mechanism of governance in value chains should go hand in hand with the promotion of other social control mechanisms such as social knowledge. Social knowledge is used to describe ones' ability to understand and predict other's general patterns of behaviour (Sohn, 1994). However, in line with Sohn's (1994) argument, it should be noted that social knowledge does not eliminate the potential risks associated with trust, but it increases one's ability to predict the behaviour patterns of the potential transacting partner in different situations.

4. Conclusions and recommendations

Generally, the findings of the study showed that spot market and relational governance are the dominant linkages in the timber value chain. Spot market is characterized by absence or little trust while some trust exists in relational linkage. In this linkage, trust facilitates integration into a value chain through enabling access to credit, technology for processing timber, sharing of market information, lessening opportunistic behaviour, and enhancing coordination and building collaboration between actors of the value chain. Furthermore, on the side of retailers in regional centres, trust significantly reduced the cost of getting timber by avoiding cost related to control systems such as formal contracts. In addition, it is because retailers did not travel to where timber is obtained, and thus saved time and transportation costs. The time saved was used to supervise their business or engage in other livelihoods activities.

Nevertheless, trust was also associated with some challenges, such as retrenchment of actors from accessing regional market that negatively affected their integration into the timber value chain. The retrenched actors were less powerful compared to the one retrenching implying that the integrative role of trust was negatively affected by power asymmetry between actors of the value chain. The current study and other studies (Ribot, 1998; Ribot and Peluso, 2003) show that capital (both social and financial), technology, and market information are the sources of power that help actors of the value chain gain benefits from their resources. Therefore, the government through the Ministry of Natural Resources and Tourism and Development actors should facilitate access to these resources in order to balance power between actors and enhance equitable distribution of benefits accrued from the timber value chain. Similarly, access to market information would increase transparency in the chain hence improving trust between actors. In addition, the findings indicate that trusting without conducting a comprehensive assessment of the person to trust causes a loss on the side of the suppliers. This is associated with quitting from the business by the suppliers. Thus, promoting trust along with other social control mechanisms such as social knowledge can help reduce the challenges.

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