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Theory-supported Insights into Commitment of Cooperative Members: A Case of Rice Farmers in Western Zambia

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Declaration

I hereby declare that I have done this thesis entitled ‘Theory-supported Insights into Commitment of Cooperative Members: A Case of Rice Farmers in Western Zambia’ independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague 13th May 2020

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Samuel Mwanza

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Abstract

Cooperatives have been considered as fundamental building blocks for agricultural and rural development because of their potential to reduce farmers' transaction costs, providing economies of scale and building up of social capital. However, the benefits of cooperative membership in Zambia still remain a theory. Based on the given theoretical framework, this study analyzes and links key factors that influence the active participation of farmers in rice value chains. Simple descriptives and Framework Deductive content analysis was used on quantitative and qualitative data respectively from a total of 215 passive and active rice cooperative members from Mongu and Limulunga districts of western Zambia. Results show higher mean years of education, more number of gadgets and larger total land holding for active members than passive members. Further, active members have higher share capital value, selling price, sell less via middlemen, better access to extension services, and higher perceived cooperative benefit. Results from content analysis revealed the validity of transaction cost theory, social capital theory and economies of scale theories as benefits, hence, motivation for activeness. Further, governance and decision making problems, investment related problems, and cooperative asset related problems were found to be relevant among the passive members and therefore contribute to their passivity. Other reasons for passivity included different levels of commitment, dormancy of cooperatives, low production quantities of rice and failure to benefit from subsidised inputs.

Key words: Smallholder Farmers, Producer Groups, Commitment, Rural Institutions

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List of the abbreviations used in the thesis

AGM	Annual General Meeting
RPO	Rural Producer Organization
IFAD	International Fund for Agricultural Development
FAO	Food and Agriculture Organisation
SACCOS	Savings and Credit Co-operative Society.
UNDP	United Nations Development Programme
MACO	Ministry of Agriculture and Co-operatives
MAL	Ministry of Agriculture and Livestock
PCS	Primary Cooperative Society
FISP	Farmer Input Support Programme
SNAP	Second National Agricultural Policy

1. Introduction

Most of the populations in sub-Saharan Africa live in rural areas with high levels of poverty. More than 60 percent of the rural people in the sub-Saharan Africa live on less than US$1.25 a day (Carmody et al. 2015). Similar to the sub-Saharan context, about 57.7 percent of Zambian population lived below the international $1.90 poverty line in the year 2015 and the majority population are dependent on subsistence agriculture with the rural poverty of about 80 percent as of the year 2018 (World Bank 2019). The then Zambian sector of agriculture forestry and fisheries only contributed about 9 percent to the real Gross National Product as of 2014 (UNDP 2016). In the year 2019, the GDP contribution of the Agricultural sector reduced to about 8 percent composing of the total labour force of about 54 percent (ILOstat 2019). Therefore, meaningful poverty reduction strategies should have the focus on agriculture. Interventions that aim at agriculture directly raise farm incomes by increasing marketable output, linkage creation, and processing (Moono 2015).

In order to implement poverty reduction strategies in the agricultural sector, Zambia has been using the road map outlined in three (3) documents: The National Agriculture Policy (2004-2015); the Sixth National Development Plan (2008) and the Zambia National Agriculture Investment Plan (NAIP, 2014-2018). These documents emphasise on the improvement of the farmers' livelihood through agriculture diversification, agricultural sector commercialisation and enhancing the participation of farmer organisations in agricultural marketing and value chains.

Rice is one of the crops being promoted for diversification and commercialisation as earmarked in the National Agricultural Investment plan by the government of Zambia (NAIP 2013). The promotion of rice commercialisation emanated from its value at national level as a highly profitable small scale cash crop and also as a major contributor in food security of the Zambian population (FAO 2017; MACO 2011). About 66 600 households participate in rice production of which 32 percent are women (NAIP 2013). Production of rice in Zambia is mostly carried out in Eastern province, Northern province, and Western provinces due to inherent conducive rainfed lowlands, plains, and wetlands suitable for rice production.

According to Netherlands Development Organization, a prominent organisation promoting rice and its value chains in Zambia, rice farmers also face critical challenges among other things, the fragmented and unformalized market system where producers operate individually rather than in groups (Manda & Mandebwu 2010). The problem of inability of smallholder farmers to access better markets is a global issue demanding better solutions. The United Nations pronounced the year 2012 as the international year of Cooperatives. Further, 2014 was declared an international year of family farming and more recently 2019 to 2028 as the decade of family farming (IFAD 2018). The afore mentioned pronouncements serve as an attestation to the importance of farmer organisations in poverty reduction and enhancing food security. By participating in cooperatives, smallholder farmers can undergo sustainable economic transformation through resource sharing, improved market access and bargaining power (Dube et al. 2016).

Acting collectively, smallholders, through cooperatives may help to curtail some transaction costs incurred during accessing of inputs and market information, coordination of processing and selling activities which are often lacking among the smallholders especially in Africa (Lamboll et al. 2015). Cooperatives can be the means of accessing new technologies through increased capacity resulting from collective action, which would aid in tapping into both domestic and international markets thereby allowing cooperatives to compete with larger firms in rice value chains (Stockbridge et al. 2003).

The challenges faced by smallholder producers with regard to penetrating the high -value markets of rice among other crop products has kindled afresh the role cooperatives can play, describing it as a ‘fundamental building block’ for agriculture development (World Bank 2008). Thus, a better understanding of how cooperatives can break the barriers to access the market through addressing coordination and inefficiencies becomes very critical (Markelova et al. 2009). Many success stories exist from some viable cooperatives both outside and within Africa, examples given, India, Thailand, Uganda, Southern Tanzania, Malawi (Lamboll et al. 2015). In the above cited countries, cooperatives successfully linked the smallholder members to high value markets. For Zambia, however, this commercial potential is still untapped (Chitundu et al. 2009). This potential is particularly present in the western part of Zambia where there is good

production of good quality rice despite having the highest incidence of poverty as estimated at 82.20% (CSO 2017).

There is a general agreement among the experts of the cooperative movement that there is immense potential in cooperatives' contribution to poverty reduction through job creation, shared risk, access to inputs, better markets, social protection, improved livelihoods, to name but a few, through collective action (Develtere et al. 2009). With this view, the Zambian government through the Second National Agriculture Policy has since 2016 endeavoured to strengthen the capacity of farmer groups and co-operatives in production, processing, marketing and trade (Keluarga 2016). Therefore, a deliberate re-alignment of the department of cooperatives from the Ministry of Agriculture and Livestock to the Ministry of Commerce, Industry and Trade was effected to foster diversification in cooperative entrepreneurial approaches as opposed to previous agriculture centred cooperatives (President's 1st inaugural speech to National Assembly 2016).

It is evident that the realignment has encouraged cooperative diversification from traditional cooperatives to non-agricultural centred cooperatives as evidenced by the numbers of newly registered cooperatives: for example a total of 1,901 new cooperatives, i.e. 1,827 cooperatives in agriculture, 36 in financial, 25 in mining, 5 in artisans, 4 in marketing, 3 in transport and 1 in tourism as of the year 2018 (MCTI 2018). While the increase of cooperatives may be encouraged, as has been the case for Zambia, it is equally true that their increase in number does not outrightly imply effectiveness (World Bank 2008). Neither can the increase in numbers of cooperatives be deemed as an absolute signal of desirable social-economic transformations among the beneficiaries.

It is widely observed not only by specialists in the cooperative movement but also by the laymen, that most of the Zambian cooperatives have not served the purpose of their formation. Other researchers (Lolojih 2009; Siame 2016) who studied the performance of cooperatives in central Zambia insist that cooperative movement in Zambia has been disappointing in spite of increased government support through agricultural development programmes such as Farmer Input Supply Program (FISP). Generally cooperatives have their own drawbacks such as horizon, portfolio, agency cost, free rider, and influence cost problems (Royer 1999; Porter & Scully 2005; Ortmann & King 2010). These drawbacks have not been adequately considered among the Zambian cooperatives.

The support towards diversification through FISP by the Zambian government through cooperatives has resulted in among other things, the increased yields of rice with consequential designation of rice as one of the major food crops besides maize, cassava, and wheat (MACO 2011). Although rice is getting good establishment in the private sector, the involvement of cooperatives in rice value chains and market linkages has not received the corresponding attention it deserves when compared to its potential for profitability and food security (Chizhuka 2009). Given the potential of the cooperatives in developing the value chains, it is surprising that very few studies have been undertaken to explore and analyse the participation of cooperatives in the value chain. This gap was also noted by Royer et al. (2017). Particularly, the involvement, benefits, and challenges of Zambian rice cooperatives in designated rice producing areas has not been well investigated. It is interesting to note that in Zambia, rice production is most common in highest poverty-stricken areas of which Western province happens to be the worst stricken since 1981 (CSO 2017; World Bank 2019). This research, with the help of qualitative research methods based on empirical evidence from the field, unveils levels of participation, the benefits, and challenges of rice cooperatives in the western part of Zambia where poverty levels are highest. The research further endeavours to shade more light on relevant elements unique to the Zambian smallholder cooperatives. This would be useful to various stakeholders involved in the transformation of rice value chains in Zambia.

2. Literature Review

This section firstly reviews various theories about the benefits and challenges of co-operative societies as the necessary background of our fact-based qualitative research. Then follows a section on the co-operative societies in Zambia and efforts by the Zambian government to support the co-operatives. Then the situation of rice production in Zambia with its value chain, is briefly discussed.

2.1. Theoretical framework of the analysis

As focus is directed towards benefits and challenges of the farmer cooperatives, it is worth noting that cooperatives are to some extent complex and ambiguous in performance compared to investor-owned firms (Soboh 2012a). This is especially due to the fact that cooperatives' performance is closely related to the activities and performance of their members. In order to understand these phenomena, we first create theoretical framework composed of known theories as a basis for the following theory-supported qualitative analysis of our data. The framework is constructed from main existing theories established for understanding and explaining internal dynamics and resulting performance of collective actions. The framework is divided according to theories linked to the benefits of cooperatives and theories relating the challenges.

2.1.1. Theories related to the benefits of cooperatives

Under this section, the theories relating to the benefits of cooperatives are reviewed. The theories on benefits of the farmer cooperatives can be presented generally by inter-related set of theories which include, but not limited to; better *economies of scale* (Staatz 2007; Mojo et al. 2017); minimisation of *transaction costs* (Shiferaw et al. 2008; Staatz 2007; Valentinov 2007); building up of *social capital* (Chloupkova et al. 2003; Majeea & Hoyt 2010; Mojo et al. 2015).

2.1.1.1. Economies of scale

By bulking of outputs and pooling different resources, Latynskiy & Berger (2016) & Wossen et al. (2017) mention that cooperatives can create economies of scale. Economies of scale is the theory of the relationship between the scale of optimum combination of productive resources and the rate of output of the enterprise (Stigler 1958). Smallholder farmers are typically challenged by their individual incapacity to capitalize on the economies of scale, bargaining power and low market access and this is more true in the rural areas where there are more government failures and market barriers (Poulton et al. 2010; Latynskiy & Berger 2016). This results also in related higher non-labour transaction costs such as purchasing of inputs, selling of produce and accessing of capital (Key et al. 2000; Poulton et al. 2010). Hence successful collective action exhibited by the farmer-controlled producer organizations in form of a cooperative, positively re-distributes incomes as opposed to inequality income distributions caused by monopolistic markets (Staatz 2007). For many cooperative members, the motivation for collective action is to take advantage of the bargaining power which improves farm gate prices in the event of input and output market failures (Feleke et al. 2017; Grashuis & Ye 2019; Wossen et al. 2017). Apart from better market price found in cooperatives, premiums are reported as a motivation in certain cooperatives that supply in greater quantities and this has an overall positive effect on the returns of the members (Latynskiy & Berger 2016).

Also cooperatives reduce transaction costs by improving their level of commercialization, linkages to high value markets and also it has a tendency of fixed cost digression (Latynskiy & Berger 2016; Markelova et al. 2009). By virtue of pooling resources together, the farmers benefit from the bargaining power which can also aid in redistribution of income in the favour of the members. Chloupkova et al. (2003) also highlights the point that cooperative participation aids the members to have their selling power, which reduces chances of farmers being played off against the other.

Adding on to the problem of very low levels of production, the poor market situation in the developing countries is further worsened by poor institutions, poor infrastructure, poor roads and transport services, poor telecommunication services leading to increased physical costs in moving the products coupled with high cost of gathering market information and opportunities (Dorward & Kydd 2004). Shiferaw et al. (2011) on the other hand, has a view that even though small holders in Africa are still oriented towards

subsistence practices, many are however connected to domestic, national, regional, and international markets. Although Shiferaw et al. (2011) could be right in the forgoing view, these smallholders often have to meet the ever dynamic market challenges resulting from varying consumer preferences and standards for respective regions, for which, due to low individual capacity of small holder farmers it would be impossible to participate especially with the growing demand of higher-value food and processed food products from supermarkets (Gehlhar & Regmi 2014). In addition, there is a growing requirement of an expensive third party certification which acts as another market barrier to smallholder participation (Barrett et al. 2001). Cooperatives can therefore correct market imperfections such as coordination gaps, high transaction costs, missing credit markets (Markelova et al. 2009). In addition cooperatives can obtain necessary information for achieving better quality standards of products, larger scales, and pooled financial and labour resources needed to penetrate the domestic and international markets (Markelova et al. 2009).

Correct adoption of improved agricultural technologies by smallholders has proved to have a positive effect on productivity and income which leads to creation of marketing opportunities with consequential economic growth (Wossen et al. 2017). However, in Ethiopia for instance, improved agricultural technology adoption among smallholders has been rather disappointing and incomplete (Shiferaw et al. 2008; Asfaw et al. 2010; Wossen et al. 2015). Setbacks in adoption of agricultural technologies is also due to market inefficiencies, financial as well as input and output markets (Latynskiy & Berger 2016). According to a study by Suri et al. (2006) which investigated the puzzle in technology adoption for developing countries, the results showed that smallholder farmers can adopt a technology when their level of production reflects cost efficiency when matched with the technology. This means that it is not viable for some smallholder farmers to adopt certain technologies unless after pooling their resources and produce through the cooperative. Asfaw et al. (2010) in his research on whether technology adoption promote commercialization concluded that enhanced credit system and risk coping strategies help to build asset base which increases access to improved technologies.

Linked to the adoption of technologies is the ability of cooperatives to relax the liquidity constraint faced by farmers through provision of credit facilities for members

(Masamha et al. 2018; Wossen et al. 2017). Cooperatives can offer collateral to members who lack assets by transferring the liability of a member to the group with the view that a group can exert peer pressure upon the lender to repay the loan (Thorp et al. 2005). Hence credit facilities can be improved by strengthening cooperatives (Mutyasira et al. 2018). Cooperatives also influence technology adoption and welfare through provision of market information which is easily accessed by being a member (Shiferaw et al. 2008, 2011; Lloyd 2017). Also, Wossen et al. (2017) indicates that addressing imperfections in market information through cooperative membership can raise adoption of agricultural technologies.

2.1.1.2. Transaction costs

Coase (1937) was the first one to describe the transaction cost theory. According to Moyo (2010), transaction costs are a class of barriers to access market participation by a resource poor farmer. These costs can be classified as information (costs for obtaining information required in the undertaking of the transaction e.g. price information, market, location), negotiation (costs incurred while the transaction is being carried out e.g. negotiating terms of exchange, coming up with the contract), and monitoring and enforcement which are costs incurred once the transaction is completed .e.g. payment arrangements. In addition, Williamson (1985) considers transaction costs as encompassing bargaining, enforcement, decision, and policing costs.

Cooperatives are viewed as coalitions of individuals which are jointly taken to achieve particular goals that would be otherwise impossible to achieve without a coalition (Staatz 1984). The aim of the cooperative therefore is to align transactions with governance structure in such a way that production and transaction costs are minimized. Interestingly, Chloupkova et al. (2003) views appropriate levels of social capital as a useful precondition in minimising transaction costs which then leads to economic growth.

For the cooperative to thrive well, its goals in terms of costs and benefits must be well aligned to the individual goals of members (Staatz 1984). Alongside that, it is agreed that farmers choose to adopt marketing channels after evaluating the transaction costs and benefits that are involved for each channel which is available to them. Mostly, benefits and costs are evaluated based on the characteristics of the marketing channels by factoring

in production conditions (Hao et al. 2018). Despite cooperatives being actors in marketing channels, Hao et al. (2018) highlights the fact that members are not compelled to choosing the cooperative marketing channel.

Costly and inadequate information on market prices and agricultural technologies, distortions in input and output markets, credit constraints and limited connections with market actors limit farmers from taking the market opportunities (Markelova et al. 2009). Therefore improved access to market information and credit can spur the economic growth of cooperatives and respective members (Shiferaw et al. 2008). Farmers in groups are easily accessible to agricultural officers, and others seeking to provide services, trainings and information to farmers (Gyau et al. 2016; Ngugi et al. 2006). Hence cooperatives provide information to farmers (Wossen et al. 2017). Latynskiy and Berger (2016) in their research on networks of rural producer organizations in Uganda, reported on the provision of market information as reaching up to 81% of his respondents.

2.1.1.3. Social capital

Social capital, which is associated with theory of transaction costs, may be defined as the level of mutual trust among people (Coleman 1988). Or as put by Woolcock and Narayan (2000) theory of social capital may refer to norms and networks that enable people to cooperate and act collectively. Social capital is one of the vital immaterial stocks that can be influenced by collective action, and can, in turn, affect cooperation with consequential rural development (Mojo et al. 2015).

Social capital has recently been considered as a new factor of production together with human and physical capital because it minimises monitoring and transaction costs by enhancing communication and information flow (Chloupkova et al. 2003). Putnam et al. (1993) also adds that social capital is an important element of economic development. A lot of literature shows general agreement on the theory that cooperatives create social capital (Coleman 1988; Majeea & Hoyt 2010; Majee & Hoyt 2011; Mojo et al. 2015). Majeea & Hoyt (2010) affirms that a cooperatively structured business can increase social capital in low income communities. Cooperatives are also known for particular incentive problems and coordination problems which can be solved by social capital (Liang et al. 2015). The basic idea of social capital implies that the family, the friends, community, the fellow cooperative members constitute an important asset, one that can be depended

upon in moments of crisis and can be used for material gain (Woolcock & Narayan 2000). Social capital is all about networks connecting individuals within and across power and identity structures at an individual or group level (Pinto 2006).

According to Woolcock and Narayan (2000) groups with diverse stock of social networks have an advantage in their response towards poverty and vulnerability. Small scale farmers in rural areas of the developing countries have less access to legal protection resulting in reliance on other available alternative forms of security such as social capital and trust (Lyon 2000). In addition, they are more capable to resolve disputes (Varshney 2013), and respond well to new opportunities (Isham & Kaufmann 1999).

However, it is also true that social capital can sometimes be a liability especially in Sub-Saharan Africa where explicit social networks can be used to discriminate unfairly, and create distortion and corruption (Woolcock & Narayan 2000). Putnam et al. (1993) describes this aspect as bonding and bridging social capital. Bonding social capital which is known to occur to homogenous groups benefits only those with internal access (Leonard 2004). Putnam et al. (1993) further explains that while bonding may be beneficial to minority ethnic groups, its benefits are limited and the very favourable inherent factors like tight bonds of trust and solidarity may negatively influence enterprising members by being held back by their community and family demands. While quoting Putnam, Leonard (2004) states that bridging is essential for 'getting ahead', adding that it can be the channel of acquiring other forms of capital such as human and financial capital. Different views occur as to which one is good and bad because of the complexity of the theory of social capital.

High density social networks in groups of a given community are viewed as inherently good, saying that more is better and has a positive effect on the welfare of the community (Woolcock & Narayan 2000). Rubio (1997), however, highlights two conflicting forms of social capital which is 'pervasive and productive' social capital, each bearing a form that is either beneficial -in which the culture and rules stimulate community economic development, or destructive -in which strong social links can tolerate youths who belong to the community to persist in abrogating laws whilst being involved in acts of crime such as theft, drugs, violence and this can be retrogressive to the community.

2.1.2. Theories related to challenges of cooperative membership:

Literature reveals a number of inefficient attributes to traditional cooperatives. The inefficiencies may include but not limited to technical inefficiencies, allocation inefficiencies (Ferrier & Porter 1991), Agency problems, portfolio problems, horizon problems, property rights theory, influence cost problem and free-rider problem (Cook 1995; Jensen & Meckling 2000; Nilsson 2001: Royer 1999: Sykuta & Chaddad 1999). As will be noted later, most of the challenges revolve around three broad categories of problems namely (i) Governance and decision-making problems, (ii) Investment related problems, and (iii) Cooperative asset related problems. Each of the aforementioned categories of theories may be named and defined differently by different authors but the principles behind them appears the same. It should be mentioned that despite these broad categorizations, the theories may sometimes be closely related within and across the categories and therefore their application cannot be limited to the category in which they are placed in this study.

2.1.2.1. Problems Related to Governance and Decision making

Free ridding, is known to exist in different forms, which may include participating less in cooperative governance (Nilsson et al. 2012), side-selling of products to better bidders (Bhuyan 2007), investing less in quality provision (Cechin et al. 2013). *Free ridding* is at the core of the cooperative 'vicious cycle' which together with lack of conformity in the cooperative may breed many more problems in the cooperatives. For example, follow up problem, a scenario where due to demotivation of old members, their behaviour shows less involvement and low investment in the cooperative (Nilsson 2001). Low involvement implies low control, with consequent low monitoring which may result in a risky state of managers over-riding the goals and objectives of the cooperatives for their own interest or even at the expense of social and economic preferences of the general cooperative membership (Nilsson 2001).

Free ridding on cooperative assets

Jensen & Meckling (2000) view asset related problems in the light of *free ridding*. According to Jensen & Meckling (2000) free ridding problem arises when the new cooperative members acquire same claims on cooperative assets upon their joining into

the cooperative, equalling the claims of the old members on assets. It may also refer to a scenario where other members benefit more from the cooperative assets than the ideal way. It therefore implies that new patrons have equal rights on all the distributions of prior investments and the consequent returns to which they never participated. Therefore, as long as a cooperative retains an open-membership approach, the anticipated cash flows on investments would be divided and hence less likely to motivate the old membership for further investment (Jensen & Meckling 2000).

Technical inefficiency

Technical inefficiency arises due to the higher costs of monitoring or control incurred by the cooperative in the attempt to solve the divergent membership choices and managerial interests or objectives in well-known principal-agent problem (Ferrier & Porter 1991). It all revolves around reduced monitoring by the members who feel that the incentives associated to their input and commitment are not worth it because they are equally distributed to everyone including those who did not so much commit themselves. The result therefore is that the cooperative business becomes technically inefficient in product maximisation and cost minimisation.

Agency costs

Governance and Decision making are perceived as *agency costs* by Staatz (1987). The agency costs refer to problems encountered by ensuring that the different interests and choices of the diverse cooperative membership which encompasses the board of directors and the interests of the management (agent) are consolidated into one ultimate goal representing the entire cooperative (Cook 1995). Cooperatives are complex and closed organisations where risk bearing function of ownership (membership) is separated from managerial control or agent. The *agency cost* problems become more complex to deal with as the cooperative undergoes membership growth which may lead to multiplied member choices and interests (Cook 1995). The costs come in because the principal (members) must use resources to direct and monitor the actions of the agent, even though the level to which this can be accomplished is highly disputable owing to two known challenges i.e. hidden actions and hidden information (Arrow 1984). In the 'hidden actions', the actions of the agency are either hidden from the members or too costly to observe, while in 'hidden information' the agent possesses information that is costly to obtain or unobservable by the members (Arrow 1984; Borgen 2004). Since the agent is

capable of making decisions based on his/her own hidden skills and knowledge, this poses a big risk as the agent can either act deceitfully or pro-membership's interest whose consensus is hardly attainable (Nilsson 2001)

Scale inefficiency

Scale inefficiency is the problem resulting from opting for the level of production (output) whose average costs are not minimised in the long run (Porter & Scully 2005). Therefore, scale inefficiency raises costs of production. According to Nilsson (2001), cost minimisation in a cooperative requires adequate patronage. He alleges that since the cost of control increases with the growth in membership while legally constrained on the amount of businesses which a cooperative can engage in with non-members, and this inhibits cooperative growth. Since the agent can hardly realise gains from his/her strategies to minimise costs, the cooperative is then likely to run in a scale inefficient manner (Porter & Scully 2005).

Decision making problem

The decision making problem is mainly due to a scenario where the membership of the cooperative is too large and heterogeneous to have their opinions adequately considered (Borgen 2004). This then creates a problem as one of the Rochdale (and ICA) principles of the cooperative is 'democratic control' which ensures that the decisions are member driven and generally it works out that members are more committed to the decision to which they participated (Borgen 2004; Staatz 1987).

Follow up problem

This problem arises from the failure of each member to significantly contribute to decision making processes, supervising and monitoring of the management coupled with their failure of realising full potential benefits of their contribution (Borgen 2004).

2.1.2.2. Investment Related Problems

Horizon problem

This happens when there are limited planning horizons of the actors. The difference may also be between members and the management and elected representatives of the cooperative (Nilsson 2001). Horizon problem also occurs when

assets have a longer productive lifespan of generating the income than the residual claim on net income of a member (Porter & Scully 2005). The member therefore has no legal claim to the additional gains realised in the cooperative after the expiry of his tenure with the firm (Jensen & Meckling 2000). At the heart of this problem is the limitation of transferability of residual rights of the claimant coupled with the lack of liquidity for the transfer of the rights in question (Cook 1995). This problem can intensely and negatively affect investment in intangible assets and can exert the pressure on the board of directors to opt for decisions that tend to favour short term or immediate cash flow payments to members rather than postponing rewards through long term re-investments (Cook 1995; Vitaliano 2006). Horizon problems may be more serious due to varying ages, large per-capital member investments, prohibited intergenerational membership transfer (Staatz 1987).

Allocative inefficiency

In allocative inefficiency, capital allocation including intangible assets is under-utilised (claims on investments are reduced) because the patron does not exhaust all the expected long term marginal returns on an investment that could be realised beyond his horizon (Nilsson 2001). In other words, allocative inefficiency or factor-price is the inefficiency resulting from the uneconomical combinations of inputs which raises average costs of production (Porter & Scully 2005). In addition, the portfolio can neither be concentrated in a cost-effective manner nor diversified to avert potential risks. According to Soboh (2012), cooperatives experience inefficiency because of allocation inefficiency resulting from the different horizons among the members.

High time preference

Although the cooperative offers better prices, high time preference is cited as a challenge. By this, is meant the delay experienced by members before the cooperative could receive the payment for supplied produce (Latynskiy & Berger 2016). When this is coupled with unexpected financial obligations, limited liquid assets, members can easily avoid participating in cooperative marketing channels and opt to get some informal future contracts before the harvest of the produce as the only way to credit facility(Latynskiy & Berger 2016). Late payments after deliveries of the supply to the markets are sometimes an issue especially in non -Savings and Credit Cooperative Societies (Ngugi et al. 2006).

Limited liquidity therefore forces farmers to practice low input-low output kind of agriculture (Latynskiy & Berger 2016).

2.1.2.3. Cooperative Asset Related Problems

Property right

As viewed by Grossman & Hart (1986) & Cook (1995), asset related problem occurs when property rights are not clearly defined or assigned, non-tradeable, and insecure, it leads to the scenario of free ridding, a situation where members use cooperative property to benefit their own interest while being irresponsible of the resultant costs. This problem seems to be prominent in cooperatives with open membership. *Property rights* affects the decision-making functions which in turn has an implication on the efficiency. (Porter & Scully 2005). Changes in the patronage or membership can lead to inequalities between dividends and shares among cooperative members (Porter & Scully 2005).

Portfolio problem

Asset related problems are also perceived by Ferrier & Porter (1991) as *portfolio problem*. A problem arising when cooperative members buy and sell assets with the aim of acquiring a portfolio of investments which will depict their respective choice from returns and as mitigation against risk (Ferrier & Porter 1991). Portfolios can either be diversified which suggests insuring against risks, or portfolios can be concentrated which is a signal of high expected gains (Jensen & Meckling 2000; Sarris et al. 2013). According to Vitaliano (2006), it is not possible to effectively reduce risks in a cooperative due to divergent preferences of the members. Unequal time horizons leads to diverse risk-reward viewpoints (Borgen 2004). Therefore, portfolio problem arises when members' residual claims are not transferable and liquid enough such that the members' asset portfolios in a cooperative are not able to be aligned with claimant's appropriate personal risk mitigatory preferences (Cook 1995).

Influence Costs Problem

According to Royer (1999), influence costs is perceived as the activities in which the cooperative members participate with the view to contribute to decisions that

distribute wealth and benefits within the respective cooperative. Regarding influence cost, Cook (1995) has a view that in the cooperative which is involved in many entrepreneaurial activities, different objectives among the members brings about activities that are costly. These costs can be attributed to misallocation of resources culminating from poor decision making (Ortmann & King 2010).

2.2. Commitment of Farmers in Cooperatives and Relation to the Performance of Cooperatives

Commitment of cooperative members can be described using three ways which includes capital participation, transactional participation, and management participation. Capital participation represents the number or value of capital shares held by someone in the cooperative (Liang et al. 2015; Meier 2016). Normally, capital shares form the basis of sharing the dividends. Since capital shares can be considered as security by members of the cooperative, shares can be traded off by members with short horizon to those with longer horizon (Borgen 2004). Transactional participation can be viewed as members' products that are sold through the cooperative (Liang et al. 2015; Meier 2016), and management participation consists of the involvement of members in decision making of the cooperative (Liang et al. 2015). Barraud-didier et al. (2018) in their study which explored the role of commitment and members' participation, they described decision making into two levels for example members in leadership may participate directly in management while common members can participate in management by attending Annual General Meetings (AGMs), and other cooperative meetings which may include trainings. The frequency or percentage of meetings attended by a member can then be used to describe the level of commitment implying that the higher the attendance the more the activeness.

2.3. Cooperatives in Zambia

The first cooperative to exist in Zambia was in the year 1914. It was initiated by the European settlers in the southern part of Zambia. The main aim to supply agricultural produce to the then newly opened mines in the Copperbelt province of Zambia, as well as into the then Zaire today's Democratic Republic of Congo. In the year 1947, cooperatives were also recognised among the Africans in Zambia. Most of the Zambian cooperatives have since in the past relied on agriculture related ventures especially monocropping of maize (Dube et al. 2016). Like in many other African countries, cooperatives in Zambia have passed through phases from state-led control (from 1964-1990) to market liberalization (1991-2000) and finally to what may now be termed by one of the scholars as partial liberalization paradigm since early 2000s (Siame 2016).

Since the year 2013, the number of cooperatives has almost doubled from 27000 in 2013 (NAIP 2013), to 62,330 registered cooperatives in the year 2019. Most of the cooperatives in Zambia have recently remained active mainly as agents of the Farmer Input Support Programme (FISP) to assist members to access subsidized inputs. The farmer qualifies to access the subsidised agricultural inputs by being registered with the Ministry of Agriculture and Livestock and by having membership with a registered farmer organisation or co-operative society (Mason et al. 2018).

2.4. Efforts of Zambian Government on Cooperatives

Cooperatives have been identified as having the ability to form the backbone of the agricultural sector if permitted to operate autonomously without political manipulation and interference (MAL 2013). As indicated in the Second National Agricultural Policy (SNAP), inefficient agricultural markets for inputs and outputs is ranked among the challenges facing the Zambian agricultural sector. The Zambian government through the Ministry of Agriculture and Livestock, has sought to improve the efficiency of agricultural markets by considering co-operatives as the vehicle for agriculture growth (Keluarga 2016b). The government has sought to strengthen the cooperatives by engaging them as channels for acquisition of subsidized agricultural inputs for member farmers and also by engaging them in crop marketing through Food

Reserve Agency (FRA) depots and other collection points (MAL 2013). In addition, in 2015, about 2000 solar powered hammermills were given to cooperatives as a way of helping them to generate income for the co-operative members (Times 2015).

The co-operative movement in Zambia has not yet reached autonomy stage where it can initiate and pursue its goals without dependence on external support. A number of challenges have been reported in the Zambian cooperatives, that include but not limited to weak incentives for members, high cost of operations, low level of commitment, dominance by a few members, lack of business understanding, Sub- optimal pricing for services and products, and weak financial base at all levels (MAL 2013)

Some of the activities implemented by the government through the Ministry of Commerce, Trade, and Industry are mainly in line with cooperative development trainings and inspections of cooperatives activities. Also, activities involve linking cooperatives to service providers and relevant business organisations engaged in various activities. For instance, organisations involved in milk processing, cassava commercialisation in North western and Luapula provinces, groundnuts in the case of cooperatives located in Central province, soya beans in Copperbelt province, horticulture, and pineapples in North western. Cooperatives in western province were linked to cooperative symposium which aimed at linking cooperatives to markets. The total number of cooperatives in Western province at the time of study was 1650 registered cooperatives.

2.5. Rice in Zambia

Although the crops sub-sector has registered growth in Zambia, it is still lagging due to less diversification as contrasted to its potential. Maize still leads as a dominant cereal crop in Zambia mostly because it is a staple crop (Keluarga 2016b). Efforts to diversify the crop sub-sector have been implemented but the results are still not impressive. The government of Zambia has of late reinforced diversification through the Electronic Voucher system which permits farmers to redeem diverse subsidised agricultural inputs which includes rice seed. This is opposed to the conventional Famer Support Programme (FSP) which only included maize in the programme (Mason et al. 2018).

Historically, rice production was supported by the government and the NGOs from as far back as 1970s although this support was later hindered by the incoming of liberalisation policies in 1991. The government's concentration in rice production was directed towards the provinces of Luapula, Northern, North western and Western (Hirvonen 2011). From the year 1981 to 2006, it is evident that there has been an increase of about 135 and 161 percent in the area planted and the production, respectively. Although production has almost tripled from about 11,699Mt in 2004 to about 25,514Mt in 2014 (MACO 2011), per capita consumption of rice also increased from 1.49Kg in 2002 to 4.9Kg in 2013 (Styger 2014).

The increase in production is attributed to Zambian government and Developmental organisations supporting the rice scheme (Chizhuka 2009). For example, Rice Irrigation system for Mongu Rural Development Project in 1998 was supported by the Japanese government, irrigated rice project in Chanyanya on Kafue Flats was supported by the Korean government and the rice development project in Chambeshi flood plains was supported through the help of the then European Economic Commission (Chizhuka 2009). Evidence therefore indicates that proper coordination among the actors is inevitable for the success of the sector and currently a Dutch NGO, SNV Zambia has been rendering much support to rice based initiatives.

Due to the emergence of rice as a staple food crop in Zambia, rice has resulted in being included on the National Food Balance Sheet (MAL 2011). Following this, the government of Zambia also included rice among other crops purchased through the Food Reserve Agency (FRA) for specific districts where rice production is suitable (Chizhuka 2009).

Rice is also identified to be one of the highly lucrative smallholder cash crops in Zambia, it can contribute to raised household incomes and offer employment to the rural farmers (Chizhuka 2009). For example, according to SNV Zambia survey 2008, the gross margin based on 1.1 ha was estimated at ZMK 2,772,846.00 (approximately US$792/ha at 2007). Interestingly, poverty levels in Zambia are highest in areas where rice is produced. Western province for example where famous local Mongu rice is grown is one of the most stricken areas in Zambia with poverty estimated at 82.20% (CSO 2017). If the interventions aimed at improving the performance of rice production were successful, they would also be succeeding in alleviating poverty among the rice producers. According

to FAO data, the Area harvested under rice cultivation in Zambia and the respective Production has averagely increased from 9270 Ha in the year 2001 to about 38423 Ha in 2017 and production of 11645 MT in the year 2001 to about 38423 MT in 2017 (FAOSTAT 2019). See Figure 1 below for more details.

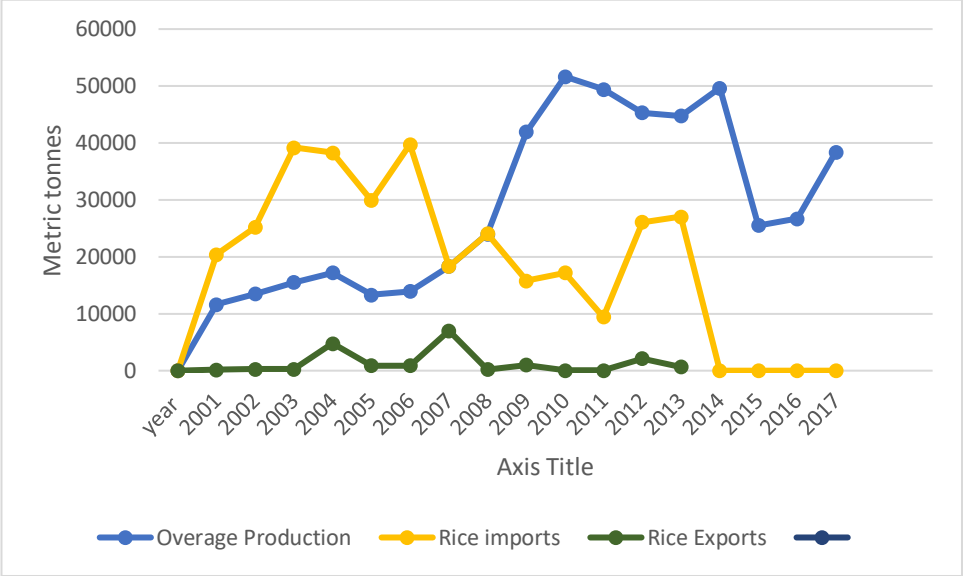

Figure 1: Rice trends in Zambia

Data source: FAOSTAT (2019)

The rice value chain is not fully described in Zambia especially regarding its organisation. For instance there is lack of a well organised body or rather institution for reference on matters of information related to rice value chain (Chizhuka 2009). This makes the gathering of the information related to rice value chain very challenging.

Despite the profitability of the rice production, the crop is highly labour intensive through all stages of production, i.e. land preparation, ploughing and levelling, transplanting, weeding and harvesting, therefore, many farmers have hire implements, labour which is not only expensive but also delays planting with consequent yield losses and poor quality produce (MACO 2011). Rice also competes with other important food and cash crops for the growing period. Therefore, if its market chains and value chains are well developed it can provide employment to the rural populations (Styger 2014).

Like many other developing countries, crop marketing, which also includes rice, is usually dominated by the middlemen such as rice millers, village traders, wholesalers

(Nainabasti 2009). The importance of marketing services provided by middlemen depends mainly on the type of agricultural products that small holder farmers are producing (Pokhrel & Thapa 2007). According to (Bingen et al. 2003), middlemen reduce transaction costs that would be incurred by smallholder farmers if they transported their small quantities of produce to the markets all by themselves. In view of low yields from the smallholder farmers in remote areas, middlemen are still relevant in filling up in case of failure on the part of the cooperative to bulk. In addition, middlemen also cushion the risks that rural smallholder farmers face regarding perishable products that require swift marketing strategies and are prone to damage when a delay occurs in the marketing measures. Keyser (2007), in his study of the country competitiveness analysis for Zambia reports that despite cash payments or batter exchange offered by these traders, their prices are often low. Similarly, Lyon (2000) observed that smallholder farmers are disadvantaged by middlemen due to low prices offered to farmers, greater bargaining power of middlemen, lack of written contracts. Nainabasti (2009) added that middlemen end up making more profits with less capital inputs and low prices offered to farmers than the farmers who invest in production immensely. Due to the exploitative nature of the middlemen, smallholders are also forced to engage in rice-value chains because there is lack of mutual benefits between the middle traders and the smallholders (Chizhuka 2009). According to Temwar (1999), a certain level of business skills are required, education level are an essential element for farmers to thrive in making profits from their produce. Smallholders lacking these facets can find favourable support in cooperatives through cooperative storage facilities, contract farming, extension services, and marketing services that come along with skilled cooperative leadership (Bingen et al. 2003).

According to Sitko et al. (2011), rice consumption in Zambia ranks third from among the staple cereal crops. However, the trends in the consumption is changing. For instance a recent survey by CUTS & WFP (2018), which was conducted in Lusaka to identify consumption patterns revealed that rice ranks second from nshima as a carbohydrate with 59% of households falling in this category. The study associates rice closer to households with higher income levels thereby suggesting the potential for its profitability. However, since Lusaka is a capital city with relatively higher per capita income, this consumption pattern might not represent the rural households. Local consumers favour the local rice due to special aroma and taste, even though local rice is usually common on the informal market (Styger 2014). Currently, Mongu rice, locally

known as Supa Mg is facing competition from cheap non-aromatic rice from Thailand known as Thai Rice. Other varieties posing greater competition are Chama rice from the Eastern province of Zambia and Mpulungu rice from Northern Zambia which originally is from Mongu but has recently been adopted by the local farmers in Northern Zambia as their local variety.

Since the year 2000, rice importation by African countries has increased leading to countries in the Common Market for Eastern and Southern Africa (COMESA) to be net importers of rice (Chizhuka 2009). Zambian value chain competitiveness report by Keyser (2007), highlighted the fact that commercial market competition for East Asian rice against local rice has been due to the low prices and assumed good quality for Asian rice when compared to local rice. According to FAO (2010), in the survey of the National Food Balance for Zambia, the total requirements of rice needed for human consumption was 63,328Mt out of which only 54,088MT was available due to low domestic supply. Commercial imports are cited to have covered the deficit of about 9240 MT. FAO data suggests that in the past two decades, Zambia's rice imports have generally increased with highest amount of 39,746 MT in 2006 and 9458MT being lowest in 2011 (FAO 2019).

3. Aims of the Thesis

Cooperatives have been described as fundamental building blocks for agriculture development because of their potential to aid smallholder farmers to penetrate the high-value markets of farm products. By effectively participating in cooperatives, smallholder can sustainably undergo social and economic transformation with consequential rural development. A better understanding of cooperative processes coupled with contextual-based studies on theories that explain benefits and challenges of cooperative membership becomes very critical. The main aim of this research therefore was to analyse and link key factors that influence the active participation of farmers in rice value chains in Western Zambia.

Specific objectives

1. To analyse differences between active/passive engagement of farmers in rice cooperatives using quantitative data from the field, in order to answer questions like: Are there differences in member attributes among passive and active members? How the business aspects of the cooperatives differ among passive and active members? How opinion about benefits differ between passive and active groups?
2. To identify the key factors that influence level of commitment and participation, and with the help of existing theories explain benefits and challenges of rice cooperatives' members in rice value chains in the western part of Zambia. At the same time, the existing theories were tested against empirical qualitative field data and evidence. With the view to respond to questions: Why members join the cooperatives in Zambia? What existing theories on cooperatives best describes the Zambian cooperatives?

4. Methodology

4.1. Research Design:

This study employed a combined methodology approach to accomplish the objectives of the research. A descriptive research based on quantitative data was used to accomplish the first research objective. A framework deductive content analysis for data from qualitative interviews was employed to answer to the objective number two. This means that the attempt was aimed at understanding the human condition and experience which can best be achieved by a qualitative approach (Bengtsson 2016; Erlingsson & Brysiewicz 2017). Using the perceived scenario of cooperative members in the western Zambia i.e. farmers' low participation in rice value chains, the desired result of the study was to provide answers and reasons for perceived lack of participation (Berg 2001).

The respondents were identified and structured into two groups based on their level of commitment. Although there are three ways of measuring the commitment of members, only Transactional participation (selling through cooperative) was employed as a criterion for classification of respondents into active and passive members. This was due to lack of uniformity in the other two measurements of commitment among the targeted cooperatives. For example, total value or number of capital shares which defined activeness for a particular rice cooperative implied passivity in another targeted cooperative. Management participation (attendance of cooperative) could not be employed as a criterion for classification due to the manner of distribution of responses, for example the average percentage of attendance of cooperative meetings was about 87% implying that everyone would have been considered as active.

Therefore, the classification was based on member participation in their respective cooperatives as supported by Meier (2016) and Juanjuan et al. (2017). In this case, classification depended on whether the farmer sold rice produce through the cooperative or not. Members who sold through the cooperative were considered as active and members who did not sell through the cooperative were considered as passive.

Each group was interviewed by the structured questionnaire intended for quantitative descriptive analysis. Then, selected representatives were questioned against the semi-

structured questionnaire in order to determine the fitness of each theory to the particular situation of each group.

4.2. Target area

The study was undertaken in Western province of Zambia (see Map in Figure 2 below). The area was chosen on account of its high potential for rice production, presence of rice cooperatives as well as its record for high occurrence of poverty in Zambia (CSO 2017). Interestingly, out of the total number of 62,330 registered cooperatives in Zambia which included 10 provinces, only 1,650 cooperatives are based in Western province. Western province has 16 districts of which Mongu is the provincial capital. Cooperatives involved in rice in Western province at the time of the research were only in Mongu and Limulunga districts which according to cooperative population only had 60 and 40 cooperatives, respectively. Refer to

Table 1 below for more details.

Table 1: Population of cooperatives in Western province of Zambia

District	**No. of cooperatives**	**Membership**
Provincial Total	1650	72,270
Mongu	60	1,953
Limulunga	40	2,014

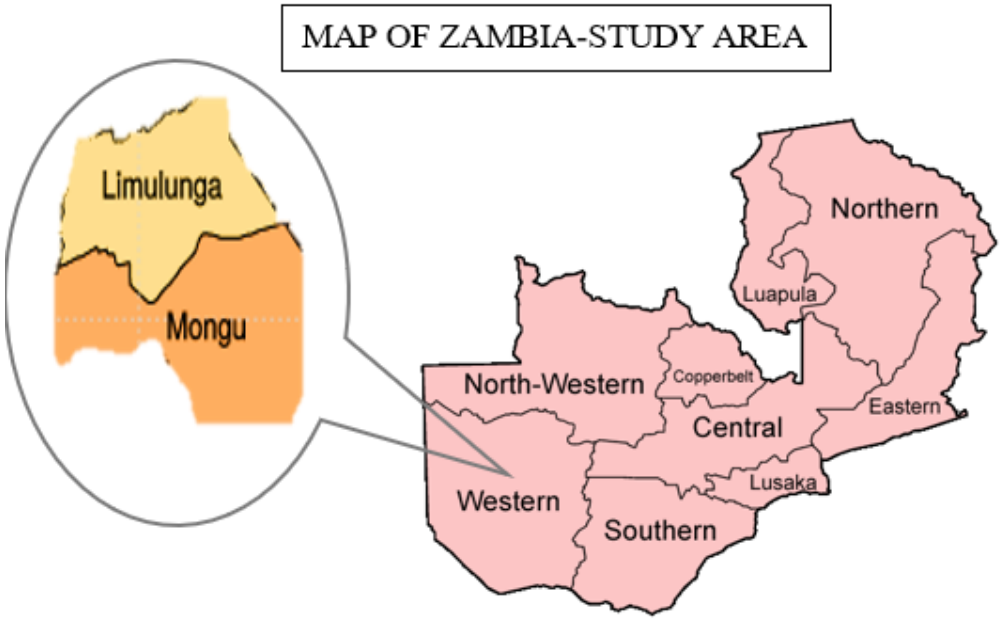

Figure 2: Map of Zambia showing Limulunga and Mongu districts of Western province

4.3. Target group

Caritas Czech Republic Mongu branch arranged meetings for some cooperatives in the various cooperative centres for data collection from the members. Caritas Czech Republic (CCR) Mongu is a Czech based international Non-Governmental Organization implementing a project entitled 'Agribusiness for LIFE – Livelihoods, Innovation, Food and Empowerment' in Western province of Zambia. The CCR officers only facilitated the collection of data from the farmers while we took measures to safeguard the reliability of the results. Quantitative data were collected through face to face interviews with rice cooperative members with the help of Nestforms mobile application. Non-Probability sampling technique, specifically the purposive technique, and snowballing was used to select the farmers who were active and passive members of cooperative for this study.

A total of 215 respondents from 8 cooperatives were interviewed, see Table 2 below for more details on the targeted cooperatives. Of the total respondents, only 33% were categorised as active (were selling) and 67% regarded as passive (not selling).

Table 2: Rice cooperatives of respondents in Western province of Zambia

Name of Cooperative	Year formed	Total membership	Characterisation of the cooperatives
Katongo Cooperative	1999	35	Multipurpose, Rice production, Enterprising, Crop marketing, Crop production & Small Livestock.
Nakato Cooperative	2018	29	Multipurpose, Rice production and Rice polishing.
Masupanzila Cooperative	2009	25	Multipurpose, Crop marketing, Rice Growing & Rice Marketing.
Nakamwe Cooperative	2017	32	Multipurpose, Emerging, Rice Farming & Cassava Production.
Ilundu Cooperative	2017	35	Multipurpose, Emerging, Rice Farming.
Nakalembe Cooperative	2009	21	Rice & Cassava Production.
Sefula Cooperative	2012	65	Multipurpose, Enterprising, Rice Growing, Rice Marketing & Crop marketing.

Note. Multipurpose- includes assorted agricultural enterprises ventured into by cooperative

In addition to the quantitative data, qualitative data were also collected from 16 rice members who were divided into 2 groups based on whether they sold the rice through cooperative or not. Some leaders of cooperatives (2 Chairpersons, 1 Treasurer and 2 Secretaries) were also included among the 16 respondents and the same leaders were categorised as active. The interviews took the form of an appropriately formulated and recorded verbal approach. The sample size for verbal interviews was determined by the saturation of data.

Also, data was collected from three (3) key informants who were involved at various levels in the rice sector in western Zambia. Key informants were Mr Munzele Paos -The Provincial Cooperative Development Officer, Mr Makumba Kasonde – the District cooperative inspector for Mongu, Mr Silumesi Angelo, the rice value chain specialist for the Western province.

The characteristics of all respondents are portrayed in Table 3 below. It can be observed that cooperatives were composed of age ranges from extreme ends of 16years (very young) and up to 85years (very old). The family size in Table 3 excludes children below 16years. Some members had never been exposed to formal education (0 years) while others had reached tertiary levels. Generally, the average total land holding of 5.57Ha entails that respondents were small scale farmers as viewed in the Zambian context. Generally, the average percent of attendance by members in cooperative meetings was very high (80%)

Table 3: Demographic characteristics of respondents

Variable	Unit	Mean (SD)	Min	Max
Member characteristics				
Age	years	49.88 (14.17)	16.0	85.0
Gender	0=Female, 1=Male,	0.39 (0.49)	0	1
Education	years	8.33 (2.98)	0.0	17.0
Attendance of meetings	Percent out of 100%	87.33 (14.49)	50	100
Household characteristics				
Family size	Number of members >16yrs	3.49 (1.99)	1	11
Gadgets	number of phones	0.41 (0.49)	0.0	1.0
Total land holding	Hectares	5.57 (5.16)	0.5	32.0

4.4. Data processing

Quantitative data were categorized into two groups based on the activeness and passivity of respondents in the cooperatives. The data was subjected to Kolmogorov-Smirnov normality test to determine whether the distribution of data permitted the application of the parametric test or non-parametric tests. For data with normal distribution, parametric test was applied and data were analysed by simple statistical analyses using the Means, Standard deviation, and Minimum and Maximum. An independent sample T-Test was used to compare whether significant differences existed between the two groups of respondents. For non-parametric data, Mann Whitney U Test was employed to test for differences between the passive and active respondent. Statistical Package for Social Sciences (SPSS) version 25 was used in the analyses.

Apart from the quantitative data analysis, some qualitative aspects were also studied. Content analysis has been cited by Berg (2001) as a reliable process when assessing social groups and their related processes. In a framework deductive content analysis, the aim therefore is to consider some prior formulated, theoretical perspectives and bringing them in connection with the text to test the hypotheses or principles (Mayring 2000; Berg 2001; Bengtsson 2016; Erlingsson & Brysiewicz 2017).

The prior formulated theoretical concepts that were investigated in this study include vis-à-vis empirical data collected in Zambia include: Economies of scale, Transaction cost, Social capital, Technical inefficiency Allocative inefficiency, Scale inefficiency, Property right, Agency costs, Free ridder, Horizon problem, Portfolio problem, Follow up problem, Decision making problem, High time preference and Influence costs.

Qualitative data processing included Audio records of the interviews which were transcribed into text with the basic unit or smallest element being the word. Texts were further manually coded. A code in content analysis is a word or short phrase which is representative of the attributes, importance and essence-capturing of part of language-based or visual data (Saldaña 2016). Codes serves as units describing the condensed meaning (Erlingsson & Brysiewicz 2017). The condensed meaning units were sorted out into categories. Categories are basically codes dealing with same issue (Bengtsson 2016; Erlingsson & Brysiewicz 2017). Categories were further summarized into themes which were defined by the theoretical framework, which is a portrayal of the magnitude of some responses. This helped to arrive at a conclusion.

5. Results

This chapter presents the findings from the quantitative and qualitative data. The chapter begins with quantitative results with description of the household and relation to cooperative, and also description of the business aspects of cooperative members structured into the two categories based on their level of commitment. The chapter proceeds with qualitative results by presenting the reasons and expectations for joining the cooperative. Further, empirical results on benefits and disadvantages how they are perceived in the Zambian context and fitness of their theoretical groundings are presented.

5.1. Demographic characteristics of the two groups

This section presents the findings from the quantitative descriptive analysis of characteristics of passive and active rice cooperative members. The Mean, standard deviation, and the independent sample T-test of parametric demographic variables are presented in the Table 4 below.

From the results in Table 4 below, it can be observed that passive category had relatively more females than males as compared to active category which had relatively more males than females. No significant differences were observed between passive and active members regarding the mean age and total land holding. Further, results in Table 4 below reveal that active members were more educated (but by few extra years of schooling only) than passive members. Interestingly, average number of adults per family was higher for passive than active members. Further, no significant differences were observed regarding the attendance of passive and active members in cooperative meetings. Capital share investment and selling price were significantly higher for active members than passive members while on the other hand passive members acquired seed at a higher price and sold their produce via middlemen more than active members.

Table 4: Descriptive variables of respondents

			Active (N=72)		Passive (N=143)		
	Variable	Description	Mean	S. D	Mean	S. D	Mean Diff.
Members characteristic	Gender	0-female 1-male,	0.49	0.50	0.34	0.48	0.15**
	Age	Years	50.76	12.62	49.43	14.91	1.33
	Education	Years	9.88	2.21	7.55	3.01	2.33***
Household characteristics	Family size	Number of adult members	3.08	1.70	3.69	2.10	-0.61**
	Gadgets	Number of phones	0.58	0.50	0.33	0.47	0.25**
	Total land holding	Number of hectares	6.43	6.07	5.13	4.60	1.30*
Member commitment	Attendance of meetings	Percentage of meetings out of 100%	89.51	10.62	86.22	16.01	3.29
	Capital share investment	Value in Zambian kwacha	372.50	260.50	196.52	134.85	175.98***
Economies of scale	Selling Price	Zambian kwacha per Kg of rice	4.01	0.90	3.33	1.00	0.68***
	Cost of seed	Zambian Kwacha per 10Kg of rice seed	266.67	287.77	371.168	406.72	-104.49**
	Sales via Middlemen	Percentage of produce sold through middlemen	19.79	30.77	32.43	45.64	-12.64***

Note: Parametric test showing; *Denote significance level of 10%, ** Denote significance level of 5%, *** Denote significance level of 1%.

5.2. Description of the business difference between the two groups

Table 5: Description of the business difference between the two groups

			Active (N=72)		**Passive (N=143)**		
Theory	Variable	Description	Means (S.D)	Mean Ranks	Mean (S.D)	Mean Ranks	Mean Diff.
Economies of scale	Reduction of costs	1-Strongly disagree, 2-Disagree, 3 Neutral, 4-Agree, 5-Strongly agree	3.58 (1.57)	77.46	3.21 (1.48)	65.87	0.37*
Social capital	Trust among members	1-no trust, 2-low trust, 3-Average trust, 4-very trusted, 5-highly trusted	4.38 (1.13)	96.27	4.69 (0.69)	113.91	-0.31**
	Members share limitations & concerns with each other	1-Strongly disagree, 2-Disagree, 3 Neutral, 4-Agree, 5-Strongly agree	4.65 (0.77)	100.36	4.80 (0.58)	11.85	-0.15**
Transaction cost	Access to extension services	1-no access, 2-low access, 3-average access, 4-better access, 5-highly accessible	4.47 (0.96)	128.08	3.97 (1.23)	97.89	0.50***
	Access to market information	1-no access, 2-low access, 3-average access, 4-better access, 5-highly accessible	4.00 (1.42)	114.92	3.87 (1.29)	104.52	0.13
	Access to trainings	1-no access, 2-low access, 3-average access, 4-better access, 5-highly accessible	4.60 (0.82)	114.19	4.45 (0.92)	104.88	0.15
	Access to higher quality inputs	1-no access, 2-low access, 3-average access, 4-better access, 5-highly accessible	3.49 (1.59)	73.55	3.33 (1.59)	69.54	0.16
	Access to credit and savings services	1-no access, 2-low access, 3-average access, 4-better access, 5-highly accessible	3.01 (1.68)	105.08	3.11 (1.66)	109.47	-0.10
Member perception	Perceived cooperative benefit	1-not beneficial, 2-minimal benefit, 3-average, 4- very beneficial, 5-highly beneficial	4.89 (0.32)	133.50	4.11 (1.24)	95.16	0.78***

Note: Non-Parametric test showing; *Denote significance level of 10%, ** Denote significance level of 5%, *** Denote significance level of 1%.

Regarding the results on non-parametric test in Table 5 above, the perception of respondents on trust shows that passive members had significantly higher trust than active members. Perception on access to extension services, and cooperatives having a benefit was found to be significantly higher for active than passive members as contrasted to the perception on access to trainings and market information where no significant difference was observed.

5.3. Reasons and expectations for joining the cooperative

This section deals with the responses brought out by the two (2) categories of qualitative respondents i.e. the passive and active. The responses summarize most frequent, typical representative opinions for two categories for joining the cooperative, their expectations at the time of joining and whether the said expectations had changed overtime. In many cases, the reasons for joining and expectations meant the same thing hence were here classified together. Only differences are highlighted. Further reasons for the interest of members in cooperatives are brought forward.

Generally, for all two groups, main reasons for joining the cooperative include the (i) desire to receive support in terms of agriculture services, marketing information, (ii) interest for agricultural knowledge and skills, (iii) and subsidised inputs that were provided by the government through the cooperative. The latter is part of the reason why both categories (passive and active) still continue to attend to some cooperative events because their expectations in this area are not yet fulfilled. According to passive members, subsidised inputs helped only a few of them to afford buying inputs while active members indicated that subsidised inputs helped members to be active in the cooperative and that without subsidised inputs most members who were active would become passive. Active members also attached a great value to subsidised inputs because they felt that crop yields were improved thanks to subsidised inputs.

Apart from common reasons mentioned above, typical reasons and expectations for joining the cooperative by passive members were to mitigate poverty and escape from alienation. Despite their low participation, passive members still continue to attend some

cooperative events also because of seeking for integration into society through cooperative.

Reasons and expectations typical only for active members included dividends, community service, improved livelihood, better social capital, and a way of settling after retirement from pensionable work. Interestingly, all active members indicated having had their expectations fulfilled in one way or the other. Active members still participate because of (i) bulking opportunities, (ii) desire to receive patronage benefits like dividends (iii) quest to benefit from opportunities that come in the cooperatives especially from NGOs. The statement below is an excerpt from one of the active members for reason of joining the cooperative:

> *"I realised that the things coming through the cooperatives would help me in my livelihood to develop and I can be able to take my children to school. For example, as a cooperative we have the rice milling machine we have been given. Because I am a rice farmer, so it is easy to do it from here."*

In summary, the reasons, and expectations for joining the cooperative were very similar in most cases. These included seeking for agriculture services, marketing information, agricultural knowledge and skills, the quest for agricultural services, particularly subsidised inputs, and these were common for both the categories of members. Unfortunately, most passive members had their expectations not yet fulfilled while majority active members had their expectations fulfilled. The reasons why members still had interest to participate in some cooperative events despite non fulfilment of expectations were found to be less for passive members as contrasted to more reasons for active members. The Figure 3 below shows the summary of the reasons why members in western Zambia join the cooperatives.

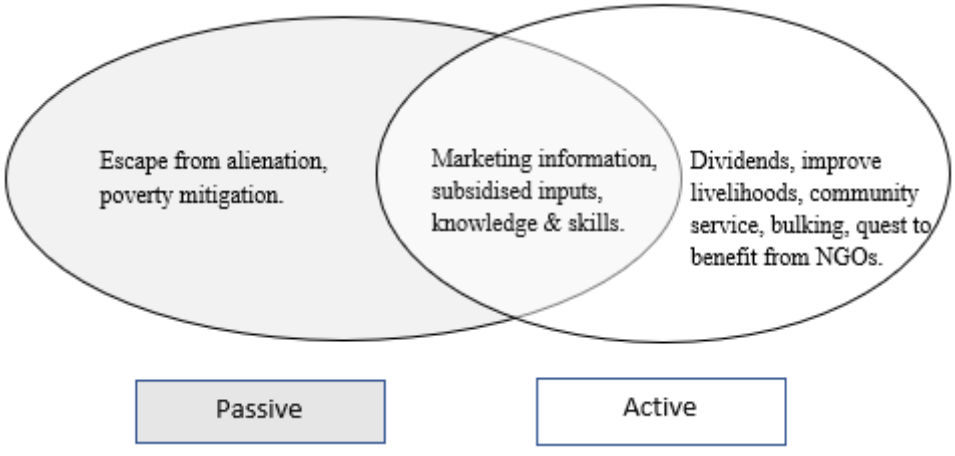

Figure 3: Summary of reasons for joining the cooperative

5.4. Theories Explaining Benefits of cooperatives

This section analyses empirical relevance of various group-related theories existing in the scientific literature as potential explication of group dynamics in agricultural cooperatives. They are reflexed against real situation of agricultural cooperatives in Zambia. The main aim is to evaluate the power of various theories to explain real-life phenomena. On top of that they are contrasted against experience of two different levels of commitment of cooperative members.

5.4.1. Economies of Scale

Based on their experience from past seasons when bulking and pooling was very common, both categories of farmers were aware of the benefits that can be derived from bulking and pooling. However, since passive members were not currently involved in bulking and pooling, *Economies of Scale theory* was not relevant to them. Active members on the other hand felt that lumpsum payments were a benefit of bulking. Lumpsum payment refers to a situation where farmers receive more payments at once because they sell a large portion of their produce through the cooperative as contrasted to when they individually sell in bits. When this occurs, it helps members to budget nicely and helps in asset acquisition by individual members. Other important benefits also included minimisation of transportation costs to and from the market, security from oppressive buyers who normally take advantage of individual farmers, and easier access of buyers to the group of producers of the commodity and vice versa. The statement below is an extract from the respondent:

> *"… looking for market and transporting the produce individually is very costly but when we bring together as members of the cooperative each one with his few bags and we share the cost and it is then reduced…, So, if we combine efforts it reduces the costs and then increase profits.."*

On the other hand, some passive members sold their produce privately because of having acquired private loans from traders prior to harvest and due to loans obtained during moments of unexpected financial demands. Selling in bits was induced by low production quantities, the inflow of low capacitated middlemen which presented an opportunity to sell early and the low prevailing market price in times of high financial demands. The latter causes farmers to sell only enough to attend to pressing financial

demands whilst waiting for the price to get better. The following is an excerpt from one of the passive members:

> *"We farmers also at the time of harvesting we are found to have loans obtained from private lenders due to unexpected problems so we would rather sell to somebody who is coming as soon as possible to collect the items.''*

Even active members however felt that price determination mostly relied on the buyer and the quality of rice which is rated by the locals according to the aroma and by the wholeness of the grains after milling. Figure 4 below, further the summarise the economies of scale theory for cooperatives in western Zambia.

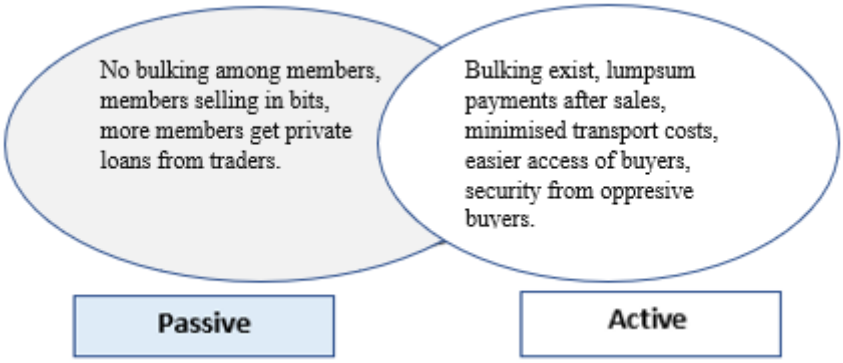

Figure 4: Summary on the Economies of Scale theory

5.4.2. Transaction Costs

All member categories affirmed that the market links created by the cooperative on behalf of the members were favourable and were a motivation to invest in the cooperative through buying of capital shares. Despite market links being a motivation for both categories, interestingly, passive members were still less willing to invest in the cooperative. The rice cooperatives, working with NGOs adopted the Lima links as the efficient way of obtaining market related information and linkages. Lima links are a Zambian Social Enterprise set up to connect farmers and agricultural producers to wider agricultural marketplace using technology platforms. The excerpt below reflects the response on whether the market links were favourable to the member:

> *"Off course they are beneficial, if the cooperative sources some good market and you are there as an individual having a bit of some rice, you can take it to the cooperative and still sell it at a relatively fair price. For example, if the cooperative also has a hammer mill even polishing would be at a fair price."*

All farmer categories mentioned that individual costs incurred to access the market, information on price, information on timing of production and selling via cooperative were fair, which corresponds to benefits derived from minimised *transaction costs*. All respondents affirmed that access to information had increased thanks to cooperative membership. The reliable sources of information on market price were ranked from highest to lowest as follows: Lima links, fellow members from the market (farmer to farmer), personal market survey, cooperative market surveys, from radios, agricultural offices.

Farmer to farmer information sources appeared more among passive members while Lima links were higher among active members. Active members sought for information on timing of production from extension agents. Other active members felt that timing of what and when to produce was dependant on rainfall pattern and the performance of a particular crop in the previous marketing season which necessitated its re-cultivation in the following season. Active members were unique in the sense that they had more diverse market alternatives in contrast to passive members. However, market alternatives other than cooperative channel exposed farmers to risk of losses due to high transport cost and oppression from traders. Below is the statement from one of the active members:

> *"The alternative market could be there, but it is dangerous because the farmer can be downplayed by the traders. That is the traders may offer only a very small price"*

All categories of farmers felt that it was easier for them to access and receive better agricultural technologies through the cooperatives. Nevertheless, the major factor in access to technology was the capacity of cooperative to easily link members to service providers who consequently increased access to technologies, agricultural equipment, better and cheaper inputs, extension services and trainings. Active members, as opposed to passive felt that increased participation in cooperatives increased access to better agricultural technologies. Below is an extract of one of the responses:

> *"Yes. for example, like our cooperative has been given a gadget which should be able to give us a projected weather pattern for a particular year. You know what it means when you have such a facility, you are able to determine where to plant the rice in that season weather in the lower land or upper land based on the expected or projected water level."*

The Figure 5 below, shows the summary of the results from the *Transaction cost theory*.

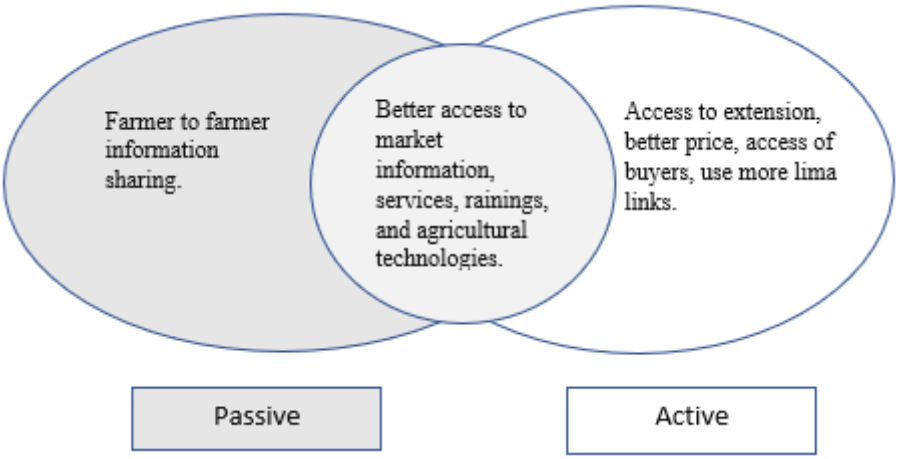

Figure 5: Summary on Transaction Cost theory

5.4.3. Social capital

Regarding the social status of members in the rice cooperatives, all member categories experienced a rise in their social status thanks to cooperative membership. The cooperatives provided a platform where other hidden skills in some members for instance skills in arts, crafts, organising community events etc, were easily observable than without the cooperative. All categories of members feel that members help each other in times of crisis but the more active the member was, the more support they receive. Typically, active members feel secured because they have gained more knowledge, skills, more exposed and are able to train others within cooperative and in the community. The following is an excerpt from an active member which relates to increased social status:

> *"ahh..!! truly because before we met as a group, I was dealing mostly as an individual, but now since we became together, the group has seen my skills, the capacity that I do and in most cases they ask me to help because they know my position so the status has improved and I am sometimes humbled when I see the members calling upon me to come to help because my fellow co-operators they see the potential in me."*

Almost all the responses showed that stronger social connections promoted community development because it facilitated easy diffusion of development ideas and increased trust upon which adoption of interventions highly depended. In addition, the popular view was that increased participation in the cooperative positively influenced the participation of cooperative members in community development. Below is one of the statements from an active member.

"That one is a straightforward thing. If you are dormant in cooperative you will be dormant also in the society and they will not know you. But if you are active even when you miss an event they will ask saying where is he?... there is learning exchange or transfer of knowledge from co-operators to non-members. Also, when I get trained in farming technologies, the non-members also can pick it up from there"

Regarding the question as to whether trust was a motivation for activeness of members, passive members attested to this view that trust was a motivation to increased participation of members. To the contrary, active members did not feel that trust was the driving factor. Instead, active members felt that interest of members in the cooperative activities was the driving factor and therefore a motivation to increased participation. In addition, active members argued that trust could not substitute interest of a member.

The Figure 6 further illustrates the summary of results on *Social Capital theory*.

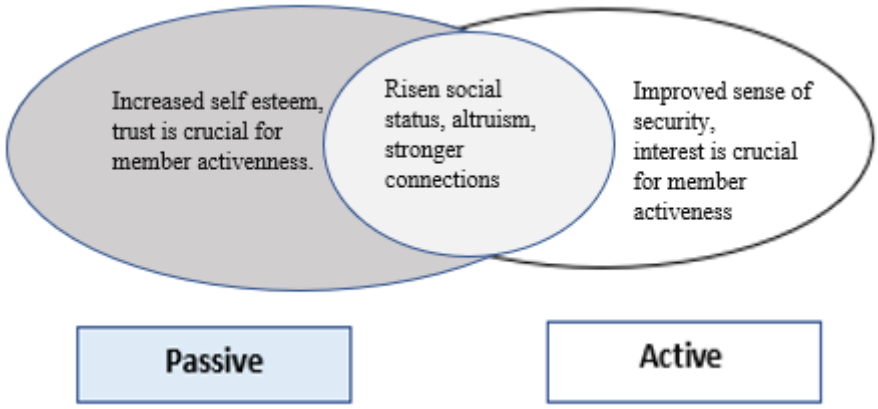

Figure 6: Summary on Social Capital

From the theories that were analysed above which relate to potential and hypothetical benefits of cooperative membership, the results confirm their relevancy among rice farmers. Tested theories include Economies of Scale theory, Transaction Costs, and Social capital theory. See Figure 7 for the summary of the relevance of the theories relating to benefits of cooperatives in Western Zambia. The Theory of *Transaction cost* is seen to be dominant as regards the benefits of a cooperative.

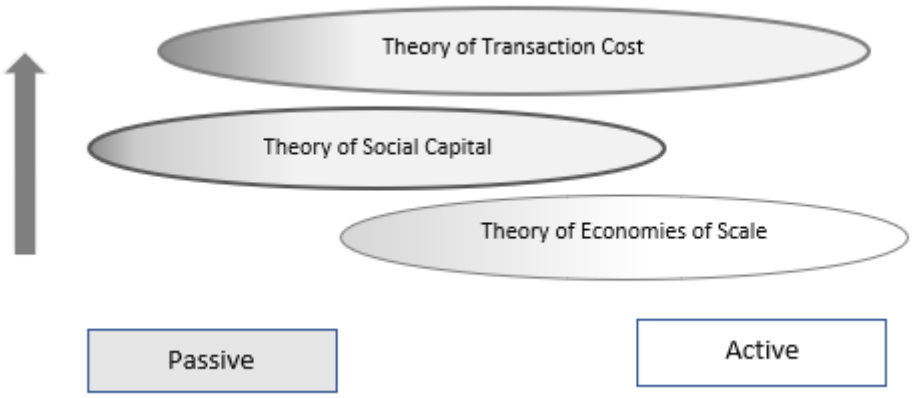

Figure 7: Summary of relevance of the theories on benefits

5.5. Theories Explaining Challenges of Cooperatives

This section analyses the relevance and importance of known group-related theories of the challenges of cooperatives for particular context of the farmers in western part of Zambia. The main aim as earlier alluded to, is to evaluate the power of various theories to explain real-life phenomena and different experience of two groups of cooperative members.

It should be noted from the outset that a number of group-related theories which are linked to challenges stand on the rationale of diverse and increased membership as occasioned by open membership principle of cooperatives. Also, the assumption that groups have agents-managers who are mandated to implement cooperative goals on behalf of general membership (owners and patrons), and that there must be some minimal group entrepreneurial activities from which members can derive certain tangible and or intangible returns. When some of the afore mentioned assumptions are non-existent as was the case with many of the groups in western Zambia, the theories then loose relevancy and are obscure. Therefore, it might be noted in this study that many of theories about challenges of cooperatives do not apply in the Zambian context.

5.5.1. Governance and Decision-making challenges

As regards the defined problem of *Technical inefficiency and Decision-making problem, Influence cost problem,* the qualitative interviews revealed that most of members participated in monitoring in one way or the other. For majority, monitoring was not motivated by patronage related benefits, due to low level of entrepreneurial activities, but by desire to acquire information, smoothness, and transparency. The theory of *technical inefficiency* mainly hinges on issues of reduced monitoring, which was understood differently by different categories, for instance, active members viewed monitoring as being actually involved in the sub committees, in transactions and programmes when delegated. For passive members, it meant being consulted during meetings, physical verification of records and confronting the erring leaders either individually or through the chairperson. Having said that, majority active members feel they participate in monitoring and that members are free to express their opinions to their leaders. The statement below is an excerpt of a response from the active respondent concerning taking part in monitoring.

''I do participate in decision making through meetings and I feel I do contribute something. The chairperson may lead that part of deciding the level of production, but all the other members ought to agree whether it should be so.''

The passive members felt that progress of cooperative was ascertained by members mainly through updates during cooperative meetings. A minority among passive members indicated that monitoring was lacking adding that in the event when it occurred, it never went to extent of questioning the performance of the management (board). Most passive members also felt that attempts to correct their leaders yielded unsatisfactory reactions. Unequal treatment and poor meeting attendance by some members was the main source of discouragement for participating in monitoring by all categories. Whether cooperative embraces the opinions of all the members, with regard to decision making, majority admitted but the minority denied saying that the board did not always consider each and every member's opinion but that when the majority decide by voting then its prioritised. Below is an extract from one of the statements by the passive respondent.

"*No, I don't think so because we have very different members as co-operators. Usually we just try to ask for clarity. Sometimes when certain things have been done in our absence, we ask for clarity and when they satisfy us then we are agreeable.''*

In terms of Principal – *Agent problem* and Follow up Problem, when asked whether the management (the Board) implemented activities that best described members' interests, majority (both passive and active) members were in affirmation. The majority said that they trusted their leaders because they effectively engaged members in the cooperative affairs, presence of transparency, and that leaders exhibited proper conduct. When asked whether the respondents felt that they adequately participated in deciding the level of output (potential of *Scale inefficiency*), all felt they adequately participated except for few passive members who felt they only do in part because they do not belong to the executive.

When asked if the cooperative board was accountable to members, the respondents were divided; However, majority respondents conceded to the view that the board of directors was accountable, the minority argued that the board undertook some activities without the consultation from general membership. Figure 8 below, summarises the theories on governance and decision making.

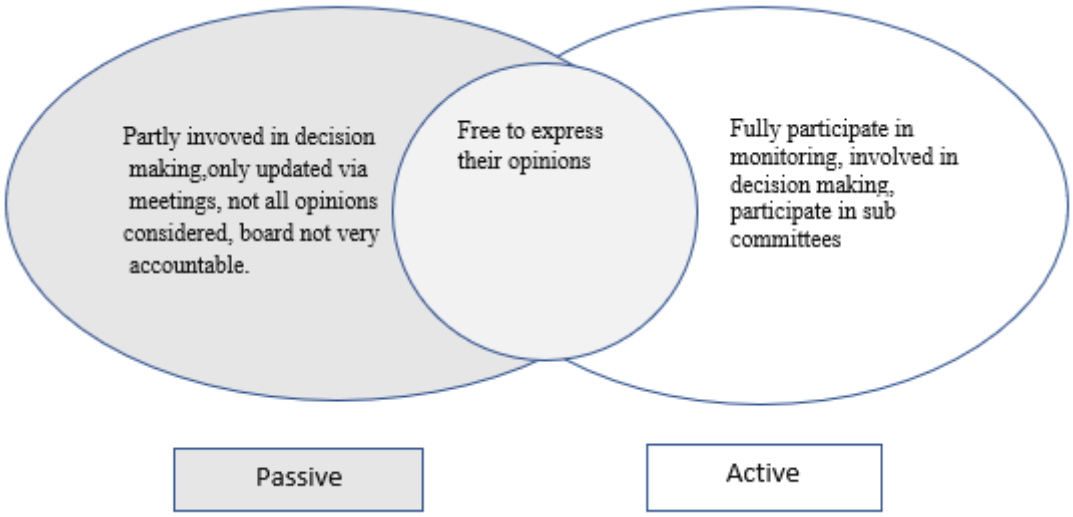

Figure 8: Summary of results on governance and decision-making challenges

5.5.2. Investment Related Challenges

Almost all the members felt that membership fee was fair with only a minority highlighting the inadequacy of the capital share contributions. These stated that the share capital contributions were too little to kick start any cooperative business and this was

evidenced by the fact that the cooperatives almost had no money in reserve. Although the majority (all passive) said that the willingness to invest (buying capital shares) into cooperative assets or long-term projects (*Horizon problem*) was different among the various age groups, a notable number of respondents (some active members) still maintained the view that the willingness was equal. Passive members said youthful age group was more willing to invest in cooperative asset while some few active members felt older group was more willing to invest in the cooperative citing that investing served as remedy for their declining physical strength. Almost all respondents felt that the duration of investments affected members' willingness to invest adding that cooperative projects with a short-time span were favourable. The majority said it was better for them to invest their cash into the cooperative than taking it home, but to the contrary, the minority (from the passive members) said it was better to take cash home for private investments alluding that it was risky to re-invest in cooperatives with low levels of entrepreneurial activities. Increased cooperative activities, support from NGOs and knowledge on cooperatives were viewed as motivations for higher investing in cooperatives. Below is an extract from a passive respondent regarding risk of buying more capital shares.

> *"Yes, it is risky to buy more shares because the shares can be abused when the cooperative has no business"*

When asked whether intangible capital like image of cooperative was beneficial almost all the respondents stated that it was beneficial and felt satisfied with the benefit they received thanks to the image of their cooperative notwithstanding their different horizons. Intangible capital helped members to easily access markets, invitation of the cooperative for big meetings, attracting NGOs and other opportunities. Concerning the residual benefits of their capital allocation and or intangible capital, passive members felt that their cooperatives would be owing them benefits in the event of cessation of their cooperative membership especially that some members had paid up share capital which seemed less yielding.

In terms of *High Time Preference* challenge, the majority from the active group perceived that the payments for the items supplied through the cooperatives were not delayed, on the other hand the minority pointed out that delayed payments occurred but

the delayment was not a challenge enough to outweigh the risks of ignoring bulking and pooling. Members therefore reserved some produce in store to sell in the event of delayed payments to serve as urgent source of funds. Passive members did not sell through the cooperative hence they hardly expressed their opinions on this issue. The Figure 9 below illustrates the theories on investment related problems in summarised form.

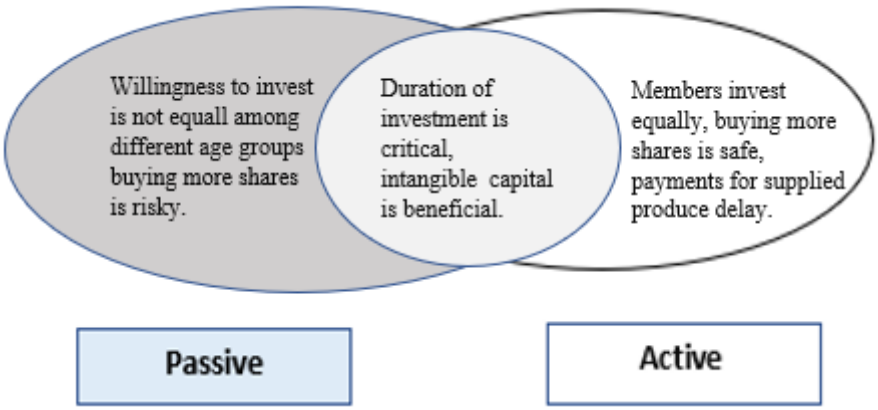

Figure 9: Summary on Investment Related problems

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5.5.3. Cooperative Asset Related Challenges

The interviews revealed the absence of assets in majority cooperatives. Where availability of assets occurred, the use by members was only done through mandated machine operators after payment of a service fee, hence majority respondents felt that no exploitation occurred. Some of the properties owned by the cooperatives were still new and had not yet been utilised enough to exhibit challenges in usage and ownership. A few cooperatives had communal assets like tractor and plough which were given to them by the government. Some members from these cited cooperatives had the view that property rights on communal assets were not clearly defined because the assets were owned and used communally by other cooperatives hence individual members could not claim the existence of property rights.

Portfolio Problem

Most of the cooperatives in Zambia are multipurpose cooperatives as seen on Table 2: Rice cooperatives of respondents in Western province of Zambia. This implies

that assorted agricultural enterprises are ventured into by the cooperative as a way of ensuring risk mitigation. With the varying weather patterns, cooperative members said that it was better for the cooperative as well as the individual members to diversify their investment. This implies that specialization is becoming more challenging as farmers are dictated by the climatic factors.

When asked whether free ridders were present in the cooperative, majority respondents denied and said that *free ridding on cooperative assets* was absent in their cooperatives. The question as to whether it was fair on the part of old members to allow new members to acquire equal benefits on the cooperatives benefits to which they never invested; active members felt it was fair. This was because it sent a good signal to new members. Also, it was fair because new members did not actually benefit from the past cooperative benefits of which other old members benefited, and that cooperative membership growth was paramount than restrictions of who qualify to benefit. However, some passive members (minority) felt it was not fair and it was demotivating because all claims by members should be based on their respective levels of initial investments mainly in form of shares. Below is an excerpt from active member referring to new members having equal benefits.

> *''Because they are new members, so we have to welcome them and encourage them so that the number becomes big… because if you are many and you are cultivating you can do a big portion compared to when you are few*

Figure 10 below, presents a summary of Cooperative Asset Related Problems

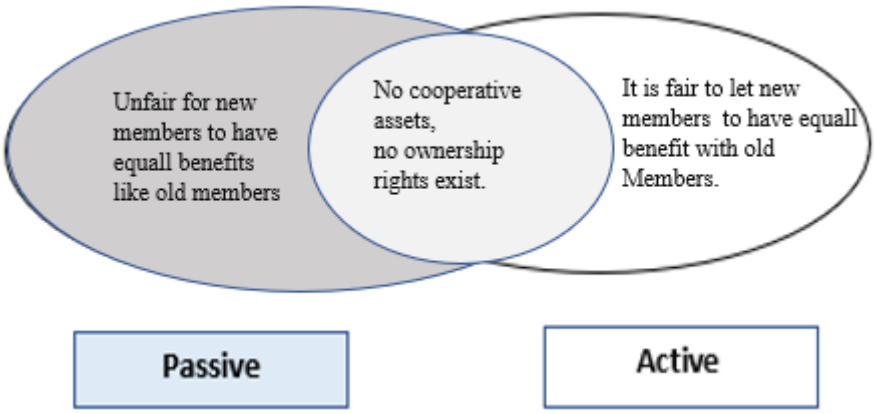

Figure 10: Summary of results on Cooperative Asset Related problems

The classes of theories relating to challenges of cooperatives are here summarised. These classes include (i) the problem with governance and decision making, (ii) the problem with investments and (iii) problem with assets of the cooperatives. From these classes of theories, the problem with governance and decision making is seen to be dominant in aspects that compromise the efficiency of the cooperative in Zambia. The problem with governance may give rise to problem with investments. The problems with assets were negligible because of the rarity of assets among the cooperative in western Zambia. The Figure 11 below shows the three classes of the examined theories on challenges.

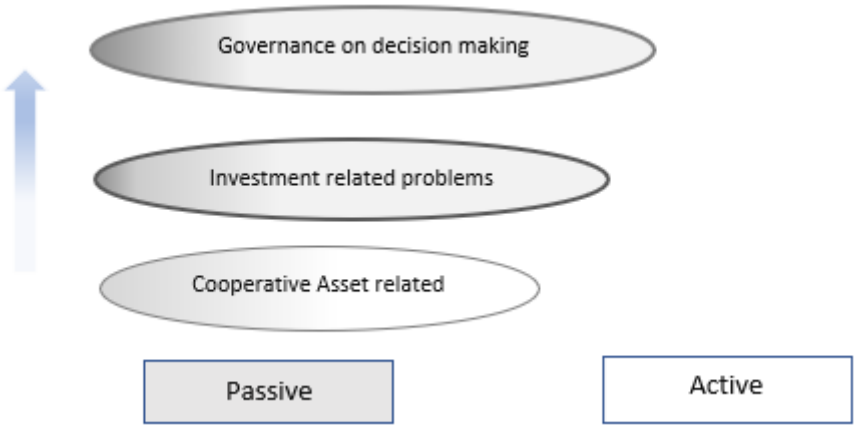

Figure 11: Summary of results on theories relating to challenges of cooperatives.

6. Discussion

This thesis studied the theory-based insights into the commitment of rice cooperative members of western Zambia. The commitment of members was understood by their ability to sell their rice through the cooperative, which is supposed to be main indicator of economic health and sustainability of producer's groups.

The results on membership of the cooperative shows more females being passive than males. These results on gender are similar to results by Pini (2002) who studied the constraints of women's participation in agricultural leadership in Australia. The factors leading to this difference in my opinion can be attributed to the overwhelming commitments experienced by women. Also due to masculinist society and culture of the cooperatives in which women find themselves. Pini (2002) adds that unfavorable duration and location of meetings and lack of support from family may also affect comitment of women.

The lower mean years of formal education and lower total land holding for passive members may also contribute to reduced commitment of members. Similar results by Bernard & Spielman (2009) in Ethiopia found that landholding and education appear to be the deciding variables towards participation of households in farmer organisations.

Low participation among some members, according to my understanding, resulted mainly from the demotivation from the; (1) low commitment by other members, (2) delayment in promised support from government and or NGOs, (3) lack of accountability and transparency on the part of some cooperative leaders, (4) dormancy in cooperative entrepreneurial activities, and (5) low yields of the crop (rice).

While the participation of members must be encouraged, increased involvement by illiterate members in decision making may disadvantage the cooperative by opting for decisions that may lead to collapse of cooperative. Preferences and resources of farmers should be more or less homogenous for efficiency of cooperatives in general.

Lack of significant differences between the meeting attendance by passive and active members may suggest high hopes held by members in the cooperative due promises of support from the governement. This is also supported by Nilsson (2001) who explained that some cooperatives only survive due to support from the government which may include subsidised interest rates, which in Zambian scenario may imply subsidised inputs.

Paos (2018) also in his case study of Kamangango cooperative in western Zambia adds that members have a felt need for inputs and that attending meetings is another way towards potential accessing the inputs.

In the results, active members sold their rice at a higher price than their counterparts and this could be as a result of active members selling less via middlemen while on the other hand they sell more through the cooperative at a higher price. This view is also with findings from Lyon (2000) & Nainabasti (2009) who also found that middlemen and other traders offer lower prices to farmers. This distinctly reflects the benefits of *economies of scale.* However, we must aknowledge that our simple two-groups comparision in the whole paper lacks any serious measures to deal with the selectivity (self-selection) and randomization bias related to observable and non-observable characteristics of farmers. The *Economies of scale theory* fitted more in the context of active rice farmers who generally sold their rice through the cooperative. The theory however loses relevance as levels of production and participation of members becomes low.

The benefits derived from the *theory of transaction* cost fitted into all the categories of rice farmers mainly through lessening and or cutting-off completely costs related to access to service providers. Active members had increased access of extension services more than passive members. The Zambian extension system is often challenged with lack of resources to reach the targets of service delivery to common farmers. Hence, only such farmers as have the keen desire for technical advise are able to individually seek extension advise. Seeking extension advise also calls for a certain level of self confidence on the part of the farmer which could possibly be inadequate among the passive members leading to reduced extension contacts among passive members. However, when other services are channelled through the cooperative, passive members including non members also benefit as much as active members. Hence, in the results, no significant differences were observed regarding trainings, market information. Also trainings and and information have a spill over effect to non members. However, the benefits relating to effecting and safeguarding contracts among cooperative members were not so much realised because of the low levels of rice production which resulted in members not opting for big buyers. The aspect of contracts, particularly contract farming, can help farmers overcome the current rice production and marketing challenges.

Transaction cost theory therefore with its spill over effect is the weightiest theories for both groups of members

As regards the higher levels of trust among the passive members than active members, although these results are at crossroads with findings by Barraud et al. (2012) & Jensen et al. (2018) which suggest that higher trust is linked to increased participation, this however can be explained by findings of Nilsson (2001) who argues that the growth of the investments by members in the cooperatives often leads to changes and suppression of social capital to the favour of business oriented mindset among the members. *Social capital* therefore is important in Zambia especially for the poor and passive members. The *theory of social capital* seems relevant and valid theory among all the categories of rice farmers because it raised the self-esteem of members.

The results on *governance and decision making problems* showed that some passive members were partially involved in decision making and others among the passive group felt they had freedom to express their opinion Although governance problems may currently appear to exist only at a low level in rice cooperatives in western Zambia, their potential of decreasing the efficiency of cooperatives exists especially among passive members. Currently, it is not easy to identify and evaluate clearly the problems because of very low levels of institutionalization and formalization, weak and overlapping hierarchies of governance, low investments by the cooperatives and also because of absence of salaried managerial positions in most of the cooperative businesses in western Zambia. Nevertheless, when levels of investments rise and agents (managers) are employed, the problems related to *governance and decision making* can easily mushroom. In the studies by Ferrier & Porter (1991), agency costs increase as the membership increases. Mutambo (2017), also asserts that if members feel that their leaders perfom well, their level of participation in cooperative increases through decision making and meeting attendance and other group tasks.

Horizon problem exists among the rice farmers in Zambia especially among different age groups where different planning horizons were noted. This contributes to the reason why some passive members are less willing to invest in the cooperative. Because the passive members were sensitive towards tangible and intangible capital, it entails therefore that as the cooperatives grow, the *allocative inefficiency* would become an issue and more pronounced because the increased monetary flows of the cooperative

would then attract the interest of members. *High time preference* was present in rice cooperative. Although not very important for active members when viewed in light of the limited market alternatives, *high time preference* may contribute to shunning to sell through the cooperative by passive group who cannot afford to stay long without receiving payments for their supply. Investment Related Problems in Zambia can therefore explain the occurrence of passivity among some members.

The qualitative results show that passive members felt that *free ridding* existed at least to a small extent while active members felt it was still fair that new members would aquire equall claims on cooperative assets. However, Ferrier & Porter (1991) indicates that cooperatives can survive from inefficiencies when the needed capital is affordable by members, when technologies don't take the lead in competition, of the firm, when ownership of assets is equall among members. In Zambian cooperatives, capital investments are still low, with stagnant membership, and rare cooperative assets, hence *cooperative asset related problems* are not much.

Property rights problem exist but only in part because majority cooperatives did not own assets apart from the communally owned assets. The communally owned assets were utilised by other cooperatives. This further obscured any ownership rights on the part of members. *Free ridding* was more felt by the passive members. Active members viewed it as a way to grow the cooperative membership. *Portfolio problem* was very uncommon. Similar to other challenges, problems with assets of the cooperatives are currently very faint but may appear more with cooperative growth. When the cooperative undergo transformations in membership and in asset acquisition, it then becomes an occasion for *property rights problem, portfolio problems* and *free ridding problem* to erupt.

7. Conclusion

This study analysed and linked theory-based explanations to the participation of rice cooperative members using quantitative and qualitative data from Western province of Zambia. Member activeness and passivity was determined by their ability to sell their rice through the cooperative.

The first objective was to describe level of active/passive engagement of farmers in rice cooperatives using quantitative data. The research found significant differences between active and passive members with regard to their characteristics. Except for gender participation where females are more passive, results also reveals that active members have higher mean years of education, total number of gadgets and total land holding. Further, business aspects of cooperative members were analysed, and results reveal that active members have significantly higher value of invested capital shares, selling price, sell less through middlemen, better access to extension services, and they perceive more cooperative benefit. However, trust among members was more among the passive members.

The second specific objective was to identify the key factors that influence active participation, benefits, and challenges of rice cooperatives' members. Common reasons for joining the cooperative were found to be seeking for marketing information, knowledge and skills and subsidised inputs. An investigation into theories on benefits of cooperatives reveals that *Transaction Cost theory*, *Social Capital theory* and *Economies of Scale* explain the reasons for increased participation of members. While theories related to governance and decision making, investment related problems, and cooperative asset related problems are found to be relevant among the passive members in that they explain the passivity of members. Main reasons for passivity by some members were due to different levels of participation among other members, general dormancy in the cooperative, low production of rice and their failure to benefit from subsidised inputs.

In order to achieve improved performance of Zambian rice cooperatives, the raising of knowledge and skills of cooperative managers (Board) should be fostered. This can reduce on the governance and decision related problems. There is needed to re-consider raising the value of share capital because the current values hardly stimulate investment ideas and purchase of assets for upgrading of the whole rice value chain. The

earlier the cooperatives delink their over-dependence on FISP, the better for the cooperatives and its members. Further, managers, NGOs and extension workers should also advocate on fulfilling main economic principles of cooperative, which is bulking, and marketing of members produce.

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Appendix 1: Appendix title

QUESTIONNAIRE FOR KEY INFORMANTS

TOPICS FOR DISCUSSION WITH KEY-INFORMANTS

My name is Samuel Mwanza, I am a student at the Czech University of Life sciences from Czech Republic. I would like to ask you about cooperatives. All to be obtained will be used for research purpose only and will be very confidential

RICE VALUE-CHAIN **(The Rice Specialist)**

Stakeholders in rice value chain and their roles

Public markets for rice

Millers, Polishers, Retailers,

Farmer deliveries and transportations

Competitors and commodity characteristics

Impact of subsidies on rice marketing

GENERAL COOP SITUATION:(**With Provincial and District Cooperatives Officers)**

Latest statistics on cooperatives.

Importance of governmental incentives for cooperatives

Farmer subsidies schemes.

Is it positive for coops or harmful?

Impact of subsidies on cooperatives?

Why farmers join/leave coops?

Are they active? Why, why not?

THANK YOU FOR YOUR RESPONSES

QUESTIONNAIRE FOR CO-OPERATIVE LEADERS

My name is Samuel Mwanza, I am a student at the Czech University of Life sciences from Czech Republic. I would like to ask you about cooperatives. All data that will be obtained will be used for research purpose only and will be very confidential

PART A: INTRODUCTORY QUESTIONS

1. Are you a farmer?
2. Do you produce enough for sale?
3. How long have you been a cooperative member?
4. What is the annual fee of members?
5. What is the minimum and maximum number of shares that a member can invest?
6. Is the cooperative buying the produce from members, organize the sales or is not involved in selling at all? Why? Is there any plan? What are the conditions of selling through coop?
7. Do members supply their produce to the cooperative according to the agreements (reference to question 9 above)? And reason for answer?
8. Are members rather active or passive? Why? What can be done to mobilize them?
9. Do you receive any external support from any organisation? If yes what kind of support?
10. Do you receive/ever received support from the government? If yes what kind of support?

PART B: BENEFITS OF COOPERATIVES

What are the benefits of active participation in the cooperatives? With brief explanations?

Do you think that your cooperative influences and controls market prices positively? And how does it achieve that? Is it risky for members to market their produce individually?

Are there any certification requirements for your cooperative to access the market? How does it help the members?

Does the cooperative help members to access technology easier? If yes how?

Are the costs for organising and processing information to make decisions at cooperative level lower than at individual level? how? and why?

Has the co-operative been involved in community service of any kind? And how?

Does cooperative participate in community development?

What are the incentives on produce for cooperative members?

Is there a better price of products for members? Or more stable? Or better customers?

Is there better access to inputs? Information? Trainings? Technology?

Is there better trust among the farmers thanks to cooperative membership?

What are the benefits of selling the products as a cooperative rather than an individual?

PART C: CHALLENGES OF CO-OPERATIVES

In your own opinion, what are the disadvantages of belonging to a cooperative? Briefly explain?

Is it common for cooperative members to monitor the management? And why and how?

Do you think the manager feels motivated enough to make initiatives towards cost minimisation? How is that perceived by the members?

To what extent do you experience free ridding of members on cooperative assets? How do other members take that?

How honest is the coop management in running coop affairs? Explain further about your response?

Who benefit more by the common ownership of property among the old and the new members of the cooperative? And why?

What influences the members' adoption of cooperative long-term investments? What are the incentives for long serving members?

Do you think that new members should contribute membership fees corresponding to their share of cooperative's asset? And why?

Do you think old members' commitment is affected by membership fees of new members? How?

Do co-operators experience delayed payments related to their supply through co-operative? And how do they react to delayed payments (both in short term and long run)

Are there any benefits for older members in comparison to new entrants?

Property rights – who can use the property of cooperatives and under which condition? What is the property of cooperatives and how is it defined/protected?

Is it better to focus only on one (1) product or it is beneficial to include more activities into cooperative business? Why?

Is the cooperative too small for any economic benefits, or ideal or too big? Why?

Do you think that the mix of services the cooperative provides now is ideal? Should it be more diversified or more focused on just few products/services? Why?

What are the main challenges of selling produce through farmer cooperatives?

THANK YOU FOR YOUR RESPONSES

QUESTIONNAIRE FOR SPECIFIC GROUP MEMBERS

The first part of questionnaire (A), looks at general introductory questions, (B) focusses on co-operative benefits followed by part (C), focussing on challenges of cooperatives.

All the questions will be asked to all types of members whose categorisation is based on their level of commitment. For example-

1. Passive members
2. Members selling their produce
3. Members selling their produce and investing their money into the cooperative
4. Members selling their produce, investing their money into the cooperative and actively participating in the bodies of the cooperative

My name is Samuel Mwanza, I am a student at the Czech University of Life sciences from Czech Republic. I would like to ask you about cooperatives. All data that will be obtained will be used for research purpose only and will be very confidential. Thank you for your time.

PART A: COMPULSORY QUESTIONS

1. Are you a farmer?
2. What do you produce?
3. How much of your produce do you sell?
4. How many years have you been a member of the co-operative?
5. Why did you join the co-operative?
6. What were your expectations when joining the co-operative?
7. Have they changed now and why?

PART B: BENEFITS OF CO-OPERATIVE

1. Economies of scale

1 Does the cooperative buy the production from you? If not, why not? If yes, what is the advantage compared to selling individually?

2 If you sell only part then why?

a. Higher market power

I. Do you sign any contract with the coop management when selling the produce?

II. How is transportation of produce organised?

III. Do cooperative members have a say on pricing the produce? And How?

IV. Do you think bulking and pooling of resources is beneficial in view of the market power? And why?
V. Do you ever benefit from the bargaining of the prices by cooperative? And how?
VI. Do you think the cooperative's control or influence on the price of the buyers favors you? And how?
VII. How does your involvement in (cooperative marketing, investment) cooperative bodies affect your marketing power?

b. Better access to markets

I. Are the market links created by your cooperative favourable to you considering your level of production? And Why?
II. Do you think the individual costs incurred for you to finally access the market via cooperative are fair? Explain why?
III. Do you think market access through cooperative motivates you to invest more into cooperative? And why?
IV. Are you able to have alternative market access than through cooperative? And which one is better for you? And why?

c. Access to technologies

I. Do you think the cooperative can help you to have access to better agricultural technologies? Why? Why not?
II. Have you ever received any technological benefit through the cooperative? How?
III. Is it easier for you to access agricultural technologies when in cooperative or not? and why?
IV. Do you think increased participation in cooperatives increases access to better agricultural technologies? And how?

3 Transaction costs

a. Better price

I. Is the cooperative price usually favourable for you? Why?
II. Is it better for you to bargain for yourself or through the cooperative? Why?
III. When are you able to bargain well for the prices? When in cooperative or individual and why?
IV. How do stable prices as influenced by the cooperative help you?
V. Does your cooperative membership affect the price of your inputs? If yes, in what ways? Is it better or worse?

b. Access to information

I. From where do you easily get reliable information on the following:
- market price? how
- quality? And how?
- Timing for your production and selling?
- Place of delivery?

II. Is it easier for you to access marketing information individually or through a cooperative? And why?
III. Has your level of sharing market information reduced or increased after joining cooperative? and why?

IV. Do you think that for more active members the cooperative provides more and better information? And reason?

4 Social capital

a. Better relations with other farmers

I. Do you think individual cooperative members can help you in the event of crises? Why?
II. Do you think your social status in the community has risen thanks to cooperative membership? Why?
III. Do you sometimes think that other members benefit from your efforts more than you benefit from them? How?
IV. Is trust a motivation towards your increased participation in cooperative? Why?

b. Community development

I. Do non-members of cooperatives benefit either directly or indirectly from the cooperative? And how?
II. Do you think non cooperative members in your community should also benefit from the cooperative? and how?
III. Do you think stronger social connections promote community development? And why?
IV. How does your increased participation in cooperative influence your participation in community development work?

5 ***What is the main reason why you are passive/active (as defined by each category above)?***

***PART C*: CHALLENGES:**

1. Technical inefficiency

I. How do you know if the cooperative is making progress or not?
II. Do you participate in monitoring of the management? And how do you do it?
III. Is there any motivation for participation in monitoring? Name it?
IV. To what extent are you involved in monitoring? And what is your motivation? what discourages you.

2. Allocative inefficiency

I. Does the cooperative's image have any benefit to you? Explain.
II. Are you satisfied with the benefit you get from the image of the cooperative? How?
III. Do you think you can benefit from the image of the cooperative after you cease to be a member? And reason?
IV. Do you feel your cooperative will be owing you with regard to the image of your cooperative after your membership ceases? How does it matter to you?

3. Scale inefficiency

I. Do you feel that you adequately participate in deciding the level of output? Why?

4. Property right

I. Is there strict evidence of what property or equipment belongs to individual members and or to the cooperative? Explain briefly about this existence/lack of evidence?
II. Do you feel that no member is exploiting cooperative property and any member can use it?
III. Is it good for you that property rights are not clearly defined? How does that affect you?
IV. Do property rights affect how you invest in the coop?
V. Do you feel that other members abuse cooperative resources? And why do you think they don't /do so?

5. Agency costs

I. Do you trust the leaders of the cooperatives? And why?
II. Do you think the management implements activities that best describes your interest?
III. Do you feel safe to say your opinions to the cooperative management? If not why? if yes, how does the management respond to your opinions?
IV. How do you ensure that what the cooperative management does is to the best of your interest as members?

6. Common ownership

I. Do you think it is fair if new members are allowed to have equal access to cooperative benefits to which they never invested? and explain why?
II. Is equal access of new members to cooperative benefits a motivation or demotivation for you? Why?
III. In your opinion, is common ownership good for cooperative? and reason?
IV. Are there some free riders in your cooperative? What do you think can be done about them?

7. Horizon problem

I. What would motivate you to invest your resources in the cooperative?
II. Is it better for you to have cash now or to re-invest it in the cooperative? And why?
III. Does the duration of investment affect how you choose to either invest in cooperative or not? And How?
IV. Is the willingness to re-invest into cooperative assets different or same among the various age groups? And why?

8. Portfolio problem

I. What is your opinion on your membership fee, is it low, fair, or high? And why?
II. Is it risky for you to buy more shares in the cooperative? Give a reason to your answer?
III. Are you satisfied with your dividends? Why?
IV. Is it better for you to diversify your investment in coop or concentrate them? And why?

9. Decision making problem

I. Do you think the cooperative embraces the different opinions of all members adequately in its decision making? How does it do that?
II. In your own opinion, is the cooperative board accountable to the members? Why?

10. High time preference

I. Do you think that members receive their payments after supplying through the cooperative in good time? How do members react to that?
II. Are you comfortable with the duration of payment for supplied produce by your cooperative? If not, why?
III. Does the duration of payment after supply affect you in any way? If yes what are the coping strategies employed?

11. What other challenges do you think hinder active participation in cooperatives? Why do they occur? What is the possible solution? (compulsory question)