

---

## Co-operative Governance and Financial Performance of Irish Potato Farmers' Co-operatives in Northern and Western Provinces, Rwanda

Charles Uwaramutse<sup>1\*</sup>, Esther N. Towo<sup>2</sup> and Gervas M. Machimu<sup>3</sup>

<sup>1\*</sup>University of Lay Adventists of Kigali, Correspondence author: [uwacharles3@yahoo.fr](mailto:uwacharles3@yahoo.fr)

<sup>2</sup>Moshi Co-operative University, Tanzania, [awaichisaria@gmail.com](mailto:awaichisaria@gmail.com)

<sup>3</sup>Moshi Co-operative University, Tanzania, [gmtthe38@gmail.com](mailto:gmtthe38@gmail.com)

### **Abstract**

*Farmer co-operatives are considered the backbone of agricultural development and the main pillars in facilitating socio and economic development. However, their contribution is small in many countries due to governance problems. This paper investigated the effect of governance on financial performance among Irish potato farmers' co-operatives (IPFCs). To address the objectives of the paper, data were collected from 32 primary co-operatives that had complied with audited financial reports in Northern and Western Provinces. Questionnaire, focus group discussions and key informant interviews were used to collect primary data. Secondary data from audited financial statements were collected to analyse selected co-operatives' financial performance in terms of Return On Assets. Pearson correlation and multiple regression were used for data analysis. The results showed that members' participation, accountability, transparency, and leadership are significant factors contributing to the financial performance of IPFCs. However, the relationship between policy compliance on financial performance, co-operative structure and financial performance was not statistically significant. As revealed, most IPFCs experience poor leadership to run their co-operatives smoothly. Based on the findings, Rwanda Co-operative Agency (RCA) and other community development partners should organise ongoing capacity-building training for IPFCs' leaders, to ensure self-governance and curtail the interference of local authorities within the administration of co-operatives under the pretext of reported mismanagement and poor leadership. This paper generates facts to inform IPFCs, community development partners, and policymakers about the major factors that can affect the financial performance of farmers' co-operatives. In addition, the paper contributes to the literature by analysing governance practices that affect the financial performance of agricultural co-operatives in developing countries perspective.*

**Keywords:** Governance, Financial performance, Farmer co-operatives, Irish potatoes, Rwanda

---

*AJCDT, Vol. 7 No. 1 (December, 2022), pp. 88 – 111, ©2022 Authors*

---

### **INTRODUCTION**

Farmers' co-operatives are considered the backbone of agricultural development (Lepe, 2016) and the main pillars in facilitating the socio and economic development of most countries (Sunghye & Sang-ho, 2020). However, their contribution is small in many

countries due to governance problems (Matangaidze *et al.*, 2022; Hussein, 2020; Melak *et al.*, 2018). Lemmi and Nakkiran (2019) and Wanyama (2014) reported adverse performance of co-operatives due to ineffective governance practices, which greatly affected the farmers' wellbeing and

sustainable development. Governance is the key determinant of farmer co-operatives' performance (Uwaramutse *et al.*, 2021; Drona & Walsh, 2018). With inadequate governance in co-operatives, co-operative performance is impaired (Ricardo & Mery, 2019) and may be difficult for co-operatives to sufficiently serve their members and contribute to their social and economic transformation.

Co-operatives are affected by both internal and external governance. Internal governance consists of co-operative by-law, policies, structures and decision-making process (Bijman *et al.*, 2014; Chambo & Diyamett, 2010) while external governance entails the process of co-operatives' interaction with their external stakeholders from either public or private sectors (Anania, 2021). This includes co-operative policy, law and regulation. Good governance is determined by how co-operatives retain autonomy and independence, assure mutual benefits, bargain, influence policy and other reforms, and protect co-operative identity and interest. In the Western world, co-operatives are independent of government and govern themselves according to the needs of their members (Johnson & Shaw, 2014). However, in most developing countries, it is different because co-operatives were primarily developed by states which did not prioritize the needs of co-operative members but rather put state interests first (Hammond & Luiz, 2016).

Furthermore, inefficient leadership and limited financial control mechanisms among cooperatives in developing countries necessity government oversight in their management and administration. Cooperatives should ensure effective internal governance and self-financing in order to limit the interference of government entities. Members should also be able to self-govern

their cooperative without being influenced by the larger government's legal and policy framework.

Poor performance of co-operatives in different countries has prompted research about the functioning of governance practices within co-operatives. From the research by Drona & Walsh (2018) on governance practices and their impact on performance, legitimacy, participation, accountability, professionalization, and transparency were reported to be contributory factors to performance. Dayanandan and Dagnachew (2015) proved that poor performance of co-operatives depends on inadequate governance practices linked to members' participation, accountability, transparency, predictability, and the rule of law. Musuya's (2014) study on the poor financial performance of farmers' co-operative societies in terms of cash coverage and return on assets (ROA), governance practices challenges related to board size, board composition, and status of chief executive officer are among the factors that have hindered the financial performance of farmers' co-operatives. Lemmi and Nakkiran (2019) reported leadership problems in farmers' co-operatives as one of the challenges to their performance. Okonkwo (2017) has shown a weak relationship between members' participation and co-operative performance. Though, Mmari (2019); Mwendia, 2018; Hammad *et al.*, 2016 reported improved performance due to effective governance practices.

In Rwanda, agriculture is the dominant sector of the economy, contributing 31% of the country's Gross Domestic Product and employing about 70% of the country's working population (National Institute of Statistics Rwanda [NISR], 2018). The agricultural sector development was specifically done by creating strong

agricultural co-operatives (Meador & O'Brien, 2019). The Government of Rwanda (GoR) views co-operatives as pivotal tools for achieving Vision 2050 and a number of Sector Strategic Plans (Ministry of Agriculture and Animal Resources [MINAGRI], 2018). GoR has thus established an environment conducive to the development of the co-operative movement. This encompasses law N° 50/2007 of 18/09/2007 determining the establishment, organization, and functioning of co-operative organizations in Rwanda, as amended in 2021, and other regulations guiding various governance bodies and entities of the co-operative movement (Ministry of Trade and Industry [MINICOM], 2018). The government has developed the national policy of 2018 on the promotion of co-operatives to ensure that they are profitable and productive enterprises capable of delivering services and creating surpluses for themselves and their members. The Government also supports co-operatives in activities such as value chain development, research, and extension (International Labour Organisation [ILO], 2017). Due to their contribution to the gross agricultural production, Irish potatoes were prioritised as one of the most important crops falling under the crop intensification program (FAO, 2016). Irish Potato production was found to generate in average 57% of gross income per year and per household (Shimira *et al.*, 2020). Rwanda is ranked the third largest potato producer in Sub-Sahara Africa, second in East Africa (US Agency for International Development [USAID], 2016), and one of the top five potato-producing countries in Africa (FAOSTAT, 2015).

Despite the efforts of the government and private sector actors, the financial performance of farmers' co-operatives in Rwanda is questionable (MINICOM, 2018). Most are characterised by limited financial

capacity, which challenges their growth, competitive posture, and improved financial performance (Uwaramutse *et al.*, 2022). As a result, there is high dependence on the Government and donor agencies (Niyonzima *et al.*, 2021). Moreover, most farmers' co-operatives face challenges that include low members' participation in decisions affecting their co-operatives, the extent to which local government officials get involved in the co-operative leadership, and mismanagement of co-operative fund (Nkurunziza, 2019). Moreover, lack of managerial skills among the staff and management in most co-operatives and non-compliance with co-operatives laws and regulations are other challenges facing co-operatives in Rwanda (RGB, 2018). These concerns cast doubt on how IPFCs governance is coordinated to ensure improved financial performance. Co-operatives may struggle to adequately serve their members and contribute to their social and economic transformation unless their financial performance is strong.

Previous research has found that governance factors have a positive and significant impact on co-operative financial performance (Drona & Walsh, 2018; Tewodros, 2017; Hammad *et al.*, 2016; Munyasia, 2016). However, Omwenga (2017); Okonkwo (2017) have reported negative association between governance factors and financial performance of farmers' co-operatives. Furthermore, there are limited studies on co-operative governance and financial performance in Rwanda. As a result, the impact of governance and financial performance studies is inconclusive, given contradictory results from previous studies and contextual differences. This study seeks to fill those gaps by investigating the impact of governance factors on the financial performance of Rwandan IPFCs. It specifically describes governance practices among IPFCs and identifies governance

practices that affect the financial performance of IPFCs in the Northern and Western Provinces. The rest of the paper is organised into theoretical and empirical framework, methodology, results and discussion, and finally conclusion and recommendations.

### **THEORIES GUIDING THE STUDY**

**Agency theory:** The study is guided by agency theory, developed by Jansen and Meckling (1976), which explains the relationship between the principals and agents. Agency relationship is a contract under which one or more persons (the principal/s) engage another person (the agent) to perform some service on their behalf, which involves delegating some decision-making authority to the agent (Clarke, 2004). This is because of the separation of ownership and control when the owner of the company or the board of directors have to employ managers to run the business and need to monitor their performance to ensure they act in the owner's interest (Lan & Heracleous, 2010). In view of this, co-operative members (principal) elect board members and managers (agent) to carry out a task on their behalf.

Principal-agent problems occur because the agent's objectives are not the same as those of the principal, and consequently, the agent may not always best represent the principal's interest (Royer, 1999; Sykuta & Chaddad, 1999). It also arises when there is information asymmetry between the principal and the agent in addition to the conflict of objectives between the principal and the agent. According to the general formulation of the principal-agent model, if members cannot monitor managers' behaviour, this can prompt them to behave opportunistically by maximizing their interest (Russo, *et al.*, 2000). When the principal-agent problem occurs in a co-operative, members become dissatisfied with the services they get (Ortmann & King,

2007). To better align the goals of the agent with those of the principal, costs are incurred in structuring, administering, enforcing and adapting the terms of contracts. The primary focus of agency theory is on incentive and measurement problems (Mahoney, 1992). In agency relationship, the agent usually has more information than the principal about the details of individual tasks assigned to him and, of course, his own actions, abilities, and preferences (Eggertsson, 1990). Mainly, agents often capitalise on the high cost associated with measuring their characteristics and performance, enforcing a contract, and engaging in opportunistic behaviour (Karaan, 1999). Most applications of agency theory focus on the incentive versus risk sharing trade-off of contracts aimed at aligning the agent's interests with those of the principal (Sykuta & Chaddad, 1999). Agent theory is thus very relevant to the institutional structure of co-operatives because employed agents (managers) may not act in the best interests of the co-operative principal (members) (Ortmann & King, 2007).

From the agency theory viewpoint, insight can be offered into how controlling critical resources offers better performance for farmers' co-operatives. Several studies urge that co-operatives experience more principal-agent problems than private-owned companies due to lack of capital market discipline, a clear profit motive, and the transitive nature of ownership (Richards *et al.*, 1998). Co-operatives may also have greater difficulty in designing incentive schemes for managers that will align their personal objectives with those of co-operatives (Ortmann & King, 2007). While governance prescription of agency is to design controls that enforce compliance, the ability of an organization to grow and maintain business performance is related to

effective governance practices (Nkundabanyanga, 2016). This study focuses on how agency theory can be applicable in farmers' co-operatives and a theoretical ground for governance through member's participation, accountability, transparency, policy compliance, leadership, and co-operative structure, which is used as a controlling mechanism to minimize the effect of opportunistic behaviour so as to achieve better financial performance.

**Co-operative theory:** Given that co-operatives are mainly managed and controlled by their members, agency theory best fits with Investor-Owned Firms (IOFs). Thus, this study applied the co-operative theory to explain governance and financial performance from a co-operative point of view. Co-operative theory emerged from Adam Smith's idea of cooperation (1776) and developed by students of co-operation, particularly Emelianoff (1942) and Philips (1953), and further propounded by Helmberger and Hoos (1962). Emelianoff (1942) and Philips (1953) focused on economic function of co-operative, while Helmberger and Hoos strongly viewed co-operatives as special firms, which is the essence of this study. Helmberger and Hoos (1962) assumed that in agricultural co-operatives, the manager would try to maximise member benefits by maximising co-operative profit.

The co-operative enterprise is conventionally held to be a non-profit institution guided by the principle of service at cost for the benefits of patrons. However, Emelianoff (1942) regards a cooperative as an aggregate of economic units, each fully retaining its independence in seeking profits. One of the objectives of co-operatives should be to maximise its net earnings in the same manner as an IOF maximises profits (Royer, 2014). Several reasons have been offered for why co-operatives might seek to maximise

profits. By achieving this objective, a co-operative will maximise fund available for patronage refunds or for internally financing growth and avoid hostility and retaliatory pricing by rival firms (Enke, 1945). According to Torgerson *et al.* (1998), co-operatives may have increasingly important roles to play in improving agricultural producers' access to markets and capturing value-added. As Georges Fauquet said, co-operative associations combine two elements; an association of persons and a common enterprise. This dual nature defines the social relationship between members in the association and the economic relationship between them and the enterprise (Fauquet, 1965). However, when the members abandon the dual status, it is generally because their co-operative is no longer functioning as a co-operative (Reynaud, 1989). The theory was applied to explain the governance of IPFCs in relation to co-operative principles and philosophy.

**Neo-classical theory of co-operatives:** Neoclassical theory of the firm found in most of economic textbooks and papers (Marshall, 1890; Hart, 1989) is inadequate for the economic behavior of co-operatives (Royer, 2014). A co-operative must be economically and financially sustainable to achieve its benefits, but those benefits can be interpreted as strategies a co-operative might use to achieve its main objective of maximizing member benefits (Royer, 2014). Similar to IOFs, profitability of the co-operative is essential. Both business structures are incorporated and have legal status separate from that of their membership or shareholders with limited liability (Cheong, 2006). In addition to economic benefits, the co-operative principles also promote social objectives (Mooney & Gray, 2002). By maximizing profit, a co-operative will maximize funds available for paying internally financing growth, and it can avoid

hostility and retaliatory pricing by rival forms (Enke, 1945). Unless the financial performance of co-operatives is healthy, it may be difficult for co-operative societies to sufficiently serve their members and contribute to national economic development (Tekeste *et al.*, 2014). Neo-classical theory of co-operatives was applied in this study to explain whether IPFCs in the study area are financially stable for the members' benefits.

#### **EMPIRICAL STUDIES AND HYPOTHESES**

This paper aims at testing the effect of governance practices, namely members' participation, accountability, transparency, policy compliance, leadership and co-operative structure on co-operative financial performance. Participation of members in co-operative is directed by active participation in the co-operative activities, including attendance at annual meetings, participation in the decision-making process, and supporting business activities (Hammad *et al.*, 2016). It also entails collective leadership, open discussion and interaction. The financial performance of co-operative relies on the active participation of members in co-operative activities (Hammad *et al.* 2016). According to 'Aini *et al.* (2012), members' participation is essential for the financial performance of co-operative; even though members may not be actively involved in the administration, their opinion at annual general meetings is crucial. Harun *et al.* (2012) supported this by stating that the new perspective of the co-operative movement in strong membership contributes to the co-operative performance. Using binary logistic regression analysis, Othman *et al.* (2012) found that co-operative performance depends not only on the efficiency and effectiveness of management, but also on the members' participation, since members provide financial support for co-

operative activities. they further stated that members' commitment and support of co-operative activities sustain their performance. The above discussion leads to the following hypothesis:

*H<sub>1</sub> There is a statistically significant and positive relationship between member participation and financial performance.*

Gitonga and Miano (2020) describe accountability as the obligation and responsibility to explain actions and conduct. It is a monitoring system to check compliance with rules and regulations, board accountability and responsibility for performance results, and evaluation by the general assembly. Drona and Walsh (2018) examined the impact of good governance on performance of co-operatives in Nepal, employing person correlation and multiple regression analysis. The findings revealed significant and positive relationship between accountability and financial performance of co-operatives. Similarly, Diminah *et al.*, (2018); Khafid and Nurlaili (2017) have also reported significant and positive relationship between accountability and financial performance of co-operatives. Furthermore, among several factors that influence a co-operative performance, co-operative accountability is deemed a strategic factor influencing a co-operative's performance. Based on the above discussion, this study hypothesized the following:

*H<sub>2</sub> There is a statistically significant and positive relationship between accountability and financial performance.*

Transparency is one of the principles of governance; that means openness and willingness to provide clear information to shareholders and other stakeholders (Gitonga & Miano, 2020). It also involves openness and willingness to disclose timely and

relevant financial information that is truthful and accurate, information on existing policies, and transparency on adopting new policies. In their study on the effect of governance on deposit taking savings and credit co-operative societies in Kenya, the above authors, using multiple regression analysis, reported adverse performance of co-operative due to non-disclosure of audit report, which greatly affected the trust of customers and shareholders. On the other hand, transparency promotes successful performance (Mariana *et al.*, 2020). In studies by Mwendia (2018); Mwanja *et al.* (2014), and Mmari (2019), transparency has also shown a positive relationship with the performance of co-operatives. A high level of transparency is fundamental to co-operative performance. The above discussion leads to the following hypothesis:

*H<sub>3</sub> There is a statistically significant and positive relationship between transparency and financial performance.*

Co-operatives need a supportive policy framework to be sustainable, since it creates a large and vibrant co-operative sector (Mwanja *et al.*, 2014). They further stated that policy compliance could play a pivotal role in promoting the development of an independent co-operative movement. Kobia (2011) observes that co-operative policies include guidelines on the authority and duties of co-operative members as shareholders, function, and responsibilities of the board/management committee, values and strategies, co-operative communication, and monitoring performance of board/management committee. Additionally, effective co-operative policies involve members' awareness of bylaws, their ability to propose changes in the bylaws, board obligation to operate under a set of policies, procedures, and guidelines. A study by Iliopoulos (2012) found out that policies

regarding board composition and member participation, selection of directors on the basis of expertise, all affect performance of co-operatives. He further added that formal institutional environment (laws and regulations) is the most influential factor that affects performance of agricultural co-operatives and plays an important role in shaping the environment in which co-operatives operate. Mwanja *et al.* (2014) reported positive impact of co-operative policy compliance on financial performance. Wamalwa (2012) concluded that the introduction of regulations positively impacts the financial performance of co-operatives. Therefore, the foregoing discussion leads to the following hypothesis:

*H<sub>4</sub> There is a statistically significant and positive relationship between policy compliance and financial performance.*

Dimitrios *et al.* (2013) said that leadership is an important driving force in any organisation, because it positively contributes to their success. To ensure that a firm is profitable, leadership is the key to achieving greater performance (Onchieku & Ragui, 2019). Dimitrios *et al.* (2013) put this into perspective by arguing that leadership inspires other members of an organization to reach their wise decisions, which improves the viability of the business. The leadership capacity in rural co-operatives is directly related to literacy among its members, as leaders are usually elected from the member base (Lemmi & Nakkiran, 2019). Previous studies have reported a positive relationship between leadership and co-operative's performance (Lemmi & Nakkiran, 2019; Gutema, 2014). Dayanandan and Huka (2019) argued that efficient leadership is a cornerstone for the better performance of co-operatives that attract and retain members. They further added that effective co-operative leaders are crucial for determining

the co-operative's performance. According to Emanu (2012), one of the problems facing co-operatives in developing countries is the low capacity of co-operative leadership. The above discussion, therefore, leads to the following hypothesis:

*H<sub>5</sub> There is a statistically significant and positive relationship between leadership and financial performance.*

Co-operative structure specifies the distribution of the right and responsibilities among different co-operative participants such as board, managers, members, and other stakeholders, and spells out the rules and procedures for making decisions (Musuya, 2014). It includes organs of co-operative and clear functions, duties and responsibilities of leaders, terms of leaders, types, and composition of board committees, nomination of board members, and board meetings. According to Wuryani (2019), within the co-operative organisational structure, there must be a division of tasks and authority so that each function can carry out the work correctly and be accountable for the job. He further stated that clear duties and powers facilitate the evaluation of responsibilities and authorities. Studies conducted by Musuya (2014); Rebelo *et al.* (2017) have revealed improved financial performance as a result of effective co-operative structure. Pang and Jinmeng (2018) argued that the composition of management and commitment of members contribute to better performance. Atty *et al.* (2018); Oyerogba & Oseni (2021) found that the size of the board of directors significantly affected financial performance. He has further concluded a significant relationship between the board of directors' meetings and financial performance. Based on the above discussion, this study hypothesized the following:

*H<sub>6</sub> There is a statistically significant and positive relationship between co-operative structure and financial performance.*

## METHODOLOGY

The study employed relational design in cross-sectional research as recommended by different scholars (Bryman, 2012). It is cross-sectional in the sense that all relevant data were collected at a single point in time. In this study, a concurrent mixed-method approach of doing research was employed as recommended by Creswell (2009). The study was conducted in Northern and Western Provinces in Rwanda. It included four separate Districts of Musanze and Burera in Northern Province and Nyabihu and Rubavu Districts in Western Province. The targeted population was 76 co-operatives which had 25332 members in the above Districts (NCCR, 2019).

The Districts were purposively selected because of their predominance in Irish potato farming (NISR, 2017). Given that this study examined the financial performance of IPFCs, purposive sampling was used in selecting the IPFCs that comprise the study. Only co-operatives with audited financial reports were taken purposively to examine their financial performance (NCCR, 2019). Given the bookkeeping problem facing co-operatives in the area (FECOPPORWA, 2018), 32 co-operatives have managed to avail their audited financial statements. Yamane's (1967) formula for sample determination was used in determining the sample size of the co-operative members from a population of 11878 across 32 IPFCs (NCCR, 2018). Using Yamane formula, the sample size of co-operative members was computed as follows:

$$n = \frac{N}{1+N*e^2} \text{-----} (1)$$



Where n is the sample size, N is the population size and e is the margin of error (5%).

$$n = \frac{11878}{1+11878(0.05)^2} = 386.968 \approx 387$$

The computed sample size of co-operative members was distributed to each co-operative on the basis of Probability Proportional to Size (PPS), which is the quotient between the size of the population and the size of the sample. PPS formula adopted according to (Kothari, 2004) as presented below.

$$n_1 = \frac{nN_1}{N} \text{-----} (2)$$

Where n = determined sample size, N= target population, N<sub>1</sub>= total number of population in each co-operative, n<sub>1</sub> = number of samples in each co-operative. In selecting member respondents from the sample, a list of members in the selected co-operative was entered into Microsoft Office Excel to make a random selection.

This study adopted a concurrent mixed-methods approach whereby both quantitative and qualitative data collection techniques and analysis were used. This method aims to provide sufficient information about the focus of the study than either research approach alone. It is also used to avoid biases inherent in a single technique (Creswell, 2009).

Data were collected using a structured questionnaire, Key Informants Interviews (KIIs), and Focus Group Discussion (FGD). A structured questionnaire was designed to collect information from co-operative members. KIIs guide was applied to collect qualitative data from representatives of the National Co-operative Confederation of Rwanda, Irish Potato Federation, chairpersons of co-operative unions, Districts' Co-operative Officers, Sector Executive Secretaries, and all co-operative

managers. Concerning FGDs, two were conducted with board members and Supervisory committee. Each FDG was composed of five board members of primary co-operatives and three members of the supervisory committee. Furthermore, two FGDs were also conducted with co-operative members. The ones having more ideas were excluded from individual interviews to avoid monotony and formed part of FGD. Secondary data from the audited financial reports were collected in analysing financial performance measured in terms of ROA for the selected co-operatives. ROA has been reported by different researchers as the most popular value-based measure for financial performance of agricultural co-operatives (Zelhuda *et al.*, 2017; Taiwo & Adeniran, 2014) and is frequently used by financial analysts who perceive that the higher return on assets, the better the financial performance (Azis *et al.*, 2018).

To ensure the quality of scales employed, it was checked whether they meet the criteria of reliability and validity. Prior to the actual study, field-testing of the data collection tools to rectify some unfamiliar terms was employed. Some questions were omitted, and the concepts, which were intended to be captured through the questions, were improved. In testing reliability, Cronbach's alpha ( $\alpha$ ) was employed; its optimal figure depends on the purpose of the research (Churchill, 1979). Cronbach's alpha coefficient was used for that case, and the result indicated a good internal consistency of 0.885, which is above the acceptable standard of 0.7. A general accepted rule is that Cronbach's alpha values of 0.7 or higher indicate acceptable internal consistency (George & Mallery, 2003).

Data were analysed with both descriptive and inferential statistics. The descriptive statistics used include frequency distributions, minimum, maximum, and

mean. To analyze the perception of respondents about governance practices, five-point Likert scale was used. Likert scale responses to each governance practices were converted into summed composite scores in continuous data as recommended by Tabachnick & Fidell (1989) and Norman (2010). Interval size was calculated by subtracting the lowest category from the highest category and dividing by the total number of categories (Adel & Nahed, 2016). The interval size =  $\frac{5-1}{5}=0.8$ . Poor [1.00-1.8[, Fair [1.8-2.6[, Good [2.6-3.4[, Very good [3.4-4.2[, and Excellent [4.2-5].

Moreover, inferential statistics were used to test the formulated hypothesis, including ANOVA, Pearson correlation, and multiple regression. To perform multiple regression, the ROA for each of 32 IPFCs was assigned to its sampled corresponding members determined using probability proportional to size from a total of 387. ROA values were later regressed on governance practices converted into summed composite scores in continuous data as recommended by

Tabachnick & Fidell (1989), hence treated with parametric statistics without fear of wrong conclusion (Norman, 2010). This implies that financial performance of IPFCs was measured by comparing the selected co-operatives rather than their performance over a period of time. The following model was estimated to capture the relationship between governance practices and financial performance of sampled IPFCs.

$$\text{Performance} = \beta_0 + \beta_1 \text{MP} + \beta_2 \text{AC} + \beta_3 \text{TP} + \beta_4 \text{PO} + \beta_5 \text{LP} + \beta_6 \text{CS} + \varepsilon \text{ -----(3)}$$

Where Performance is agricultural co-operative performance;  $\beta_0$ , Intercept; MP, members' participation; AC, accountability; TP, transparency; PC, policy compliance; LP, leadership; CS, co-operative structure;  $\varepsilon$ , error term. Qualitative data obtained from KIIs and FGDs were analysed using content analysis. In this case, the interview data were transcribed, sorted, and arranged. Subsequently, the information obtained was coded into different themes, which were further interpreted into meaningful information.

Table 1: Description of variables as specified in the regression analysis

Variable Category	Variable name	Symbol	Variable Description	Expected sign	Existing studies
Co-operative Governance	Members' Participation	MP	Active participation of members in the co-operative in terms of their attendance in meetings, decision-making, and others.	+/-	Okonkwo, <i>et al.</i> (2017); Hammad, <i>et al.</i> (2016); Huang, <i>et al.</i> (2015); Abdulahi & Pethronila (2011)
	Accountability	AC	Monitoring system to check compliance to rules and regulations, Board accountability and responsibility for performance results, and board evaluation by general assembly.	+	Diminah, <i>et al.</i> (2018) and Drona & Walsh (2018)
	Transparency	TP	Information of existing policies, transparency on adoption of new policies, communicating financial information and others.	+	Gitonga & Miano (2020) and Mwendia (2018)
	Policy Compliance/regulations	PC	Members' awareness of bylaws, their ability to propose changes in the bylaws, board obligation to operate under a set of policies, procedures, guidelines, and others.	+/-	Mwanja, <i>et al.</i> (2014)
	Leadership	LP	Leadership experience, understanding the concept of co-operative, interpersonal skills, efficient conflict solving abilities, required education level, adequate computer skills, financial management capacity, accounting, leadership, and managerial skills.	+	Lemmi & Nakkiran (2019); Mwanja, <i>et al.</i> (2014); Gutema (2014) and Ssekakubo <i>et al.</i> (2014)
Co-operative structure		CS	Organs of co-operative and clear functions, duties and responsibilities of leaders, terms of leaders, types and composition of board committees, nomination of board members, and board meetings.	+/-	Musuya (2014) and Franken and cook (2013)
Financial Performance	Return on Assets	ROA	A measure of how efficiently a co-operative uses its assets to generate profits, calculated by Net profit/total assets.		Azis <i>et al.</i> (2018); Zelhuda <i>et al.</i> (2017); Taiwo & Adeniran (2014)

Before running multiple regression, the assumption of normality was checked using Kolmogorov-Smirnov and Shapiro-Wilk tests. Both tests indicated that the variables were not normally distributed. Data were transformed to the natural logarithm to solve non-normality issue as suggested by Field (2009) and still data were not normally distributed. Though, parametric tests can be used with Likert data with no-normal distributions without fear of coming to the wrong conclusion (Norman, 2010). Furthermore, multiple regression assumes that the errors, which are the residuals between the actual score and the estimated score obtained through the regression equation, are independent, and there is no serial correlation (Stevens, 2009). The correlation matrix in Table 3 tested the assumption of multicollinearity using the correlation matrix. As indicated, no multicollinearity problem exists since none of the variables correlate above 0.8 (Senaviratna & Cooray, 2019). Variance Inflation Factor (VIF) and Tolerance (1/VIF) were further used as diagnostic test to ascertain any sign of multicollinearity among explanatory variables. When VIF is greater than 10 and 1/VIF is lower than 0.1, it implies poor estimates (Gujarati, 2004). As reported in

Table 3, all VIF values are below 10, while all 1/VIF are greater than 0.1, indicating that multicollinearity among explanatory variables is not a major problem in the model.

Durbin Watson test statistic was used to test the occurrence of serial correlation between residuals. Table 4 depicts a model summary table that includes a Durbin-Watson statistic of 1.748, which is between 1.5 and 2.5, as recommended by Garson (2012), and therefore, the data is not auto correlated.

### RESULTS AND DISCUSSION

Table 2 reports the summary statistics of governance practices and financial performance of IPFCs obtained from Likert scale with five levels, Poor [1.00-1.8[Fair [1.8-2.6[Good [2.6-3.4[Very good [3.4-4.2[and Excellent [4.2-5[(Adel & Nahed, 2016). It includes minimum, maximum, and mean values. Regarding governance factors, findings reveal member participation mean value (3.8); accountability (3.6); transparency (3.3); policies (3.6); leadership (3.7); and co-operative structure (3.5). Except for transparency, there is an indication of a very good level of governance practices implementation among IPFCs, supported by the overall mean of 3.6.

*Table 2: Summary statistics*

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Members' participation	387	2.00	5.00	3.8019	.61499
Accountability	387	2.00	4.75	3.6176	.67888
Transparency	387	1.45	4.55	3.3162	.79655
Policies Compliance	386	2.00	5.00	3.5724	.72433
Leadership	387	2.43	4.65	3.6861	.51467
Co-operative structure	387	2.00	4.30	3.5437	.52663
<b>Overall</b>				<b>3.5896</b>	<b>0.6427</b>
ROA	387	.01	.66	.1688	.15736
Valid N (listwise)	386				

Considering the maximum and minimum values in Table 2, it was observed that some IPFCs implement governance practices effectively while others experience inadequate implementation, which limits and impairs their performance. With inadequate governance in co-operatives, co-operative

performance is impaired (Ricardo and Mery, 2019). Finally, summary statistics show a ROA minimum value of 0.01 (1%) and a maximum of 0.66 (66%) with a mean value of 0.17 (17%), indicating that few IPFCs report satisfactory returns while others are struggling to achieve desired performance. In

a KII with District Co-operative Officer (DCO), he provided the reason: “*Most IPFCs are not growing and achieving better financial performance since, during registration, they were not required to present their business plan showing how they will become financially self-reliant. Therefore, economic growth and financial performance are not possible because most are not doing business; they are socially but not business oriented*” (DCO, 19<sup>th</sup> October 2019).

**Correlation analysis**

Before running multiple regression, Pearson correlation coefficient was applied to

*Table 3: Correlation Matrix and Variance Inflation Factor*

	ROA	MP	AC	TP	PO	LP	CS	1/VIF	VIF
ROA	1								
MP	.688**	1						.415	2.409
AC	.611**	.636**	1					.460	2.175
TP	.742**	.709**	.698**	1				.212	4.712
PO	.663**	.651**	.597**	.770**	1			.257	3.895
LP	.734**	.671**	.583**	.792**	.776**	1		.212	4.721
CS	.540**	.500**	.409**	.606**	.758**	.774**	1	.286	3.491

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Regression results**

This study applied multiple regression analysis to examine the aggregate effect of the dependent variables on the dependent variable and determine the most influencing factors that affect the financial performance of IPFCs. The first output of interest was the good fit of the model (Table 4). This table presents the R, R<sup>2</sup>, adjusted R<sup>2</sup>, and the standard error of the estimates, which is used to determine how well a regression model fits the data. Results indicate that the value of overall R-square is 0.645, showing all seven variables have described 64.5% disparity in financial performance measured in terms of ROA. Moreover, 35.5% (100%-64.5%) of the variation results from factors other than the predictors included in the model. Adjusted R square is another essential factor to determine how well the model fits. A value of .640 in

examine the association between governance practices and financial performance of IPFCs. As reported in Table 3, the result shows a positive relationship between members' participation, accountability, transparency, policies, leadership, and co-operative structure with financial performance. This indicates that increase in member's participation, accountability, transparency, policies, leadership, and co-operative structure increase the financial performance of IPFCs in the study area. Factors of governance practices are positively related to financial performance.

this study indicates that 64.0% of the variation in the outcome variable is explained by the predictors to keep in the model. Results of the F-ratio in the table tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically and significantly predict the dependent variables,  $F(6, 380) = 115.321, p < .005$ , indicating that the regression model is a good fit for data.

Results from the regression analysis in Table 4 found that, among governance factors in IPFCs, members' participation, accountability, transparency, and leadership, significantly and positively affected the financial performance of IPFCs. In contrast, the co-operative structure has been found to have insignificant and negative effect on performance.

Table 4: Governance factors influencing financial performance

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients Beta		
(Constant)	-4.152	0.176		-23.581	0.000
Members' participation	1.456	0.305	0.223	4.776	0.000***
Accountability	0.520	0.261	0.090	1.995	0.047**
Transparency	1.046	0.272	0.236	3.841	0.000***
Policies	0.371	0.292	0.071	1.273	0.204
Leadership	2.813	0.523	0.349	5.382	0.000***
Co-operative structure	-0.535	0.393	-0.073	-1.361	0.174
R	.803				
R <sup>2</sup>	.645				
Adjusted R <sup>2</sup>	.640				
Durbin-Watson	1.748				
Df	6				
Residual	380				
F	115.321				
Sig.	.000				

\* = Significant at 10%, \*\* = Significant at 5%, \*\*\* = Significant at 1%

Among all the explanatory variables, leadership was the most influencing factor that affected the financial performance of IPFCs ( $b = 2.813$ ,  $p < 0.001$ ). This result supports H<sub>5</sub>, states that there is a statistically significant and positive relationship between leadership and financial performance. The findings are in line with the previous studies that support the theoretical assumption that leadership positively influences financial performance of co-operatives (Lemmi & Nakkiran, 2019; Gutema, 2014). Effective leadership, which emphasises the leaders' technical, human, and conceptual skills, ensures a smooth run of the co-operative and successful performance. However, data from members shows knowledge gap among IPFCs leaders. FGD with a member reveals the following:

*Leadership in our co-operative is poor; our leaders lack the necessary skills to manage co-operatives. Due to poor leadership and reported cases of mismanagement, we are experiencing a big challenge from government interference in the management of our co-*

*operative. Local authorities are highly involved in decisions made by our co-operatives, including the nomination of leaders and financial decisions (Co-operative member, October 13, 2019).*

The above caption is supported by the information reported in Table 5, which shows that only 9% of supervisory committees have financial management capacity, 10% have managerial capacity; 10% have accounting skills, and only 15% have computer skills. This is a big challenge to the governance of IPFCs, since the supervisory committee should be able to supervise the management of co-operative, monitor how the internal auditor discharges his/her duties, and check books of accounts in order to accomplish its duties as stipulated by Rwanda co-operative law (GoR, 2021), hence failure to address issues that affect day-to-day management of the co-operative. According to Rwanda Governance Board (RGB), there is lack of skills among the staff and management in most co-operatives, as hiring qualified personnel is not seen as cost beneficial (RGB, 2018).

Table 5: Governance Practices among IPFCs

Members' frequency of participation in co-operative activities (#387)		Never		Rarely		Frequently	
		F	%	F	%	F	%
Regular meetings		54	14	61	16	272	70
General assembly		13	3	52	14	322	83
Election and voting process		16	4	31	8	340	88
Discussions and decisions on finance and budget		24	7	76	21	278	72
Discussion on financial audit report		37	10	106	27	244	63
Approving the bylaws		49	13	19	5	319	82
Training and education		163	42	46	12	178	46
<b>Co-operative structure (#32)</b>							
Board members	Co-ops with five board members 24(75%)	Co-ops with below five members 8(25%)					
Supervisory Board	Coops with 3 Supervisory board members 22 (69%)	Coops with below 3 Supervisory board members 10(31%)					
Manager	Co-ops with managers 8(25%)	Co-ops without managers 24(75%)					
Internal Auditor	Co-ops with internal auditor 2(6%)	Co-ops without internal auditor 30(94%)					
<b>Transparency (#32)</b>							
Co-operatives that make their financial reports public on notice board	Co-ops with financial reports made public on notice board 3(9%)	Co-ops which do not make financial reports public on notice board 29(91%)					
<b>Leadership and managerial skills</b>							
Leadership skills	Member of supervisory board (#81)			Managers (#8)			
Computer skills	12(15%)			8(100%)			
Financial management capacity	7(9%)			6(75%)			
Accounting skills	8(10%)			6(75%)			
Managerial skills	8(10%)			6(75%)			
<b>Accountability (#32)</b>							
Number of co-operatives with reported cases of mismanagement and corruption by some of elected officials		None	1-5 Cases	6-10 Cases	Over 10 Cases		
		14(44%)	12 (37%)	6(19%)	0(0%)		

However, despite poor leadership skills in some IPFCs, government interference is against the co-operative principle of democratic member control. Co-operatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions (International Co-operative Alliance [ICA], 2015). The challenge co-operatives interfacing with government is achieving adequate support without undue government influence over co-operatives. In extremis, co-operative will be challenged to resist the tendency of some politicians, who do not understand the nature and benefits of co-

operative society, to seek demutualisation and destruction of co-operatives (ICA, 2015). The major obstacle to co-operative progress in Africa is undue control and interference in the daily running of the business. Government should not interfere but intervene by ensuring that political, legal and administrative platforms are in place to help co-operatives develop (Hammond & Luiz, 2016). Independence from the government does not exclude it from recognizing the value of co-operatives and supporting their development. This can be done by legislation and policies that promote the development of co-operatives while preserving their

independence and autonomy (ICA, 2015). As per co-operative principle of education, training and information, IPFCs should keep their members and staff educated, informed and trained to govern their co-operatives without an external influence and make their co-operative successful. One of the Board members further said:

*Since 2015, our co-operatives experienced the interference of two companies involved in the management of collection centres and sale of Irish potatoes. Initially, there were assigned to deal with the alleged disorganization in selling Irish potato produce, ensuring security, and dealing with unscrupulous buyers. However, it is observed that the companies took over the Irish potato business to the detriment of farmers and co-operatives. This problem has severely hindered the growth of our co-operatives and the individual benefits of farmers (Board member, Oct. 13, 2019).*

These captions indicate that poor leadership among some IPFCs encourages local authorities' involvement in co-operative administration. For co-operatives to be independent, they should ensure effective internal governance and performance in order to limit the interference of government entities. According to Gutema (2014), the performance of farmers' co-operatives depends on effective leadership. Co-operative with poor leadership is more likely to be forced out of the market by more efficient organisations.

The estimated coefficients in Table 4 also show a positive and significant relationship between member participation and performance ( $b = 1.456$ ,  $p < 0.001$ ). The result supports  $H_2$ , namely that there is a statistically significant and positive relationship between member participation and financial performance. As observed, co-

operative with the active participation of members in co-operative activities, including active attendance at meetings, decision-making process participation, and supporting business activities, showed improved performance (ROA). Findings in Table 5 indicate a good level of members' participation in co-operative activities. As revealed in the table, 70% of members participate frequently in regular meetings, 83% attend general assembly frequently, 88% participate frequently in election and voting process, 72% participate frequently in discussions and decisions on finance and budget, 63% participate in discussions of financial audit report, and 82% frequently participate in approving the bylaws. This result supports the study by Hammad, *et al.* (2016) and Mahazril'Aini, *et al.* (2012), which reports a positive and significant relationship between member participation and ROA, suggesting that active participation of members in co-operative activities would help to maintain the direction of the co-operative and ensure its success in the long term. However, findings from this study do not conform to the study by Okonkwo, *et al.* (2017) which indicates a negative effect of member participation on co-operatives financial performance.

Results have also shown a significant and positive relationship between transparency and performance ( $b = 1.046$ ,  $p < 0.001$ ). This result supports  $H_3$ , states that there is a statistically significant and positive relationship between transparency and financial performance. IPFCs with high level of transparency are expected to achieve better performance. Transparency involves information about existing policies, transparency on adoption of new policies, and openness and willingness to disclose timely and relevant financial information that is



truthful and accurate. The above results concur with the study by Gitonga and Miano (2020); Mwendia (2018) who reported adverse performance of co-operatives due to non-disclosure of audit report, which greatly affected the trust of the customers and members. However, as shown in Table 5, only 3(9%) of IPFCs post their financial reports on the notice board, posing a challenge to transparency in most of IPFCs in the study area.

Furthermore, the results in Table 4 indicate that co-operative structure does not affect ROA ( $b = -.535, p > 0.1$ ). The result doesn't support  $H_6$ , which states that there is a statistically significant and positive relationship between co-operative structure and financial performance. This study does not support Musuya (2014) findings that reported correlation between co-operative structure and ROA. This negative and not statistically significant relationship between co-operative structure and performance (ROA) may be attributable to what was revealed by some members in the above captions. Local authorities intermeddle with the co-operative structure in the area under the pretext of addressing reported mismanagement and poor leadership problems. There was a time when some co-operative organs were even dissolved, and private companies took over their responsibilities. Findings in Table 5 indicate that in 32 IPFCs, only 8(25%) have managers, while 10(31%) have below 3 (three) supervisory board members required by Rwanda co-operative law. Contrary to Rwanda co-operative law, 8(25%) IPFCs have below 5 (five) board members. Among 32, co-operatives only 14 (44%) have not reported any case of mismanagement or corruption.

The results are supported by agency theory; according to the general formulation of the principal-agent model, if members are not able to monitor managers' behavior, this can prompt them to behave opportunistically by maximizing their own interest (Russo, *et al.*, 2000). As mentioned above, there were cases of mismanagement that led to poor financial performance for some of the IPFCs, resulting in government interference in their management and administration. The results of the study also reported government interference in management and administration of co-operatives which is against the co-operative principle of democratic member control. As mentioned above, members should be able to run their co-operative by self-governing without the influences of wider government policy or other organizations. Furthermore, contrary to the neoclassical theory of co-operative, most IPFCs are not economically and financially sustainable to achieve their members' benefits.

#### **CONCLUSION AND RECOMMENDATIONS**

This study aimed to examine the governance factors that affect the financial performance (ROA) of IPFCs in Rwanda. The results show that member participation, accountability, transparency, and leadership are significant factors contributing to the financial performance of IPFCs. However, the findings reveal that most IPFCs have ineffective leadership to run their co-operatives smoothly. Leadership problems identified among IPFCs include understanding the concept of co-operative, efficient conflict solving abilities, interpersonal skills, managerial skills, technical skills, financial management capacity, accounting skills, and the required education level. IPFCs should be aware that ineffective internal governance

encourages government interference in management and administration of their co-operatives. They should thus keep their members and staff educated, informed and trained to govern their co-operatives successfully without an external influence. On the other hand, Rwanda Co-operative Agency (RCA) and other community development partners should organise IPFCs leaders' capacity-building trainings for self-governance to curtail the interference of local authorities within the administration of co-operatives under the pretext of reported mismanagement and poor leadership.

Due to the limitations of the study associated with exhausting all factors influencing financial performance of co-operatives, it is recommended that future studies consider other factors like legal, political factors, technological and cultural factors affecting the performance of farmers' co-operatives. This paper generates facts to inform IPFCs, community development partners, and policymakers to identify the major factors affecting farmers' co-operatives' financial performance. In addition, the study contributes to the literature by analyzing governance factors that affect the financial performance of agricultural co-operatives in developing countries' perspective.

**Funding:** This work was supported by the German Academic Exchange Service (DAAD).

## REFERENCES

- Abdulahi, T. & Pethronila, O. (2011). Effect of Members' Participation on Co-operative Performance: A study of Selected Multipurpose Co-operative Societies in Awka South LGA of Anambra State, Nigeria. *International Journal of Multidisciplinary Research*, 4(1), 117-126.
- Adel, L. & Nahed, A. (2016). *Measuring Farmers' Satisfaction with the Services of Agricultural Service Providers in Minya and BeniSuef Governorates*. CARE International in Egypt.: Cairo. 48pp.
- Aini, Y. M., Hafizah, H. & Zuraini, Y. (2012). Factors affecting co-operatives' performance in relation to strategic planning and members' participation. *Procedia – Social and Behavioural Sciences*, 65(1), 100-105.
- Anania, P. (2021). Members' education and training for enhanced good governance in co-operatives: Experience from members' empowerment in co-operative program in Kilimanjaro and Arusha Regions, Tanzania. *Review of International cooperation*. 106(1), 55-69.
- Atty, A., Moustafasoliman, M. & Youssef (2018). The effect of board of director's characteristics on firm's financial performance: An empirical study on the most active firms in the Egyptian stock exchange. *Open Access Library Journal*, 5(11), 1-19.
- Azis, M., Azis, M. D., Rosikah, & Prananingrum, D. (2018). Effect of Return on Asset, Return on Equity, Earning Per Share on Corporate Value. *International Journal of Engineering and Science*, 7(3), 6-14.
- Bijman, J., Hanisch, M. & Van der Sangen, G. (2014). Shifting control? The changes of internal governance in agricultural co-operatives in the EU. *Annals of Public and Co-operative Economics*, 85(4), 641-661.
- Bryman, A. (2012). *Social Research Methods*. Fourth edition, Oxford University Press Inc., New York. 766p.
- Carter, S. M. & Greer, C. R. (2013). Strategic leadership: values, styles, and organisational performance. *Journal of Leadership and Organisational Studies*, 20(4), 375-393.
- Chambo, S. A. & Diyamett, M. (2010). Governance in Co-operative organizations in Tanzania (Paper presentation). International Co-operative Research Conference, Moshi University

- College of Co-operatives and Business Studies, Moshi, Tanzania.
- Cheong, E. (2006). The agricultural co-operative business structure in context: A Western Australian Study. Ph.D. Thesis. Edith Cowan University: Western Australia. 308pp.
- Churchill, G. A. (1979). A Paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64-73. <https://psycnet.apa.org/doi/10.2307/3150876>
- Clarke, T. (2004). Theories of corporate governance: *The philosophical foundations of corporate governance*. Routledge: London. 370pp.
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3<sup>rd</sup> Edition). SAGE Publications: London. 295pp. <https://doi.org/10.2307/1523157>
- Dayanandan and Dignachew (2015). Good governance practice for co-operative development in Ethiopia. *National conference on co-operative development*, 7-8 June 2015, Ethiopia. 1-15.
- Dayanandan, R. & Huka, R. (2019). Determinants of leadership efficiency in co-operative organisations!! An investigation. *International Journal of Research in Social Sciences*, 9(2), 121-151.
- Dayanandan, R. (2013). Good governance practice for better performance of community organisation-myths and reality. *Journal of Power, Politics and Governance*, 1(1), 10-26.
- Diminah, C., Ondiek, B. A. & Tibbs, C. (2018). The Contribution of Board Accountability on the Performance of SACCO's in Kakamega County, Kenya. *International Journal of Economics, Commerce and Management*, 6(5), 416-435.
- Dimitrios, N. K., Sakas, D. P. & Vlachos, D. S (2013). Analysis of strategic leadership simulation models in non-profit organisations. *Social and Behavioural Sciences*, 73(1), 276-284.
- Drona, L. P. & Walsh, J. (2018) Impact of Good Governance on Performance of Co-operatives in Nepal. *Management and Marketing Journal*, 16(2), 206-222.
- Eggertsson, T. (1990). *Economic behavior and institutions*. Cambridge University Press. Cambridge. 401pp.
- Emana, B. (2012). Co-operative movement in Ethiopia. *Workshop on perspectives for co-operatives in East Africa*, October 2-3, 2012. Uganda. 44pp.
- Emelianoff, I. V. (1942). *Economic Theory of co-operation: Structure of co-operative organisations*. I.V Emelianoff. Washington, DC. 269pp.
- Enke, S. (1945). Consumer co-operatives and economic efficiency. *American Economic Review*, 35(1), 148-155.
- FAO (2016). *Strengthening linkages between small actors and buyers in the roots and tubers Sector in Africa: Work plan Rwanda*. Food agriculture organization (FAO): Kigali. 15pp.
- FAOSTAT (2015). FAOSTAT Database. Rome, Italy: FAO
- Fauquet, G. (1965). Le secteur coopératif. *Archive Internationales de Sociologie de la Coopération*, 17(1), 27-31.
- Field, J. W. (2009). *Discovering Statistics using SPSS*. (3<sup>rd</sup> Edition). Sage Publication Inc: New Delhi. 822pp.
- Franken, J. R. & Cook, M. L. (2013). Impact of Board Structure and Process on Co-operative Performance. Paper Presented at the Agricultural and Applied Economics Association's 2013 AAEA and CAES Joint Annual Meeting, Washington, DC, August 4-6, 2013.
- Fulton, M. (2001). Leadership in Democratic and Participatory Organisations. *Canadian Journal of Agricultural Economics*, 49(4), 381:394.
- Garson, G. D. (2012). *Testing Statistical Assumptions*. Statistical Associate Publishing: North Carolina. 52pp.
- George, D. & Mallery, P. (2003). *SPSS for Window step by step: A simple guide and reference, 11.0 update* (4<sup>th</sup> Edition). Allyn & Bacon: Boston. 400pp.

- Gitonga, E. & Miano, A. (2020). The effect of corporate governance practices on performance of deposit taking savings and credit co-operative societies in Kiambu County, Kenya. *International Journal of Business Management, Entrepreneurship and Innovation*, 2(2), 64-81.
- GoR (2021). *Official Gazette n° Special of 14/05/2021: Law Governing Co-operative in Rwanda*. Government of Rwanda (GoR): Kigali. 142pp.
- Gujarati, D. (2004). *Basic Econometrics*. (4<sup>th</sup> Edition). McGraw-Hill: New York. 1027pp.
- Gutema, A. K. (2014). The role of Leadership on Agricultural Co-operative Performance: A case Study of Selected Coffee Co-operatives in Ethiopia. Thesis for award of PhD degree at UNIS School of Business Leadership: South Africa, 208pp.
- Hammad, A. K. H., Mahazril'Aini, J., Abdullah, H. & Siti, H. A. B. A. (2016). Factors Affecting Performance of Co-operatives in Malaysia. *International Journal of Productivity and Performance Management*, 65(5), 641-671.
- Hammond, D. & Luiz, J. (2016). The co-operative model as a means of stakeholder management: An exploratory qualitative analysis. *South African Journal of Economics and Management Sciences*, 19(4), 630-646.
- Hart, O. (1989). An economist's perspective on the theory of the firm. *Columbia Law Review*, 89(7): 1757-1774.
- Harun, M. Z., & Mahmood, R. B. (2012). The relationship between group cohesiveness and performance: An empirical study of co-operatives movement in Malaysia. *International Journal of Co-operative Studies*, 1(1), 15-20.
- Helmberger, P. & Hoos, S. (1962). Co-operative Enterprise and Organization Theory. *American Journal of Agricultural Economics*, 44(2), 275-290.
- Huang, C. C., Suhana, Z., Rohana, O., Abdul, A. & Siti, A. (2015). Influence of Co-operative Member Participation and Gender on Performance. *Journal of Southeast Asian Research*, 2015(2015), 1-9.
- Hussein, I. (2020). Assessing the performance of Agricultural marketing co-operative societies in Mbinga District, Tanzania. MSc Dissertation. Muzumbe University: Tanzania. 74pp.
- ICA (2015). *Guidance notes to the cooperative principles*. International Co-operative Alliance (ICA): Belgium. 120pp.
- Iliopoulos, C. (2012). *Support for farmer co-operatives – Final report*. European Commission: Greece. 127pp.
- ILO (2017). *Evaluating the results of an agricultural co-operative support program: Business practices, access to finance, youth employment*. International Labor Organisation (ILO): Geneva. 38pp.
- Jansen, M. C. & Meckling, W. H. (1976). Theory of the Firm: Managerial Behaviour, Agency Cost, and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360.
- Johnson, H. & Shaw, L. (2014). Rethinking rural co-operatives in development: introduction to the policy arena. *Journal of International Development*, 26(5), 668-682.
- Karaan, A. S. M. (1999). Bridging the small-big divide: A transaction cost approach to enterprise modelling for mussel mariculture in Saldanha Bay. *Agrekon*, 38(4), 680-692.
- Khafid, M. & Nurlaili, D. (2017). The mediating role of accountability in the influence of co-operative characteristics in its financial performance. *International Journal of Economic Research*, 15(5), 191-200.
- Kobia, S. K. (2011). *The co-operative movement in Kenya. Challenges and opportunities*. Lukiko Consulting Trust Publishers: Nairobi. 195pp.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* (Second Edition). New Age International Publishers: New Delhi. 401pp.

- Lan, L. L. & Heracleous, L. (2010). Rethinking agency theory: The view from law. *Academy of Management Review*, 35(2), 294-314.
- Lemmi, M., & Nakkiran, S. (2019). Effectiveness of Leadership on Business Performance of Farmers Agricultural Co-operative Unions in Horo Guduru Wollega Zone, Ethiopia *International Journal of Scientific and Research Publication*, 9(12), 282-290.
- Lepe, M. (2016). The role of agriculture cooperatives and farmer organizations on the sustainable agricultural practices adoption in Uganda. Master thesis in Rural Development. Ghent University: Belgium, 96pp.
- Mahazril', Y., Hafizah, H. A. K. & Zuraini, Y. (2012). Factors affecting co-operatives' performance in relation to strategic planning and members' participation. *Procedia – Social and Behavioral Sciences*, 65(1), 100-105.
- Mahoney, J. T. (1992). The choice of organizational form: Vertical financial ownership versus other methods of vertical Integration. *Strategic Management Journal*, 13(8), 559-584.
- Mariana, C. M., Ana Maria, B., Lui, B., Conceição, C., Deolinda, M., Denise, P., Isabel, V. & Brizida, T. (2020). A framework for co-operatives' transparency – A linked open data approach. *XVIII Congreso Internacional de Investigadores en Economía Social y Cooperativa. La Economía Social: Herramienta para el fomento del desarrollo sostenible y la reducción de las desigualdades. Porto*. 16pp.
- Marshall, A. (1890). *Principles of economics* (8<sup>th</sup> Edition). Macmillan: London. 627pp.
- Meador, E. & O'Brien, D. (2019). Placing Rwanda's agriculture boom: Trust, women empowerment and policy impact in maize agricultural co-operatives. *Food Security*, 11(4), 869-880.
- Melak, D., Derso, B. & Melesse, B. (2018). Governance of Multipurpose Agricultural Co-operatives in North Gondar Zone, Ethiopia. *International Journal of Scientific Research and Management*, 6(8), 628-635.
- MINAGRI. (2018). *Strategic Plan for Agriculture Transformation 2018-24: Planning for Wealth*. Ministry of Agriculture and Animal Resources (MINAGRI): Kigali. 235pp.
- MINICOM. (2018). *National Policy on Cooperatives in Rwanda: Toward Private Co-operative Enterprises Business Entities for Socio-Economic Transformation*. Ministry of Trade and Industry (MINICOM): Kigali. 53pp.
- Mmari, G. A. (2019). The impact of corporate governance on performance of Savings and Credit Co-operative Societies in Tanzania: Experience from Moshi Municipality. *International Journal of Economics, Commerce and Management*, 7(6), 421-438.
- Mooney, P. & Gray, T. (2002). *Co-operative conversion and restructuring in theory and practice (RBS report 185)*. Washington, United States Department of Agriculture, Rural Business Co-operative Service. 18pp.
- Munyasia, G. W. (2016). Assessment of Corporate Governance on Performance of Savings and Credit Co-operative Societies in Kakamega County. *International Journal of Advances in Management and Economics*, 5(6), 51-56.
- Musuya, D. N. (2014). Corporate Governance Practices and Performance of Coffee Farmer's Co-operative Societies in Kenya. *International Journal of Social Sciences and Entrepreneurship*, 1 (13), 148-161.
- Mwanja, B. K, Marangu, W. N, Wanjere, D. M. & Thuo, K. J. (2014). Effect of Corporate Governance on Performance of Savings and Credit Co-operatives Societies in Kakamega County. *European Journal of Business and Management*. 6(30), 123-136.
- Mwendia, R. M. (2018). Corporate governance practices and financial

- performance on deposit taking savings and credit co-operatives in Nairobi City, Kenya. MSc Dissertation. Kenyatta University: Kenya, 96pp.
- NCCR (2019). *Irish Potato co-operatives data*. National co-operative Confederation of Rwanda (NCCR): Kigali. 16pp.
- NISR (2017). *Seasonal Agriculture survey 2017*. National Institute of Statistics of Rwanda(NISR): Kigali. 167pp.
- NISR (2018). *Seasonal Agriculture survey 2018*. National Institute of Statistics of Rwanda(NISR): Kigali. 79pp.
- Niyonzima, T., Gisanabagabo, S., Butera, E., Musabyimana, R. W., Murindwa, K. D., Hakizimana, P., Kanyamihigo, K. J. P., Masengesho, E. J., Habimana, G. S. & Kadondi, V. (2021). Understanding How Co-operatives Use Financial Reports to Make Decisions: Evidence from Agricultural Co-operatives in Rwanda. *Journal of Accounting and Marketing*, 10(3), 1-15.
- Nkundabanyanga, S. K. (2016). Board governance, intellectual capital and firm performance: Importance of multiplicative effects. *Journal of Economic and Administrative Sciences*, 32(1), 20-45.
- Nkurunziza, F. (2019). Factors affecting performance in Gasabo District. MSc. Dissertation. University of Rwanda: Rwanda, 92pp.
- Norman, G. (2010). Likert scale, levels of measurement and the “Laws” of statistics. *Advances in Health Sciences Education*, 15(5), 625-632.
- Okonkwo, J., Njideka, J. O. & Ogbu, O. (2017). Effect of Type and Participation on Co-operative Financial Performance Orumba South L.G.A of Anambra State. *International Journal of Social Sciences and Management Research*, 3(8), 104-114.
- Onchieku, E. N. & Ragui, M. (2019). Effect of strategic leadership on performance of housing co-operative societies in Nairobi City County, Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(5), 411-433.
- Ortmann, G. F. & King, R. P. (2007). Agricultural cooperatives I: History, theory and problems. *Agrekon*. 46(1), 18–46.
- Othman, A., Kari, F., Jani, R. & Hamdan, R. (2012). Factors influencing co-operative membership and share increment: An application of the logistic regression analysis in the Malaysian co-operatives. *World Review of Business Research*, 2(5), 24-35.
- Oyerogba, E.O. & Oseni, M. (2021). The impact of co-corporate governance on financial performance of co-operative societies. *Journal of Research in Humanities and Social Science*, 9(12), 56-65.
- Pang, S. & Jinmeng, Y. (2018). A study on enterprise risk management and business performance. *Journal of financial risk management*, 7(1), 123-138.
- Phillips, R. (1953). Economic nature of the co-operative association. *American Journal of Agricultural Economics*, 35(1), 74-87.
- Rebelo, J. F., Leal, C. T. & Teixeira, Â. (2017). Management and financial performance of agricultural co-operatives: A case of Portuguese olive oil co-operatives. *Revista de Estudios Cooperativos*, 123(1), 225-249.
- Reynaud, J. D. (1989). Les règles du jeu. L'action collective et la régulation sociale. *Revista de Sociologia*, 36(1), 141-145.
- RGB (2018). *Governance Assessment Report, 2018: Assessment of Co-operatives*. Rwanda Governance Board (RGB): Kigali. 20pp.
- Ricardo, V. & Mery, S. (2019). Co-operative Corporate Governance Manual for Board of Directors, Supervisory Board and Management. 102 pp.
- Richards, T. J., Klein, K. K. & Walburger, A. (1998). Principal-Agent relationships in agricultural cooperatives: An empirical analysis from rural Alberta. *Journal of Cooperatives*, 13(1), 21–34.

- Royer, J. S. (1999). Cooperative Organizational Strategies: A Neo-Institutional Digest. *Journal of Cooperatives*, 14(1), 44–67.
- Royer, J. S. (2014). The theory of agricultural co-operatives. *Journal of Co-operatives*, 28(1), 1-19.
- Russo, C., Weatherspoon, D., Peterson, C. & Sabbatini, M. (2000). Effects of managers' power on capital structure: A study of Italian agricultural cooperatives. *International Food and Agribusiness Management Review*, 3(1), 27–39.
- Senaviratna, N. & Cooray, T. (2019). Diagnosing multicollinearity of logistic regression model. *Asian Journal of Probability and Statistics*, 5(2), 1-9.
- Shimira, F., Afloukou, F. & Maniriho, F. (2020). A review on challenges and prospects of potato (*Solanum tuberosum*) production systems in Rwanda. *Journal of Horticulture and Postharvest Research*, 3(1), 97-112.
- Smith, A. (1776). *The wealth of nations*. Oxford University. Oxford. 543pp.
- Ssekakubo, J., Ndiwalana, G. & Lwanga, F. (2014). Managerial Competency and the Financial Performance of Savings, Credit, and Co-operative Societies in Uganda. *International Research Journal of Arts and Social Science*, 3(3), 66-74.
- Stevens, J. P. (2009). *Applied Multivariate Statistics for Social Sciences*. (4<sup>th</sup> Edition). Routledge: New York. 644pp.
- Sunghye, M. & Sang-ho, L. (2020). A strategy for sustainable development of co-operatives in developing countries: The success and failure case of agricultural co-operatives in Musambira Sector, Rwanda. *Sustainability*, 12(20), 1-24. <https://doi.org/10.3390/su12208632>
- Sykuta, M. E. & Chaddad, F. R. (1999). Putting theories of the firm in their place: A supplemental digest of the new institutional economics. *Journal of Cooperatives*, 14(1), 68–76.
- Tabachnick, B. G. & Fidell, L. S. (1989). *Using multivariate statistics* (7<sup>th</sup> edition). Pearson Education Inc.: California Pearson. 815p.
- Taiwo, A. M. & Adeniran, R. T. (2014). Does corporate social responsibility improve an organization's financial performance? Evidence from Nigerian banking sector. *IUP Journal of corporate governance*, 13(4), 52-60.
- Tekeste, B., Muthyalu, M. & Azmera, G. (2014). A study on financial performance of multipurpose co-operative unions of Tigray Region, Ethiopia. *International Journal of Community and Co-operative Studies*, 1(1), 15-26.
- Tewodros, B. A. (2017). Assessment of Factors Affecting Performance of Agricultural Co-operatives in Wheat Market: The Case of Gedeb Hasasa District, Ethiopia. *African journal of business management*, 11(16), 393-414.
- Torgerson, R., Reynolds, B. & Gray, T. (1998). Evolution of Co-operative Thought, Theory and Purpose. *Journal of Co-operatives*, 13(1), 1-20.
- USAID (2016). *Rwanda Early Generation Seed: Country Report*. United States Agency for International Development (USAID): Kigali. 91pp.
- Uwaramutse, C., Hakizimana, E., Ngamije, J. & Butera, A. (2021). Governance Practices and their Impact on the Inclusion of Youth and Women among Rice Co-operatives in Eastern Province, Rwanda. *East African Journal of Science and Technology*, 11(2), 70-84.
- Uwaramutse, C., Towo, E. N. & Machimu, G. M. (2022). Influence of co-operative characteristics on financial performance of Irish potato farmer co-operatives in Northern and Western Provinces, Rwanda. *African Journal of Applied Research*, 8(2), 220-239.
- Wamalwa, I. S. (2012). The effect of regulation on financial performance of Saving and Credit Co-operative Societies offering front office service activity in Kenya. MSc Dissertation. School of Business, University of Nairobi: Kenya, 52pp.

- Wuryani, E. (2019). Management of co-operatives in improving financial performance in East Java, Indonesia. *Advances in Social Sciences, Education and Humanities Research*, 390(1), 99-102.
- Yamane, T. (1967). *Statistics: An Introductory Analysis* (2nd Edition). Harper and Row: New York. 919pp.
- Zelhuda, S., Abdul G., I., Suraya, M., & Md Faruk, A. (2017). Determinants of Agricultural Co-operative Performance Using Financial Ratio. *International Journal of Business and Technopreneurship*, 7(3), 385-396.