

Market Orientation and Financial Performance of Irish Potato Farmer Co-operatives in Rwanda

Name of authors: Charles Uwaramutse^{1*}, Esther N. Towo² and Gervas M. Machimu²

^{1*} Lecturer, University of Lay Adventists of Kigali, Correspondence author:
uwacharles3@yahoo.fr

²Senior Lecturer, Moshi Co-operative University, Tanzania, awaichisaria@gmail.com

² Senior Lecturer, Moshi Co-operative University, Tanzania, gmthe38@gmail.com

Abstract

Co-operatives are considered key vehicles for increased market orientation among smallholder farmers. Nonetheless, there are limited studies on its influence on the performance of co-operatives in developing and emerging economies. The paper examined the effect of market orientation dimensions on financial performance among Irish potato farmer co-operatives (IPFCs) in Rwanda. Data were collected by interviewing 387 members from 32 co-operatives. Secondary data from audited financial statements were collected to analyze financial performance between selected IPFCs in terms of Return on Equity (ROE). Pearson correlation and multiple linear regression were used for data analysis. The results showed a positive significant relationship between customer orientation and financial performance ($b = 0.091$, $p < 0.001$), and competitor orientation and financial performance ($b = 0.065$, $p < 0.001$), while supplier orientation has shown a negative correlation ($b = -0.023$, $p < 0.05$). Furthermore, the results revealed a non-significant relationship between inter-functional coordination and financial performance ($b = 0.03$, $p > 0.001$). Based on the findings, the most IPFCs experience ineffective market orientation due to limited financial capacity, which impairs their financial performance. In order to raise capital and implement the market orientation concept, it is recommended that IPFC's leaders address the barriers that prevent members from increasing their shareholdings. This study could serve as a framework for IPFCs leaders, policy makers and community development partners to formulate appropriate strategies for IPFCs to be market-oriented. The study contributes to the literature by analyzing market orientation dimensions that affect the financial performance of agricultural co-operatives in developing and emerging economies.

Keywords: Market Orientation, Financial performance, Farmer co-operatives, Irish potatoes

1.0 Introduction

In a competitive market and the era of rapid change, firms face growing technology, evolving customer expectations, and institutional uncertainty and instability, which aggravates the uncertainty and dynamics of the external environment (Yi Wang, 2022). These create both critical challenges and opportunities for businesses to capitalise on their abilities for development (De Vos, *et al.*, 2015). As a consequence,

businesses must apply the concept of market orientation, which is a set of activities developed by business entities to permanently monitor, analyse and respond to market changes (Alsadi & Aloulou, 2021; Jiang, *et al.*, 2020). Market orientation is a business philosophy that focuses on identifying consumer needs and desires and satisfying them through products and services (Udriyah *et al.*, 2019) better than the competitor (Gheysari, 2013).

Many studies reported the importance of market orientation in improving business performance (Dickson & Fahad, 2022; Mandal & Saravanan, 2019; Al-Henzab, *et al.*, 2018). For a business to successfully overcome changes in external factors, it needs to adopt and promote market orientation by creating superior customer value (Bamfo and Kraa, 2019). Market orientation helps to understand and cope with market dynamics and changes resulting from disturbances and uncertainties in the environment, global economic situation and an increasingly competitive pressure while maintaining business performance (Meisya & Surjasa, 2022). Businesses that adhere to the concept of market orientation develop customer loyalty and satisfaction, create superior customer value, and hence superior performance (Hernandez-Linares *et al.*, 2020). With high market orientation, companies report high business performance compared to businesses with low level of market orientation (Saleh *et al.*, 2021).

Agricultural marketing co-operatives are considered key vehicle for increased market orientation of the smallholder farm sector (Verhofstadt & Maertens, 2014). They play a significant role to help smallholder farmers in overcoming various internal and external factors that lead to market failure. They represent a governance structure that enables reduction in transaction costs related to acquisition of agricultural inputs and selling farm products to improve the co-operative performance (Bernard & Taffesse, 2012). However, smallholder farmer co-operatives, particularly in developing and emerging economies, experience various weaknesses and limitations that limit their performance (Sisay *et al.*, 2017). Previous studies have reported, among others, that the main problems are related to the management and organisation arrangement (Bijman *et al.*,

2014), leadership capabilities (Borda-Rodriguez *et al.*, 2016) and limited financial capacity (Uwaramutse *et al.*, 2022).

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). It has thus established an environment conducive to the development of the co-operative movement that includes law N° 024/2021 determining the establishment, organization, and functioning of co-operative organizations, and the national policy of 2018 on the promotion of co-operatives to ensure that they are profitable enterprise (International Labour Organisation [ILO], 2017). Agricultural policies for agricultural development in Rwanda focus on increased market orientation of the smallholder farm sector (Verhofstadt and Maertens, 2014) and co-operatives are seen as key vehicle (Rwanda Co-operative Agency [RCA], 2020). Irish potatoes were selected as one of the most important crops as part of the crop intensification program due to their contribution to the agricultural production. (Food Agriculture Organization [FAO], 2016). Irish potato production was found to generate in average 57% of gross income per year and per household (Shimira *et al.*, 2020).

Despite government initiatives to make co-operatives profitable businesses able to help their members overcome market challenges, Irish Potato Farmer Co-operatives (IPFCs) in Rwanda are characterized by limited financial capacity, which challenges their growth, competitive posture, and improved financial performance (Uwaramutse *et al.*, 2022), resulting in high reliance on the government and donor agencies (Niyonzima *et al.*, 2021). Irish potato farmers are challenged by poor quality of agricultural inputs and weak coordination between IPFCs

and potential buyers (FAO, 2019). Consequently, this leads to low yields, high post-harvest losses and, subsequently, low prices on the market. Members of IPFCs are also unsatisfied with the market for their production due to speculative pricing by unscrupulous buyers. As a result, they do business with private traders, which has a significant impact on the performance of smallholder farmer co-operatives. These challenges bring doubt on how market orientation concept is coordinated among IPFCs to face competition with strong private traders.

Adopting the concept of market orientation is a key and priority for co-operatives to deliver higher value to customers (Agirre *et al.*, 2014). They need to strive to optimize their qualities and capabilities to respond to customers' demand (Bijman *et al.*, 2014) and develop the capacities to create sustainable competitive advantage by adopting market-oriented approaches (Agirre, *et al.*, 2014). Benos *et al.* indicate that strengthening market orientation is essential for co-operative performance (Benos *et al.*, 2016). Due to globalization and the widespread requirements in cash-based economy, subsistence farming is becoming outmoded and replaced by the need to have cash for meeting the family needs. Smallholder farmers now have to walk the pathway moving from production-driven farming to profit-driven business. Market-oriented farming is primarily concerned with making profit from regular interaction with the markets (Nwafor, 2020).

Market orientation and firm performance studies are empirically supported by studies conducted for Investor-Owned Firms (IOFs). Saleh *et al.* (2021) have reported positive and significant impact of market orientation components on performance of SMEs in

South Arabia. In a study conducted by Protcko and Dornberger (2017) in Tatarstan knowledge-intensive companies in Russia, findings also show that market orientation has positive impact on financial and non-financial performance. Meisya & Surjasa (2022) studied the effect of market orientation on firm performance in food and beverage sector in Indonesia. They found positive and significant relationship between market orientation components of customer orientation, competitor orientation, inter-functional coordination and firm performance. However, the influence of market orientation on performance of co-operatives is under-researched (Sisay *et al.*, 2017). Despite the differences between investor owned firms and co-operatives in terms of governance structure and their objectives (Kyriakopoulos *et al.* 2004), both are operating in the same concept of market orientation. Moreover, contradicting findings by Ho *et al.* (2018); Homaid *et al.*, (2018); Shehu & Mahmood (2014) have reported insignificant and negative association between market orientation dimensions and business performance. Considering contextual differences and contradicting results from previous studies on the influence of market orientation and organizational performance, the impact of market orientation and business performance studies is inconclusive. It is against this background that this study analysed market orientation and its influence on financial performance of IPFCs in Northern and Western Provinces in Rwanda. It specifically describes market orientation dimensions among IPFCs and determines their effect on financial performance of IPFCs in Northern and Western Provinces. This study then presents the theoretical and empirical framework, methodology, results and discussion, and, lastly, conclusion and recommendations.

2.0. Theoretical and Empirical Framework

2.1. Resource-Based Theory

This study was guided Resource-Based Theory (RBT) which examines performance variations among organizations based on their resources (Peteraf and Barney, 2003). The theory hypothesises that organisational resources are an essential factor influencing their performance (Othman *et al.*, 2015). Resources include any tangible and intangible assets owned by the firm (Caves, 1980). Market orientation is therefore considered as part of the overall firm's intangible resource base. Looking critically at the explanations provided by Tho (2019) & Savabieh *et al.*, 2020, market orientation is a capability-based activity which pertains to the RBT of the firm. Zhou *et al.*, (2008) view market orientation as one of the important firm resources and competencies. According to Tho (2019), market orientation is a valuable, rare, and non-replaceable capability that can generate sustainable competitive advantage. Market orientation is an internal intangible resource that gathers and uses the information to satisfy customer's needs, thereby improving performance. The theory was applied in this study to describe the effectiveness of market orientation among IPFCs and its impact on their performance, similar to prior studies that elaborated co-operative performance employing RBT (Machado *et al.*, 2017; Othman *et al.*, 2015).

2.2 Neo-classical Theory of Co-operatives

Given that RBT deals with firm's resources, Neoclassical theory appears to be more appropriate to supplement RBT, as far as co-operative profitability is concerned. Neoclassical theory of the firm developed by Marshall (1890) focuses on profit maximization (Royer, 2014). A co-operative must be financially sustainable to achieve its benefits, though all benefits should be aimed

at achieving its main objective of maximizing member returns (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 to avoid hostility and retaliatory pricing by rival forms (Enke, 1945). It may be challenging for co-operative societies to adequately serve their members if their financial performance is not strong (Tekeste *et al.*, 2014). The Neo-classical theory of co-operatives was applied in this study to explain whether IPFCs in the study area are financially stable to improve social and economic transformation of their members.

2.3 Empirical Review and Hypothesis Development

Market orientation is viewed as an organization's capacity, unique and valuable resources that cannot be replicated, emphasizing the importance of putting the customer's needs first in operations and strategy (Mostafiz *et al.*, 2021). It helps a business to identify and scrutinise its competitors, their strengths, weaknesses, and strategies (Cambra-Fierro *et al.*, 2011). Previous studies report market orientation culture as a significant predictor of improved business performance, because it places a premium on customer needs, and strives to improve customer satisfaction, thereby increasing firm performance (Morgan *et al.*, 2019; Olabode *et al.*, 2018). The study adopts Narver & Slater (1990) conceptualization of market orientation which includes customer orientation, competitor orientation and inter-functional

coordination. Supplier orientation conceptualized by Sisay (2017) was also adopted.

Customer orientation is described as an organization's understanding of customer demands and possession of capacity to continually create superior value to the customers (Neneh, 2018) and a key factor for superior business performance (Sisay *et al.*, 2017). As a key factor, it is also a process which a firm follows to meet customer's need and satisfaction (Feng, *et al.*, 2019). An organizational competitiveness depends on the level of satisfaction it gives to customers (O'Dwyer & Gilmore, 2018). Using structural equation model, Dickson & Fahad, 2021; Sisay *et al.*, 2017, have reported positive impact of customer orientation on financial performance. Both studies used subjective measures of performance through respondents' perceptions which could be suitable for non-financial data measurement. Sisay *et al.* explained that they resorted to subjective measures due to the unavailability of financial data in small enterprises. Kasim & Mustofa (2021), using subjective measures of performance examined the impact of market orientation practices on performance of basic co-operative enterprises in Ethiopia. Employing Pearson correlation and multiple regression analysis, the positive impact of customer orientation on performance has been supported. Research in Ghanaian SMEs reports positive and significant effect of market orientation on their performance level (Bamfo and Kraa, 2019). Conversely, in a study by Ho *et al.* (2018), non-significant relation was found. Homaid *et al.* (2018) study in Yemen reported also a negative significance between market orientation and performance. The above discussion leads to the following hypothesis.

H₁ Customer orientation has positive relationship with financial performance of IPFCs

On the other hand, competitor orientation is the ability of firms to determine, evaluate and respond to weakness and strengths of competitors, and to improve their organizational intelligence (Kohli & Jaworski, 1990; Narver & Slater, 1990). As noted by Crick, *et al.*, an organization with higher degree of competitor orientation may have an enhanced understanding of important elements in the move of competitors which help the firm to build and deliver superior value to a customer with subsequent positive impact on the firm performance (Crick, *et al.*, 2020). Previous studies have reported a positive significant relationship between competitor orientation and co-operative's performance (Kasim & Mustofa, 2021; Dickson & Fahad, 2021). However, Ho *et al.* (2018); Sisay *et al.*, 2017 found non-significant relationship between competitor orientation and performance of co-operatives while, Foreman *et al.* (2014) reports a negative relationship between competitor orientation and financial performance. Narver and Slater (1990) established a positive relationship between competitor orientation and business performance measured using profitability. Likewise, Kumar *et al.* (2011) findings provide additional support for the positive relationship between competitor orientation and performance. With respect to the above debate, this study hypothesises:

H₂ Competitor orientation has positive relationship with financial performance of IPFCs

Inter-functional coordination is the other dimension of market orientation that contribute to business performance. It is recognised as a situation where each

department is regarded to be important irrespective of whether such department belongs to marketing unit or not as each department has a significant role in satisfying the customers (Waruiru, *et al.*, 2018). A market orientation guarantees a customer focused strategy for market knowledge base generation which is monitored by coordinated inter-functional marketing efforts to achieve long term firm performance (Bamfo & Kraa, 2019). It ensures smooth collaboration, cohesiveness, communication, trust and functional commitment among departments (Auh & Menguc, 2005) and, hence, superior firm's performance. Kasim & Mustofa (2021) examined the impact of market orientation on performance of co-operatives. The findings revealed significant and positive relationship between inter-functional coordination and performance. Similarly, Sisay *et al.*, 2017; Ho *et al.*, 2017; Ingenbleek *et al.*, 2013 have also reported significant and positive relationship between inter-functional coordination and co-operatives performance. Agirre *et al.* (2014) also found the positive influence of market orientation on co-operative performance in terms of efficiency (Return on investment) and effectiveness (sales growth and market growth). However, studies by Ho *et al.* (2018) & Johnson *et al.* (2009) found non-significant relationship between inter-functional coordination and performance. Given the debate:

H₃ Inter-functional coordination has positive relationship with financial performance of IPFCs

Finally, supplier orientation is the firm's efforts to cooperate with its suppliers and strategic alignment regarding outsourcing choices in the supply chain (Lintukangas *et al.*, 2019) leading to competitive advantages and success of the firm (Stuart *et al.*, 2012). Based on Porter's theory in the research, it is

explained that supplier orientation can affect competitive advantage and the performance of business firms (Celikyay *et al.*, 2022). If the supplier orientation is effectively managed, it is likely that the performance of the firm will be positively affected. The scope of smallholder farmers to participate in market depends on their own ability to create good relationship with suppliers. Co-operatives with solid relationship with suppliers in the supply chain have better chances for success than co-operatives of less supplier oriented co-operatives (Frohlich & Westbrook, 2001). Studies by Celikyay *et al.* (2022); Lintukangas *et al.* (2019); Sisay *et al.* (2017) have shown positive significant relationship between supplier orientation and business performance. It can be assumed that supplier orientation affects financial performance. Therefore, the following hypothesis can be put forward:

H₄ Supplier orientation has positive relationship with financial performance of IPFCs

On the basis of the above, some studies report that variables are positive, while others report that they are negative. Moreover, most of the studies have used subjective measures of performance and none has collected qualitative data to supplement and validate quantitative outcomes. As a result, this study analysed market orientation and its influence on financial performance of farmers' co-operatives using objective measures in mixed method approach.

3.0 Methodology

The study employed a relational design in cross-sectional research, as recommended by different scholars (Bryman, 2012). Relational design was used to measure the relationship between independent and dependent variables. The study was conducted in Northern and Western Provinces in Rwanda

and included four separate Districts of Musanze and Burera in Northern Province and Nyabihu and Rubavu Districts in Western Province, due to their predominance in Irish potatoes farming (NISR, 2017). The market difficulties for members' production reported in Northern and Western Provinces also contributed to the choice of the study area (Mugabo, 2018). The population was 76 co-operatives with 25332 members in the above Districts (NCCR, 2019). Purposive sampling technique was used in selecting IPFCs that comprise the study. Only co-operatives that had complied with audited financial reports were taken purposively to examine their financial performance (NCCR, 2019). 32 IPFCs out of 76 have managed to avail their audited financial statements. The sample size of co-operative members was calculated using Yamane (1967) formula. From a population of 11878 co-operative members across 32 IPFCs (NCCR, 2019), 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.

This study adopted a concurrent mixed-methods approach whereby both quantitative and qualitative data collection techniques and analysis were used. This approach was appropriate because it enables to collect data that provide rich information. It also helps to neutralise biases inherent in a single

technique (Creswell, 2009). Data were collected using a structured questionnaire, Key Informants Interviews (KIIs), and Focus Group Discussion (FGD). The Secondary data from the audited financial reports were collected to analyse financial performance of the sampled co-operatives in terms of ROE as an indicator of financial success. 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). This study focuses on financial performance to assess whether the IPFCs in the study area are financially sustainable to ensure the social and economic transformation of their members. According to Shariff *et al.* (2010) measures of performance can be seen from an objective perspective that is more about the financial assessment of a business performance, such as return on equity, return on assets and sales growth. Objective performance measures are more reliable than subjective measures, since they use quantitative and factual standards. Financial performance of IPFCs was measured by comparing the selected co-operatives rather than their performance over a period of time. Financial performance of IPFCs was measured by comparing the selected co-operatives rather than their performance over a period of time. Past studies have used one financial ratio to examine the financial performance (Singh *et al.*, 2019; Hussain & Hadi, 2017). Profitability ratio was reported by different researchers as the best measurement for financial performance of agricultural co-operatives (Zelhuda *et al.*, 2017; Taiwo and Adeniran, 2014).

Before actual data collection, research instruments were checked to ensure they meet reliability and validity criteria. Field-testing of data collection tools was used to

rectify some unfamiliar terms. Some questions were omitted and minor modifications were done to some questions. In testing reliability, Cronbach's alpha (α) 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 and Mallery, 2003).

Data were analysed with both descriptive and inferential statistics. The former used frequency distributions, minimum, maximum, mean and standard deviation. To analyze the perceptions of respondents about market orientation dimensions, five-point Likert scale was used. Likert scale responses of each market orientation dimension 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 and Nahed, 2016) to determine the levels of market orientation among IPFCs. The interval size = $\frac{5-1}{5}=0.8$. Poor [1.00-1.8 [, Moderate [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 linear regression. The idea behind the use of multiple regression analysis among the other parametric tests was statistical

dependence of one variable, the dependent variable (ROE), on more independent variables (market orientation dimensions). Composite scores of market orientation were regressed with ROE as recommended by Tabachnick & Fidell (1989), hence, treated with parametric statistics without fear of wrong conclusion (Norman, 2010). Several experts also argue that parametric tests can be employed for Likert scale and they have also demonstrated this with research evidence. Parametric tests can be used not only with ordinal data, but they are generally more robust than non-parametric tests (Sullivan & Artino, 2013). Research affirms the robustness of parametric test for Likert scale when analysed as a scale that is summed composite score, not individual items (Carifio & Perla, 2008). The following model was estimated to capture the relationship between market orientation and financial performance of sampled IPFCs.

$$\text{Performance} = \beta_0 + \beta_1 \text{CUSOR} + \beta_2 \text{COMPOR} + \beta_3 \text{INTFCO} + \beta_4 \text{SOR} + \varepsilon \quad (2)$$

where Performance is co-operative performance measured in terms of ROE; β_0 , Intercept; CUSOR, Customer orientation; COMPOR, Competitor Orientation; INTFCO, Interfunctional Coordination; SOR, Supplier Orientation; ε , 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
Market Orientation	Customer Orientation	CUSOR	Timely and sufficient quantity of products , fair prices, products packaging, increase of production due to market demand, market study to meet client expectations, contract with customers, marketing committee, systematic and frequent measure of customer satisfaction.	+/-	Kasim & Mustofa (2021); Saleh <i>et al.</i> (2021); Ho <i>et al.</i> (2018); Sisay <i>et al.</i> , 2017.
	Competitor Orientation	COMPOR	Analysis of the weaknesses and strengths of competitors, responding to competitor action that threaten the co-operative, concern about what private Irish potato traders are doing in the market, regular discussion of competitors' strengths and strategies, and response to significant changes in the competitors 'pricing structures.	+/-	Kasim & Mustofa (2021); Saleh <i>et al.</i> (2021); Crick <i>et al.</i> , (2020); Sisay <i>et al.</i> , 2017; Ho <i>et al.</i> (2018); Foreman <i>et al.</i> (2014).
	Inter-functional Coordination	INTFCO	Co-operative meetings to discuss market trends and development, discussion of customers' future needs with coop management by marketing personnel, dissemination of data on customer satisfaction on regular basis, awareness on the role and contribution of each member and committee for the success of our co-operative, inter-committee meetings to discuss the Irish potato business, sharing the information concerning competitors' strategies.	+/-	Kasim and Mustofa (2021); Saleh <i>et al.</i> (2021); Ho <i>et al.</i> (2018); Sisay <i>et al.</i> , 2017.
	Supplier Orientation	SOR	Contract with suppliers, relationship with suppliers, capacity of suppliers, communication with suppliers, price negotiation.	+	Sisay <i>et al.</i> , 2017.
Financial Performance	Return on Equity	ROE	A measure of financial performance that shows the net profit generated by a business based on its equity investment, calculated by Net profit/shareholders' equity.		Zelhuda <i>et. al.</i> (2017); Agirre <i>et al.</i> (2014).

Statistical assumptions were tested before running multiple linear regression. The assumption of multicollinearity was tested using correlation matrix. As shown by appendix Table A1, no multicollinearity problem exists, since none of the variables correlates above 0.8 (Senaviratna and Cooray, 2019). Variance Inflation Factor (VIF) and Tolerance (1/VIF) were further used as a 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 (El-Dereny and Rashwan, 2011). As reported in Appendix Table A1, 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. Heteroscedasticity was tested using Glejser test to check whether there is a constant variance within residual. Based on output coefficients in Appendix Table A2, the obtained value of sig, all independent variables > 0.05 , it can be concluded that there is no heteroscedasticity problem, as recommended by Glejser (1969).

The assumption of normality was also checked using Kolmogorov-Smirnov and Shapiro-Wilk tests (Appendix Table A3). Both tests indicated that the variables were not normally distributed since all sig. values under the Shapiro-Wilk column are below 0.05. Data were transformed to the natural logarithm to solve non-normality issue as suggested by Field (2009), and still data were not normally distributed. However, parametric tests can be used with Likert data with no-normal distributions without fear of coming to the wrong conclusion (Norman, 2010). In testing the good fit of multiple regression model, R, R², adjusted R², and the standard error of the estimates were used to determine how well a regression model fits the data. Results in Table 3 show that the value of overall R-square is 0.420, showing all independent variables have described 42% disparity in financial performance. Moreover, 58% (100%-42%) 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 .414 in this study indicates that 41.4% 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 (4, 382) = 69.080, p < .005, indicating that the regression model is a good fit for data.

4.0 Results and Discussion

4.1 Descriptive Statistics for Market Orientation Practices and Financial Performance

The results in Table 2 report summary statistics of market orientation dimensions and financial performance obtained from Likert scale with five levels. As discussed in the methodology section, responses of each market orientation dimension were converted into composite scores in continuous data. The result shows that mean value of customer orientation, competitor orientation, and inter-functional coordination are 2.04, 2.225, 2.45 and 2.26 respectively. With the overall mean of 2.25, it can be concluded that IPFCs have moderate level of market orientation dimensions.

Table 2: Results of Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CUSOR	387	1.00	3.25	2.0439	0.71419
COMPOR	387	0.50	3.13	2.2545	0.70348
INTFCO	387	0.80	3.10	2.4460	0.63999
SOR	387	0.40	4.00	2.2553	0.88753
Overall				2.2499	0.7362
ROE	387	0.01	0.61	0.2012	0.17967
Valid N (listwise)	387				

Considering the maximum and minimum values in Table 2, it was observed that few IPFCs effectively implement the practices of market orientation, while others lack market orientation culture in their activities. This is a

challenge to their financial performance and members' benefits. Profitability of the cooperative is essential to achieve social benefits of members (Mooney & Gray, 2002). As shown in Table 2, minimum,

maximum and mean values of ROE are 0.1(1%), 0.61(61%) and 0.20(20%), respectively. Similarly, the information provided in Appendix Table A4 shows that 18(56.25%) out of 32 IPFCs have reported the ROE below 10%. This indicates that some IPFCs report satisfactory returns, while others experience inefficiency in the use of members' equity to generate profit. According to Gregory (2018), ROE below 10% is a bad sign.

4.2 Correlation Analysis

The correlation analysis has been carried out to analyze the magnitude of the relationship between market orientation dimensions and financial performance of IPFCs (Appendix Table A1). It measured the strength of the linear relationship between the variables. The results confirm that the four dimensions of market orientation have positive and significant correlations with financial performance. This indicates that increase in customer orientation, competitor orientation, inter-functional coordination and supplier orientation increase financial performance of

IPFCs. Correlation results indicate the relationship between customer orientation and ROE (.628**), competitor orientation and ROE (.579**), inter-functional coordination and ROE (.514**), and supplier orientation and ROE (.309**). Correlation analysis further tested the assumption of multicollinearity, as discussed in methodology section.

4.3 Regression Results

Since the important assumptions of regression were met, multiple regression was employed to examine the aggregate effect of the independent variables on the dependent variable and determine the most influencing factors that affect the financial performance of IPFCs. Multiple linear regression was further employed to test the hypothesis. The results in Table 3 indicate significant relationship between customer orientation and financial performance, and competitor orientation and financial performance. The significant relationship between supplier orientations has shown negative correlation.

Table 3: Regression Results for Market Orientation Practices and Financial Performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant)	-0.175	0.036		-4.832	0.000
CUSOR	0.091	0.014	0.463	6.476	0.000***
COMPOR	0.065	0.018	0.279	3.706	0.000***
INTFCO	0.003	0.022	0.011	0.131	0.896
SOR	-0.023	0.011	-0.124	-2.107	0.036**
R	0.648				
R ²	0.420				
Adjusted R ²	0.414				
Df	4				
Residual	382				
F	69.080				
Sig.	0.000				

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

Customer Orientation and Financial Performance

As revealed in Table 3, customer orientation that includes but not limited to timely and sufficient quantity of products to customers, quality products, fair prices, market study to meet customer expectation, contract with customers, and systematic and frequent measure of customer satisfaction has significant and positive effect on ROE ($b = 0.091$, $p < 0.001$). This result supports H_1 , that states that customer orientation has positive relationship with financial performance. The findings are in line with the previous studies that support the theoretical assumption that customer orientation positively influences financial performance (Kasim & Mustofa, 2021; Dickson & Fahad, 2021), but contrary to Ho *et al.* (2018) that found non-significant relation between customer orientation and financial performance. Strengthening of customer orientation has been claimed to be essential for the success of co-operatives (Bijman, 2010). It is the key factor for superior business performance, irrespective of economic development of a country (Sisay *et al.*, 2017). However, the mean value of 2.04 shown in Table 2, which exhibits ineffective practices of market orientation among IPFCs, along with small beta value of 0.092, is an indication of a weak contribution of customer orientation to the performance of IPFCs.

Competitor Orientation and Financial Performance

The results in Table 3 also show that ROE is positively and significantly affected by competitor orientation ($b = 0.065$, $p < 0.001$). The result supports H_2 which postulates that competitor orientation has positive relationship with financial performance. Explicitly, when IPFCs effectively implement competitor orientation practices,

such as analysis of the weaknesses and strengths of private Irish potato traders, and respond to their actions that threaten the co-operative, high returns are generated. Results are consistent with Dickson & Fahad (2021) study that supports a positive significant relationship between competitor orientation and ROE. However, findings from this study do not conform to the study by Ho *et al.* (2018); Sisay *et al.*, 2017 that displays inconsistency with the body of literature that established a non-significant relationship between competitor orientation and performance of co-operatives. In spite of the benefits associated with competitor orientation, excessive concentration on competitors may inhibit the ability to innovation, leading to mediocrity (Augusto & Coelho, 2009).

Inter-Functional Coordination and Financial Performance

The result in Table 3 showed a non-significant relationship between inter-functional coordination and financial performance ($b = 0.03$, $p > 0.001$). The result doesn't support H_3 which states that inter-functional coordination has positive relationship with financial performance. The finding disagrees with similar studies that found positive significant relationship between inter-functional coordination and financial performance of co-operatives (Kasim & Mustofa, 2021; Sisay *et al.*, 2017). The non-significant contribution may be attributable to inadequate consideration towards discussion of customers' future needs, dissemination of data on customer satisfaction on a regular basis, awareness on the role and contribution of each member and committee for the success of the co-operative, inter-committee meetings to discuss the Irish potato business, sharing the information concerning competitors' strategies, and especially, limited financial

capacity among IPFCs to have a strong management team to enhance the flow of information and knowledge to help the co-operative generate new insights from market knowledge. Lack of a strong team to facilitate the sharing of information different co-operative organs was explained by one of the co-operative member in a FGD: “... *In our co-operatives, we have challenges to comply with the required number of members in all co-operative organs, as required by co-operative law. Moreover, due to limited financial capacity, few co-operatives have managers. The ones with managers don't have accountants. This is a big issue in competing with better-prepared and market-oriented private traders...*” (October 13, 2019). Co-operatives, unlike organised firms, hardly operate in line with the principles of division of labor with clear cut special activities. Rather, overlapping functions thrive in the system (Nnadi *et al.*, 2020). Benos *et al.* (2016) also reported co-operative organisational attributes that contribute to the implementation of market orientation. The above discussions explain less concern shown for the implementation of inter-functional coordination among IPFCs.

Supplier Orientation and Financial Performance

The estimated coefficients in Table 4 show that ROE is negatively and significantly correlated with supplier orientation ($b = -0.023$, $p < 0.05$). This result does not support H_4 which states that supplier orientation has positive relationship with financial performance. The results do not conform to the study by Sisay *et al.* (2017) that indicates significant and positive influence of supplier orientation on financial performance of co-operatives. Farmer co-operatives are dependent on suppliers for key inputs, such as quality seeds and fertilizers. Co-operatives with good relationship, contract and effective

communication with suppliers are expected to report improved performance (Sisay *et al.*, 2017). Negative and significant correlation among IPFCs was explained by few companies in the area that monopolize the sale of agricultural inputs, which limits co-operative bargaining power. Based on Porter's theory in the research, it is explained that supplier orientation can affect competitive advantage and the performance of business firms (Celikyay *et al.*, 2022). If the supplier orientation is effectively managed, it is likely that the performance of the firm will be positively affected. Frohlich and Westbrook stated that the scope of smallholder farmers to participate in market depends on their own ability to create good relationship with suppliers. Co-operative with solid relationship with suppliers in the supply chain have better chances for success than less supplier oriented co-operatives (Frohlich & Westbrook, 2001). Findings from the study indicate that IPFCs experience challenges in creating solid relationship with suppliers in, which impairs their production and desired financial performance.

As per the results, lower mean values for all dimensions of market orientation in Table 2 and small beta coefficients that show small magnitude of contribution of customer orientation to financial performance in Table 3 is a clear indicator of ineffective market orientation practices among IPFCs. This can be explained by limited financial capacity to perform the practices associated with customer orientation. Uwaramutse *et al.* (2022) reported financial constraints among IPFCs in Rwanda, challenging their financial performance. This issue can be explained by the following caption from one of the board members in a FGD: “... *small capital presents a barrier in some of our co-operatives. Since our District sets a maximum amount of members' share capital*

due to the alleged mismanagement in some of co-operatives, it is not possible to raise capital through members' shareholding, which is a big challenge for our co-operatives growth and performance... ” (30th September 2019). This implies that limited financial capacity among IPFCs constitutes a serious drawback to the implementation of market orientation activities. During an interview, ineffective market orientation was also explained by a key informant, who provided the following reason: “... Most IPFCs are not growing and achieving better financial performance, since, they were not required to present their business plan during registration to show how they will become financially self-reliant. Therefore, economic growth and financial performance are not possible because, most of them are not doing business; they are rather socially oriented than business oriented ...” (19th October 2019).

Theoretical Implication

Contrary to neo-classical theory of co-operative which affirms that a co-operative must be economically and financially sustainable to achieve its benefits, mainly maximizing member returns (Royer, 2014), most of IPFCs experience lack of financial capacity, which is a problem to achieve social and economic transformation of their members. The results are also supported by RBT. According to the general formulation of RBT, market orientation is an internal intangible resource and capability based activity which pertains to the RBT of the firm (Savabieh et al., 2020) and an essential factor influencing its performance (Othman *et al.*, 2015). From the results, weak market orientation resulted to lack of financial capacity in most of IPFCs, led to their poor financial performance, given that 56.25% of sampled IPFCs have reported ROE below 10%.

5. Conclusion and Recommendations

The study examined market orientation dimensions that contribute to financial performance (ROE) of IPFCs. The results showed positive significant relationship between customer orientation and financial performance; competitor orientation and financial performance, while supplier orientation has shown negative correlation. Furthermore, the results revealed a non-significant relationship between inter-functional coordination and financial performance. As noticed from the findings, most of IPFCs are characterised by lack of market orientation culture, which impairs their financial performance. Lower mean values for all dimensions of market orientation, along with small beta coefficients that show small magnitude of contribution of customer orientation to financial performance, is a clear indicator of ineffective customer orientation practices among IPFCs. As mentioned above, this was attributed to limited financial capacity to implement the concept of market orientation. In the endeavour to improve the financial performance of IPFCs, a joint effort from both the co-operatives and the Government is required. Based on the findings, in order to raise capital and implement the market orientation concept, it is recommended that IPFCs leaders address the barriers that prevent members from increasing their shareholdings. On the other hand, RCA and other community development partners should organize capacity building training on market orientation among IPFCs.

This study could serve as a framework for IPFCs leaders, policy makers and community development partners to set up strategies at ensuring that IPFCs are more market oriented. To do that, development policies should encourage IPFCs to engage in

coordinating supply and increase their capacity to access information on customers and competitors. The study contributes to the literature by analyzing market orientation dimensions that affect the financial performance of agricultural co-operatives in developing and emerging economies. This study used objective performance approach. Future research should investigate both objective and subjective approaches by analysing the influence of market orientation on co-operative performance and members' satisfaction.

Funding acknowledgement

This work is supported by the German Academic Exchange Service or DAAD (Deutscher Akademischer Austauschdienst).

References

- 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.
- Agirre, I., Peinares, P., & Agirre, A. (2014). Antecedents to market orientation in the worker cooperative organizations: The Mondragon group. *Annals of Public and Cooperative Economics*, 85(3), 387–408.
- Alhakimi, W., & Mahmoud, M. (2020). The impact of market orientation on innovativeness: evidence from Yemeni SMEs. *Asia Pacific Journal of Innovation and Entrepreneurship*, 14(1), 47-59.
- Al-Henzab, J., Tarhini, A., & Obeidat, B. Y. (2018). The associations among market orientation, technology orientation, entrepreneurial orientation and organizational performance. *Benchmarking: An International Journal*, 25(8), 3117-3142.
- Ali, G. A., Hilman, H., & Gorondutse, A. H. (2020). Effect of entrepreneurial orientation, market orientation and total quality management on performance. Evidence from Saudi SMEs. *Benchmarking: An International Journal*, 27(4), 1503-1531.
- Alsadi, A. K., & Aloulou, W. J. (2021). Impact of strategic orientations on Saudi firm performance: is supply chain integration a missing link? *The International Journal of Logistics Management*, 32(4), 1264–1289.
- Auh, S., & Menguc, B. (2005). The influence of top management team functional diversity on strategic orientations: The moderating role of environmental turbulence and inter-functional coordination. *International Journal of Research in Marketing*, 22(1), 333–350.
- Bamfo, B.A., & Kraa, J.J (2019). Market orientation and performance of small and medium enterprises in Ghana: The mediating role of innovation. *Cogent Business & Management*, 6(1),1-16.
- Bernard, T., & Taffesse, A.S. 2012. Returns to scope? Smallholders' commercialization through multipurpose cooperatives in Ethiopia. *Journal of African Economies*, 21(3), 440–464.
- Benos, T., Kalogeras, N., Verhees, F.J.H.M., Sergaki, P., & Pennings, J.M. E. (2016). Cooperatives' organizational restructuring, strategic attributes and performance: The case of agribusiness cooperatives in Greece. *Agribusiness*, 32(1), 127-150.

- Bijman, J. (2010). Agricultural cooperatives and market orientation: a challenging combination? In: Lindgreen, A., Hingley, M., Harness, D., & Custance, P. (eds). 119– 136. Aldershot: Gower Publishing.
- Bijman, J., Hanisch, M., & van der Sangen, G. (2014). Shifting control? The changes on internal governance in agricultural cooperatives in the EU. *Annals of Public and Cooperative Economics* 85(4), 641–661.
- Borda-Rodriguez, A., Johnson, H.J., Shaw, L., & Vicari, S. (2016). What Makes Rural Co-operatives Resilient in Developing Countries? *Journal of International Development*, 28(1), 89-111.
- Bryman, A. (2012). *Social Research Methods*. Fourth edition, Oxford University Press Inc., New York. 766p.
- Cambrá-Fierro, J., Florin J., Perez L., & Whitelock J. (2021). Inter-firm market orientation as antecedent of knowledge transfer, innovation and value creation in networks. *Management Decision*, 49(3), 444-467.
- Caves, R.E. (1980). Industrial organisation, corporate strategy, and structure. *Journal of Economic Literature*, 18(1), 64-92.
- Celikyay, M., Sonmez Cakir, F., & Adiguzel, Z. (2022). Effects of supplier orientation and competitive strategies on ICT firms' performance. *Journal of Asia Business Studies*, Vol. ahead-of-print No. ahead-of-print.
- 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.
- Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd Edition). SAGE Publications, London. 295pp.
- Crick, J.M., Karami, M., & Crick, D. (2021). The impact of the interaction between an entrepreneurial marketing orientation and cooperation on business performance. *International Journal of Entrepreneurial Behavior & Research*, 27(6), 1423-1447.
- De Vos, A., De Hauw, S., & Willemse, I. (2015). An integrative model for competency development in organizations: The Flemish case. *The International Journal of Human Resource Management*, 26(20), 2543 - 2568.
- Dickson, O.O, & Fahad, J. L. (2022). Effects of market orientation on farmer resilience and dairy farm performance in emerging economy. *Cogent Business & Management*, 9(1), 1-15.
- El-Dereny, M., & Rashwan, N. I. (2011). Solving Multicollinearity Problem Using Ridge. Regression Models. *International Journal of Contemporary Mathematical Sciences*. 12(6), 585-600.
- Ellis, P.D., (2006). Market Orientation and Performance: A Meta-Analysis and Cross-National Comparisons. *Journal of Management Studies*, 43(5), 1089-1107.
- Enke, S. (1945). Consumer co-operatives and economic efficiency. *American Economic Review*, 35(1), 148-155.
- FAO (2019). *Strengthening linkages between small actors and buyers in the roots and tubers sector in Africa, Rwanda*.

- Food agriculture organization (FAO), Kigali. 2pp.
- 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.
- Field, J.W. (2009). *Discovering Statistics using SPSS*. (3rd Edition). Sage Publication Inc., New Delhi. 822pp.
- Foreman, J., Donthu, N., Henson, S., & Poddar, A. (2014). The performance implications of planning, implementation, and evolution of firms' customer and competitor orientations. *Journal of Marketing Theory and Practice*, 22(4), 349–366.
- Frohlich, M., & Westbrook, R. (2001). Arcs of integration: an international study of supply chain strategies. *Journal of Operations Management* 19(2), 185-200.
- George, D., & Mallery, P. (2003). *SPSS for Window step by step: A simple guide and reference, 11.0 update* (4th Edition). Allyn & Bacon, Boston. 400pp.
- Gheysari, H., Rasli, A., Roghanian, P., & Norhalim, N. (2013). A Review on the Market Orientation Evolution. *Procedia - Social and Behavioral Sciences*, 40(1), 542–549.
- Glejser, H. (1969). A new test for heteroscedasticity. *Journal of the American Statistical Association*, 64(1), 316-323.
- Hernández-Linares, R., Kellermanns, F.W., & López-Fernández, M.C. (2018). Dynamic Capabilities and SME Performance: The Moderating Effect of Market Orientation. *Journal of Small Business Management*, 59(1), 162-195.
- Ho, L.P.K., Nguyen, C.N., Adhikari, R., Miles, M.P., & Bonney, L. (2018). Exploring market orientation, innovation, and financial performance in agricultural value chains in emerging economies. *Journal of Innovation and Knowledge*, 3(3), 154-163.
- Homaid, A.A., Minai, M.S., & Al-Ansi, A.A. (2018). The effect of market and entrepreneurial orientation on the performance of microfinance institutions: The mediating role of learning orientation in the context of Yemen. *Journal of Business and Retail Management Research*, 12(3), 126-139.
- Hussain, M.A., & Hadi, A. (2017). Corporate governance and firm performance: Evidence from CIDB Malaysia. *American Journal of Research Communication*, 5(12), 1-21.
- Ingenbleek, P.T.M., Workneh, T.K. and van Trijp, C.M. (2013). Conducting field research in subsistence markets, with an application to market orientation in the context of Ethiopian pastoralists. *International Journal of Research in Marketing*, 30(1), 83-97.
- Jiang, W., Rosati, F., Chai, H., & Feng, T. (2020). Market orientation practices enhancing corporate environmental performance via knowledge creation: Does environmental management system implementation matter? *Business Strategy and the Environment*, 29(5), 1899-1924.
- Johnson, A. J., Dibrell, C. C., & Hansen, E. (2009). Market orientation, innovativeness, and performance of food companies. *Journal of Agribusiness*, 27(2), 85-106.
- Kasim, Y.H., & Mustofa, K.E.M (2021). Market orientation practices and its effect on performance in case of basic cooperative enterprises in South

- Gondar Zone. *Innovations*, 67(1), 1420-1435.
- Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: The construct, research propositions, and managerial implications. *Journal of Marketing*, 54(2), 1-18.
- Kothari, C.R. (2004). *Research Methodology: Methods and Techniques* (Second Edition). New Age International Publishers, New Delhi. 401pp.
- Kumar, V., Jones, E., Venkatesan, R., & Leone, R. P. (2011). Is market orientation a source of sustainable competitive advantage or simply the cost of competing? *Journal of Marketing*, 75(1), 16-30.
- Lintukangas, K., Ka'hko'nen, A.K., & Hallikas, J. (2019). The role of supply management innovativeness and supplier orientation in firms' sustainability performance. *Journal of Purchasing and Supply Management*, 25(4),1-10.
- Machado, M., Henkels, D., Dalfovo, M. G.A. (2017). Co-operative resources that lead to sustainable competitive advantage. *REBRAE, Curitiba*, 10(1), 53-71.
- Mandal, S., & Saravanan, D. (2019). Exploring the influence of strategic orientations on tourism supply chain agility and resilience: An empirical investigation. *Tourism Planning & Development*, 16(6), 612 - 636.
- Marshall, A. (1890). *Principles of economics* (8th Edition). Macmillan, London. 627pp.
- Masa'deh, R., Al-Henzab, J., Tarhini, A. & Obeidat, B.Y. (2018). The associations among market orientation, technology orientation, entrepreneurial orientation and organizational performance. *Benchmarking: An International Journal*, 25(8), 3117-3142.
- Meisya, P., & Surjasa, D. (2022). Effect of Market Orientation on Firm Performance in F&B Business Sector in Indonesia. *Journal of Theory and Applied Management*. 15(1), 132-145.
- Micheels, E.T., & Gow, H.R. (2008). Market orientation, innovation and entrepreneurship: An empirical examination of the Illinois beef industry. *International Food and Agribusiness Management Review*, 11(3), 31-56.
- Morgan, N. A., Clark, B. H., & Vorhies, D. W. (2019). Market-oriented culture and customer feedback processes. In *Handbook on Customer Centricity*. Edward Elgar Publishing. 43-78.
- Mostafiz, M. I., Sambasivan, M., & Goh, S. K. (2021). Antecedents and consequences of market orientation in international B2B market: Role of export assistance as a moderator. *Journal of Business & Industrial Marketing*, 1(1), 1-49.
- Mpandare, M., & Li, G. (2020). Utilising enterprise social media for product innovation: The role of market orientation. *Sustainability*, 12(9), 3913.
- Mugabo, J., Nyamwaro, S.O., Kalibwani, R., Tenywa, M.M., Buruchara, R. and Fatunbi, A.O. (2018). *Innovation Opportunities in Potato Production in Rwanda*. FARA Research Reports, 2 (16): pp 15.
- Narver, J.C., & Slater, S.F. (1990). The Effect of a Market Orientation on Business Profitability. *Journal of Marketing*, 54(4), 20–35.
- NCCR (2019). *Irish Potato co-operatives data*. National co-operative

- Confederation of Rwanda (NCCR), Kigali. 16pp.
- Neneh, B.N. (2018). Customer orientation and SME performance: the role of networking ties. *African Journal of Economic and Management Studies*, 9(2), 178-196.
- NISR (2017). *Seasonal Agriculture survey 2017*. National Institute of Statistics of Rwanda(NISR), Kigali. 167pp.
- 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.
- Norman, G. (2010). Likert scale, levels of measurement and the “Laws” of statistics. *Advances in Health Sciences Education*, 15(5), 625-632.
- Nwafor, C. (2020). The Market Orientation of South African Smallholder Farmers in a Disaster Context. *Journal of Agribusiness and Rural Development*, 58(4), 437-446.
- O'Dwyer, M., & Gilmore, A. (2018). Value and alliance capability and the formation of strategic alliances in SMEs: The impact of customer orientation and resource optimisation. *Journal of Business Research*, 87(1), 58-68.
- Olabode, O. E., Adeola, O., & Assadinia, S. (2018). The effect of export market-oriented culture on export performance: Evidence from a Sub-Saharan African economy. *International Marketing Review*, 35(4), 637-660.
- Othman, R., Arshad, R., Aris, N.A., & Arif, S.M.M. (2015). Organizational Resources and sustained competitive advantage of co-operative organisations in Malaysia. *Procardia-Social and Behavioural Sciences*, 170(1), 120-127.
- Othman, R., Arshad, R., Aris, N.A., & Arif, S.M.M. (2015). Organizational Resources and sustained competitive advantage of co-operative organisations in Malaysia. *Procardia-Social and Behavioural Sciences*, 170(1), 120-127.
- Peteraf, M., & Barney, J. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309-323.
- Protcko, E., & Dornberger, U. (2017). The impact of market orientation on business performance – the case of Tatarstan knowledge-intensive companies (Russia). *Problems and perspectives in management*, 12(4), 225-231.
- RCA (2020). *Co-operative Statistics in Rwanda*. Rwanda Co-operative Agency (RCA), Kigali. 9pp.
- Royer, J.S. (2014). The theory of agricultural co-operatives. *Journal of Co-operatives*, 28(1), 1-19.
- Saleh, M. H. M., Azmin, A. A., & Saraih, U. N. (2021). The Effect of marketing ethics as a moderator on the relationship between customer orientation and SMEs Performance in Saudi Arabia. *Advanced International Journal of Business, Entrepreneurship and SMEs*, 3 (8), 119-138.
- Savabieh, S., Nayebzadeh, S., Abghari, R., & Bhatami-Nasab S. (2020). A systematic review and a Synthesis Research on Market Orientation Studies. *International Journal of*

- Information Science and Management*, 18(2), 145-261.
- Senaviratna, N., & Cooray, T. (2019). Diagnosing multicollinearity of logistic regression model. *Asian Journal of Probability and Statistics*, 5(2), 1-9.
- Shariff, M.N., Peou, C., Ali, J. (2010). Moderating Effect of Government Policy on Entrepreneurship and Growth Performance of Small-Medium Enterprises in Cambodia. *International Journal of Business and Management Science*, 3(1), 57-72.
- Shehu, A.M., & Mahmood, R. (2014) The Relationship between Market Orientation and Business Performance of Nigerian SMEs: The Role of Organizational Culture. *International Journal of Business and Social Science*, 5(9), 159-167.
- Singh, K., Misra, M., Kumar, M., & Tiwari, V. (2019). A study on the determinants of financial performance of U.S. agricultural co-operatives. *Journal of Business Economics and Management*, 20(4), 633-647.
- Sisay, D. T., Verhees, F. J. H., & Van Trijp, H. C. (2017). The influence of market orientation on firm performance and members' livelihood in Ethiopian seed producer cooperatives. *Agrekon*, 56(4), 366–382.
- Stuart, F.I., Verville, J., & Taskin, N. (2012). Trust in buyer-supplier relationships: supplier competency, interpersonal relationships and performance outcomes. *Journal of Enterprise Information Management*, 25(4), 392-412.
- Suryanto, T., & Mukhsin, M. (2020). Mediation of supply chain integration on the relationship between market orientation with company performance. *Uncertain Supply Chain Management*, 8(4), 739–744.
- Sutapa, S., Mulyana, M., & Wasitowati, W. (2017). The role of market orientation, creativity and innovation in creating competitive advantages and creative industry performance. *Jurnal Dinamika Manajemen*, 8 (2), 152-166.
- Tabachnick, B.G., & Fidell, L.S. (1989). *Using multivariate statistics* (7th 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.
- Tho, N.D. (2019). Strategic orientation and firm innovativeness: a necessary condition analysis. *Baltic Journal of Management*, 14(3), 427-442.
- Udriyah, U., Tham, J., & Azam, S.M. (2019). The effects of market orientation and innovation on competitive advantage and business performance of textile SMEs. *Management Science Letters*, 9(9), 1419-1428.
- 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.

Verhofstadt, E., & Maertens, M. (2014). Smallholder co-operatives and agricultural performance in Rwanda: Do organizational differences matter? *Agricultural Economics*, 45(1), 39-52.

Wang, Y., Xue, X., & Guo, H. (2022). The Sustainability of Market Orientation from a Dynamic Perspective: The Mediation of Dynamic Capability and the Moderation of Error Management Climate. *Sustainability, MDPI*, 14(7), 1-15.

Waruiru, E., Namusonge, M., & Wanjira, J. (2018). In influence of inter-functional coordination on performance of insurance organizations in Kenya. *Business and Strategic Management*, 3(6), 52–65.

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 Cooperative Performance Using Financial Ratio. *International Journal of Business and Technopreneurship*, 7(3), 385-396.

Zhou, K. Z, li, J. J., Zhou, N., & Su, V. (2008). Market orientation, Job satisfaction, Product quality and firm performance: Evidence from China. *Strategic Management Journal*, 29(9), 985-1000.

Appendices

Appendix Table A1: Correlation Matrix and Variance Inflation Factor

	CO	CMO	INFC	SO	ROE	1/VIF	VIF
CO	1					.297	3.363
CMO	.797**	1				.268	3.730
INFC	.792**	.717**	1			.204	4.897
SO	.538**	.628**	.739**	1		.441	2.268
ROE	.628**	.579**	.514**	.309**	1		

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

Appendix Table A2: Heteroscedasticity

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	3.305E-16	.036		.000	1.000
	CUSOR	.000	.014	.000	.000	1.000
	COMPOR	.000	.018	.000	.000	1.000
	INTFCO	.000	.022	.000	.000	1.000
	SOR	.000	.011	.000	.000	1.000

a. Dependent Variable: AbsUt

Appendix Table A3: Tests of Normality^a

	Kolmogorov-Smirnov ^b			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROE	.450	12	.000	.440	12	.000

a. Co = 1.00, COMO = 2.00, INFO = 2.00, SO= 1.80

b. Lilliefors Significance Correction

Appendix Table A4: IPFCs ROE in 2019

Ratio	Range	Co-operatives	
		Frequency	Percentage
ROE	≤ 0.10	18	56.25
	0.10-0.20	02	6.25
	0.21-0.30	04	12.50
	0.31-0.40	04	12.50
	0.41≤	04	12.50

Source: Calculated from Secondary data, NCCR (2019)