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INTELLECTUAL CAPITAL AND ENTREPRENEURIAL ORIENTATION AS PREDICTORS OF BUSINESS SUSTAINABILITY AMONG AGRICULTURAL COOPERATIVES IN DAVAO DEL NORTE, PHILIPPINES

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Abstract:
The primary aim of the study is to determine whether intellectual capital and entrepreneurial orientation are predictors of business sustainability. Utilizing a non-experimental, quantitative-descriptive correlation technique, data were obtained from 25 compliant agricultural cooperatives consisting of 807 accumulated employees in the Province of Davao del Norte. The researcher utilized a stratified random sampling technique and an online survey mode of data collection. The researcher also utilised the statistical tools mean, Pearson r, and regression analysis. From the results of the study, it was found that there is a very high level of intellectual capital, entrepreneurial orientation, and business sustainability. Additionally, there is a significant relationship between intellectual capital and business sustainability. Moreover, there is also a significant relationship between entrepreneurial orientation and business sustainability. In addition, among the indicators of intellectual capital, structural capital and customer capital can significantly predict business sustainability. Further, among the indicators of entrepreneurial orientation, innovativeness, proactiveness, risk-taking, and competitive

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aggressiveness can significantly predict business sustainability. Finally, intellectual capital and entrepreneurial orientation can significantly predict business sustainability.

SDG Thrust: #8 Decent Work and Economic Growth; #11 Sustainable Cities and Communities

JEL: M10, L26, Q13, O34, C12, D23

Keywords: business administration, intellectual capital, entrepreneurial orientation, business sustainability, correlation, agricultural cooperatives, Philippines

1. Introduction

Agricultural cooperatives play a vital role in preserving the rural livelihoods and sustaining agricultural practices that contribute to farm sustainability. They empower their members and small farmers to have a greater voice in the supply chain (Ajates, 2020, p.1), embrace eco-friendly methods (Candemir, Duvaleix, & Latruffe 2021, p. 1119), and enhance farmers' incomes through resilient livelihoods, market failure corrections, and sustainable rural development (Chen, Khan & Zhang 2022, p. 1). However, conditions such as distrust among members, unmet resource commitments, lack of bargaining power, poor quality of products, price sensitivity, low human resources, and limited funding greatly affect the sustainability of agricultural cooperatives and compromise the ability of organizations to grow (Orlu & Rambe 2022, p.3; Munir, Prajawati, & Sagena 2021, p. 157).

Business sustainability is crucial for agricultural cooperatives. This suggests the possibility for governmental policies and private activities in cooperatives to mutually reinforce one another (Candemir, Duvaleix, & Latruffe, 2021, p. 1118). Lamm *et al.* (2023, p. 1), emphasize the adoption of sustainable agricultural practices to reduce environmental impacts and maintain a sufficient food supply. The cooperative members' implementation of sustainable environmental methods like agroforestry and organic fertilizers significantly enhances the sustainable development of agriculture (Donkor, Ratinger, & Hejkrlik, 2023, p. 80; Muhaimin, Retnoningsih, & Pariasa, 2023, p. 3). The intervention of institutional support strengthens the productivity necessary for ensuring food security (Ndlovu & Masuku 2021, p. 672). And transform cooperatives into sustainable, more transparent, and efficient entities (Ciruela-Lorenzo 2020, p. 3; Richter & Hanf 2021, p. 14).

Studies have shown the well-established links between intellectual capital and business sustainability. Intellectual capital and its dimensions serve as an important factor and cornerstone of sustainability (Trajkovska *et al.* 2022, p. 1187). Ying, Hassan, and Ahmad (2019, p. 14) agreed that intellectual capital makes a major contribution to resource acquisition that aids businesses in creating a sustainable competitive edge in challenging market conditions. Scholars such as Phonthanukitithaworn *et al.* (2023, p. 15),

Massaro *et al.* (2018, p. 11), and Dal Mas (2019, p. 21) have demonstrated that intellectual capital significantly influences sustainable business practices in the context of sustainable development. The integration of commitment from top management and human resource management has a positive impact on the sustainable business performance of cooperatives (Chawewonga & Naipinit 2023, p. 1053; Malik *et al.* 2020, p. 16).

On the other hand, researchers have found a link between entrepreneurial orientation and business sustainability. According to Abbas, Banu, and Ugheoke (2023, p. 8), entrepreneurial orientation dimensions have a beneficial effect on the sustainability of the firm. Further, Loan *et al.* (2023, p. 254) have investigated the association between entrepreneurial orientation factors and business sustainability. Further, Bouichou *et al.* (2021, p. 11) emphasize that entrepreneurial intentions, opportunities, and experiences positively impact the sustainability of agricultural cooperatives.

Furthermore, there are no similar studies which deal with intellectual capital, entrepreneurial orientation, and business sustainability in Region XI or specifically in Davao Del Norte. Existing studies are only on the adoption of green practices, quality of service, the implementation of emergency procedures, and the use of smart city strategies and technologies influenced sustainability (Nuevo 2022, p. 5; Regidor *et al.* 2023, p. 257; Regidor *et al.* 2022, p. 150; Giourka *et al.* 2019, p. 14). Such studies only focus on small and medium enterprises; no research on the aforementioned variables has been done for agricultural cooperatives in the vicinity of Davao del Norte. The researcher observes a shrinking number of agricultural cooperatives, yet the most vulnerable in a constantly changing environment is the agricultural sector (Paparon & Lagura 2022, p.367). Moreover, the findings of the study may aid in becoming an asset to the world of literature. Thus, making this study a creation of new knowledge that can give a specific contribution to the field of business administration. In addition, results may be improved or augment practices of agricultural cooperatives in terms of their intellectual capital, entrepreneurial orientation, and business sustainability. Thus, there is a need to conduct this study.

2. Literature Review

There is a review of related literature which are discussed in support of the study. On intellectual capital, customer capital puts companies in a better position by enabling them to understand their customers' current needs and anticipate their demands ahead of competitors. Customer capital contributes to revenue due to the company's relationship with its customers (Yasir 2022, p. 1). Similarly, in the study by Dou *et al.* (2018, p. 3), customer capital ensures stable customer demand. Customer capital helps companies manage financial constraints due to the customers' pure brand recognition.

In addition, structural capital preserves knowledge based on a successful past implementation within the organization. Structural capital significantly influences the capacity and performance of companies (Beltramino *et al.* 2020, p.916). Further, a previous study by Olajide *et al.* (2022, p. 176) found out that structural capital has a positive

relationship with operational performance and growth of small businesses. Small-scale businesses should persist in acquiring structural capital to achieve more of their objectives.

On entrepreneurial orientation, the innovativeness of firms reflects their successful exploitation of ideas. Innovativeness indicates that the growth of a firm's profits is rising due to the increased new ideas (Battisti & Stoneman 2019, p.46). In a related study by Yi *et al.* (2022, p. 2), innovativeness determines the customer's response to new products. Successful innovativeness contributes to the retention of existing customers and the acquisition of new customers.

Relatedly, autonomy results in greater profitability, productivity, and sales. Firms that receive autonomy are more likely to form strategic partnerships like joint ventures or subsidiaries (Kala 2024, p. 5). In a similar study by Sikandar *et al.* (2019, p. 2), firms with more risk-taking behaviors gain more growth and sales. Both political ties and managerial power are important factors influencing the risk-taking of firms. Furthermore, competitive aggressiveness is a critical determinant of a firm's ability to achieve and sustain competitive advantage. Competitive aggressiveness is also important in boosting marketing performance (Tariah *et al.* 2023, p. 97).

On business sustainability, the high economic factors of sustainable development in countries are attributed to opportunity-driven entrepreneurship. The financial stability of economies and business environments has a positive effect on achieving sustainable economic factor goals (Sofrankova *et al.* 2021, p. 3).

Moreover, social factors aim to reorganize politics in a manner similar to the welfare state. Social factors demand and promote new institutions that develop welfare state endeavors that reduce social inequalities and develop an eco-welfare (Opielka 2022, p. 9). Furthermore, the study by Said *et al.* (2024, p. 2) highlighted that environmental factors remind businesses that meeting daily needs should not endanger the environment and that there is a need to preserve it for the benefit of future generations. Incorporating environmental factors into operations can enhance organizational value. By taking into account environmental issues, businesses can reduce carbon emissions, conserve resources, improve environmental quality, and boost their reputation. Enhancing climate resilience is a crucial consequence of environmental conditions and sustainability strategies (Tennakoon *et al.* 2024, p. 8).

This study was anchored on the Institutional Theory by Campbell (2007, pp 946-963), which provides a valuable perspective for explaining the various influences that exert pressure on a company's sustainability practices. Institutional pressure can support the stability of cooperatives throughout the agricultural industry's chain. Thus, institutional support enhances the efficiency of local agricultural cooperatives.

Additionally, this study is supported by the Human Capital Theory by Vaizey (1962 as cited in Sweetland 1996, p. 341), which posits that investing in people benefits both individuals and society economically, and this supports this study. The investment component of this proposition distinguishes human capital expenditures from consumer expenditures and those that yield long-term benefits. Research has also confirmed the

crucial role of human capital in the development and success of cooperative organizations.

Furthermore, this study is also supported by the Resource-Based View Theory by Barney (1991, p. 102), which emphasizes the importance of firm-specific resources and skills in establishing long-term competitive advantage, further supporting this study. Businesses that possess internal resources and competencies that are uncommon, valuable, unique, and non-substitutable are at a competitive advantage. Moreover, it focuses on the implementation of strategies to improve performance through the optimization of internal resources.

3. Material and Methods

Out of the total population of 807 employees of the agricultural cooperatives, 314 became the respondents for this study, coming from the 25 active and compliant agricultural cooperatives. The respondents are regular employees from the identified 25 agricultural cooperatives and have served for at least 1 year as of the period of this study. Employees from non-compliant and dissolved agricultural cooperatives were excluded from the population under investigation to avoid respondent bias. Also, newly hired employees or those whose employment is less than 1 year were excluded from the study, including the managers and those in higher managerial positions, to prevent conflicts of interest.

The researcher used the list of registered agricultural cooperatives from the Cooperative Development Authority (CDA) in the Provincial Administrator's Office-Cooperative and Investment Development Division (PADO-CIDD) in Davao del Norte, resulting in a total of 25 active and compliant agricultural cooperatives.

To gather as much data as possible and gain a deeper understanding of the phenomenon under study, the sampling technique used in the study was stratified random sampling, which approach to data collection is more effective than simple random sampling because it provides strata-specific results and can increase the accuracy of objective extent estimates (Liu & Pontius 2021, p. 2; Mbu & Nso, 2021, p. 233). Stratified random sampling guarantees an accurate representation of every person in the population. It entails splitting the sample into homogeneous subgroups, or strata, and then choosing samples from each stratum. This method is frequently applied to produce reviews of specific groups' experiences within the target population.

The sample size was determined using the Raosoft Sample Size Calculator available online. It was computed considering a response distribution of 50%, a confidence level of 95%, and a margin of error of 5%. Originally, the total number of respondents for the investigation was two hundred sixty-one (261). However, to account for potential non-response, an additional twenty percent (20%) was included. Consequently, the total sample size is three hundred fourteen (314) agricultural cooperative employees throughout Davao del Norte. The distribution of the sample size was based on the calculation of the ratio of 0.389% from the total number of 807

employees proportioned equally to the 25 compliant cooperatives in the locality of Davao del Norte.

This study was conducted in the 25 agricultural cooperatives in the Province of Davao del Norte, which is positioned in the north-central section of the Davao Region. Davao Region serves as the primary hub for economic and administrative activities in Region XI. Davao del Norte, located at 7º 21' North latitude and 125º 42' East longitude, acts as a border and is well-connected to numerous provinces, cities, and municipalities in Mindanao via national highways. These routes enable mobility in all cardinal directions: north, south, east, and west.

In this study, the researcher utilized an adapted and modified questionnaire as a survey tool to effectively collect data for addressing specific and identified research issues. The instrument was modified to suit the requirements of this study and underwent expert validation. Furthermore, the questionnaire was verified through validation conducted by both a panel of experts from UM Tagum College and the research adviser to assess the reliability and validity of the questionnaire.

Additionally, fifty (50) employees of the agricultural cooperatives who were not among the participants who had been identified took part in pilot testing. The pilot testing procedure for the modified instrument involves ensuring internal consistency through reliability tests like Cronbach's Alpha (CA). For the first independent variable, intellectual capital, Cronbach's Alpha showed a result of 0.917, which means very good intellectual capital. The second independent variable, entrepreneurial orientation, showed good internal consistency with a Cronbach's Alpha of 0.887, which means good entrepreneurial orientation. Relatedly, the dependent variable, business sustainability, gained a Cronbach's Alpha of 0.959, which means very good business sustainability. These results suggest that the variables used in the study are reliable and consistent.

The study utilized three sets of adapted questionnaires. The questionnaire for intellectual capital is adapted from Al-Dujaili (2012, pp. 131-132) from the study "Influence of Intellectual Capital in the Organizational Innovation" with three indicators: human capital, structural capital, and customer capital. The questionnaire for entrepreneurial orientation was based on Zhang *et al.* (2014, p. 112) in their study "Proposing and Validating a Five-Dimensional Scale for Measuring Entrepreneurial Orientation—An Empirical Study", which included indicators such as risk-taking, competitive aggressiveness, autonomy, and innovativeness. The adapted questionnaire for business sustainability, which includes indicators such as economic factors, social factors, and environmental factors, was retrieved from Laurell *et al.* (2018, p.524) in their study "Management of Environmental Quality: An International Journal." The panel of experts also modified and validated the questionnaires to ensure they aligned with the study. Five internal and four external validators validated this research instrument, modifying it to align with the study. The consolidated results from the expert validation yielded an average weighted mean of 4.59, which is verbally described as very high.

The research respondents were asked to rate the level of intellectual capital, entrepreneurial orientation, and business sustainability using the 5 point Likert scale

with the following range of means with its descriptions 4.20 – 5.00 or Very High which means measures are very much evident; 3.40 – 4.19 or High which means measures are evident; 2.60 – 3.39 or Moderate which means measures are moderately evident; 1.80 – 2.59 or Low which means measures are less evident; and 1.00 – 1.79 or Very Low which means measures are not evident at all.

The study used a quantitative, non-experimental, cross-sectional descriptive correlational design to look at the link between two or more variables and find out the level of association and correlation among variables, as it is the purpose of the design (Olivencia-Carrion *et al.* 2023, p. 6). The study highlighted that correlation designs do not assert absolute causation but instead concentrate on investigating the relationships between variables and allow insightful information on how entrepreneurial orientation and intellectual capital support sustainable business practices (Rodriguez & McCorkle 2020, p. 11; Liu 2020, p. 2238).

In doing descriptive quantitative research, the following procedure will be followed. The researcher sent a letter to the Office of the Cooperative Development Authority, Provincial Administrator's Office-Cooperative and Investment Development Division (PADO-CIDD) in Davao del Norte asking for permission to conduct the study, and once approved, it was furnished to the identified agricultural cooperatives. The researcher immediately visited the concerned agricultural cooperatives in Davao Del Norte, as part of the courtesy call, and will discuss the plan for conducting a face-to-face survey with all concerned respondents. Also, before the actual data collection, the researcher secured a Certificate of Compliance from UMERC (UMERC Protocol Number UMERC-2024-308) to ensure compliance with some ethical considerations in research. With the use of the Excel template, all retrieved questionnaires were encoded, tallied, and validated after verification and checking for the completeness of the answers. The data was analyzed and interpreted in line with the objectives of the study with the assistance of the designated statistician, and based on the findings of the study, conclusions and recommendations were formulated.

For more comprehensive interpretation and analysis of the data, the following statistical tools were utilized. Mean for the levels of intellectual capital, entrepreneurial orientation, and business sustainability among agricultural cooperatives, in answer to research objectives 1, 2, and 3. Pearson Product-Moment Correlation (Pearson r) for the significance of the relationship between and among the variables of intellectual capital, entrepreneurial orientation, and business sustainability, in answer to research objective number 4. For research objective 5, multiple regression analysis assessed how well independent variables predict the variation in the dependent variable. This tool was used to identify the indicators of intellectual capital and entrepreneurial orientation that significantly predict business sustainability among agricultural cooperatives.

In the conduct of this study and before the data were gathered, some ethical issues and considerations were considered. The participation of the respondents was completely voluntary and anonymized to protect their privacy. As a researcher, I maintained the confidentiality of all gathered data, using it solely for research purposes.

No names were required from the respondents so that their identities became anonymous in adherence to the Data Privacy Act of 2012, which protects the respondents from unauthorized processing of their private or identifiable information or guarantees them that their response cannot be traced back to its real sources to protect their identity. Informed consent was secured from all the respondents involved in the study.

The participants were carefully selected based on the criteria provided in the research. The study did not involve high-risk situations that the respondents experienced since the respondents are employees of the agricultural cooperatives, and this was conducted in accordance with due process. All the agricultural cooperatives became the primary beneficiaries of the study, and they were able to gain an understanding of the dynamics of intellectual capital, entrepreneurial orientation, and business sustainability. The results of this study can help the agricultural cooperatives since the findings of this study will give them new information about intellectual capital, entrepreneurial orientation, and business sustainability among agricultural cooperatives. In addition, this study is used as a practical reference for future research in the field of business administration. Further, in the conduct of this research, the respondents received tangible benefits such as a simple token from the researcher.

The study used the Grammarly or Turnitin software and/or Plagiarism Detector to ensure that there was no plagiarism to happen in the whole duration of the study. The study underwent the standard procedure of research procedure established by the Professional Schools of the University of Mindanao. The study had no conflict of interest since the researcher has no relationship to the respondents of the study, but it was a requirement for the completion of the master's degree in business administration at the University of Mindanao Professional Schools. In this study, there was no deceit. The researcher secured proper permission from the targeted agencies where the respondents are working. No person was authorized to publish or present this paper except the researcher or the adviser without the consent of the researcher. For publication of this study, the adviser becomes the study's co-author.

4. Results and Discussion

Table 1: Level of Intellectual Capital

Items	SD	Mean	D.E.
Human Capital	4.35	0.55	Very High
Structural Capital	4.34	0.52	Very High
Customer Capital	4.43	0.49	Very High
Overall	**4.37**	**0.51**	**Very High**

Presented in Table 1 is the level of intellectual capital, which revealed a total mean rating of 4.37 labelled as Very High and an overall standard deviation of 0.51. It can also be viewed from the table that the indicator customer capital gained the highest mean score of 4.43, described as Very High. Followed by human capital with a mean score of 4.35,

descriptively described as Very High. Lastly, structural capital has a mean score of 4.34 or Very High.

The very high level of customer capital implies that the agricultural cooperatives have a very high capacity to develop and implement plans that meet the needs of their customers. The result is aligned with the statements of the authors (Dou *et al.* 2018, p. 3; Yasir 2022, p. 1), wherein customer capital enables companies to be in a better position as it contributes to revenue due to the relationship of the company with its customers. Customer capital ensures stable customer demand due to the customers' pure brand recognition.

The very high level of structural capital implies that the agricultural cooperatives have a very high aggregate and collective knowledge of the assets of communities and organizations. The authors (Beltramino *et al.* 2020, p.916; Olajide *et al.* 2022, p.176) support the result by asserting that structural capital significantly influences the capacity and performance of companies. Moreover, structural capital has a positive relationship with operational performance and growth in small businesses. Small-scale businesses should continue to acquire structural capital so that more of their goals will be actualized.

Table 2: Level of Entrepreneurial Orientation

Items	SD	Mean	D.E.
Autonomy	4.28	0.50	Very High
Innovativeness	4.34	0.50	Very High
Proactiveness	4.32	0.49	Very High
Risk-Taking	4.28	0.50	Very High
Competitive Aggressiveness	4.28	0.59	Very High
Overall	**4.30**	**0.52**	**Very High**

Revealed in Table 2 is the level of entrepreneurial orientation with an overall mean score of 4.30, a very high level, and a standard deviation of 0.52. Moreover, the indicator innovativeness gained the highest mean score of 4.34, described as very high. It is followed by proactiveness with a mean score of 4.32, descriptively described as very high. Lastly, autonomy, risk-taking, and competitive aggressiveness all have a mean score of 4.28, or very high.

The very high level of innovativeness implies that the agricultural cooperatives greatly introduce new products to the market. The agricultural cooperatives also create new opportunities by integrating a strategic approach with a market-oriented approach to processes and behaviors that are innovative. The result is consistent with the claim of authors (Battisti & Stoneman 2019, p. 46; Yi *et al.* 2022, p. 2) stating that the innovativeness of firms reflects the firm's successful exploitation of new ideas. Innovativeness indicates that the growth of a firm's profits is rising due to the increased utilization of new ideas. Successful innovativeness contributes to the retention of existing customers and the acquisition of new customers.

The very high levels of autonomy, risk-taking, and competitive aggressiveness imply that the agricultural cooperatives highly decide what work is done, when it is done,

and how it is done. Also, the agricultural cooperatives are very much willing to invest large sums of money in a risky manner and have a high ability to deal with their competitors aggressively. The results agree that autonomy leads to greater profitability, productivity, and sales. Also, firms exhibiting greater risk-taking behaviors experience more growth and sales. Further, competitive aggressiveness allows firms to attain and sustain competitive advantage (Kala 2024, p. 5; Sikandar *et al.* 2019, p. 2; Tariah *et al.* 2023, p. 97).

Table 3: Level of Business Sustainability

Items	**SD**	**Mean**	**D.E.**
Economic Factors	4.39	0.33	Very High
Social Factors	4.39	0.30	Very High
Environmental Factors	4.34	0.34	Very High
Overall	**4.37**	**0.32**	**Very High**

Presented in Table 3 is the level of business sustainability, which revealed an overall mean rating of 4.37 labeled as Very High and a standard deviation of 0.32. It can also be viewed from the table that the indicators of economic factors and social factors both gained the highest mean score of 4.39, described as Very High. Followed by environmental factors with a mean score of 4.34, described as very high.

The very high levels of economic factors and social factors imply that the agricultural cooperatives highly experience long-term sustainability. The agricultural cooperatives are also highly impacted by the societal factors on sustainability and achievement. The result is consistent with the claim of the authors (Opielka 2022, p.9; Sofrankova *et al.* 2021, p.3) stating that the high economic factors of sustainable development of countries are due to opportunity-driven entrepreneurship. Relatedly, social factors demand and promote new institutions that develop welfare state endeavors that reduce social inequalities and develop an eco-welfare.

The very high level of environmental factors implies that the agricultural cooperatives' long-term sustainability and effectiveness are highly influenced by the natural environment. The result is aligned with the authors' statements (Said *et al.* 2024, p. 2; Tennakoon *et al.* 2024, p. 8) wherein considering environmental factors into operations can augment the value of organizations. Similarly, building climate resilience is one of the significant impacts of environmental factors and sustainability practices.

Table 4: Significance of the Relationship between Intellectual Capital, Entrepreneurial Orientation, and Business Sustainability

Independent Variables	**Dependent Variable**	**r-value**	**p-value**	**Decision**
Intellectual Capital	Business Sustainability	.582**	<0.001	Ho is rejected
Entrepreneurial Orientation		.609**	<0.001	Ho is rejected

Presented in Table 4 is the correlation between the measures of intellectual capital, entrepreneurial orientation, and business sustainability. It can be gleaned from the table that when intellectual capital is correlated with the measures of business sustainability,

the overall r-value results in 0.582 with a p-value of <0.001, which is less than the 0.05 level of significance. This signifies that intellectual capital has a significant relation to business sustainability. Meanwhile, when entrepreneurial orientation is correlated with the measures of business sustainability, the overall r-value results in 0.609 with a p-value of <0.001, which is less than the 0.05 level of significance. This signifies that entrepreneurial orientation is positively correlated with business sustainability.

The results indicated a significant link between intellectual capital and business sustainability. Entrepreneurial orientation is significantly correlated with business sustainability. The result of the study confirms with authors (Abbas *et al.* 2023, p. 8; Trajkovska *et al.* 2022, p. 1187) who mentioned that intellectual capital and its dimensions serve as an important factor and cornerstone of sustainability. Also, entrepreneurial orientation dimensions have a beneficial effect on the sustainability of the firm.

Table 5.1: Domains of Intellectual Capital that Significantly Influence Business Sustainability of Agricultural Cooperatives

Independent Variables	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**p-value**	**Decision**
	B	**SE**	**Beta**			
(Constant)	1.644	0.187				
Human Capital	-0.012	0.053	-0.015	-0.23	0.818	Ho is not rejected
Structural Capital	0.305	0.056	0.374	5.414	<.001	Ho is rejected
Customer Capital	0.333	0.056	0.385	5.958	<.001	Ho is rejected
Dependent Variable: Business Sustainability						
R = 0.684 R2 = 0.468						
F-value = 76.942 p-value = <.001						

Presented in Table 5.1 is the output of the analysis, which aims to show the investigation on the domains of intellectual capital that can significantly predict business sustainability. The results indicate that intellectual capital is found to be a significant predictor of business sustainability, as shown with an F-value of 76.942 and a p-value of <0.001. The analysis shows that the indicators structural capital and customer capital have T-values of 5.414 and 5.958, respectively. It implies that among the indicators of intellectual capital, structural capital and customer capital can predict business sustainability.

The result of this study showed a significant influence of intellectual capital on business sustainability. Thus, the null hypothesis, which stated that there is no domain of intellectual capital that can significantly predict business sustainability, was rejected. The result implied that among the indicators of intellectual capital, structural capital and customer capital can predict business sustainability. The result is consistent with the authors (Beltramino *et al.* 2020, p. 916; Yasir 2022, p. 1), wherein structural capital significantly influences the capacity and performance of companies. Further, customer capital contributes to revenue due to the relationship of the company with its customers.

Table 5.2: Domains of Entrepreneurial Orientation that Significantly Influence Business Sustainability of Agricultural Cooperatives

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	p-value	Decision
	B	SE	Beta			
(Constant)	1.359	0.163				
Autonomy	0.069	0.040	0.090	1.736	0.084	Ho is not rejected
Innovativeness	0.230	0.045	0.294	5.088	<.001	Ho is rejected
Proactiveness	0.193	0.046	0.247	4.213	<.001	Ho is rejected
Risk-taking	0.134	0.045	0.176	3.001	0.003	Ho is rejected
Competitive Aggressiveness	0.077	0.035	0.119	2.182	0.030	Ho is rejected
Dependent Variable: Business Sustainability						
R = 0.764 R2 = 0.584						
F-value = 72.943 p-value = <.001						

Revealed on Table 5.2 is the output of the analysis, which aims to show the investigation on the domain of entrepreneurial orientation that can significantly predict business sustainability. The results indicate that entrepreneurial orientation is found to be a significant predictor of business sustainability, as shown with an F-value of 72.943 and a p-value of <0.001. The analysis shows that the indicators innovativeness, proactiveness, risk-taking, and competitive aggressiveness have T-values of 5.088, 4.213, 3.001, and 2.182, respectively. It implies that among the indicators of entrepreneurial orientation, innovativeness, proactiveness, risk-taking, and competitive aggressiveness can predict business sustainability.

The result of this study showed a significant influence of entrepreneurial orientation on business sustainability. Thus, the null hypothesis, which stated that there is no domain of entrepreneurial orientation that can significantly predict business sustainability, is rejected. The results suggest that among the indicators of entrepreneurial orientation, innovativeness, proactiveness, risk-taking, and competitive aggressiveness are significant predictors of business sustainability. The findings confirm that effective innovation enhances the retention of existing customers and the acquisition of new customers. Also, firms exhibiting greater risk-taking behaviors get enhanced growth and sales. Moreover, competitive aggressiveness is an important factor in a firm's ability to attain and sustain competitive advantage (Sikandar *et al.* 2019, p.2; Tariah *et al.* 2023, p.97; Yi *et al.* 2022, p.2).

Table 6: Multiple Regression Analysis of Intellectual Capital and Entrepreneurial Orientation as Predictors of Business Sustainability

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	p-value	Decision
	B	SE	Beta			
(Constant)	1.501	.175				
Intellectual Capital	.650	.165	.774	11.602	<.001	Reject Ho
Entrepreneurial Orientation	.703	.211	.926	16.220	<.001	Reject Ho
Dependent Variable: Business Sustainability						

R=0.724 R2=0.526
F-value=149.885 p-value=<.001

Revealed in Table 6 are the regression coefficients to test if intellectual capital and entrepreneurial orientation significantly predict business sustainability. The results show that intellectual capital and entrepreneurial orientation significantly predict business sustainability, as shown with an F-value of 149.885 and a p-value of <0.001, which implies that the overall predictor is significant. Therefore, the null hypothesis that intellectual capital and entrepreneurial orientation do not significantly predict business sustainability is rejected. The results also revealed that when intellectual capital and entrepreneurial orientation are regressed on business sustainability, an R^2 of 0.526 is manifested, which implies that 52.6% of the variance of business sustainability can be explained by intellectual capital and entrepreneurial orientation, and the remaining 47.4% is linked to other factors.

The overall result of the regression analysis on intellectual capital and entrepreneurial orientation as predictors of business sustainability revealed that intellectual capital and entrepreneurial orientation significantly predict business sustainability. The results of the study proved that the integration of top management commitment and human resource management positively influences sustainable business performance. Furthermore, entrepreneurial goals, opportunities, and experiences positively influence the sustainability of agricultural cooperatives (Bouichou *et al.* 2021, p. 11; Chawewonga & Naipinit 2023, p. 1053; Malik *et al.* 2020).

5. Recommendations

The researcher came up with recommendations based on the results of the study. For the very high-level results of the 3 variables: intellectual capital, entrepreneurial orientation, and business sustainability, the researcher recommends that the agricultural cooperatives continue with their present program of activities in promoting their services and products to the members, as these can be considered their best practices in their operation. With its best practices, the cooperatives' management may come up with the conduct of its annual inventory of services/products and identify which services/products need improvement and/or change or consider its advantages and disadvantages in order to come up with a much-improved delivery of its services/products for the satisfaction of its members/customers.

For the very high level of intellectual capital, the researcher recommends that it should focus more on its structural capital, which has the lowest mean among the other indicators. Structural capital glues together other indicators of intellectual capital. It is important to integrate well and link the other indicators with structural capital. It is recommended that cooperatives establish and maintain solid processes in terms of their rules and regulations related to farm inputs, credit, technical assistance, storage, marketing, processing and other services for the member-farmers. Then, a strategic

planning team may be created to undertake the review of the cooperatives' existing rules, regulations, and processes. The existing processes may also be part of the "customer-member satisfaction survey," which may be conducted once a year by the Human Resource Department or under the Business Development Department of the cooperatives.

Moreover, the researcher will also recommend looking into the indicator of customer capital. Since the customers make or break the business, the cooperatives may consider looking for more than just satisfying the members' expectations but also taking more attention on how to fulfill the desires of its members. The cooperative's management may put up suggestion boxes in conspicuous places in the office where members' suggestions may be considered to help improve the quality of services/products and even to develop new services/products that can be offered to its members. An annual customer/client/members' satisfaction survey may be conducted at the end of the year to determine the level of satisfaction of the members and what things need to be improved in the next year's operation.

Furthermore, the management may be open to the possibility of a forum where both management and all members will be able to share openly their ideas, including their sentiments about the existing operation of the cooperatives. The customers' and members' loyalty to the cooperative is a great factor for the continuing positive relationship of both parties in the sustainability of the existence of the cooperatives. If the funds will warrant it, the conduct of "Customers-Members Relationship Management" may be scheduled annually to refresh the minds of management and members on their duties and obligations as far as the cooperatives are concerned. More efforts may be provided by management in taking care of its members in order to maximize customer-members' satisfaction.

On the result of the very high level of entrepreneurial orientation, the researcher recommends that attention may still be centered on its innovativeness, which is the key element of the competitiveness of the cooperatives. The cooperative may continue to attend trainings and seminars on how to improve its services and products for the continuing satisfaction of its members. The seminars may include professional development training for cooperative members and an innovation and entrepreneurship seminar, which may be done through online classes or in-house and locally facilitated seminars. On the results of other indicators such as autonomy, risk-taking, and competitive aggressiveness, it is recommended that the management be given more autonomy to develop ideas and expectations required to solve problems that lie ahead in the cooperative. The officers may be given maximum flexibility in their desire to improve the delivery of cooperatives' services and products, and there is a need to introduce different ideas to make it a reality and meet the demands of its members. There may be a conduct of orientation and re-orientation on a quarterly basis to ensure that the cooperative remains responsive to the demands of the members.

Further, on the indicators of risk-taking, it is recommended for the cooperative to be prepared to take risks, as they play a vital role in its survival. The conduct of seminars

on "Risk Management" and "Risks versus Expectations" may be facilitated by the cooperative with the assistance of some experts on business risk management and survival. Moreover, to enhance its competitive aggressiveness, the cooperative is encouraged to remain vigilant in responding to market changes and client demands. This proactive approach can help ensure its continued success in the business. This can be made possible through attendance at various seminars on "Business Competitiveness" and "Business—Now and in the Future," which can be taken from in-house and local speakers/business experts.

The very high results of the variable business sustainability can be attributed to the fact that the cooperatives are much more ready to face the economic, social, and environmental challenges nowadays. To improve economic sustainability, the researcher recommends that the cooperative management may decide to process, brand, and market value-added agricultural products rather than merely produce raw materials to boost profit margins and profit resilience. Leaders, employees, and members may be trained in advanced financial management, strategic planning, investment diversification, and collective bargaining power to increase economic sustainability. Another is the risk assessment, which may be conducted once a year and introduce the cooperative to some proactive measures or steps in its operation. In addition to serving the interests of their members, cooperatives may support larger community welfare initiatives and encourage openness, trust, and active networking between members and outside stakeholders. Involving the environmental aspect in strategic planning is very important as it will prepare the cooperative for some changes in how to address issues affecting the physical environment. At this point, the cooperative may be able to improve its policies and regulations for the betterment of its operation and ultimately to the satisfaction of the customer-members.

For future researchers, this study can be replicated or expanded to include public and private companies using the same variables. Another quantitative study may be conducted, introducing mediating variables or another study using the Structural Equation Model with a larger population. A qualitative study may also be conducted to specifically examine the impact of the best practices introduced in the different cooperatives.

6. Conclusion

In reference to the results of the study, conclusions are drawn in this section. There is a very high level of intellectual capital, entrepreneurial orientation, and business sustainability. Additionally, there is a significant relationship between intellectual capital and business sustainability and a significant relationship between entrepreneurial orientation and business sustainability. Furthermore, among the indicators of intellectual capital, structural capital and customer capital can significantly predict business sustainability. Also, among the indicators of entrepreneurial orientation, innovativeness, proactiveness, risk-taking, and competitive aggressiveness can significantly predict

business sustainability. Finally, intellectual capital and entrepreneurial orientation can significantly predict business sustainability.

Moreover, the results of the study imply that the agricultural cooperatives have a very high capacity to develop and implement plans that meet the needs of their customers. In addition, the agricultural cooperatives greatly introduce new products to the market. Relatedly, the agricultural cooperatives have experience with long-term sustainability and prosperity. To add, the agricultural cooperatives are also highly impacted by the societal factors on sustainability and achievement. Similarly, intellectual capital is significantly associated with business sustainability. Further, entrepreneurial orientation is positively linked with business sustainability. Finally, intellectual capital and entrepreneurial orientation are significant predictors of business sustainability.

The conclusions of the study clearly align with the notion that intellectual capital and entrepreneurial orientation significantly predict business sustainability. The conclusions are consistent with the anchor theory, the institutional theory by Campbell (2007, pp. 946-963), which provides a valuable perspective for explaining the various influences that exert pressure on a company's sustainability practices.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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