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Internal Control Policy Predictors of Financial Performance in Ghana: An Ordinal Logistic Regression Analysis of Community-Based Credit Unions (CCUs)

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ABSTRACT

Community-based credit unions (CCUs) occupy a unique position within the Ghanaian economy because of their special role in facilitating payments and channeling credit to individuals and businesses in remote areas. Internal control policy mechanisms are critical to their financial performance. To determine significant internal control policy predictors of financial performance, an ordinal logistic regression model is applied. Data was collected from 105 registered and operational CCUs in Ghana using multistage stratified sampling. Statistically significant internal control policy predictors of CCUs' financial performance were organizational environment (OR=0.34, 95% CI: 0.21, 0.56), monitoring (OR=0.38, 95% CI:0.22,0.65), risk assessment and control (OR=1.52, 95% CI: 1.05, 2.21). A statistically significant interactive relationship was also found between organizational environment and risk assessment and control (OR=3.76, 95% CI: 1.88, 7.61). The financial performance of CCUs appears to depend on a complex combination of internal control policy predictors.

Keywords: Community-based Credit Union, Internal Control.

1.0 INTRODUCTION

Cooperatives Credit Unions (CCUs) are autonomous organizations of well-meaning persons united voluntarily with a common purpose ("Common bond") to meet the socio-cultural, economic, and more importantly financial aspirations of their members through joint-owned and democratically guided rules and regulations (Ciaian et al., 2012). (Betru, 2010), described cooperative credit unions as user-owned formal enterprises where members typically have groupings with objectives and purposes referred to as common bonds. These groupings can be based on either geographical, religion, employer, community, industry, or other specialized affiliations. Furthermore, CCUs have been described as economic entities organized by individuals with a common interest who pool resources together to invest in the form of loans and securities, and returns from the investment are shared among members and democratic participation is highly exercised (Bagina, 2020).

Over the years, CCUs have become resilient in structure and efficient in their operations. As such, they continue to exercise a critical role in poverty reduction and promotion of the economic well-being of members (Sakitri, 2020). It is also clear that well-structured and well-functioning CCUs with sound internal controls and financial systems can facilitate efficient mobilization and allocation of financial resources from those with excess money to those who require excess money (financial intermediaries) (Guinnane, 2011). Access to financial services to persons and organizations is one of the imperative roles played by CCUs. Economic players including the rich, the low-income earners, the poor as well and businesses have access to save money, invest in productive ventures, spread their risk, access credit, and above all improve their lives (Ansah & Sakyiwaa, n.d.).

Invariably, CCUs have become strategic mechanisms used by many policymakers and governments to mobilize savings from remote areas and also train citizens to develop a culture of savings. This facilitates and enhances credit creation with little or no cost since savings mobilized from those with excess funds within a group or society are given to those who need extra funds for their investment opportunities within the same group or community. Ultimately credit unions contribute to the financial resources of members and investors to create and maximize wealth and also improve the incomes and welfare of the "common man" (Irumba & Alinaitwe, 2019).

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Given its invaluable contributions to wealth creation and development of countries, CCUs' sustainability and financial performance have been deemed as very important. As such, several studies have focused on efforts to understand the determinants of financial performance of CCUs. Findings of previous studies have alluded to many factors influencing the performance of CCUs. One such factor is internal control. Internal control is a detailed process developed to ensure that the objectives of operational effectiveness and efficiency of an organization are achieved through effective reporting and compliance of standards, (Kabuye et al., 2019) (H. B. Ahmed, 2021). Internal control encompasses systems of controls instituted by the board and management aimed to ensure operational activities of an enterprise are orderly and efficient (Sulistiyo & Pratiwi, 2021). Controls also ensure that policies and procedures are adhered to by staff and management. This safeguards assets and protects the completeness and accuracy of records (Kiiru et al., 2018).

The authors have discussed a few advantages of internal control to government and non-governmental organizations. This includes ensuring smooth operations and also preventing and protecting against errors, omissions, and fraud. It also ensures that accounting records are accurate and complete. (Widagdo et al., 2020). Management adopts effective internal control mechanisms to achieve operational efficiency and transparency and to enhance performance (Alabdullah et al., 2018). Internal control mechanisms further assist management in curbing qualitative as well as quantitative problems. Important issues relating to regulations and law and other matters of corporate governance and risk management are resolved by effective internal control(E. R. Ahmed et al., 2020).

Despite these advantages, some researchers argue that an internal control system is just a mere construction of bureaucracy and also eats the financial resources of an entity without a necessary increase in financial resources (Le & Nguyen, 2020). Also, internal control adversely affects business operations. Internal control policy is characterized by bureaucracy and therefore stifles initiatives of staff and management. This leads to unnecessary delays in operations and executions of activities (Asiligwa & Rennox, n.d.).

2.0. A review (Internal Control and Financial Performance)

Many researchers have examined the connection between internal control policy and a firm's financial performance. Especially, (Oláh et al., 2019) studied the influence of internal control policy on Jordanian banks and found effective internal control systems ensured policy development and efficiency and accounted for improved financial performance. It also established a positive relationship between internal control policy and the profitability of banks in Jordan. Similar studies by (Alabdullah et al., 2018) interrogated the influence of internal control systems on financial performance in Sultanate of Oman firms. The study established that the internal control system improved investors' confidence and trust which led to more capital injection. It also revealed that the performance of these firms is significantly influenced by internal control systems and also revealed that strong internal controls increase returns of equity (ROE).

In the case of (Kabuye et al., 2019) conducted a study to establish whether the internal control environment is a predictor of financial performance among Uganda supermarkets. It however indicated that an effective internal control environment ensured good customer relations and also ensured after-sales service. It emerged that effective internal control policy is a key influencer to the performance of supermarkets. It again revealed a strong positive relationship between the internal control environment and the performance (profitability, ROE as well as liquidity) of supermarkets in Uganda. A Comparable study was carried out in Kenya by (Mumba & Wekesa, 2020) who explored how an effective control environment influenced the financial performance of Kenya's hospitality industry. This study observed that an effective control environment promotes religious adherence to developed policies and also ensures the implementation of newly developed policies. It also indicated that good policies facilitate the financial performance of hotels. The study provided empirical evidence that ROA, ROE, and ROC correlated positively with the internal control environment. Also, (Prasanna et al., 2019) conducted a study in Sri Lanka that looked at how the control environment influenced the financial performance of manufacturing companies and found that an effective control environment promotes check and balance among management and staff which led to cost savings and cost reduction. The study established that the performance of manufacturing companies in Sri Lanka is influenced by an efficient internal control environment. The study further revealed a positive correlation between financial performance and both liquidity and profitability which were used to measure performance.

Other authors have provided empirical evidence that demonstrates risk assessment influences financial performance. For instance, (Kabuye et al., 2019) studied the effect of control risk assessment on Uganda supermarket's financial performance. It found that effective control risk assessment minimized operational losses (internal and external) and led to improved financial performance. It revealed that control risk assessment has a positive influence on the financial performance (liquidity and profitability) of supermarkets in Uganda. In Saudi Arabia (Sharma & Senan, 2019) conducted similar studies to ascertain the contribution of risk assessment to the financial performance of banks and it revealed that effective risk assessment is a key contributor to the financial performance of Saudi Arabian banks. Effective risk assessment helped minimize risk and ensure that viable investments are chosen. The study provided empirical evidence that effective control risk assessment and profitability correlate positively in the Banks of Saudi Arabia. Similar studies were also conducted in Indonesia by (Pangaribuan et al., 2022) that sought to determine whether a control risk assessment is a predictor of the financial performance of manufacturing companies. It however found that

control risk assessment greatly predicts the financial performance of manufacturing companies in Indonesia. It revealed that control risk assessment is a positive predictor of the financial performance of Indonesian manufacturing companies. It also revealed that customer satisfaction was the key driver of an increase in profitability (financial performance). Comparatively, (Singh & Bagga, 2019) and (Adesunkanmi & Oluwasola, 2022) conducted similar studies in Tanzania and Nigerian and established the contributions made by control risk assessment to the financial performance of Training institutions and insurance companies respectively, and found that effective control risk assessment smooth operations and customer-centered banks. Effective risk assessment improved risk identification and management in the insurance company. It was therefore revealed that risk assessment is one of the key determinants of performance of both the training institutions and insurance companies. The study revealed that effective control risk assessment related positively to the financial performance of both training institutions and insurance companies in Tanzania and Nigeria respectively.

Many other studies have also examined the impact made by information and communication systems on financial performance. In the case of (Mumba & Wekesa, 2020) study assessed the influence of information and communication on the financial performance (ROE, ROC, and ROA) of Hotels in Kenya. it was found that the free and indiscriminate spread of information prevents information asymmetry and hence leads to improved financial performance (ROE, ROC, and ROA). The study concluded that effective control of information culminated in increased performance of the Kenyan hospitality industry. Other Studies by (Pangaribuan et al., 2022) and (Masanja, 2020) examine how control communication and information systems reflect on performance. Investor satisfaction and financial accountability were used to measure performance. it pointed out that effective information and communication promote the utilization of assets and minimization of liabilities. Their findings revealed that performance was largely influenced by effective communication and information systems. The results further revealed a strong positive relationship between investor satisfaction and financial accountability with effective information and communication systems.

Effective control monitoring is an essential area of internal control policy. Many other authors have studied its contributions to financial performance. A study was conducted in Saudi Arabia (Sharma & Senan, 2019) to assess the significance of control monitoring on the performance of Banks. It found that customers' concerns were looked at and led to depositors' trust and confidence. It was established that effective control monitoring is one of the key determinants of the financial performance of Saudi Arabian Banks because it exposes variance between actuals and standards. The results reveal a direct correlation between control monitoring and profitability of Saudi Arabian banks. Similarly, a study by (Pangaribuan et al., 2022) in Indonesia explored contributions made by control monitoring to listed manufacturing companies' financials. This study revealed that stakeholder satisfaction was used as a measure of performance and customer sizes were increased which brought about an increase in profitability. It also revealed that control monitoring is pivotal to stakeholders' satisfaction because of accountability. The study established a direct relationship between control monitoring and creditors' and investors' satisfaction. Another key study (Kijjambu & Kyomuhendo, 2022) in Uganda to ascertain how effective control monitoring contributes to the financial performance of SACCOs in Uganda, revealed that control monitoring is key to financial performance. A similar study by (E. R. Ahmed et al., 2020) in the Sultanate of Oman revealed that effective control monitoring is one of the key determinants of performance among listed manufacturing firms in Oman and revealed a direct correlation between control monitoring and Return on Equity (ROE).

Several authors have conducted studies and produced varied findings relating to internal control policy and firm's financial performance. Many questions remained unanswered, especially using Ordinal Logic Regression to determine the internal control policy pre-predictor of CCU's financial performance. This study shall determine internal control policy predictors of financial performance: A Ghanaian perspective on Community-Based Credit Unions (CCUs) using Ordinal Logic Regression.

3.0. METHODOLOGY

3.1. Study Design and Variables

A cross-sectional study was conducted in all 16 administrative regions of Ghana. Using self-administered survey questionnaires, primary data were collected from all 105 registered and operational CCUs across Ghana over the period February 2022 to March 2023 inclusive. A modified version of the Dillman method for mail and telephone surveys [1] was applied to maximize the survey response rate response rate. The survey questionnaire explored respondent views on internal control policy attributes using a Likert scale. The reliability of this scale was tested using Cronbach's alpha to measure consistency or reliability among responses.

The outcome variable in this study is financial performance – a CCU's financial health relative to its assets, revenue, liabilities, equity, expenses, and general profitability. We determine financial performance from the CCU's total assets which is consistent and widely in the literature [2-4]. Data on the total assets of CCUs are not publicly available in Ghana but were formally applied for and received from the national regulator of CCUs, the Credit Union Association (CUA). A copy of the application documentation is available upon request. Originally a quantitative variable measured on a continuous scale, CCU's total assets were reclassified into

small, medium, and large with defined thresholds due to a violation of assumptions relating to methods requiring the outcome variable to be continuous. (i.e., linear and Poisson regression). As a result, the reclassification of CCU's total assets was done based on CUA's standards as shown below. Thus, financial performance is the ordinal response variable grouped from the continuous variable. $Y_i = \begin{cases} \text{Gh¢1 – Gh¢5,000,000,} & \text{Small,} \\ \text{Gh¢5,000,001 – Gh¢10,000,000} & \text{Medium.} \\ \text{Gh¢10,000,001 +} & \text{Large.} \end{cases}$

In this study Internal control policy was characterized by the following independent variables: control environment, control risk assessment, control activities, information and communication, and control monitoring. These were Likert-type variables measured and a 5-point Likert scale was developed with these responses "*Strongly disagree*", "*Disagree*", "*Neutral*", "*Agree*", and "Strongly agree". These were further coded numerically as 1, 2, 3, 4, and 5 respectively. Consistent with the literature, we calculated the arithmetic mean for these numerical codes and used the median value (i.e., the 50th percentile) of arithmetic means to dichotomize the independent variable [3,5-6]. That is, the organizational environment was recorded as "*favorable*" if the associated response was greater in value than the median and "*unfavorable*", otherwise. The same procedure was used to dichotomize the remaining independent variables as follows: risk assessment and control (*strong*, *weak*), control activities (*reliable*, *unreliable*), communication (*effective*, *ineffective*), and monitoring (*adequate*, *inadequate*) respectively.

3.2. Analysis

Frequencies and percentages were used to summarize categorical variables, while mean (± standard deviation) was used to summarize continuous variables in the descriptive analysis. Internal control policy-based predictors of financial performance were determined using the ordinal logistic regression model also known as the proportional odds regression model or cumulative logit model which is based on cumulative probabilities. We fit the proportional odds logistic regression model using the power () function from the MASS package in R [7]. The Brant test [8] was used to test the proportional odds assumption. A brief parameterization of the ordinal logistic regression model is presented below.

Based on the procedures proposed by Hosmer, Lemeshow, and Sturdivant [9], standard model-building strategies were employed to select the most parsimonious model to characterize the relationship between financial performance and the independent variables. In the univariate (analysis), the independent variables with p-value < 0.25 were candidates for multivariable analysis [9, 14-15]. Significant predictors of financial performance were retained in the final multivariable model at a 5% significance level. Based on the recommendation by Fagerland and Hosmer (2016) [10], the goodness of fit and model performance was evaluated using Lipsitz's test alongside the Pulkstenis-Robinson tests and ordinal Hosmer-Lemeshow test. Odds ratios (OR) with the corresponding 95% confidence intervals (CIs) were used to describe the strength of associations. The data analyses were completed using R Statistical Software (v4.3.1; R Core Team 2023).

3.3.1. Ordinal Logistic Regression Model

Ordinal logistic regression (also known as proportional odds model) is a class of generalized linear models widely used for modeling the dependence of an ordinal (i.e., with clear ordering) outcome variable on discrete or continuous independent variables. It was first introduced as the cumulative logit model by Walker and Duncan (1967) but was later renamed as the proportional odds model by McCullagh (1980). The proportional odds model uses cumulative probabilities up to a specified limit, thus making the entire range of ordinal categories binary at that limit. The major assumption underlying ordinal logistic regression is the proportional odds assumption. Thus, the relationship between independent variables and log odds of cumulative probabilities of the ordered categories is the same/proportional across the levels of the outcome variable. This means that the effect of the independent variable on log odds of moving from one category to a higher category is constant/same across the levels of financial performance. A brief parameterization is presented below for this study:

Let $\boldsymbol{Y}$ be ordinal response variable with $\boldsymbol{J}$ category. The cumulative probability of $\boldsymbol{Y}$ less than or equal to a certain category $\boldsymbol{j = 1, 2, \ldots, J - 1}$, may be defined as $P(\boldsymbol{Y} \leq y_i|\boldsymbol{x})$, where $\boldsymbol{x}$ is a vector of covariates with dimension p **(**i.e., $\boldsymbol{i} = 1,2, \ldots, p$**)**, containing the information on all p independent variables. For this study, each CCU's financial performance is classified into one of three groups (i.e., small, medium, or large). Therefore, we parameterize the ordinal logistic model for dependency of the outcome variable ($\boldsymbol{Y}$) on the explanatory variables (x_i) as follows:

$$P\,(\boldsymbol{Y} \geq y_i|\boldsymbol{x}) = \frac{1}{1 + \exp\,(-\alpha_j - x_j'\beta)}, \qquad j = 1,2, \ldots, J - 1 \ldots\ldots\ldots\ldots\ldots (\mathbf{1})$$

In the current study, the outcome variable has three categories (i.e., $j = 1,2,3$) with five (5) independent variables. With these, Equation **(1)** above is re-written as,

$$log\left[\frac{P(\boldsymbol{Y} \geq y_i|\boldsymbol{x})}{1 - P(\boldsymbol{Y} \geq y_i|\boldsymbol{x})}\right] = \alpha + x_j'\beta, \quad j = 1,2, \ldots, 5 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (\mathbf{2})$$

where α is the respective regression intercepts/constant, and β is the vector of regression coefficients of dimension *5x1* corresponding to the 5 independent variables. Details of the ordinal logistic model are reported elsewhere in [11-12].

4.0 RESULTS

The main objective of this study is to identify significant internal control policy predictors of the financial performance of CCUs in Ghana. Methods discussed above were applied to achieve this goal using multiyear data (i.e., 2017 through 2021). Both descriptive and inferential statistics were explored. Univariable analysis was performed to describe and measure the univariable relationship between each attribute of internal control policy and financial performance. Significant factors (i.e., p-value < 0.25) are included in the multivariable modeling. ORs with their corresponding 95% CI were used to describe the relationship between internal control policy attributes and financial performance using proportional odds (ordinal) logistic regression analysis. This study used 105 CCUs in Ghana and the results are presented below.

4.1 DESCRIPTIVE STATISTICS

4.1.1 Respondent Information

About 1 in 3 of the surveyed CCU staff had a bachelor's degree (30.5%) while the majority 73(69.5%) had master's degrees. About 85 (81%) of respondents were employed with their current CCUs of at least seven years with 20 (19%) employed less than two years. Note that, due to the sensitivity of the information requested/collected, only managers and/or members of the Board of Directors could respond to the survey questionnaire by their positions and the information privy to them. Consequently, the majority of 80 (76%) respondents were either managers or 25 (24%) CCU Board members. Overall, with an average (± standard deviation) staff size of about 13 (± 10.77), each CCU had about two branches (1.89 (±1.36)) in Ghana. The number of board members and committee members per CCU varied quite slightly with an average of 6 (± 1.45) board members and 9 (± 1.55) committee members respectively.

4.1.2 Internal Control Policy Characteristics Stratified by Financial Performance, 2017-2023

With data from 105 CCUs for the 5 years, a total of 525 data points were analyzed. Table 1 gives the internal control policy characteristics (independent variables) stratified by financial performance status. Overall, of the survey responses, CCUs of the small financial performance category, 285 (54%) were about double that of the medium 140 (27%) categories, and nearly three times that of the large 100 (19%) categories. A similar trend in financial performance status was also observed in the distribution of responses across all the categories of the internal policy control characteristics (Table 1). The p-values (Table 1) show that except for "control activities", all independent variables were significantly associated with financial performance at p-value < 0.25. With a Cronbach coefficient of 0.79, the internal consistency of the survey was acceptable/consistent based on Santos (1999) [13].

Table 1: Frequency Distribution of Internal Control Policy Characteristics by Financial Performance, 2017-2023

Independent variable: Internal Control Policy		**Total N (%)**	**Outcome Variable: Financial Performance (N = 525)**			***p-value****
Description	**Categories**		**Small (%)**	**Medium (%)**	**Large (%)**	
Organizational Environment	Favorable	305 (58.10)	175 (57.38)	85 (27.87)	45 (14.75)	**0.02**
	Unfavorable	220 (41.90)	110 (50.00)	55 (25.00)	55 (25.00)	
Risk Assessment and Control	Strong	265 (50.48)	150 (56.60)	65 (24.53)	50 (18.87)	**0.04**
	Weak	260 (49.52)	135 (51.92)	75 (28.85)	50 (19.23)	
Control Activities	Reliable	280 (53.33)	150 (53.57)	80 (28.57)	50 (17.86)	0.51
	Unreliable	245 (46.66)	135 (55.10)	60 (24.49)	50 (20.41)	
Communication and Information	Effective	335 (63.81)	185 (55.22)	90 (26.87)	60 (17.91)	**0.13**
	Ineffective	190 (36.19)	100 (52.63)	50 (26.32)	40 (21.05)	
Monitoring	Adequate	290 (55.23)	150 (51.72)	85 (29.31)	55 (18.97)	**<0.001**
	Inadequate	235 (44.77)	135 (57.44)	55 (23.40)	45 (19.14)	
Total		**525**	**285 (54.29)**	**140 (26.67)**	**100 (19.05)**	

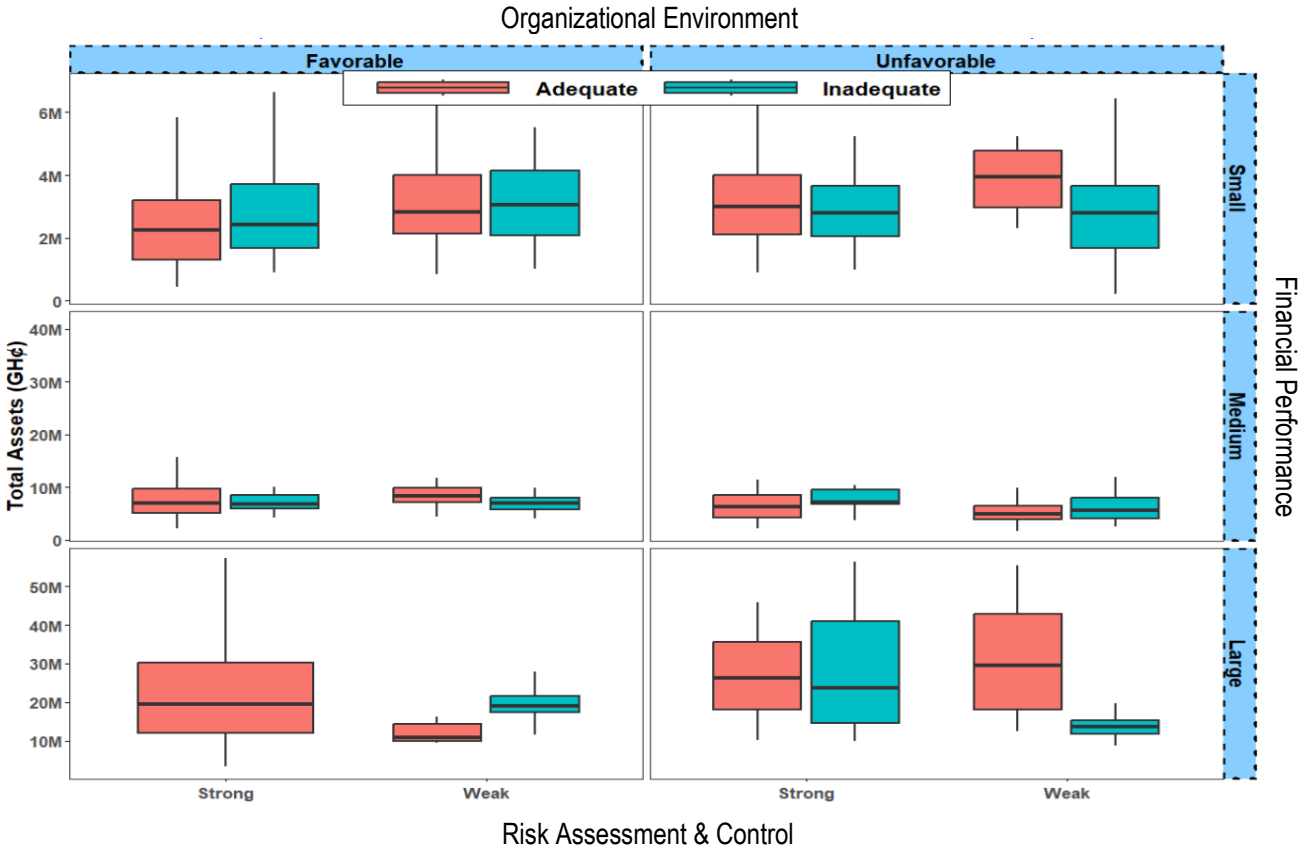
*Statistical significance is determined at p<0.25.

Being the independent variables strongly associated with financial performance under a 5% level of significance, a decision was made to visualize their descriptive relationship. Figure 1 is the schematic representation of the nuanced dynamics in the distribution of risk assessment, monitoring, and organizational environment by financial performance. In a favorable organizational environment, CCUs with a relatively weaker risk assessment and inadequate monitoring tend to have slightly higher average total asset sizes than those with adequate monitoring (Figure 1). This was true for small (0 to Gh¢5 million) and large (Gh¢10,000,000+) and not those designated as having medium financial performance (Gh¢5,000,001 - Gh¢10

million). Regardless of organizational environment, risk assessment level, and monitoring, it appears that the average total assets size for medium financial performance is relatively similar (Figure 1).
Overall, the average financial performance for CCUs with adequate monitoring and strong risk assessment mechanisms tends to be higher than those with inadequate monitoring and weak risk assessment respectively. Also, it appears financial performance tends to be higher in an unfavorable (than favorable) organizational environment (Figure 1). However, the relationships presented thus far are descriptive, and as a result, inferential statistics would be needed to validate them, the results of which are presented next.

Figure 1: Distribution of Financial Performance by Internal Control Policy Variables (Risk Assessment, Monitoring and Organizational Environment)

4.2. Statistical Modelling



The fitting of the models occurred in two major phases namely univariable and multivariable analysis stages.

4.2.1. Univariable analysis

In the univariable analysis stage, separate models are fitted for each independent variable to examine its relationship with financial performance (without neither considering the other variables nor accounting for potential confounding and/or interaction effects) to identify the strength, direction, and/or significance of the relationship between the predictor and the outcome and to identify potential predictors for further investigation. Based on recommendations from Bendel and Afifi (1977) [14] and Mickey and Greenland (1989) [15] on regression and logistic regression respectively. Variables with p-values < 0.25 were selected as candidates for multivariable analysis. From the univariable p-values in Table 1 above, control environment, control risk assessment, communication and information, and monitoring were candidates for the multivariable analysis and therefore selected for further analysis.

4.2.2. Multivariable analysis

Significant results (significant variables) from the univariable analysis were considered in the multivariable analysis. Due to the ordered nature of the outcome variable, financial performance (i.e., small, medium, large), and ordinal logistic regression (OLR) (aka proportional odds) models were fitted. Before the multivariable OLR, (multi) collinearity and first-order effect modification were checked and none were present. The proportional odds assumption of the OLR is violated if the associated p-value with the parallel line test is lesser than the specified significance level. In the current study, the proportional odds assumption was not violated at a 5% significance level (i.e., p-value = 0.25). The results of the final multivariable ordinal logistic regression model are shown in Table 2.

Multivariable Analysis of the Dependency of Financial Performance on Internal Control Policy Attributes by Adjusted Odds Ratio (OR), 95% CI, and P-value

Table 2:

Predictors	Categories	$\hat{\beta}[SE(\hat{\beta})]$	Adjusted Odds Ratio (OR) (95% CI)	P-value*
Organizational Environment	Favorable	-1.07 (0.25)	0.34 (0.21, 0.56)	<0.01
	Unfavorable		1.00 (Reference)	
Risk Assessment and Control	Strong	-0.97 (0.28)	0.38 (0.22, 0.65)	0.001
	Weak		1.00 (Reference)	
Monitoring	Adequate	0.42 (0.19)	1.52 (1.05, 2.21)	0.03
	Inadequate		1.00 (Reference)	
Organizational Environment X Risk Assessment and Control		1.32 (0.36)	3.76 (1.88, 7.61)	<0.01
			1.00 (Reference)	

*Statistical significance is determined at p<0.05.

Internal control policy attributes that significantly predict/influence financial performance include organizational environment, risk assessment and control, and monitoring at a 5% level of significance (Table 2). Although communication and information were significantly associated with financial performance at the univariable level, it was not significantly associated with financial performance after a multivariable adjustment. In addition, a significant interaction was found between organizational environment and risk assessment and control. This means that, whereas the coefficients and/or ORs associated with the main effect of monitoring are directly interpretable, that of organizational environment and risk assessment and control is not due to the presence of a significant interaction. A unit increase in control monitoring is significantly associated with a 52% increase in odds of being in a higher category of financial performance (i.e., large), all other factors being constant (OR = 1.52, 95% CI: 1.05, 2.21, p-value = 0.03) (Table 2). Thus, as monitoring increases, the odds of being a large financial performer increase, also implying that more monitoring is significantly associated with better financial performance at a 5% level of significance. The OR associated with the interaction between organizational environment and risk assessment and control is 3.76 (95% CI: 1.88, 7.61, p-value < 0.01) (Table 2). This means that the effect of strong risk assessment and control (as against weak) on the likelihood of being a larger financial performer is almost four times higher in a favorable organizational environment as compared to an unfavorable organizational environment and this relationship is statistically significant at 5%. This suggests that the effect of control risk assessment on financial performance differs significantly depending on whether a CCU is operating in a favorable or unfavorable organizational environment. More specifically, the impact of control risk assessment on financial performance is greater in a favorable organizational environment compared to an unfavorable one (Table 2).

Figure 2: Interaction Plot between Risk Assessment and Control by Fina ncial Performance and Predicted Probabilities

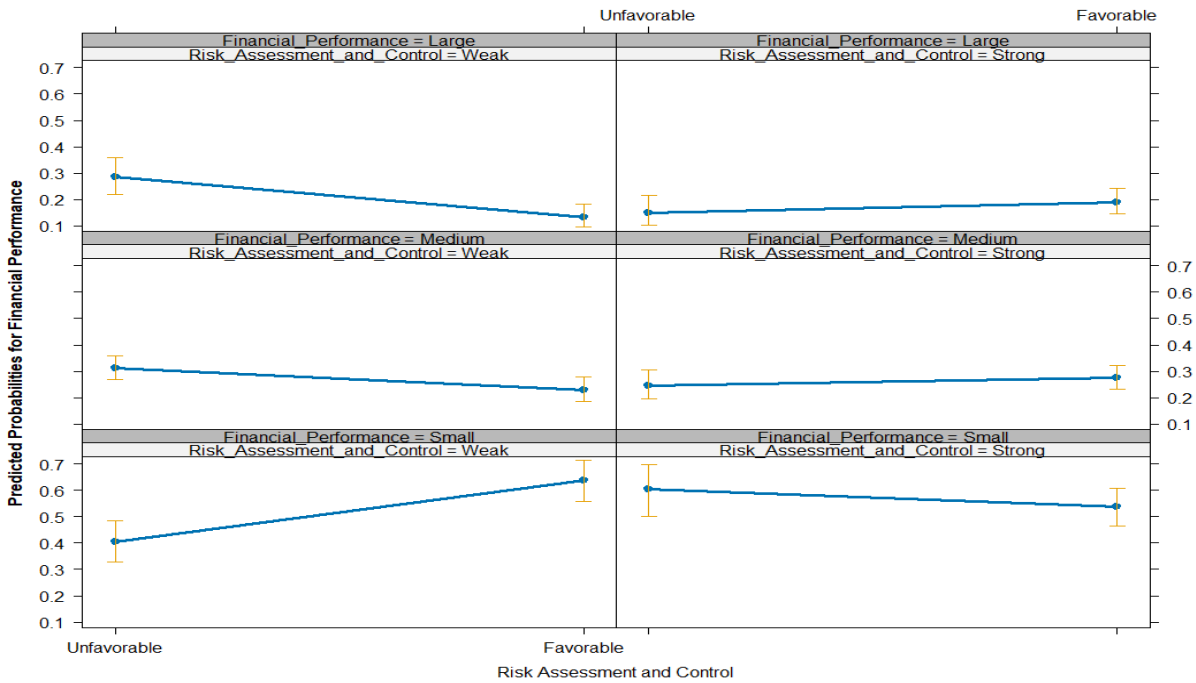


Figure 2 is a diagrammatic representation of the interaction between organizational environment and risk assessment and control as predictors of financial performance using predicted probabilities. The lack of parallelism in the predicted probability plots shows the interaction between the organizational environment and risk assessment and control of financial performance (Figure 2). By moving from an unfavorable to a favorable control environment with a strong control risk assessment, an increased probability for higher/better financial performance is associated with large and medium CCUs; the opposite was the case for small CCUs (Figure 2). This means that with a strong control risk assessment, the financial performance of medium and large CCUs is more likely to increase in a favorable control environment (than in an unfavorable environment). More specifically, at a 5% level of significance, a favorable organizational environment is associated with higher/better financial performance when risk assessment and control are strong but only for medium and large CCUs. In contrast, by moving from an unfavorable to a favorable organizational environment with a weak risk assessment and control, the probability of higher/better financial performance decreased for large and medium CCUs but increased for small CCUs (Figure 2). Thus, in a favorable organizational environment with weak risk assessment and control, small CCUs are more likely to have higher/better financial performance than medium and/or large CCUs. The final multivariable model fitted in Table 2 was evaluated for goodness of fit using Lipsitz's test. With a p-value of 0.128, there isn't any evidence of lack of fit, hence the model fits the data well at a 5% level of significance.

5.0 Summary of findings and recommendations.

The objective of this study was to ascertain internal control policy predictors of CCU financial performance in Ghana. This was achieved by investigating five elements involved in the internal control system (i.e., the independent variables) using ordinal logistic regression. The elements include control environment, control risk assessment, control activities, information and communication as well as monitoring. Using standard model-building strategies in multivariate modeling, significant predictors of the financial performance of CCUs in Ghana include organizational environment, risk assessment and control, and monitoring while control activities and communication and information are not.

With a significant interaction found between the organization environment and risk assessment and control, their respective odds ratios become more complex to explain and are not directly interpretable. As a result, the interaction effect is presented. The results further established a positive significant interaction between organizational environment and control risk assessment in jointly predicting financial performance at a 5% significant level (OR: 3.76, 95% CI: 1.88, 7.61). This means that the more favorable the organizational environment coupled with strong risk assessment and control mechanisms, the higher the chances of financial performance. Since the confidence interval does not include 1, there isn't enough evidence to support the null hypothesis that organizational environment and risk assessment and control are not significant predictors. Hence, the current study concludes that control environment and control risk assessment are significant predictors of the financial performance of CCUs in Ghana at a 5% level of significance.

In addition, we explored the influence of control monitoring on the financial performance of CCUs in Ghana. Descriptive statistics as well as an ordinal logistics regression model were used to investigate the relationship. The majority (55.23%) of survey responses indicated that CCUs have adequate monitoring mechanisms. The multivariable analysis showed that control monitoring is a significant predictor of financial performance of CCUs in Ghana at a 5% level of significance (OR: 1.52, 95% CI: 1.05, 2.21). More preferably, adequate monitoring is associated with a 52% increase in financial performance. This relation is statistically significant because the confidence interval does not include one (1). This means that, at a 5% level of significance, we do not have enough evidence to support the null hypothesis that control monitoring is not a significant predictor of CCU's financial performance. As a result, the current study reports that monitoring significantly predicts the financial performance of CCUs in Ghana.

On the other hand, though communication & and information was found to a significant predictor of financial performance in the univariable analysis, it was found not to be statistically significant after a multivariable adjustment (OR = 0.88, 95% CI: 0.62, 1.24, *p*-value = 0.25). Since the multivariate p-value = 0.25 > 0.05 and the confidence interval includes one (1), communication and information do not significantly predict financial performance. As a result, we do not have enough evidence to reject the null hypothesis that there is no statistically significant relationship between communication and information and the financial performance of CCUs. Hence, communication & and information are reported not to be significant predictors of financial performance by the current study at a 5% significance level.

Control activities were not found to be significant predictors of financial performance in this study. During the univariable analysis, it was not found as a candidate for the multivariable analysis. As a result, control activities were not included in all the multivariable analysis.

5.1 Conclusion

In the current study, CCUs that have developed an enabling control environment for internal control systems are associated with better/higher financial performance compared to those with weak or no control environment. This is evidenced by the statistically significant relationship found between a favorable

organizational environment and financial performance. In addition, control monitoring and control risk assessment are found to be statistically significant predictors of financial performance. Also unique to the current study, a significant interaction is found between the control environment and control Risk assessment. Consequently, control environment and risk assessment jointly predict the financial performance of CCUs in Ghana above and beyond their respective main effects. Overall, at a 5% significance level, while control activities and communication and information were not statistically significant predictors, control environment, control risk assessment, and monitory were statistically significant predictors of the financial performance of CCUs in Ghana

5.2. Recommendations

Based on the above findings, the following recommendations are relevant:

i. All forms of community-based credit unions (large, medium, and small) should continue to invest more to develop a conducive organizational environment to improve financial performance. According to the study CCUs with the right control organizational environment have their financial performance doubled.

ii. Community-based credit unions in Ghana should ensure concurrent investment in control investment and control risk assessment. This is because the two elements jointly and concurrently influence CCU's financial performance. Investment in one element would not produce a significant influence on financial performance. This was evidenced by the fact that the results established a significant interaction between organizational environment and control risk assessment.

iii. In our study we used total assets to measure the financial performance of Community-based credit unions in Ghana. We recommend that other financial performance measurement techniques such as ROI, ROA, liquidity, profitability, etc should be used for similar studies in the same community-based credit union in Ghana. This would make it possible for generalization.

iv. On the aspect of control activities and control communication and information, CCUs in Ghana should be skeptical when investing in internal control policies. This is because CCU's financial performance has no significant relationship with control activities and control communication and information.

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