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Evaluation of Cooperative Risks in Eastern Visayas: Basis for the Development of Risk Management Manual

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study evaluated the risk exposure of cooperatives in Eastern Visayas as basis for the development of a comprehensive risk management manual. The research provided a detailed overview of cooperative profiles, encompassing factors such as membership, asset size, loan portfolio, savings/deposits, equity, and years of operation. The examination extended to the assessment of risk levels across institutional, financial, operational, and external dimensions. Employing a descriptive survey methodology, the study utilized a validated self-made survey schedule as the primary data-gathering instrument for risk assessment. Data analysis involved the application of statistical measures such as arithmetic mean, Pearson correlation, risk severity matrix, and standard deviation. The sample comprised thirty (30) credit and multi-purpose cooperatives, representing 75% of medium and large cooperatives in Leyte, Southern Leyte,

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Biliran, and Samar provinces. Results indicated an overall low risk level for cooperatives in the institutional, financial, operational, and external dimensions. Particularly, the financial aspect exhibited the highest mean score compared to other risk categories. Factors like the number of members, asset size, loan portfolio, and equity demonstrated significant correlations with identified risks, except for members' savings deposits and years of existence. The study highlighted that the top 5 specific risks carried a combination of high and medium probabilities and impacts. Mitigation strategies, including an internal control system and internal audit, emerged as crucial measures to manage these risks. These strategies were subsequently incorporated into the developed risk management manual, which is recommended for implementation by cooperatives as a proactive measure.

Keywords: Cooperatives; cooperative profile; Eastern Visayas; Philippines; risk; risk assessment.

1. INTRODUCTION

The term 'risk' permeates our daily conversations, embodying diverse meanings contingent on context. The "Evaluation of Cooperative Risks in Eastern Visayas" delves into a comprehensive analysis of the risks faced by cooperatives in the Eastern Visayas region. This study aims to identify and assess the various risks affecting cooperative entities in the Eastern Visayas. By scrutinizing the unique challenges and potential hazards encountered by these cooperatives, the research endeavors to provide valuable insights that can inform strategic risk management practices, fostering resilience and sustainable growth within the cooperative sector.

Recognized as an integral facet of sound management and governance within cooperatives, risk management is a continuous and methodical process aimed at enhancing decision-making. This systematic approach involves a series of steps that, when followed sequentially, contribute to ongoing improvements. The term "risk management" denotes a rational and structured methodology that involves establishing context, identifying, analyzing, evaluating, treating, monitoring, and communicating risks associated with any activity, function, or process. The overarching goal is to empower organizations to minimize losses and capitalize on opportunities (http://www.dmp.wa.gov.au).

This research aligns primarily with Rausand's and Haugen, [1]. "Theory of Risk Assessment," emphasizes that risk assessment involves two key components. Firstly, it entails the identification and analysis of potential future events that could adversely affect individuals, assets, or the environment, commonly known as risk analysis. Secondly, it involves making judgments regarding the acceptability of the identified risk based on the outcomes of the risk analysis, considering various influencing factors, a process known as risk evaluation. To put it simply, a risk assessment explores potential hazards, their likelihood, potential consequences, and assesses the tolerability of the identified risk.

The accurate identification and evaluation of risk factors in the cooperative process, coupled with the formulation of rational precautionary and resolution measures, directly impact the success of dynamic cooperation [2]. Addressing the challenges inherent in cooperative operations requires a comprehensive examination of the risks associated with day-to-day activities, encompassing business transactions, governance, organizational culture, policies, plans, and programs.

Drawing upon Rausand's theory of risk assessment, we have developed a conceptual framework, represented in Fig. 1. This framework serves as a guide, outlining essential elements for navigating the study's processes.

The conceptual framework encompasses key elements crucial for the study's progression. To assess the potential relationship between cooperative profiles (including membership, asset size, loan portfolio, savings, equity, and years of existence) and identified risks in the areas of institutional, financial, operational, and external domains, a survey is conducted. Subsequently, specific risk identification involves delineating the three fundamental elements of risk definition: Cause, Consequence, and Impact. Following risk identification, the process moves to risk analysis or measurement, detailing the probability and impact.

Upon completing the risk assessment, incorporating corresponding controls, the framework introduces a mitigation strategy. The

choice of mitigation measures is contingent upon the criticality of the identified risks and management's tolerance for risk. This conceptual framework provides a structured approach to guide the study, ensuring a comprehensive exploration of the intricacies surrounding cooperative risk assessment and management.

Guided by the identified framework, the study assessed the risks of the cooperatives in Eastern Visayas as a basis for the development of the risk management manual. The study was conducted to address specific purpose to showcase the (1) profile of the cooperatives in terms of membership, asset size, loan portfolio, savings, equity, and years of existence; (2) extent of the identified risks as to institutional, financial, operational, and external; (3) relationship of the profile to the identified risks; (4) extent of the probability and impact of the identified risks; (5) mitigating factors and techniques to control the identified risks; and (6) risk management manual as the output.

2. LITERATURE REVIEW

The Cooperative Code of 2008, Republic Act No. 9520, defines cooperatives as autonomous associations of individuals with common interests, working together to fulfill social, economic, and cultural needs. Adhering to universally accepted principles, cooperatives prioritize voluntary and open membership, democratic control, and member economic participation. The code outlines the purposes of cooperatives, including encouraging thrift, providing credit, promoting systematic production and marketing, and advancing members' economic, social, and educational status. The cooperative membership comprises regular and associate members.

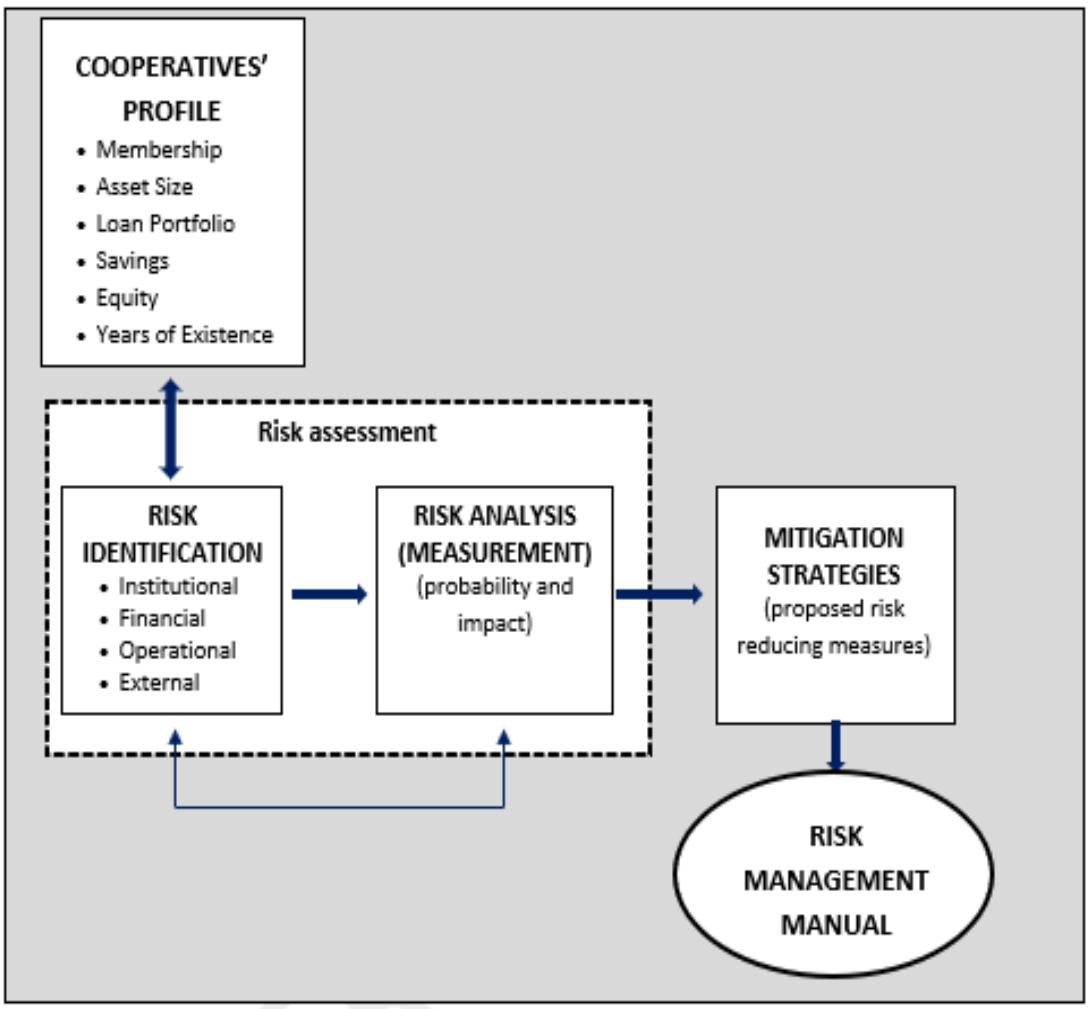


Fig. 1. Schematic diagram of the conceptual framework of the study

Supporting this manuscript are various research studies relevant to the broader study of risk assessment and management, with a particular focus on cooperatives. While acknowledging the limited depth of research on Risk Assessment of Cooperatives compared to banks, insights from the latter can still be valuable due to shared business functions. The review covers institutional, financial, operational, external risks, profiles in relation to risks, risk management strategies, and factors influencing risk management.

2.1 Institutional Risks

Many researchers argued that risk is emerging as a key organizing concept for regulatory regimes and extended governance systems in a multitude of settings [3,4,5]. The institutionalized forms of risk management refer to the formal, integrated, strategic, enterprise-wide systems of identifying potential risks, the management of risks in line with the enterprise's level of acceptable risks, and the provision of assurances toward achieving the objectives of the enterprise [5]. Risk managers argued that when successfully implemented, risk management involves balancing opportunities, hazards, and uncertainty to advance the mission of the institution. Institutions maintain legitimacy by demonstrating that they are applying rational, knowledge-based standards and risk assessment of their operations, and as such "a 'good' organization is one which manages risk by established frameworks" [5].

2.2 Financial Risks

Aykut [6] conducted research on the effect of credit, interest, and foreign exchange rate risk on the bank index and bank stock return. He analyzed 49 banks. The return distribution was negatively skewed for all variables, which meant asymmetrical distribution with a long tail to the left, meaning big losses in the crisis periods. The results revealed that interest rate risk had a negative and significant effect on the volatility of bank profitability. The effect of Foreign exchange risk on bank return volatility was significant and positive while credit risk had a negative and significant effect on bank index and bank returns volatility.

Another study was conducted by Ahmed et al. [7] on risk management practices of Islamic Banks. The research aimed at determining the firm's level factors, which have significantly persuaded the risk management practices of Islamic banks in Pakistan. The study concluded that size of Islamic banks had a positive and statistically significant relationship with financial risks that is both credit and liquidity risk.

Another researcher, Virginie [8] investigated the effects of capital and liquidity ratios on banks' profitability according to their size. The data used was obtained from bank scope, a regular financial database of the Dijk desk. The sample included annual financial data of 1270 European banks for the period of 2005 to 2012. The banks were put into three groups of 346 commercial banks, 487 cooperative banks, and 835 savings banks, respectively. The independent variables were bank capital, liquidity risk, and credit risk. The analysis revealed that liquidity risk had a positive relationship on performance, which was significant for small banks. This means, averagely, small banks had less demand deposit in comparison to large banks where large banks had better access to external funds than small banks. Credit risk indicated a negative relation to banks' profitability, which was significant for large banks. The total loans had an association with a decrease in profitability for large banks, thus, higher provisions indicate non-performing ratios with lower asset quality.

Similarly, the findings from the study of Tan et al. [9] found a significant impact of financial risk indicators on bank performance. Causality ran unidirectionally from financial risk indicators to return on assets (ROA), supporting evidence of financial risk's influence on bank performance. A strong long-term relationship between capital adequacy and financial performance was observed, indicating that financial risk indicators actively stimulate and enhance banks' financial performance in Ghana.

According to Scannella [10] financial risk management necessitates a proactive, centrally coordinated treasury function, addressing liquidity risk, interest rate risk, and investment portfolio risk. Effective liquidity risk management involves understanding market dynamics and quickly liquidating assets to meet increased demand for loans or withdrawals [10]. Interest rate risk arises from the possibility of a change in the value of assets and liabilities in response to changes in market interest rates. Also known as asset and liability management risk, interest rate risk is a critical treasury function, in which financial institutions match the maturity schedules and risk profiles of their funding

sources (liabilities) to the terms of the loans they are funding (assets) [11].

Relatedly, foreign exchange risk is the potential for loss of earnings or capital resulting from fluctuations in currency values (Habibnia, 2013).[12]. Investment portfolio risk refers mainly to longer-term investment decisions rather than short term liquidity or cash management decisions [13]. Most financial institutions have policies establishing parameters for acceptable investments within the investment portfolio, and they range from very conservative to more aggressive for a portion of the investment portfolio [13].

2.3 Operational Risks

Among the studies, Pakhchanyan [14] explores operational risk in financial services, emphasizing the role of human resources (HR) management in enhancing personnel management. He advocates collecting HR data, like turnover and sick days, to develop key risk indicators for forecasting and managing employee behavior as part of operational risk. The focus is on retaining core employees through strategies such as clarifying rewarding aspects and recognizing engaged individuals. The author highlights the effectiveness of key risk indicators in monitoring the risk environment and suggests identifying high-risk activities for incorporation into risk indicators. Moreover, the author asserts that alerts from risk indicators, such as exceeding specified payment figures, facilitate quick problem resolution should be communicated widely. He introduces a model for managing people's risk in the operational risk framework. In line with the aforementioned arguments, he suggests developing risk indicators based inter alia on staff dissatisfaction and staff turnover for alerting operational risk management about possible hazards.

Another researcher, Cech [15] argues that risk managers should identify in advance the causal elements generating operational risk events and then develop risk indicators to validate the drivers of these events within their organizations. Furthermore, he argues that causes may result from or be associated with, some firm-specific factors, such as the firm's processing activities and external factors such as high market volatility driven in particular by data entry error.

The forms of internal operational risks involve issues of human error in processing, fraud, missing a control step, disruption or system failures (software, hardware, telecommunications), act of sabotage or vandalism, noncompliance with the law and regulatory requirements, an external dispute with the employee as a result of discrimination or harassment, and new service or change in the current processes [16].

Operational risk arises from human or computer error within daily product delivery and services and it transcends all divisions and products of a financial institution [17]. Error risk is unintentional errors due to lack of training and capacity, rapid growth or an inadequate number of staff [18].

Organizations need to utilize risk management and control to mitigate any unexpected losses that may arise from unwanted events (Zheng, 2012). The management should be aware of the procedures for the identification and management of risks. Internal control is among the core principles of managing risks and companies need to get it right [19].

According to Achoki [20] in the dynamic business world, the business environment is constantly evolving, hence the risks are continually changing, and a firms' system of internal control should be responsive to the changes.

In addition, Childress [21] states that the board has full responsibility for the system of internal control and they should, therefore, set up the appropriate policies on internal control that would ensure that the processes are effectively functioning to screen the risks exposures.

In larger banks, risk committee that specializes in the management of the bank's risks, and internal control system is set up for the role of observance of the risk, state of affairs, and approaches are taken for comprehensive risk identification, and maintenance of an efficient internal control system. Such a centralized risk-controlling unit has the authority to lay down pointers and strategies of risk management [22].

According to the Chartered Institute of Insurance [23] all employees are accountable for the implementation of the policies on risk and control. The management is tasked with the role of implementing the policies adopted by the Board. At the same time, the operation and monitoring of internal control systems should be undertaken by employees who have the necessary skills, technical knowledge, and

understanding of the company, industries, and markets.

2.4 External Risks

In one study that focuses on the cooperative banking sector, Presbitero and Zazzaro [24] suggest that in markets dominated by cooperative banks, the increase in competition leads to higher investments in building long-lasting relationships with customers (i.e., relationship lending). It can speculate that competition increases bank stability because of higher investments in collecting information, screening, and monitoring. Eventually, cooperative banks subject to competitive pressures may witness an improvement in the credit quality of their portfolio. In line with this prediction, Fiordelisi and Mare [25] show that in five cooperative banking markets in Europe (Austria, France, Germany, Italy, and Spain) banking competition increases individual bank stability. Liu et al., [26] focus on regional banking in Europe including cooperative banks, find similar results to Martinez and Repullo [27] a non-linear relationship between competition and stability.

2.5 Profiles in Relation to Risks

Ahmed et al. [28] studied the Islamic banks of Pakistan with a sample of 6 Islamic banks for the time period of 2006 to 2009. The study, based on secondary data, employed Pearson correlation and regression analysis. Findings suggest the bank size correlates positively with credit and liquidity risk but negatively with operational risk. Asset management is linked to liquidity and operational risk, while gearing ratio and non-performing loans have negative associations with liquidity and operational risk, directly linked with credit risk. Capital adequacy has a negative and significant relationship with credit risk and operational risk, while it has a positive association with liquidity risk.

2.6 Risk Management Strategies

Bauer and Ryser [29] in their study delved into optimal risk management strategies for a bank financed with deposits and equity in a one-period model. It addresses the motivation for risk management arising from deposit-related bank runs and ensuing liquidation costs. The derived hedging strategy maximizes equity value under specific conditions, including the initial debt ratio, liquidation costs, regulatory constraints, asset volatility, and the spread between the riskless interest rate and deposit rate. The study extends the model to incorporate counterparty risk constraints on forward contracts, highlighting the complexity of risk management decisions for banks, especially concerning regulatory limitations.

2.7 Factors Affecting Risk Management

Elsakit and Worthington [30] explored the extent to which banks and lending institutions consider information other than financial when analyzing customer information for loan application. Particularly in developing countries, banks and lending institutions enforce the use of environmental and social information when evaluating a loan request rather than promote this requirement by the power of the law. In developing countries, the process of making lending decisions without taking the impact of external environment is risky, because the external environment includes legal environment, awareness of society, the ability of the client to produce such information, and perception of environmental and social responsibility [30].

The effects of the changes of fair-value accounting rule on security prices of financial institutions during the period 2008 to 2009 allowed banks to use judgment in estimating the fair value of assets when the market is inactive and keep certain losses of the institutions out of earnings. This approach could improve the bank earnings and help in maintaining capital adequacy [31]. The increase in commercialization of the microfinance sector resulted in a new focus to implement formal risk policies and practices. Generic procedures of risk assessment and management from for-profit industries could affect the microfinance industry [32].

The history of risk management over the last thirty years highlighted the idea that proper risk management within companies may prevent corporate scandals and financial crises [33]. The study analyzes optimal risk management strategies for a bank financed with deposits and equity in a one-period model. It addresses the motivation for risk management arising from deposit-related bank runs and ensuing liquidation costs. The derived hedging strategy maximizes equity value under specific conditions, including the initial debt ratio, liquidation costs, regulatory constraints, asset volatility, and the spread between the riskless interest rate and deposit

rate. The study extends the model to incorporate counterparty risk constraints on forward contracts, highlighting the complexity of risk management decisions for banks, especially concerning regulatory limitations [33].

Auditors who decomposed fraud-risk assessments perceived a higher need to revise audit plans and increased audit testing. The decomposition of fraud-risk assessment into component, incentive, and opportunity risk is a preferred method, to assess overall fraud risks [34]. The underperformance of risk management in meeting expectations from executive forecasts signals the need for continuous improvement. Managers should align reliable forecasts with risk exposure, emphasizing realistic projections and reinforcing internal controls for enhanced control [35].

The foregoing research literature review provided a profound understanding of various risks that banks and cooperatives faced. It shed light on the research problem and helped the researchers to conceptualize the research. The information gathered contributed to a better analysis of the data gathered from this research.

3. METHODOLOGY

The research employed a descriptive survey research design to investigate the status of the subject under study. This approach delved deep into research problems, offering a detailed description of the subject.

The study's descriptive nature facilitated a thorough and detailed analysis of the collected data, aligning with the primary objective of identifying, analyzing, and addressing risks. Following the analysis, the researchers proposed risk mitigation strategies to assist the cooperative in minimizing the potential failure of specific programs and reducing the likelihood of risks. The chosen research design allowed for a nuanced exploration of the research problem, contributing to a comprehensive understanding of the cooperative's risk landscape. This method was chosen as it is an effective means of gathering information that is most relevant to the research question, as highlighted by Starr [36]. Moreover, Cleary et al. [37] emphasized that purposive sampling aids in achieving data saturation, particularly when gathering insights from experts who can provide valuable information on the research problem.

The study participants comprised cooperatives in Eastern Visayas with assets totaling at least 20 million. The selection of respondents from the cooperatives' human resource pool utilized purposive sampling. The respondents included the Board of Director, Chief Executive Officer or General Manager, Branch Manager or Account Supervisor, and Accounting or Treasury Officer.

The research locale is in Eastern Visayas, classified as Region VIII, is an administrative region in the Philippines. Comprising six provinces—Biliran, Leyte, Southern Leyte, Samar, Eastern Samar, and Northern Samar—this region occupies the easternmost part of the Visayas group of islands.

The primary data-gathering tool in this study was a self-developed survey schedule crafted in alignment with the Risk Management Essentials training. Modeled after Marvin Rausand's Theory of Risk Assessment, this instrument served as the risk assessment tool. Before deploying the survey schedule, a pilot test was conducted to assess its reliability consistency. The computed coefficient, based on the results, is 0.997, signifying robust internal reliability of the test. The results revealed a coefficient of 0.997, signifying strong internal reliability for the test.

Notably, this survey instrument had previously been utilized in the cooperative the authors had been supporting. The survey schedule was structured into the following sections: (a) Cooperative Identification Data (Profile), (b) General Risk Identification, (c) Specific Risk Identification, (d) Risk Measurement, and (e) Mitigation Phase and Techniques.

Within the Cooperative Identification Data (Profile) section, the survey delved into the current state of total membership, asset size, loan portfolio or receivables, savings, total equity, and the number of years of existence for the cooperative under examination.

The General Risk Identification encompassed four risk areas: institutional, financial, operational, and external. To assess the cooperative's risk level and understand the underlying causes, inquiries were made about its current practices.

Specific Risk Identification involved outlining consequences linked to the identified causes from the general risk identification. These risk consequences were categorized into high,

medium, or low based on their impact on the cooperative. The most significant risks were prioritized and identified until reaching a total of approximately fifteen risks. Following the identification, the risks were further ranked by assigning numerical values, with 1 denoting the highest risk, and so forth. In the Risk Measurement phase, each ranked risk underwent an assessment of its impact rating. This evaluation considered the potential impact on various facets, including reputation, financial aspects, people, regulatory compliance, and external events involving clients. While not confined to these criteria, the assessment also factored in the likelihood or probability of each risk occurrence.

The likelihood was quantified by assigning a probability value, such as rare, unlikely, possible, likely, and almost certain, to each risk. The inherent risk rating resulted from the amalgamation of the selected probability and impact ratings, which were then plotted on the risk severity matrix depicted in Fig. 3. (This risk rating matrix was designed based on Rausand's Theory of Risk Assessment, as outlined in the theoretical/conceptual framework.) Subsequently, from the identified risks, the five highest potential risks were singled out, and existing or necessary controls were identified for each risk, categorized as Effective (E), Partially Effective (PE), or Not Effective (NE).

Upon completing the risk assessment along with the corresponding controls, the Mitigation Phase and Techniques were initiated. This phase involved formulating a mitigation strategy to determine how to effectively manage the identified risks. Various options for risk management were considered, including (a) accepting the risk, (b) avoiding the risk, (c) controlling the risk, (d) managing the risk, (e) sharing the risk, and (f) transferring the risk. In conjunction with the existing controls, actions were identified to enhance controls, directly relating to mitigation and employing various techniques.

Following a meticulous organization and tabulation of the data, statistical treatment was applied using both the Microsoft Excel add-in program and SPSS. In addressing the cooperative profile, the arithmetic mean (average) was employed.

On evaluating the extent of risk in institutional, financial, operational, and external aspects, the arithmetic mean was also utilized. The interpretation was as follows:

A score of 4.21 – 5.0 : Always - Very low risk
A score of 3.41 – 4.20: Most of the time - Low risk
A score of 2.61 – 3.40: Sometimes - Medium risk
A score of 1.81 – 2.60: Slightly - High risk
A score of 1.00 – 1.80: Never - Extreme risk

On exploring the existence of a relationship between the identified risks and each cooperative's profile, Pearson correlation was employed. Corresponding hypotheses were tested at the 0.01 and 0.05 levels of significance. To quantitatively interpret the correlation coefficient (r), the computed values were compared to the 0.05 level of significance, serving as a reference for decision-making in hypothesis testing.

On addressing the extent of identified risk in terms of probability and impact, the scoring guide was employed. Regarding risk measurement (analysis), the risk severity matrix was utilized and rated using the following scale:

The enumeration of potential threats lacks substantial value when considered in isolation and necessitates augmentation by an assessment of the likelihood (probability) of their occurrence. This estimation can be articulated through various means, such as an occurrence frequency over a specific (e.g., once every ten years) period or as a statistical probability (e.g., a one in a million chance). Subsequently, these estimates can be categorized and represented on a scale, denoting 'high', 'medium', or 'low' risk, or ranked numerically from one to five. In this numerical ranking, one signifies an 'almost certain to occur' scenario, while five may indicate an 'extremely rare occurrence.'

Despite endeavors to ensure accuracy and reliance on robust, accessible, and objective information, risk evaluation inherently involves a subjective element. Determinations regarding the placement of risks on a grading scale rely on the organization itself and are contingent on its risk appetite. Organizations inclined to avoid risk may set the criteria for a 'high' probability risk at a lower threshold compared to more risk-tolerant organizations.

Chart 1. Probability

Numerical Rating	Description	Indicators
1	Rare	Once per > 5 years
2	Unlikely	Once within 5 years
3	Possible	Once a year
4	Likely	Once a quarter
5	Almost Certain	Every month

Chart 2. Impact

Numerical Value/Impact Description		Indicators				
		People	**Financial Loss**	**Reputation**	**Regulatory**	**External events clients**
1	Insignificant	one staff members slightly injured	Up to PHP 100,000.00	no effect	Little or no impact	a few clients are affected
2	Minor	some staff members slightly injured	From PHP 100,000.01 to PHP 255,000.00	some negative rumors (not public)	Routine regulatory finding	several clients are affected low to medium degree
3	Moderate	one staff member seriously injured	From PHP 255,000.01 to PHP 765,000.00	limited negative publication (local)	Targeted regulatory scrutiny or investigation	many clients are affected, in varying degree of severity
4	Major	some staff members seriously injured	From PHP 765,000.01 to PHP 2,550,000.00	negative publication (reasonably well- known (regional)	Sustained regulatory scrutiny and/or significant fines and/or formal undertaking	many clients are affected heavily/ one region affected in full
5	Catastrophic	death; full business affected	Over PHP 2,550,000.00	negative publication (reasonably well known-country wide)	Suspension or loss of license	almost all clients are affected heavily

Evaluating risks solely in terms of likelihood (probability) is a crucial but partial aspect of the comprehensive risk assessment process. Risks categorized with low or rare likelihood, for instance, may exhibit significant variations in their potential impact on the organization. Therefore, it is imperative to also assess the impact or magnitude of damage associated with each type of risk. A rating scale is devised to mirror the organization's perception of risk magnitude, ranging from catastrophic to insignificant. Some scales may incorporate specific financial levels of loss within each category.

The scores for both likelihood (probability) and magnitude (impact) can be combined (multiplied) and illustrated on a risk matrix (refer to Fig. 2 risk severity matrix on the subsequent page). Typically, these matrices depict probability levels on the vertical axis and impact levels on the horizontal axis. Additional scrutiny of the "overall" risk level can be undertaken by assigning descriptors such as 'low', 'medium', 'high', and 'extreme' to the combined scores. This communicates how seriously the organization perceives the threat and the urgency with which action needs to be taken. Such an evaluation doesn't rely solely on the numerical value in the matrix cell but considers other relevant factors.

For instance, both the scores in the top-left and bottom-right cells are '5'. The score in the top-left cell signifies an event that is almost certain to occur daily but is deemed insignificant in its impact, hence evaluated as 'medium'. Conversely, a score of '5' in the bottom-right cell of the matrix denotes a rare event with potentially catastrophic consequences, leading to its classification as 'extreme'.

This signals the need for prompt action, either to avert a catastrophe or diminish its impact. Employing the colors of a traffic light to this

matrix highlights the crucial areas requiring attention. Consequently, threats falling within 'green' (low risk) boxes may demand less attention compared to those in the 'yellow' (medium risk), 'orange' (high risk), and 'red' (extreme risk) zones.

The determination of the overall risk assessment for each identified specific risk was conducted using the standard deviation.

4. RESULTS AND DISCUSSION

The presentation of the results are arranged in this order. Profile of the cooperatives in Eastern Visayas, extent of risk by each cooperative, relationship between each of the profiles and the identified risks of the cooperatives, relationship between cooperative profile and the identified risks, top 5 identified specific risks of cooperatives and extent of the probability impact of the identified specific risks, risk severity matrix or heat map, and mitigating factors and techniques to control the identified risks.

4.1 Profile of the Cooperatives in Eastern Visayas

Cooperative profiles revealed an average membership of 8,267, with large cooperatives boasting an asset size of PHP 402,227,183.07, medium-sized ones at PHP 50,408,100.60, resulting in a combined average asset size of PHP 238,044,944.58. The average loan portfolio was PHP 155,960,086.81, constituting 65% of total assets. Members' savings/deposits averaged PHP 112,076,859.51, equivalent to 47% of total assets. Cooperative respondents exhibited an average total equity of PHP 64,026,410.83, accounting for 27% of total average assets. The age profile of the respondent cooperatives spanned 11 to 55 years, with an average business operation duration of 34 years.

Table 1 shows the profile of the cooperatives in terms of membership, asset size, loan portfolio, members' savings/deposits, total equity, and years of existence. The names of the cooperatives are coded in numbers.

4.2 Membership

The cooperatives' number of members ranged from 693 to 73,725 with an average of 8,267 of which, 60% are females and 40% males. This, however, can be interpreted that the cooperative respondents of 600 to 3,000 members have only one or three branches in business operations. Likewise, the cooperatives with a large number of members are operating in more than 3 branches. This would confirm the assessment survey of the Agricultural Credit Policy Council (June 2015) that nationwide,

PROBABILITY							
	Almost Certain	5	Medium Risk	High Risk	Extreme Risk	Extreme Risk	Extreme Risk
	Likely	4	Medium Risk	High Risk	High Risk	Extreme Risk	Extreme Risk
	Possible	3	Low Risk	Medium Risk	High Risk	High Risk	Extreme Risk
	Unlikely	2	Low Risk	Low Risk	Medium Risk	High Risk	Extreme Risk
	Rare	1	Low Risk	Low Risk	Medium Risk	High Risk	Extreme Risk
			1	2	3	4	5
			Insignificant	*Minor*	*Moderate*	*Major*	*Catastrophic*
			IMPACT				

Fig. 2. Risk severity matrix

Table 1. Profile of the cooperatives in Eastern Visayas

Name of Cooperative	No. of Members	Asset Size	Total Loan Portfolio	Total Members' Savings/Deposits	Total Equity	No. of Years in Business Operation
LEYTE						
1	73,725	1,796,051,716.00	1,197,273,097.00	1,175,704,898.00	427,367,158.00	40
2	34,839	554,753,877.00	433,937,191.00	171,413,325.32	109,636,004.00	21
3	10,566	276,729,159.25	210,338,439.68	67,652,936.16	70,972,835.31	23
4	7,679	223,249,638.00	139,841,302.58	127,750,870.20	76,976,557.65	44
5	4,903	222,109,225.26	57,920,580.00	134,233,211.40	46,340,600.00	50
6	17,360	205,871,991.46	148,583,791.09	78,726,609.14	81,352,537.44	30
7	9,186	204,736,672.82	173,598,130.39	150,399,148.33	56,139,293.28	26
8	1,379	86,378,270.18	50,920,162.89	43,855,727.46	31,424,390.79	24
9	2,479	56,759,229.00	33,078,498.43	27,693,836.10	11,627,764.51	29
10	1,215	56,131,922.65	30,785,487.06	9,424,870.11	33,735,716.46	26
11	693	48,572,933.04	36,622,215.59	1,779,910.51	17,031,462.17	11
12	1,186	30,610,196.96	22,695,420.00	9,600,403.40	12,440,073.36	47
13	3,031	24,004,554.44	13,761,335.39	9,500,646.75	6,460,400.00	19
14	2,033	20,209,590.64	7,059,600.00	7,464,188.19	7,642,804.62	51
SOUTHERN LEYTE						
15	8,993	797,214,863.96	374,917,800.23	351,221,825.34	141,208,227.67	51
16	11,812	626,190,421.13	433,770,634.79	308,448,751.63	207,041,832.84	36
17	4,763	258,178,548.22	161,067,968.40	48,193,313.61	100,173,149.03	53
18	5,381	257,479,435.39	128,197,131.87	66,584,968.62	89,555,410.42	40
19	8,652	209,516,217.14	167,237,642.12	96,352,168.17	55,135,419.20	27
20	6,821	113,540,921.59	69,971,711.03	38,535,921.82	17,742,182.59	25
21	1,780	84,723,012.88	68,774,749.72	25,139,667.14	37,386,462.57	55
22	1,600	63,104,821.24	48,065,157.26	22,815,672.91	24,016,724.53	27
23	2,157	58,785,327.74	28,679,688.14	37,617,637.29	17,050,381.18	55
24	2,356	50,642,132.85	45,219,515.20	22,406,430.04	23,075,793.14	52
BILIRAN						
25	6,900	363,673,284.00	333,453,674.09	118,238,291.31	97,292,910.60	25
26	1,448	76,668,080.13	37,091,739.18	51,161,787.41	21,074,185.33	20
27	1,015	27,001,837.66	20,698,612.65	12,539,826.18	12,590,606.89	50
28	2,788	22,121,499.04	13,410,397.00	10,990,000.00	5,985,000.00	16
SAMAR						
29	8,716	225,411,824.12	113,721,100.59	71,715,331.88	56,160,201.21	17
30	2,560	100,927,133.70	78,109,831.01	65,143,610.88	26,156,239.98	26
Total Average	***8,267***	***238,044,944.58***	***155,960,086.81***	***112,076,859.51***	***64,026,410.83***	***34***

there were 12,676,828 cooperative members with an average of 543 per cooperative branch. The members of a cooperative, while being owners, are also customers. The size of the cooperative is based on the number of members who participate. As more members join, the financial cooperative has more resources to offer on financial products, reduced fees, lower interest rates on loans, and higher yields on savings.

4.3 Asset Size

Under the Cooperative Development Authority (CDA) Memorandum Circular No. 2007-07 "Revised Categorization of Cooperatives as

Amended", cooperatives are categorized based on total assets. Cooperatives with assets up to PHP 3 million are considered micro, PHP 3,000,001 to 15 million as small, PHP 15,000,001 to 100 million as medium, and above 100,000,001 million as large. In this study, the sixteen (16) and fourteen (14) respondents were large and medium cooperatives, respectively. When combined, there was an average asset size of PHP 238,044,944.58. The large cooperative had an average asset size of PHP 402,227,183.07 and medium PHP 50,408,100.60. This would show that the large and medium multi-purpose and credit cooperatives in Eastern Visayas are showing remarkable growth in an upward trend.

This would support to the survey of Lab-oyan [2] that in terms of combined assets of the 10,762 cooperatives in the country there was about PHP 248.54 billion, large cooperatives that own about PHP 171.73 billion or 69.09% of the total combined assets of cooperatives valued at PHP 248.54 billion. This was followed by medium cooperatives that hold about PHP 52.14 billion or 20.98%; small PHP 19.94 billion or 7.66%, and micro PHP 5.63 billion or 2.26%. The trend presented clearly indicates that large cooperatives had the highest resources followed by medium, small, and micro cooperatives, respectively.

4.4 Loan Portfolio

The loan portfolio (also known as loans receivable) is the total principal that the cooperative expects to receive. It is a cooperative asset. The interest and fees attached to the loan portfolio are a cooperative income. The value of a *loan portfolio* depends not only on the interest rates earned on the *loans* but also on the quality or likelihood that interest and principal will be paid.

As observed in Table 2, the average loan portfolio of the cooperative respondents was PHP 155,960,086.81, comprising 65% of the total assets (that is the average total loan portfolio divided by the average total assets multiplied by 100). The amount the program has in outstanding loan portfolio is the largest asset of the credit and multi-purpose cooperatives. Similarly, according to the study of Llanto [38] loans to members constituted the biggest use (about 78 percent) of the asset use. Sixty percent of the total income of credit cooperatives came from lending activities. Therefore, the loan portfolio is one of the major sources of income of multi-purpose and credit cooperatives.

4.5 Savings/Deposits

Members' savings/deposits are one of the sources of cooperatives capital for their business operations. It has a lower cost compared to external borrowings or debt. As reflected in Table 2, the average total members' savings/deposits was PHP 112,076,859.51, equivalent to 47% of the total assets. However, relative to the nationwide survey of Agricultural Credit Policy Council [39] the total savings of the cooperative over assets was 41%. This would disclose that savings play a vital source of the cooperatives' capitalization.

Table 2. Extent of the identified risk

INSTITUTIONAL risk level	Mean	Interpretation
1. Management meets or talks to staff regularly.	4.69	very low risk
2. Back office personnel are exposed to the kind of clients the organization is serving.	3.93	low risk
3. The organization currently have excess capacity, which suggests that it should be poised for growth.	4.02	low risk
4. Capacity is built before deciding to expand.	4.05	low risk
5. The business plan is designed to achieve self-sufficiency in a reasonable amount of time.	3.91	low risk
6. The plan is updated regularly and used to make management decisions.	3.66	low risk
7. Sustainability and profitability indicators are monitored.	4.18	low risk
8. Financial and operational indicators are trending in the right direction.	4.03	low risk
9. The organization is building its capacity to operate independently from technical assistance providers.	3.89	low risk

INSTITUTIONAL risk level	Mean	Interpretation
10. The organization has the ability to identify its own needs and to contract appropriate technical expertise to address those needs on its own terms.	3.99	low risk
11. The organization has a clear mission statement that balances the social and commercial objectives and identifies its target market.	4.68	very low risk
12. The composition of the board and management reflects the dual mission of microfinance.	3.89	low risk
13. The Board led in crafting its strategic plan.	4.08	low risk
14. Outside assisting the agency's role in the governance and management structure best described as supportive.	3.98	low risk
15. Donors and lenders are not dominating the organization.	4.22	very low risk
16. There are clear indications of local ownership and that Financial service operations will continue after the assistance of an agency.	4.17	low risk
17. The interest rate is set to cover the organization's full costs.	4.10	low risk
18. The organization is moving toward accessing commercial sources of capital and reducing reliance on subsidized funding.	3.84	low risk
19. Subsidies and in-kind donations are properly accounted for.	4.46	very low risk
20. The organization has its own financial system (not installed by external agencies).	3.91	low risk
21. Cash management decisions are independent of donor/s.	4.37	very low risk
22. The organization has activities that motivate staff about their work.	4.08	low risk
23. The organization has a performance management system implemented.	3.85	low risk
24. Employees' job descriptions and Key Result Areas (KRAs) are clear.	3.60	low risk
25. Annual performance appraisal for all employees and officers is regularly conducted.	3.75	low risk
26. Good performing staff is rewarded.	4.00	low risk
27. Individual performance targets are set regularly.	3.62	low risk
28. The organization has a mechanism that ensures that it is serving the intended target market.	3.93	low risk
29. Loan sizes/credit lines are appropriate to the needs of the clients.	3.98	low risk
30. Requirements for accessing a loan address the organization's need to control credit risk without being excessively demanding on clients.	3.74	low risk
31. Market research activities are conducted regularly.	2.87	medium risk
32. Indicators are used to assess the performance of the organization's services.	3.77	low risk
33. The number of clients is increasing.	3.81	low risk
34. The interest rate is not hurting clients.	3.90	low risk
35. The budget is based on the annual goal and strategic plan.	3.98	low risk
36. The audit committee has an audit system and checklist.	3.81	low risk
37. Audit regularly sample clients to confirm loan balances.	3.39	medium risk
38. The function of the credit committee is clear.	3.95	low risk
39. Credit committee regularly checks the credit processes (loan granting) of the organization.	3.63	low risk

INSTITUTIONAL risk level	**Mean**	**Interpretation**
40. Credit committee has sufficient experience in evaluating credit.	3.79	low risk
Average	**3.94**	**Low Risk**
FINANCIAL risk level	**Mean**	**Interpretation**
1. A reliable firm audits the organization annually.	4.78	very low risk
2. The organization is not susceptible to interest rate risk.	3.86	low risk
3. The organization follows a cash flow management program.	3.91	low risk
4. Financial forecasting is done regularly.	3.75	low risk
5. Liquidity is monitored consistently using key ratios.	4.05	low risk
6. The organization develops an annual budget.	4.23	very low risk
7. Annual plan is followed, used and updated.	3.58	low risk
8. Actual expense is compared to the planned budget.	3.71	low risk
9. Activity-Based Costing (ABC) is used on loan processing.	3.45	low risk
10. Systems and procedures are analyzed to identify and eliminate inefficiencies.	3.54	low risk
11. The organization actively monitors its operating efficiency through key ratio analysis.	3.98	low risk
12. An error log is maintained to identify and rectify common mistakes.	3.11	medium risk
Average	**3.83**	**Low Risk**
OPERATIONAL risk level	**Mean**	**Interpretation**
1. Loan Officers/field staff are from the community/ province in which they work.	4.93	very low risk
2. Hiring procedures are designed to attract individuals who are honest and well-motivated.	4.19	low risk
3. New employees are oriented to the organization's culture of honesty and zero tolerance.	4.24	very low risk
4. Staff compensation levels are reasonable and competitive.	4.08	low risk
5. There is an immediate termination policy for staff fraud or dishonesty.	4.09	low risk
6. Financial products are designed to control delinquency.	4.03	low risk
7. Features of the products are modified to attract clients.	3.96	low risk
8. Exit interviews are conducted to clients who are leaving the program.	3.88	low risk
9. There are appropriate policies on collaterals.	3.67	low risk
10. The organization is intolerant of delinquency.	3.52	low risk
11. There is a transparent rescheduling and restructuring policy.	3.56	low risk
12. The portfolio at risk is limited to 5%.	3.21	medium risk
13. Fraud is not the reason of high delinquency.	3.92	low risk
14. Loan officers/Field Officers are not allowed to decide on lowering interest, waving penalties and rescheduling.	3.73	low risk
15. Loan approval authority structure balances efficiency, customer service and fraud control.	3.93	low risk
16. Managers are discouraged to do "blind signing" (ministerial approval).	4.65	very low risk
17. Managers consistently monitor portfolio quality.	4.43	very low risk
18. There is a system for collecting, analyzing and following-up customer complaints.	3.67	low risk
19. A contingency plan is present to mitigate the damage of fraud.	3.31	medium risk
20. The office and branches are equipped with security devices that deter theft.	4.36	very low risk
21. The organization is consistently addressing the problem of fraud.	3.99	low risk

INSTITUTIONAL risk level	Mean	Interpretation
22. Fraud vulnerabilities are properly identified.	3.57	low risk
23. There are clear write-off and rescheduling policies that are consistent with a fraud prevention strategy.	3.68	low risk
24. These policies are strictly followed.	3.58	low risk
25. The audit of operations is conducted regularly.	4.23	very low risk
26. Internal control policies are set and followed.	3.63	low risk
27. Set of ratios and guidelines are used to monitor credit performance.	4.00	low risk
28. Employees know the organization's mission statement and use it as their guide.	4.20	low risk
29. Field staff and officers spend 75% of working time with the clients and field activities.	4.05	low risk
30. The ratio between field staff and office staff Institutional risk is favorable for efficiency and profitability.	3.48	low risk
31. Loan officers are trained on delinquency control strategies.	4.06	low risk
32. Loan policies are strictly followed and penalties are enforced.	3.78	low risk
33. Staff members are properly rewarded to maintain high standards of portfolio quality.	3.93	low risk
34. Clients are aware of their rights.	4.26	very low risk
35. Loan details are fully disclosed to clients.	4.86	very low risk
Average	**3.96**	**Low Risk**
EXTERNAL risk level	**Mean**	**Interpretation**
1. The organization knows the competitor's services.	4.55	very low risk
2. The organization is familiar with the kind of service delivery of competitors.	4.23	very low risk
3. The organization has sufficient information on the clients' credit performance with other creditors.	3.97	low risk
4. The organization is benchmarking its performance with the industry.	4.21	very low risk
5. The organization has no directed credit from lenders.	4.38	very low risk
6. Regulatory environment is appropriate/accommodating for the kind of operation.	4.22	very low risk
7. No political pressure to lend to certain target groups.	4.34	very low risk
8. Contracts are enforceable.	4.26	very low risk
9. Labor laws are not constraining the organization.	4.28	very low risk
10. Client retention rates are tracked.	3.82	low risk
11. Majority of areas served are not prone to natural disasters or conflict-ridden.	3.61	low risk
12. Customer satisfaction information on products and services are regularly collected.	3.32	medium risk
13. Customer feedback and information are used to modify products and services.	3.40	medium risk
14. Majority of clients are financially and operationally capable.	3.38	medium risk
Average	4.00	Low Risk

The CDA had set the standard on the structure of assets which measures the percentage of total assets financed by deposits (formula: total deposits divided by the total assets x 100) with a standard of 55% - 65%. Based on the above discussion, the 47% average of savings over total assets of the cooperatives in Eastern Visayas would conclude that there is still a need to cope with the 8% to be able to comply with the standard set by the Cooperative Development Authority (CDA).

4.6 Total Equity

Other than the members' savings/deposits and debt, total equity [also known as part of Members' Share Capital and/or Capital Build-Up (CBU)] is also one of the sources of cooperative

capital. It has the advantage of being a low-cost way to build capital since the cooperative doesn't typically pay interest on member shares or equity as it does on debt capital. Besides, member investments are more dependable and less risky than relying on earnings and debt as the primary source of capital.

Based on the profile, the total average equity of the cooperative respondents was PHP 64,026,410.83 or equivalent to 27% from the total average assets. According to finance standards, a financial institution is said to be financially stable if the equity is not less than 20% of the total assets. This means that the medium and large cooperatives in Eastern Visayas are operating within the standard. However, the CDA has set the standard on the structure of assets that measures the percentage of the total assets financed by equity or share capital (formula: total equity divided by the total assets x 100) with a standard: 35% - 45%. This means that the large and medium cooperatives in Eastern Visayas would need to attain an additional 8% to meet the minimum standard set by the CDA.

The nationwide survey of Agricultural Credit Policy Council [39] disclosed that the overall percentage of total assets financed by equity or share capital on the cooperatives was about 29%. There is only a small gap as compared to the large and medium cooperatives in Eastern Visayas which was 27%.

The reason for the strict standard set by the CDA is that all cooperatives are encouraged to generate internal sources of funds through share capital (equity) and deposits from members rather than on external borrowings or debts. Cooperatives, therefore, exist by virtue of the mass deposits and share capital mobilized from many small savers. Cooperatives are self-reliant and self-sufficient institutions because they raise savings and share capital from members and recover the loans extended for various purposes.

4.7 Years of Existence

The age profile or the number of years of business operation of the respondent cooperatives were between the age range of 11 – 55 years, at an average of 34 years. The oldest cooperative in Eastern Visayas was founded in Southern Leyte by Scarborough Brothers. It shows that the growth of some of the oldest cooperatives was overtaken by the younger ones. The size does not depend on the years of existence. This can be described that some of the oldest cooperatives had been through to some downsides of their business operations but were able to rise again, or they were just contented to stay in the same area of operations without expanding or having some branches elsewhere.

Cooperative businesses are typically more economically resilient than many other forms of enterprise, with twice the number of cooperatives (80%) surviving their first five years compared with other business ownership models showing 41% [40].

4.8 Extent of the Identified Risks

Discussed in this area is the extent of identified risks of the cooperatives in Eastern Visayas as to institutional, financial, operational, and external risk levels.

The scores were ranked from 1 to 5, where 1 is the lowest, and 5 is the highest. When the cooperative *always* observes the stipulated best practice, a score of 5 was noted, 4 as *most of the time*, 3 as *sometimes*, 2 as *slightly* and 1 as *never*. The result is shown in Table 2

The use of good practices of the financial cooperative has proved to be a fundamental move in minimizing risks and ensuring the success and perenniality of organizations [41]. This means that cooperatives exercising best practices are exposed to low risk.

As to the extent of risk level, financial ranked highest (the least in terms of best practice) with a mean value 3.83 which is interpreted as low risk. The second was institutional which has a mean value of 3.94, meaning low risk, the third rank was operational with a mean value of 3.96, meaning low risk. The least in terms of risk level (the highest in best practice) was external with a mean value of 4.00 interpreted as low risk. The overall result showed that the extent of the risk level of the cooperatives in all four areas is low.

The low risk would mean that the consequence of the risk occurring will have little impact or no effect on the cooperative/unit in meeting its goals and objectives. However, the medium risks would mean that the consequence of the risk occurring will only slow, or make inefficient operation of the cooperative/unit from meeting its goals and objectives. The risk can be acceptable

for this service, but each will threaten the development of the risk so it must be monitored regularly, with considerations to implement the necessary measures [42].

Furthermore, Table 3 shows the extent of risk by each cooperative as to institutional, financial, operational, and external. Of the thirty (30) cooperatives, only three (3) had interpreted as very low risk with a mean value of 4.62, 4.23, and 4.35; of which two (2) came from Leyte and one (1) from Southern Leyte. They were all large cooperatives. The rest of the twenty-seven (27) cooperatives were at low risk. This means that the large cooperative is less risky than the medium cooperative.

4.9 Relationship Between Each of the Profiles and the Identified Risks of the Cooperatives in Eastern Visayas

Table 4 shows the relationship between each of the profiles of the cooperatives in Eastern Visayas and the identified risks as to institutional, financial, operational, and external.

The figures in double asterisks mean that the result was tested at 0.01 level, saying that the confidence is >99% (99% confident of the result). This means the result is “highly significant.” It means very probably true.

Table 3. Extent of risk by each cooperative

Name of Cooperative	Mean				Average Mean	Interpretation
	Institutional	Financial	Operational	External		
1	4.11	4.06	4.04	4.09	4.08	Low Risk
2	4.60	4.69	4.57	4.61	4.62	Very Low Risk
3	4.14	4.19	4.12	4.05	4.13	Low Risk
4	4.31	4.33	4.21	4.07	4.23	Very Low Risk
5	3.93	3.77	3.95	3.91	3.89	Low Risk
6	3.99	3.79	3.96	4.11	3.96	Low Risk
7	3.88	3.71	3.94	4.00	3.88	Low Risk
8	3.78	3.56	3.76	3.84	3.74	Low Risk
9	3.66	3.71	3.74	3.80	3.73	Low Risk
10	4.10	4.13	4.21	4.07	4.13	Low Risk
11	3.83	3.54	4.26	4.16	3.95	Low Risk
12	3.76	3.77	3.80	3.82	3.79	Low Risk
13	3.39	3.48	3.71	3.96	3.64	Low Risk
14	3.75	3.48	3.84	4.20	3.82	Low Risk
15	4.09	3.98	3.98	3.95	4.00	Low Risk
16	4.43	4.29	4.51	4.14	4.35	Very Low Risk
17	3.76	3.60	3.84	3.88	3.77	Low Risk
18	4.19	4.13	4.26	3.80	4.09	Low Risk
19	4.31	4.08	3.99	3.80	4.04	Low Risk
20	4.09	4.08	4.21	4.13	4.13	Low Risk
21	4.03	3.96	4.17	4.13	4.07	Low Risk
22	3.58	3.38	3.55	3.80	3.58	Low Risk
23	3.63	3.38	3.61	3.95	3.64	Low Risk
24	3.61	3.44	3.71	3.70	3.62	Low Risk
25	4.03	3.96	4.03	4.34	4.09	Low Risk
26	3.79	3.54	3.71	3.82	3.72	Low Risk
27	3.72	3.63	3.65	3.98	3.74	Low Risk
28	3.66	3.44	3.62	3.95	3.67	Low Risk
29	4.09	3.98	4.01	3.93	4.00	Low Risk
30	3.86	3.79	3.86	3.88	3.85	Low Risk
Total Average	3.94	3.83	3.96	4.00	3.93	Low Risk

Table 4. Relationship between cooperative profile and the identified risks

Profile	Identified Risks			
	Institutional	Financial	Operational	External
No. of Members	0.437*	0.445*	0.336	0.388*
Asset Size	0.469**	0.452*	0.356	0.286
Total Loan Portfolio	0.488**	0.476**	0.384*	0.363*
Total Members' Savings/Deposits	0.341	0.324	0.231	0.187
Total Equity	0.488**	0.459*	0.396*	0.270
No. of Years in Business Operation	-0.075	-0.092	-0.144	-0.180

***Significant at 0.01 level, c.v. = 0.463, df = 28;*
**Significant at 0.05 level, c.v. = 0.361, df = 28*

However, the figures in single asterisk would mean that the result was tested at 0.05 level, meaning the finding has a five percent (5%) chance of not being true, which is the converse of a 95% chance of being true. So this refers to statistically "significant." It means probably true.

4.9.1 Number of members

As presented in Table 5, there is a significant relationship that exists between membership and institutional risk, membership and financial risk, and membership and external risk as determined through the use of Pearson correlation at .05 level of significance [c.v. = 0.361, df = 28]. This means that the respondents agreed that membership and the three types of risk will contribute to the success or failure of the cooperative.

For instance, external events like intense competitors' good services, members may tend to withdraw from membership and transfer to the said competitor. This may affect the cooperative's financial standing as well as its institutional viability.

However, relative to the study of Presbitero & Zazzaro [24] suggest that in markets dominated by cooperative banks, the increase in competition leads to higher investments in building long-lasting relationships with customers (i.e., relationship lending). It can speculate that competition increases bank stability because of higher investments in collecting information, screening, and monitoring.

On the other hand, membership and operational risk revealed a computed r-value of 0.336. This means that no significant relationship exists between these two variables. Operational risk arises from human or computer error within daily product delivery and services and it transcends all divisions and products of a financial institution [17].

Table 5. Top 5 identified specific risks of the cooperatives

No.	Consequence	Cause	Impact (Result)
1	The risk of losing business operation	portfolio at risk is more than the allowable threshold level	business closure
2	The risk of fraud and misconduct of staff	financial needs of staff and pressure to reach the target	financial loss and loss of trust by members
3	The risk of hiring the wrong employee	poor hiring and recruitment process	poor performance, loss of image and reputation
4	The risk of losing good members	high competition (buy-out of clients) and personalized services of other competitors	low portfolio, low savings and capital generation, and low profitability
5	The risk of late and inaccurate submission of reports	lack of knowledge and proper communication	loss of opportunity for investment, poor management decision, and regulatory breach

4.9.2 Asset Size

Also, there is a significant relationship between asset size and institutional risk, and asset size and financial risk as determined through the use of Pearson correlation at .05 level of significance [c.v. = 0.361, df = 28]. This means that usually, assets comprise the following: cash and deposits of the cooperative, investments, loan receivables, account receivables, property, and equipment. If this would not be properly managed, it would certainly affect the institution and its financial stability.

However, there was no significant relationship between asset size and operational risk, as well as asset size and external risk.

Similarly, according to the study of Ahmed et al. [7] the size of the bank has directly associated with credit and liquidity risk, while its association with operational risk is found to be negative and statistically irrelevant.

4.9.3 Total loan portfolio

Moving on to the total loan portfolio, there is a significant relationship with all the types of risks. This means that loan delinquency must be addressed seriously, otherwise, this will affect the overall performance of the cooperative. Eventually, cooperative banks subject to competitive pressures may witness an improvement in the credit quality of their portfolio [33].

4.9.4 Total members' savings/deposits

Besides, there was no significant relationship with the total members' savings/deposits when paired with institutional, financial, operational, and external risks. Members' savings/deposits are not the risk of the cooperative, rather it is the members' risk as they own the money that they save.

4.9.5 Total equity

There were significant relationships that exist between total equity and institutional risk, total equity and financial risk, and total equity and operational risk as determined through the use of Pearson correlation at .05 level of significance [c.v. = 0.361, df = 28]. On the contrary, there is no significant relationship between total equity and external risk.

The total equity consists of members' share capital, statutory reserves, and undivided earnings. When this is not properly monitored and adhered to according to its standard, institutional sustainability including financial stability and operational efficiency would be at stake.

This would support the study of Tan et al. [9] that there was evidence for a strong long-run co-integrating relationship between capital (equity) adequacy of banks and their financial performance in the long-run.

4.9.6 Number of years in business operation

There was no significant relationship on the number of years in business operation when paired with institutional, financial, operational, and external risks. Subsequently, the number of years in business operation or the length of existence does not guarantee success or failure of the cooperative undertakings. The one that matters is on the strategic decisions of how the cooperatives are being managed.

4.9.7 Extent of the probability and impact of the identified specific risks

Further interviews were made to identify and rank the specific risks of the medium and large cooperatives up to the five (5) highest possible risks. Table 5 shows the top 5 risks of the cooperatives *(based on the risk definition containing the three elements: consequence, cause, and impact/result).*

The statement of the top 5 specific risks based on Table 6 were the following:

> Risk No. 1 - The risk of losing business operations since the portfolio at risk is more than the allowable threshold level resulting in business closure *(credit risk and liquidity risk),*
> Risk No. 2 - The risk of fraud and misconduct of staff because of the financial needs of staff and pressure to reach the target resulting in financial loss and loss of trust by members *(fraud risk and reputation risk),*
> Risk No. 3 - The risk of hiring the wrong employee because of poor hiring and recruitment process resulting in poor performance, loss of image and reputation,
> Risk No. 4 -The risk of losing good members due to high competition (buy-out of clients) and personalized services of other

competitors resulting in a low portfolio, low savings and capital generation, and low profitability, and

Risk No. 5 -The risk of late and inaccurate submission of reports due to lack of knowledge and proper communication resulting in a loss of opportunity for investment, poor management decision, and regulatory breach (compliance risk).

Using the ranked risks, the impact value (insignificant, minor, moderate, major, and catastrophic) was assigned to each risk/challenge based on the most likely consequences should that risk happen. As defined, the impact is the effect on the achievement of goals and objectives when the risk happens. Then, the probability value (rare, unlikely, possible, likely, and almost certain) was assigned to the risk happening. (The impact value, as well as the probability value, was explained in the statistical treatment of data under the methodology of this study).

Table 6 shows the probability and impact for each of the identified risks.

The inherent risk rating was a combination of the selected probability and impact ratings that were mapped into the risk severity matrix shown in Fig. 3. For example, on risk No. 1 the probability has a mean value of 2, interpreted as unlikely and the impact mean value of 4, interpreted as a major, when this is plotted at the risk severity matrix, the intersection of the probability and impact lies in the color orange that denotes as a high risk.

This risk rating matrix was designed based on Marvin Rausand's Theory for assessing risk as mentioned in the Theoretical Framework.

The top 5 identified risks were plotted at the heat map or risk severity matrix. The heat map is categorized in four colors: red, orange, yellow, and green, from the top corner to the bottom left. According to Rausand [43] the most significant zone of the heat map is the top right-hand corner in red, where the risks have the highest probability and the highest possible impact called an extreme risk. The risks plotted in red are considered to be critical and are considered to be in the need of the most urgent consideration. Those in the orange area are high risks, that will also need continuous management effort to manage them to an acceptable level while those in the yellow area need regular review and management updates, where its classification was considered a medium risk. The risks in the green area are low classified risks. Low risks need to be monitored and assessed to ascertain if too much resource is being expended on managing them to such a low level.

The results show that the extent of the probability and impact of the risks numbers 1, 2, and 3 were at a classification of high risks, and risks numbers 4 and 5 were in medium risks.

The risks numbers 1, 2, and 3 need constant management effort to be able to eliminate or reduce risks and bring them to an acceptable level. This could be done by a change in strategies or technical requirements, i.e. implement actions to minimize the impact or likelihood of the risks. The risks numbers 4 and 5 are necessary to be monitored and keep informed of the management for regular updates.

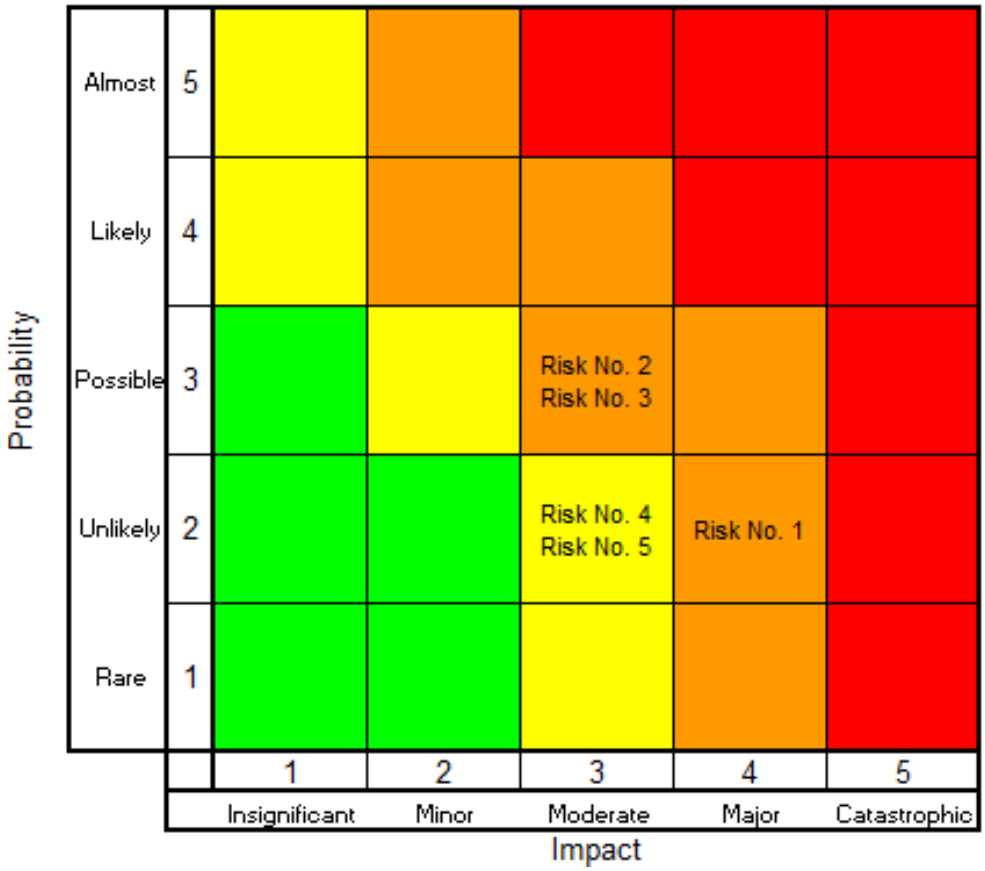
Risk mitigations and techniques would take place for determining a suitable strategy to which these actions can reduce the risk's impact or likelihood or both. This is discussed in succeeding parts.

4.10 Mitigating factors and techniques to control the identified risks

The ultimate purpose of risk identification and analysis is to prepare for risk mitigation. Mitigation includes a reduction of the likelihood that a risk event will occur and/or reduction of the effect of a risk event if it does occur.

Table 6. Extent of the probability and impact of the identified specific risks

Risk No.	Probability		Impact		Risk Rating
	Mean	Interpretation	Mean	Interpretation	*(as referred to risk severity matrix)*
1	2	Unlikely	4	Major	High Risk
2	3	Possible	3	Moderate	High Risk
3	3	Possible	3	Moderate	High Risk
4	2	Unlikely	3	Moderate	Medium Risk
5	2	Unlikely	3	Moderate	Medium Risk



Legend:

Color Code	Risk Rating
	Extreme Risk
	High Risk
	Medium Risk
	Low Risk

Fig. 3. Risk severity matrix or heat map

From further interviews, the cooperatives had already established the common existing controls to mitigate risks from the top 5 identified risks. It is shown in Table 7. The existing control measures on the identified risks have been recognized by cooperatives as effective. However, it is crucial to have a data-backed strategy in place to further control and reduce the risk. Risk control refers to assuming a risk but taking steps to reduce, mitigate, or otherwise manage its impact or likelihood.

Risk mitigation strategies are designed to eliminate, reduce or control the impact of known risks intrinsic with a specified undertaking, prior to any injury or fiasco (Logic, 2018). With these strategies in place, risks can be foreseen and dealt with accordingly. The cooperative needs to further identify the strategies that are most appropriate to control the risks. Based on the results of the survey, Table 7 shows also a few simple strategies or mitigating factors and techniques to perfect the process in addition to the existing controls done by cooperatives.

This would relate to the study of Enriques and Zetsche [33] which states that the history of risk management over the last thirty years highlighted the idea that proper risk management within

companies may prevent corporate scandals and financial crises [44-46].

The foregoing identified risk-mitigating factors and techniques are the basis for the development of the risk management manual. The following important areas are included in the manual: The Risk Management Framework with key issues on institutional risk, financial risk, and operational risk; Social Performance Management; Internal Control Systems; Preventive Controls on Human Resources and Information System; Internal Audit; and Fraud Detection and Corrective Action [47-50].

Table 7. Mitigating factors and techniques to control risks

Risk No.	Identified Risks (Top 5)	Existing Controls	Risk Mitigation and Techniques
1	The risk of losing business operations since the portfolio at risk is more than the allowable threshold level resulting in business closure *(credit risk and liquidity risk)*	• Presence of Collection and Delinquency Control Committee • Collection policies and guidelines • Filing of loans to small claim court, legal procedures • Ensure quality loan releases	• Reinforce the training and supervision of Loan Collectors by setting-up collection targets and incentive schemes • Review loan products designed to fit the needs of member-borrowers, and implement the existing rewards/demerits systems for member-borrowers having fully paid their obligations • Establish internal control systems on proper dealing with delinquent accounts
2	The risk of fraud and misconduct of staff because of the financial needs of staff and pressure to reach the target resulting in financial loss and loss of trust by members *(fraud risk and reputation risk)*	• Installation of internal and external auditor • Check all official receipts (ORs) of collector and also the OR of cashier/teller involving cash count daily • Monitoring on collectors and checking of Official Receipts (ORs) • Check all remittances correctly • Random visits of Loan Head to clients to check their payment to collector	• Install clear guidelines to properly identify other possible causes of fraud and how to handle them without bias for strict implementation • Strengthen policies and guidelines of internal control systems and internal audit
Risk No.	**Identified Risks (Top 5)**	**Existing Controls**	**Risk Mitigation and Techniques**
3	The risk of hiring the wrong employee	• Presence of human resource policy with	• Review human resource policies and clarify the hiring

Risk No.	Identified Risks (Top 5)	Existing Controls	Risk Mitigation and Techniques
	because of poor hiring and recruitment process resulting in poor performance, loss of image, and reputation.	guidelines on proper hiring of employee • Make applicants' background investigation when necessary	procedure, training and development, remuneration, and termination or separation from work
4	The risk of losing good members due to high competition (buy-out of clients) and personalized services of other competitors resulting in a low portfolio, low savings and capital generation, and low profitability.	• Continuous recruitment of members • Constant review of financial products both loan and savings to compete with other MFIs • Conduct regular surveys of the interest rates offered by competitors • Quality customer service	• Institutionalize Social Performance Management (SPM) to the overall operation of the cooperative to achieve high retention of members
5	*The risk of late and inaccurate submission of reports due to lack of knowledge and proper communication resulting in a loss of opportunity for investment, poor management decision, and regulatory breach (compliance risk)*	• Regular meeting of staff and officers • Setting the deadline of submission of reports • Proper training of assigned employee to finalize the report • Policy on Managerial/ Supervisory accountability	• Institutionalize Information System to provide timely and accurate report

5. CONCLUSION

Credit and multi-purpose cooperatives have showcased their potential for expanding membership, mobilizing financial resources, and consistently delivering financial services to small savers and borrowers. With an effective supervisory and regulatory environment, coupled with streamlined policies and practices, these cooperatives could evolve over time into financially robust and competitive institutions.

Financial risk, particularly encompassing credit risk, stands out as a high-priority concern for every cooperative.

The loan portfolio exhibits a notable correlation with all identified risks, given its substantial utilization of cooperative assets.

Institutionalizing the internal control system and internal audit emerges as a top priority, serving as mitigation strategies to effectively manage the risks inherent in cooperative operations.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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