

# Factors Affecting the Resilience of Cooperative in Region XII During the COVID 19 Pandemic

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**Abstract:** This study aimed to determine the factors that affect resilience of cooperative during the COVID 19 pandemic. Specifically, it explored the influence of leadership and management, collective skills, member participation, loyalty and commitment, innovation, partnership and linkages and government support and intervention to operational resilience of cooperative. Moreover, this study analyzed the moderating effect of cooperative profile in terms of cooperative and number of years in operation. There were 320 Multi-Purpose Cooperatives (MPC) responded in the study and answered the survey questionnaire through google form and on-site survey. The quantitative non-experimental research design, as well as correlational design was used to establish a statistically corresponding relationship. Descriptive statistics such as frequency count and percentage distribution described the cooperative profiles. The mean scores and weighted mean scores were used in the level of the variables of the study. Moreover, the Pearson Moment Correlation (Pearson's  $r$ ) determined the relationship of independent variables and dependent variable of the study. The Multiple Regression Analysis (MRA) stepwise method was used to identify the significant explanatory variables of operational resilience of cooperatives in Region XII.

There is a significant relationship between independent and dependent variables of the study. In addition, 5 factors statistically explain the operational resilience of cooperative namely: member participation, loyalty and commitment, innovation, leadership and management, government support and intervention and partnership and linkages. Both cooperative size and number of years in operation cannot statistically moderate the relationship of independent and dependent variable.

**Keywords:** Cooperative, COVID 19 Pandemic, Multiple Regression Analysis, Operational Resilience, Resilience

## I. Introduction

### 1.1 Background of the Study

Cooperatives are value-driven, member-owned, and democratically controlled enterprises that seek to address the economic, social and cultural needs of their members through production of their goods and services [1] and share a specific and strong organizational structure and design based on an internationally agreed-upon and acceptable cooperative's set of values and principles [2]. As the owner and controller of the cooperative, members in return also benefited the proceeds through distribution of dividends and patronage refund and designed to meet member's social augmentations [3] where it composes both a business logic and a community logic [4];[5], taking a unique position both between non-profit and for-profit enterprises. These made cooperatives differ from other types of businesses in which profits will be benefited by the investors.

As such, cooperatives in its very essence were organized on the basis of benefiting members in the following aspects which include improve bargaining power, improve income level, alleviate poverty, reduce cost, acquisition of skills, obtain products or services otherwise unavailable, expand new and existing marketing opportunities as well as improve product or service quality [6]. Moreover, according to the International Labor Organization (ILO), cooperatives played a vital role in overcoming global poverty, contribute to increase the financial, social and educational status of the members. These enable cooperatives to increase income and savings, investment and productivity through capacity building in terms of

business and skills development, mentoring and employment, thus cooperative should be established and developed especially in rural areas [7].

Cooperatives around the world are acknowledged to be more responsive and resilient in times of crisis. It is in fact during disasters when cooperatives often emerge and it comes as no surprise that cooperatives' history is tightly linked to economic downturns and crises. It was after the historical 2007 global financial crisis that cooperative proliferates around the world. And now the hit of the COVID 19 pandemic which resulted a great impact in the capitalist system worldwide created a significant consequence in the micro, small and medium enterprises including cooperative entrepreneurship. It affects the different types of cooperatives in Canada [8], affected the labor force due to lockdowns and border restrictions in the coffee cooperatives of Honduras [9] and the marketing of agriculture produce of cooperatives in Africa, which typically involves a myriad of small- and medium-sized transactions has also been affected by the COVID-19 outbreak [10]. The resilience of the cooperative model discerns it to be different from conventional types of business because of the centrality of its members and embeddedness in a global movement [1].

Moreover, cooperative has been considered as financial intermediaries which pay attention to social criteria focusing to augment socio-economic status of its members and the community. Thus, such entities of social enterprises are continue attracting the attention of scholars and practitioners of today owning the growing demand for business organizations to trigger positive social change [11]. Cooperative around the world have been uplifting lives, promoting social cohesion, raising productivity, reducing inequalities, and advancing economic growth and economic development in many ways.

The Philippines is considered as cooperative leader as the cooperative movement continues to play a crucial role since it started over a century ago. The development of cooperatives in the Philippines hurdled the early challenges and managed to succeed, indicating the resiliency of the organization and sustaining its operation under difficult times. Cooperatives, their employees, members and communities have also been deeply impacted by this pandemic, although unequally, depending on the sectors and the stage of the spread of the virus in the different region.

The cooperative's platforms have shown greater financial inclusion because it provides financial assistance in times of need. Aside from extending loans for various purposes, cooperatives have empowered many to enrich their lives through entrepreneurial activities, informal education, and practical training. They serve to anchor collective efforts of people in the conduct of business, production, trade, marketing, service provision, and so forth [12]. According to the survey conducted by the Cooperative Development Authority (CDA) participated by the different regions in the Philippines, 91.7% of the cooperative's business operation was greatly affected by the COVID 19 outbreak, 57.3% are multi- purpose cooperatives. These cooperatives are generally affected by this crisis, however, they still able to manage the distractions and continue rendering services to its members. Noting further the safety and health of the employees and members as its top priority being the human capital as its premium rather than on profit motivation.

Further, evidence has shown that cooperatives are more resilient during times of crisis and can be useful tools in helping communities persevere in times of crisis [13]. Resilience is the ability of the cooperative to withstand and cope with the crisis, enabling its capacity to adapt to the situation while taking advantage of the opportunities arising from the situation [14].

Amidst the threat of the pandemic, there is a majority of 94% of the cooperative members surveyed by the International Cooperative Research Group in the Philippines said that cooperative made a great contribution in their economic and social well-being [15] true to the "member centrality" element of the cooperative which satisfying the needs of the member [16]. Additionally, cooperatives also impacted as high as 93% social benefits such as providing reliefs and food packs and a PPE for the safety of everybody. Moreover, 98% of them strengthen their social capital by providing emergency and medical loan and 88% made them resilient as they have someone to talk to in times of needs and emergencies, hence, cooperative contributed to a strong network and support system in the Philippines [15].

The Philippine national government and agencies such as the Inter-agency Task Force for the Management of Emerging Infectious Disease (IATF-EID) provides the National Action Plan (NAP) which guides the Local Government Unit (LGU) mitigate the social, economic and security impact of the pandemic and developed the long-term recovery framework to include stability and restoration of livelihood and business development to achieve resilience building. The Business Continuity Management partnership program of Cooperative Development Authority (CDA) and Humanitarian Leadership Academy Philippines help cooperatives in the Philippines to be more prepared and resilient during this time highlighting the cooperative sector as contributor to rapid, inclusive and sustained economic growth including financial inclusion and poverty reduction. Therefore, cooperative's role in this time of crisis is to continue producing or delivering their service to their members to sustain their needs, livelihoods, and well-being since cooperatives exist to fulfill essential needs of the members and community that both market and government fail to address [17];[16], Cooperatives resist better in times of crisis than their capitalist counterparts [18].

Region XII SOCCSKARGEN comprises the Provinces of South Cotabato, Sultan Kudarat, Sarangani, North Cotabato and the cities of General Santos, Koronadal, Tacurong and Kidapawan. The region has a number of existing cooperatives

in different category operating in its provinces and cities. The cooperatives in the region are also not excluded by the impact of pandemic. As a matter of fact, they are the most affected in terms of its business operation. Problems and issues during the COVID 19 pandemic were identified through a conduct of Key Informant Interview (KII) of the managers of Multi- Purpose Cooperatives (MPC) in the region diversely represented. It focuses on cooperative in multi-purpose category since this category of coop offers other line of business other than savings and credit to its members.

Result of the KII shows that the multi-purpose cooperatives in the region are engaged into various business undertakings and majority of them are into agricultural services like buy and sell of the region's top agricultural commodity such as corn, rubber, rice and oil palm. Most of them are also into general merchandising and small-scale businesses which they offer to meet the demand of the members in their respective locality. The effect of the pandemic is evident in the business operation of the multi-purpose cooperatives in all its aspects to include production, marketing, financial and the human resource. The members of the cooperative particularly those who engage in agricultural farming, merchandising and small store owner failed to pay their monthly amortization to the cooperative since their businesses was also affected by the pandemic. Some health restrictions during the pandemic like limited face to face transaction, observance of skeletal workforce and border restriction affect the production, human resource and marketing activities of the cooperative in which as a result, management failed to hit their target during the onset of the pandemic. This subsequently brought a financial implication to the operation of the cooperative especially the non-payment of the members that resulted to low collection rate and increase in delinquency account which created a negative impact on its revenue.

To address the impact of the pandemic to the operation of the cooperative, the following factors were identified by the participants in the key informant interview which can affect the resilience of cooperative during the COVID 19 pandemic namely leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention. The leadership and management strategize the operation, establish constant communication and ensure over-all adaptability. There is a collective skill from sharing of some ideas and knowledge that will be helpful in terms of decision making as well as the member participation, loyalty and commitment as the owner of the cooperative.

To help cope the financial problem due to low collection rate, cooperative's partnership and linkages to other financial institutions and financial aid agencies and with the support and intervention of the government help them to access for financial support that promote the essence of cooperation among cooperatives. Further, the innovative ways in the operation such as repositioning and integrating the existing business of the cooperative ensure market and address the problem on the revenue.

Thus, to determine the factors that affect the resilience of the cooperative in Region XII during the COVID 19 pandemic, the study sought to measure the operational resilience of the multi-purpose cooperatives in Region XII as affected by different factors such as leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention. The operational resilience encompasses the functions of management such as production, marketing, financial and human resource of the business organization as the most impacted during disruptions, thus it is important to understand the nature and consequences of resilience at the operations level [19].

Therefore, this study is being called for to determine the operational resilience of multi-purpose cooperatives in Region XII during the COVID-19 pandemic and identify the factors affecting their resiliency. Considering the invaluable importance of the cooperatives to the members, to the community and to the country as a whole, it was imperative to pursue this study to become the basis for developing adaptive strategies for operation continuity and sustainability.

### **1.2 Framework**

This section of the paper consists of the framework that was used as baseline and foundation of the study. It discussed both the theoretical framework and conceptual framework used in the study.

#### **1.2.1 Theoretical Framework**

The study was anchored in the analytical framework of Borda-Rodriguez & Vicari, High Reliability Organizing Theory, System Theory, Path-Goal Theory, Social Change Theory and Innovation Theory.

##### **1.2.1.1 Analytical Framework by Borda-Rodriguez & Vicari (2013)**

Borda-Rodriguez & Vicari used the identified five key factors that affects resilience of cooperative namely collective action skills, membership, networks, innovation and the role of government and utilized these factors in the conduct of their study and explained the contributions and roles of the internal and external environment of the cooperative in combating crisis. Figure 1.1 is the analytical framework of the five key factors that affect cooperative resiliency as

adopted in their studies.

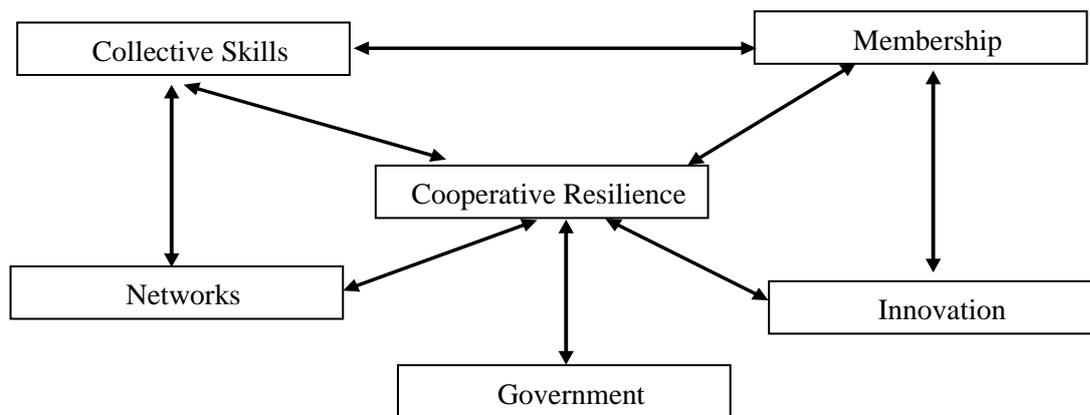


Fig. 1 cooperative resilience framework (borda-rodriguez & vicari, 2013)

### 1.2.1.2 High Reliability Organizing Theory

This theory seeks for reliability in committing an error free when the same disaster would arise in the future which can be achieved through collective mind and aggregate mental processes that can be defined as “a pattern of heedful interrelations of actions in a social system” [20]. This theory anchored in the collective skills factors that should be present in the cooperative and other same organization in sharing and contributing ideas in coming up plans and decision making to achieve resilience. Its system must have an interrelating and mindful comprehension of unfolding events and decrease the potential for organizational errors. The leadership and management factor is also crucial in the cooperative that should have a solid foundation of its system through establishing strong networks, linkages and relationship to its internal environment (referring to management itself and the members as co-owners) and the external environment (cooperation among cooperatives, government, other agencies). Figure 1.2 is the model of high reliability theory.

The term “high reliability organization” was coined to denote those organizations that successfully avoid such failure while providing operational capabilities under a wide range of environmental conditions [21].

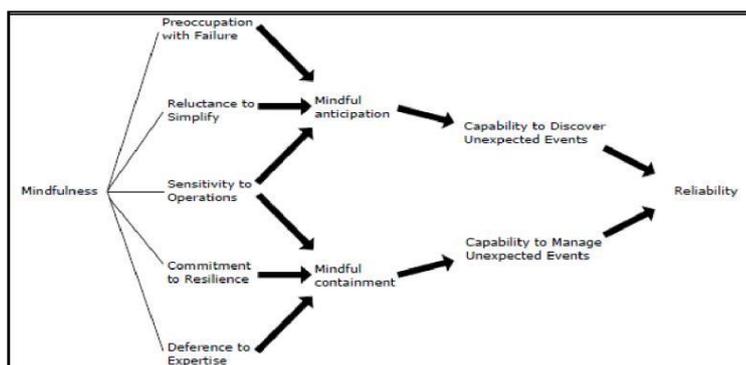


Fig.2 the high reliability theory model

### 1.2.1.3 System Theory

This study was anchored on the system theory of Katz and Khan which is basically concerned with problems of relationships, of structures and of interdependence, rather than with the constant attributes of an object. In addition, an organization must be an open system that includes interaction between subsystems and its external environment. The salient characteristics of an open system is a self-maintenance based on a process of resources from the environment and interaction with the environment.

The partnership and linkages of the cooperative is part of its external environment in which it must have strongly established to practice the essence of its cooperation among cooperative principle and that will help in the success of its

operation. It is crucial for the cooperative to establish a strong network relationship to have an access to assistance in times of need. This theory is relevant in this study since cooperative as a self-help organization must be efficient in utilizing its resources both internal and external in all types of condition and how cooperative establishes its relationship in all its systems and subsystems. Figure 1.3 is the model of system theory.

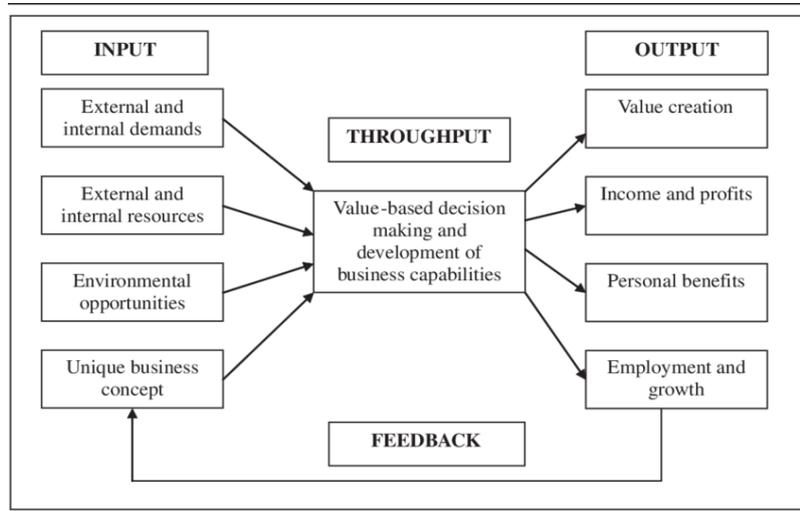


Fig. 3 the system theory model

**1.2.1.4 Path-Goal Theory**

Utilizing cooperatives’ resources depend greatly on the type of leadership that the cooperative has. This applies the Path-Goal Approach to Leadership Effectiveness by Robert House. The life and future of the cooperative greatly depends on its dynamic leadership and management. It has to sustain its increasing roles and responsibilities both under favorable and unfavorable circumstances. It has to anticipate problems and move forward, showing resiliency and effectiveness in its leadership and management. Fig. 4 is the path-goal theory model.

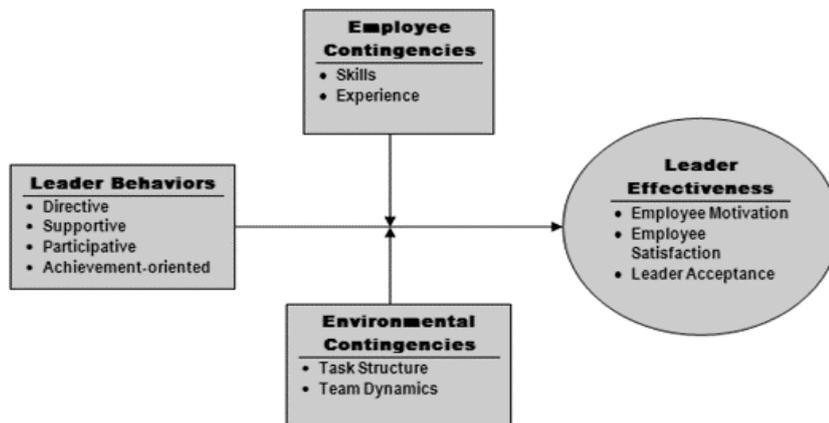


Fig. 4 the path-goal theory framework

**1.2.1.5 Social Change Theory**

The Theory of Social Change by Durkheim which concerns with the changing relationship of an individual and the society. According to Durkheim, the structure of the society changes due to its complexity and increasingly expandable nature brought by crisis and disasters. Cooperatives, which have been acknowledged to fill the void created by corrupt and inept government officials and the bureaucratic system, are very popular and hailed to have improved the quality of life of their members.

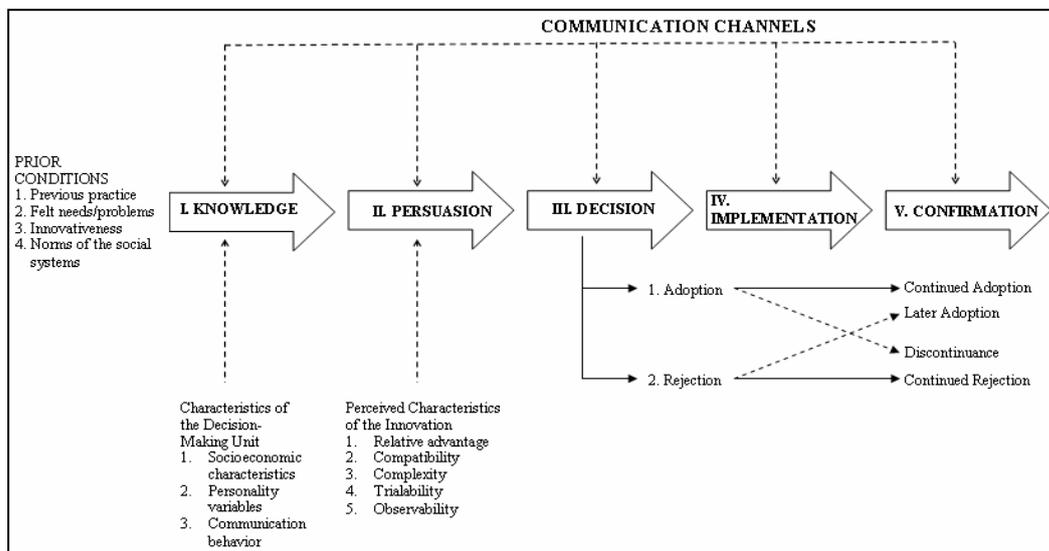
The cooperatives fill in the gap created by the distractions like delivery of basic services to the members, thus creating a better society to the individuals, in such a way that members participated and patronized the services of the

cooperative in which eventually will strengthen loyalty and commitment of the members towards the cooperative. This theory fit and anchored the member participation factor that affect the cooperative resiliency as Durkheim further expanded this theory by saying that the beneficiaries of economic changes are bonded by common outlooks, values, ideas and life principles wherein development evolves from simple to highly beneficial ones [22].

**1.2.1.6 Innovation Theory**

This study was anchored also to the Innovation Theory of Rogers. Rogers defines the innovation as “An idea, practice, project that is perceived as new by an individual or other unit of adoption”. The innovation theory is more related and appropriate for investigating and examining the adoption of technology. The innovation-decision process according to Rogers comprise of 5 stages wherein individual or organization’s motivation to adopt the innovation could establish as it weighs the pros and cons of the new idea. These are the knowledge stage, persuasion stage, decision, implementation and confirmation.

The cooperative management is expected to have a knowledge and are fully aware of the possible innovation and its implications both favorable and unfavorable impact to the cooperative and the decision as to the adoption of new ideas. In employing innovation, the management must be responsible and accountable in prioritizing the welfare of the member being a member-centered organization. In an organization like cooperatives, strong communication and network in all its stakeholders must be strengthened in the open system to come up solutions and plans mutually agreed and understood by all participants. Figure 1.5 is the innovation theory model.



**Fig. 5 the innovation-decision process model**

The variables used in the study and the theoretical support are summarized in the Table below.

Table 1 The Variables of the Study and the Corresponding Theoretical Support.

Variables	Theoretical Support
Leadership and Management	Path-Goal Theory by Robert House
Collective Skills	High Reliability Organizing Theory
Member participation, loyalty and commitment	Borda-Rodriguez & Vicari, Social Change Theory by Durkheim
Partnership and linkages	System Theory by Katz and Khan
Innovation and Integration	Innovation Theory by Rogers
Government Support and intervention	System Theory, Borda-Rodriguez & Vicari
Cooperative resilience	Borda-Rodriguez & Vicari

**1.2.2 Conceptual Framework**

Based on the framework and the result of the conducted KII supported by the existing literature, the following variables were identified and used in the study:

### **1.2.2.1 Leadership and Management**

It is defined as the ability of the cooperative's management to deliver effective strategy, decision making and risk taking in times of crisis. Revealed in the result of the study of [23] that through hard work, perseverance and cooperation leadership in the cooperative contributes to its success and that effectiveness in its business operation is the result of its innovative planning, policy formulation and management. [24] analyzed the contribution of the literatures demonstrates the direct relationship between the stress of the leader's job and his ability to maintain resilience in the face of prolonged contact with disruptions and that a resilient organization in the same way can influence on building their employee's resilience capacity through leadership development.

### **1.2.2.2 Collective Skills**

The collective skills and social learning are important in organization as these improves relationship among members and improve their actions as they act their role being a member of the cooperative [14]. It is crucial in resilience and planning for innovation and new ideas in order to address the challenges in the cooperative. Collective skills can also be facilitated by different agencies providing capacity building services.

### **1.2.2.3 Member Participation, Loyalty and Commitment**

Cooperative resilience depends on members' sense of identity, commitment and cohesion [18]. The member's active participation, affiliation and patronization of the cooperative's products and services helps established the organization's strong support system. In this regard, it has been argued that cooperatives are good as their members make them, that members are loyal and committed when cooperatives are able to meet their demands. Cooperative resilience resulted in its economic performance also depends on the loyalty of the members to trade with the cooperative [14].

In doing so and to practice cooperative principle to train and educate members, it should provide capacity building among cooperative members to enhance their knowledge, skills, and attitudes and to harness their self-help value towards being more resilient individual and organization members [25].

### **1.2.2.4 Partnership and Linkages**

Cooperatives and other mutual enterprise are particularly more resilient in adapting to crisis due to its specific features such as solidarity and democracy and its guiding principle like cooperation among cooperatives and concern for the community. Working towards a conducive legal and economic environment for cooperatives is also a vital area, in which more efforts are needed thus, partnerships with actors such as local authorities, fair trade organizations, or trade union movements, can be instrumental in working together to facilitate the conditions for people to take charge of their own development.

This means the ability of the cooperative to enhance external relationship and able to establish firm network and support. These collaborations can be facilitated through adequate structures that foster exchanges and dialogue both within and outside the cooperative movement [26]. Strong partnerships between and within cooperatives and mutual enterprise can be instrumental in enhancing the emerging role of the movement as a pivotal actor in transforming towards sustainable and resilient societies.

### **1.2.2.5 Innovation**

This is the ability of the cooperative to sustain its current business through engaging strategic integration and innovation. Employing innovation in cooperative's operation would have different levels that was explained in the study of [14].

Innovation has a positive impact to the cooperative resilience resulted from the application of new or existing knowledge, acquire technical knowledge from outside actors and upgrade its expertise. Innovation relies in organization's capacity to develop adaptive capacities or the organization's ability to learn and respond to shocks. Additionally, practicing integration and diversification of the present business operation of the cooperative make it more sustained and be able to cope when stress and disruptions occur [9].

### **1.2.2.6 Government Support and Intervention**

The government is expected to have a vital role in helping cooperatives. It should create a favorable direction for self-reliance for the cooperative [27]. The presence and support from the government in times of crisis through its programs and project assist cooperatives during trying times. According to [14] the government and other external actors are expected to provide an enabling environment which can facilitate cooperative activities, from communication to

logistics, transport and extension services.

Further, the cooperative played a big role in rural development as an agent of changes which can organized in self-help groups and can improve own chances to learn how to cope with the challenges of the changing environment, to generate new, locally adjusted knowledge by knowledge-sharing with external development entrepreneurs, to experience the positive effects of organized self-help and group solidarity for improving their own economic and social conditions and to catch up with more advanced competitors by learning from the future [27].

**1.2.2.7 Operational resilience**

The concept of resiliency varies in different point of view as it is context-dependent in nature. It is being defined depending on the situation and the context it situated and used. Cooperative are generally not for profit motivation which make it distinct from investor- owned firms wherein investments need to be calculated. Moreover, the study was focused on multi-purpose cooperative category which engages into other businesses to qualify as multi-purpose aside from savings and credit as usual service offered by cooperative. The nature of multi-purpose cooperative also practices business management and strategies in the aspects of its operation which encompasses production, marketing, human resource and finance making it more similar to typical business and investor-owned firms [28].

Cooperatives within the mainstream of organization literature defined to belongs on the economics, management, business and sociology fields that refer to concepts such as cooperation and cooperative strategy. According to UK Business Resilience 2020 report, in the context of business organization, resilience is the ability to perform well for a prolonged period of time, overcoming the range of obstacles that may arise while also taking advantage of opportunities that present themselves. Cooperative should have the capacity to withstand and bounce back its operation under disruptions and has an adaptive capacity required to take the opportunities arising from the disturbances.

The operational resilience was used as dependent variable in the study which was measured the resilience of the cooperatives during COVID 19 pandemic. This covered the functional areas in business management such as production, marketing, financial and human resource. It measured the ability of an organization to prepare responses to recover quickly from disruptive events and continue to function by adapting to change amid challenging events.

**1.2.2.7 Cooperative Profile**

The cooperative profile refers to its number of years in operation and cooperative size. The cooperative’s ability to respond to disruptions determined by the number of years it operates and its size categorized into micro, small, medium and large. The size of the cooperative is determined by the asset it has accumulated along its operation such as micro (Php below 3 million), small (Php 3 million up to 15 million), medium (Php 15 million up to 100 million) and large category (above Php 100 million).

The figure 1.6 shows the conceptual framework of the study. The independent variables were the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention. These variables were studied if it offered significant influence to the dependent variable which is the operational resilience. Furthermore, operational resilience covered the business management functions such as production, marketing, human resource and financial. In addition, moderating variables such as number of years in operation and cooperative size were examined as well if it moderates the relationship and the independent variables and dependent variable.

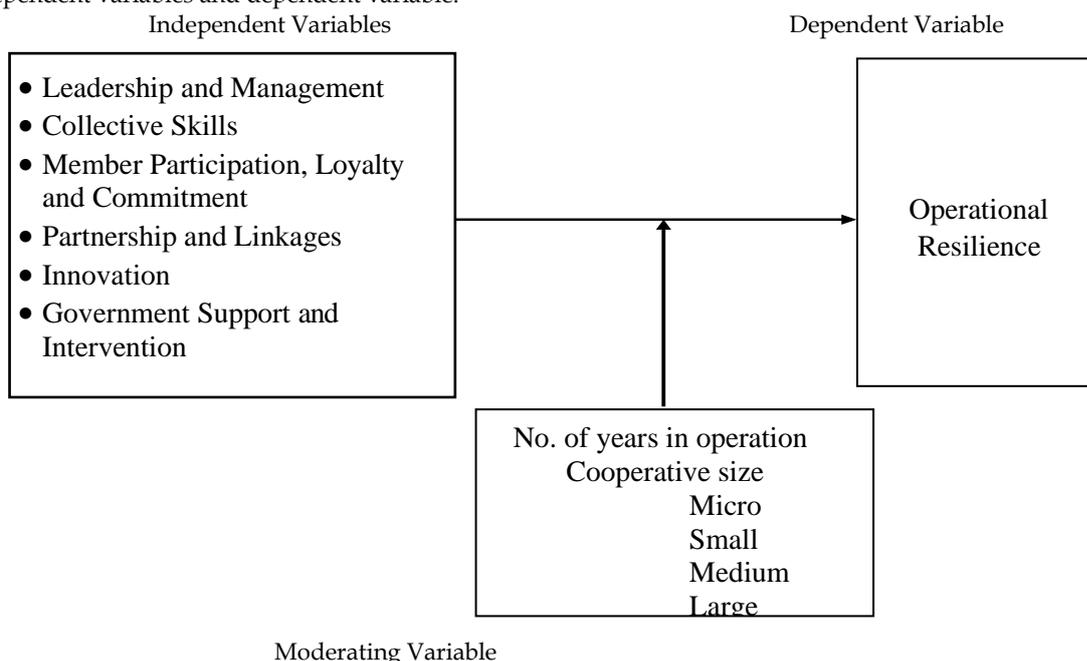


Fig. 6 conceptual framework of the study

The leadership and management referred to the ability of the cooperative's management in terms of its skills, background and experiences to deliver effective strategy, decision making and risk taking in times of crisis. The collective skills were learned from the experiences, trainings from each member which promotes open discussion, common vision and collective actions. The member participation, loyalty and commitment were manifested in their active support to the programs of the cooperative as well as patronizing and promoting its business.

The partnership and linkages referred to the ability of the cooperative to strengthen external relationship to stakeholders and cooperation among cooperatives. The innovation is the cooperative engagement related business expansion and integration, participation to value chain and the use of technology for efficiency in delivering the services. The government support and intervention are evident in the government's programs extended to help cooperatives during disasters.

The operational resilience encompasses a holistic approach in assessing cooperative resilience. It is the ability of a cooperative to quickly adapt to changes brought by disruptions in its business management functions such as production, marketing, human resource and financial. This indicates the adaptability, agility and liquidity in the operation as well presence of contingency and continuity plan.

### **1.3 Statement of the Problem**

This study determined the factors affecting the operational resilience of cooperatives in Region XII during the COVID 19 pandemic.

Specifically, the study answered the following questions:

1. What is the profile of the multi-purpose cooperatives in terms of;
  - a. Number of years in operation
  - b. Cooperative size
2. What is the level of these factors among the cooperatives in Region XII during the COVID 19 pandemic;
  - a. Leadership and management;
  - b. Collective skills;
  - c. Member participation, loyalty and commitment;
  - d. Partnership and linkages
  - e. Innovation
  - f. Government support and intervention
3. What is the level of operational resilience of cooperatives in Region XII during the COVID 19 pandemic?
4. Is there a significant relationship between the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention and operational resilience of cooperative in Region XII during the COVID 19 pandemic?
5. What are the predictors of operational resiliency among cooperatives in Region XII during the COVID 19 pandemic?
6. Do the number of years in operation and cooperative size significantly moderate the effect of the relationship of leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention to operational resilience of cooperative?

### **1.4 Hypothesis**

The following null hypothesis were tested with 0.05 level of significance.

Ho1: There is no significant relationship between the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention and the operational resilience of cooperative in Region XII during the COVID 19 pandemic.

Ho2: There is no predictor of operational resilience of cooperative in Region XII during the COVID 19 pandemic.

Ho3: The number of years in operation and cooperative size do not significantly moderate the effect of the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention to operational resilience of cooperative in Region XII during the COVID 19 pandemic.

### **1.5 Objectives of the Study**

In general, the objective of this study was to determine the operational resilience of cooperatives in Region XII during the

COVID-19 pandemic as well as the factors affecting it. Specifically, the study:

1. Described the profile of the multi-purpose cooperatives in terms of number of years in operation and cooperative size.
2. Determined the level of operational resilience of cooperatives in Region XII during the COVID 19 pandemic.
3. Determined the influence of leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention to the operational resilience of cooperative in Region XII during the COVID 19 pandemic.
4. Identified the explanatory variables of operational resilience of cooperatives in Region XII during the COVID 19 pandemic.
5. Examined the moderating effect of cooperative profile such as number of years in operation and cooperative size in the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention to operational resilience of cooperative in Region XII during the COVID 19 pandemic.

### 1.6 Significance of the Study

The result of the study benefited by the following sectors:

**Cooperatives** – result of the study can be the basis for formulating strategic management planning and decision making in times of eventualities like COVID 19 pandemic. This would make the cooperatives more prepared, mitigate and adapt to the changing environment and thus help cooperatives become a resilient organization.

**Cooperative Development Authority (CDA)** – as the lead agency responsible for giving of assistance to cooperatives, results can be used to come up better strategies to help small and big cooperatives in building resilience in terms of strategic planning and monitoring in times of pandemic.

**Members** – result of the study can serve as motivation to all members for they may be more aware of their roles, duties and responsibilities as member of the cooperative. Moreover, they may become educated of their accountability and contribution in the continuity and resiliency of the cooperative operation especially when disruptive by unexpected events.

**Cooperative Federations** – to help facilitate and carry out cooperative's initiatives and activities to help and assist its co-operative as a secondary organization which serves as their spokesman.

**National Government Organization (NGO)** – to extend and deliver assistance to cooperatives through provision of programs and services according to the varying needs of the cooperatives.

**Academe** – to add in the literature, theories and body of knowledge the factors which can affect the resilience of cooperative during crisis especially in the context of Region XII.

**Government Agencies** – result of the study can serve as basis in the assessment of the programs extended to cooperatives and emphasized their crucial role to assist coops in times of need of government agencies such as Department of Science and Technology (DOST), the Department of Trade and Industry (DTI) and the Local Government Unit (LGU). They may also be aware that extending assistance to cooperatives must tailor-fit to the needs of the coop so that appropriate strategies could be addressed.

**Future Researchers** – areas for possible research which are not covered by the result of this study will give idea to future research aspirants.

### 1.7 Scope and Limitation of the Study

This study examined the factors that affected operational resilience of cooperatives in Region XII during the COVID 19 pandemic. Moreover, factors such as leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention and the explanatory variables were likewise determined.

On the other hand, this study was limited only to 320 multi-purpose cooperatives duly registered, with complete contact details in the list and with active registration status in CDA Office. This excluded the 38 MPC who were not active, non-compliant status and lack of contact information from the list. Additionally, 33 cooperatives from the 320 total population were the respondent in the pretest that was responded by the second in rank position of the general manager.

### 1.8 Definition of Terms

**Collective skills** – are the skills of the members attained through learning from each other, training or formal education to establish good working relationship among and between members.

**Government support and intervention**– refers to the vital role of the local government in helping cooperatives during disasters through providing an enabling environment and direction to promote resiliency.

**Innovation** – refers to creating and employing new ideas to upgrade products and services adjusted to meet the needs of the members and help maneuver the operation of the business in times of adversities.

**Leadership and management** – refer to the ability of the cooperative to formulate strategic management planning and coming up with rapid decision making especially during times of difficulties and making a positive impact towards the member and the entire cooperative.

**Member participation, loyalty and commitment** – are very important role of the members in the cooperative. Their voluntary support and participation in the decision- making process, activities and their commitment on their roles and responsibilities as a member.

**Partnership and linkages** – refer to the ability of the cooperative to establish strong network and support from the external environment which enables them to become resilient during the pandemic.

**Operational Resilience** – encompasses a holistic approach in assessing cooperative resilience in all its aspect such as financial, marketing, production and human resource during the COVID 19 pandemic.

**Resilience** – is the ability of an organization to withstand its operation and cope with the crisis while enabling its capacity to adapt to the situation and taking advantage of the opportunities arising from the situation.

### **II. Review of Related Literature**

Cooperatives are usually formed and borne during a time of disasters. It is through the concept of “self-help” that improves socio-economic situations throughout the central history of cooperatives [29]. Cooperation is being seriously considered as the best possible alternative mode of organizing business to assure economic and social stability. It further advocate democratic and voluntary membership with common needs and interests, bonded by the shared spirit of mutual understanding, cooperation and respect [23]. Cooperative’s main purpose is to provide the basic services that are necessary in the life of the members and producing goods to assist the members in alleviating their financial and economic status through production of goods to be sold in the market. In general, the main contribution and impact of cooperative is to address the economic problems of the members. Thus, it develops prosperity. Cooperative basically raises fund for the improvements of both the members and the cooperative itself. It consistently continues to be helpful to the society and alleviates poverty hence it promotes the advancement of the economic, social and educational status of the members in which enable them to increased their income and savings, investment and productivity [7].

The opportunity for cooperatives is to use the inherent advantages of their unique business model to deal effectively with change in their operating environment, thereby driving forward their ambitions for development. A strong, resilient and successful cooperatives are built on a clear, well-defined purpose supported by a sound business model, which is sustained by building member loyalty, identity and commitments through delivering value to members in ways that build both economic and social capital [30]. The social capital is vital in fostering social cohesion with particular attention to their elements such as association, participation and engagement of the stakeholders in the community groups as well as the different levels of government [31]. Therefore, the social cohesion and community resilient are the two important resources that must be present in the organization, critically strengthen and leveraging it during crisis to better mitigate the effect of the disaster and able normally to bring back the operation of the organization. This is because cooperatives are helpful in delivering basic services like health nutrition, education and credit facility. This goal of cooperatives anchored on their visions and ultimate aims, liberate the beneficiaries from the clutches of economic deprivation, cultural backwardness and political slavery.

Moreover, according to [12], cooperatives around the world have been uplifting lives, promoting social cohesion, raising productivity, reducing inequalities, and advancing economic growth and economic development in many ways. Aside from extending loans for various purposes, cooperatives have empowered many to enrich their lives through entrepreneurial activities, informal education, and practical training. They serve to anchor collective efforts of people in the conduct of business, production, trade, marketing, service provision, and so forth.

According to [32] in the context of disasters and emergencies, the community’s resilience is influenced by social capital. The social capital ties among people who already built strong relationship and trusted one another that emerged as a key factor in supporting restoration and recovery. Other researchers also have found that social capital can grasp and tied the community together after a disastrous event. The United Nations Development Program defines disaster risk governance as “the way in which public authorities, civil servants, media, private sector, and civil society at the community, national and regional levels cooperate...to manage and reduce disaster- and climate-related risks”.

Cooperative in all varying degrees strategize its operations into notable focus, while facing the challenge in developing it into a successful business and aiding at the same time the members to be more productive. In some other context, cooperatives and other self- help group tests its management when environment in some instances do not favor to its operation [33]. Canopied by the internationally accepted guidelines and principles of cooperative, it can stand and able to combat against any destructions, shocks and turbulence.

## **2.1 Multi-Purpose Cooperative (MPC)**

Cooperatives are formed, registered and named according to the services and products it offers to the members. As defined by RA 9520, a multi-purpose cooperative is the one which combines two or more business activities of the different types of cooperative or it has a business that has a mixture of two or more different types of cooperatives. They are regarded as key institutions for promoting rural development and poverty alleviation [34]. There are six main types of cooperatives in the Philippines as provided in the Article 23 of the Cooperative Code of the Philippines: 1) Credit Cooperative; 2) Consumers Cooperative; 3) Producers Cooperative; 4) Marketing Cooperative; 5) Service Cooperative and 6) Multi-purpose Cooperative (Art. 23, Cooperative Code of the Philippines, RA 6938).

Among these cooperative categories, the multi-purpose is the most vulnerable and volatile one when under difficult circumstances because of its business engagement. The International Cooperative Alliance regarded multi-purpose cooperatives as a member-based organizations for agricultural farmers in rural communities. According to [34], multi-purpose cooperatives are the key institutions for promoting rural development and poverty alleviation. They serve as channels for community participation in economic development, enabling members to coordinate their efforts and gain economic benefits.

## **2.2 Cooperatives During Crisis Period**

Historically, cooperatives have been known to emerge in communities that are going through major transformations, be it industrial revolution, earthquakes and tsunamis or financial crisis it comes as no surprise that cooperatives' history is tightly linked to economic downturns and crises [41]. A 2009 ILO report on the *Resilience of the Cooperative Business Model in Times of Crisis* provides historical and empirical evidence on how the cooperative model of enterprise survives crisis, maintaining the livelihoods of the communities in which they operate [18].

In times of crisis, in particular, cooperatives can stabilize community economies. This countercyclical tendency has been observed in the most recent global economic crisis as cooperative systems have been seen to be much more stable business models. Cooperatives benefit communities in distress via what has been termed the “cooperative advantage” [37]. Spear outlines the cooperative advantage as rooted in co-ops' particular ability to: (i) respond to state and market failures, (ii) engender trust, (iii) build a spirit of self-help, (iv) strengthen civil society, (v) promote key stakeholder participation by building on cooperative values, and (vi) create greater social efficiency and efficacy via positive social and economic externalities. [29] argues that cooperative values, in particular, lead to resilient and flexible organizations that can stabilize a community economy since members usually have deeper stakes in the community compared to dispersed shareholders. Cooperatives are effective tools for community development because they can, and often do, make community interest a priority over short-term financial gain. Operating as place-based businesses they do so by choosing to locate their business functions in particular places for social rather than purely financial reasons.

Disasters around the world in varying degrees resulted in ingrained disadvantageous social and economic structures. According to [13], in responding to the natural disasters, from particular to complex emergencies, cooperatives can be found to be relevant and possesses capability to bring back the semblance of normality. Result reveals in researches that cooperatives and self-help organizations commonly contribute to the recovery process and can be found relevant in all five stages of the disaster response cycle such as preparedness, mitigation and prevention, rescue and relief, rehabilitation/reconstruction and development [13].

Compared to other forms of organization, cooperative shows considerable advantage over the others, due to its structures and synergies it created in times of stress and shocks. Moreover, it much motivated by long term rather than short term yields. Especially financial cooperative, it tends to have less risk in terms of investment decision strategies [29]. Since cooperative in its very nature centered on members as its owners, it is expected that the delivery of services and benefits to its members is always available both under favorable and unfavorable environment.

Cooperative in its general definition and principle centralized in the association of members who voluntarily joined together primarily with the purpose of meeting their common needs, therefore it characterize high social responsibility building its competitive advantage [35]. This identifies social cohesion as the primary resource for communities draw upon during shocks and stress and seconded the socio economic factor within its recovery [31]. Social cohesion as define “the belief held by citizens of a given nation-state that they share a moral community, which enables them to trust each other” hence, cohesion is vital to presume shared principles and values which enables the members of the community to tightly interact with each other.

## **2.3 The Concept of Resilience**

The measurement of organizational resilience varies from the different perspective and that it continuously illuminating where one certain resilient situation cannot equate to the resilience over time. Generally, it refers to ability of the

organization to cope and withstand the adversities and turbulence in the internal and external environment of the business [36].

The idea of resilience offers the promise of an intuitively plausible, attractive and seemingly attainable strategy to prepare for and deal with various types of adversity. The literature suggests that a resilient organization will maintain a high level of performance even when environmental pressures mount, threats arise and uncertainties deepen. In the face of unexpected adversity, the resilient organization is said to 'bounce back' quickly, without much effort [38]. If disruptions are both inevitable and surprising, as the literature tells us, investing in resilience promises to be a more effective strategy than allocating scarce resources aimed at controlling the environment and defending against specific risks [38].

Resilience has been part of many studies and prior researches in varying usage and context. According to [37] the degree to which the resilient is being assessed or measured in an organization needs to be furthered empirically studied and untangled its complexities in order for it to be valued in the real world. Supported by [38] reflecting resilience in its multi-disciplinary roots that should be recognized and explored. According to [39] who used multi-case analysis approach, building an organizational resilience cannot be done miraculously, but needs to be crucially planned, strategically designed and effectively measured. Resilience can therefore be understood as the organizational ability to develop some degree of adaptive capacity, that is, the ability to learn and adequately respond to crises.

People are the core of the community. People are expected to recover from any disruptions depending on its severity and the individuals' agility, creativity and resourcefulness. It generally means and is commonly understood as adaptation in the face of adversity withstanding or bouncing back from any hazard or disaster [32]. Various models and theories related to resilience have been discussed by many literatures. As mentioned in the theoretical framework, the High Reliability Organization Theory offers a framework that has a fairly precise relation between the characteristics of an organization and the precursor of resilience. The literature on crisis management gives an additional thought and insights in relation to the conditions for quickly responding to unexpected threats [21]. The organization should have the capacity and capability in order to arrive with an authoritative definition of a certain situation. The awareness of an innovative response system requires that all participants are on the same path. This will in return form a dynamic sense making: information must be collected, commissioned, analyzed and shared in real time [40].

As a highly context-dependent, resilience has been presented in many perceptions as reviewed by [20]. He further stressed and gave emphasis on the development of resilience as more regard on internal crisis and disruptions experienced by an organization. The context-dependent nature of resilience before researches across different study contexts has also led to highly fragmented conceptualizations of resilience. Other regard it as organizational response or adaptability to environmental jolt resulted to outcome variable. Contributions that followed focus on organizational processes precluding failures and malfunctioning from happening. Moreover, other stressed it as managing employee strengths, adapting business model and implementing design characteristics such as flexibility and redundancy for fostering resilience.

A resilient organization's structure and restructure themselves to attain a mission, support the optimal development of shared decision-making. They provide feedback, set goals, and have intelligence gathering mechanisms [41].

### **2.4 Operational Resilience**

The disturbances brought by disasters from the internal and external environment of the organization both natural and man-made has exacerbated the operational risk and increased economic and business uncertainty. This affects the overall operation of the business to include personnel, facilities, information system, partners, stakeholders and customers. Operational resilience can be achieved through appropriately combatting operational risk benefited from having an effective operation management. System of activities should be practiced such as identification of risk and assessment, mitigating the risk to include the adoption and implementation of controls and the evaluation, monitoring and control of risks through establishing effectiveness of work together to minimize operational disruptions and its negative effects.

In addition, management should focus on the organization's ability to respond to and recover from the disruptions, assuming failures will occur, can support operational resilience. An operationally resilient organization should have well-crafted and prepared contingency plans so it will be less prone to incur untimely lapses in its operations and losses from disruptions, thus lessening incident impact on critical operations and related services, functions and systems. While it may not be possible to avoid certain operational risks, such as a pandemic, but with the presence of plans, it is possible to improve the resilience of its operations to mitigate the effect of such events [42].

According to [19] developing a resilience-building in efficiency implication has a strategic importance characteristically done in a resource-consuming activity. It is important to note the clarity of the operational resilience of an organization to correctly guide decision-makers. Thus, a sound appreciation of the conceptual domain of operational resilience is an important step towards enhancing and effectively managing this capability and accurately

evaluating its cost-benefit consequences. It further suggests the two discrete levels that every manager should evaluate in operational resilience; disruption, absorption and recoverability. The operational agility is important in the absorption level as well as the flexibility of the set policies to quickly adjust to the situation in which promotes adaptability at the recovery level. The authors emphasize its importance in the organization as it creates a difference in the influence operational efficiency. Thus, the very message to the management is it is a complement rather than a substitutes. While disruption absorption permits operations to function normally during disruption events without major absorption changes to the constituents and configuration of operations system, recoverability ensures that operations output rates bounce back to prior normal levels following disruption; making both types of capabilities crucial in managing disruptive events.

### **2.5 Leadership and Management**

The start-up stage of the success of an organization is the crucial part thus the kind of leadership and management that it has plays a big role in establishing the foundation of the organization. As a member-centered organization, it needs to have a quality and dedicated leadership who can play both as primary and secondary leader at all levels whom make it sure that the socio-economic needs of the members will be articulately addressed and served [13].

[43] Discusses the result of their study and states that the leadership is one of the essential factors of cooperative resilience and sustainability, thus cooperatives should have a good leaders and management as they placed to play their responsibilities to maximize the values and principles of cooperative. Cooperatives should have a leader who could create strong relationship to its employees and stakeholders, who could give room for self-management and most importantly can manage the operation even when under trouble and make seize of the opportunities before it may even turn to troublesome nightmares.

According to the [24] who examined the resilience of leaders through conceptual framework and research models, the leadership development has a direct relationship to the organization's resiliency, both has an invaluable influence on building resilience capacity, thus the organization must strongly commit in fostering employees resiliency. For many enterprises, survival under the severe economic and public health conditions of this pandemic has been a tough task, whereby knowledge-based management skills and quick adaptation became determining factors for crisis resilience [44].

In cooperative organization, the lack of qualified leaders and not able to understand the values and principles in cooperative is considered the major problem in cooperative resilience, such as in the case of The Malawian Union of Savings and Credit Cooperative (MUSSCO) where leaders are appointed for a maximum of 6 years only which limits their knowledge and ability rendered to the cooperative [14].

Cooperatives and unions in the study of [14] identified that the reason to lack of communication between the members and the union is because of low levels leadership skills due to inadequate level of skills and education of the leaders, this lack of information to members affects member's loyalty and resiliency.

It is assumed that the leaders have an extraordinary task in the organization inculcating a positive vision and behavior, otherwise failure of the cooperative and other self-help organization. Leadership in the organization has a great role in its overall success. Achieving success in the cooperative's operation depends highly in the dynamic of leadership that it have able to sustain its roles and responsibilities and to exactly identify present needs and anticipate future problems of the organization [23].

People in the organization made up the collective action needed to achieved and sustain resilience. It has always been tested in times of disasters. It was evident in all cooperatives interviewed the collective action to attain collective decisions in order to develop strategies and mechanism during crisis, this was achieved because of the management and leadership in the cooperatives in times of adversities [25].

### **2.6 Collective Skills**

Collective skills are regarded as "associative intelligence", learning through cooperation" and social learning attained from previous experiences, knowledge, training and formal. Collective skills promote solidarity in coming up strategies and action crucial for cooperative resiliency, this is evident in the study of [25] among the cooperatives in CALABARZON region during the COVID 19 pandemic, their member's collective action was evident in coping strategies and mechanism, amidst the pandemic, the cooperative management continuously establish communication to ensure member participation through online platform.

Result of collective skills among members developed a collective sense of ownership and improved their skills particularly in management, bookkeeping and quality control which eventually improve the governance of the Mzuzu Coffee Planters Cooperative Union (MZCPCU), while the union of savings and credit capacitate members to manage financial resources. Although small in numbers, employees and members in Timber Millers Cooperative Union (TMCU) able to received training on the usage of machineries and equipment to produce their products which enhances their

skills. The Community Savings and Investment Promotion Cooperative Union (COMSIP) developed the most important skills in the nature of the union – the culture of savings and entrepreneurial skills which enable members increase their capital base and resilience. The union also able to create a loan committee particularly focuses to access the viability of their business proposals [14].

### **2.7 Member Participation, Loyalty and Commitment**

The members as the co-owners of the cooperative are crucial in building resilience. The membership sense of values, identity, commitment and cohesion are essential as they are the core foundation to decide and manage their own enterprise [45]. The members should be capacitated to enhance their skills, attitudes and knowledge towards being more resilient individual and organization member.

In cooperatives, the key feature of the organization is its members as it is democratically controlled enterprise. It is built into cooperative values and principles, and its cooperative law, resulting to different levels on the participation of the members since it manifests itself in different forms [45]. Cooperatives general advantage is embedded in its membership being a member-owned enterprise, its success relies on the alignment of members interest and the purpose of the organization to attain loyalty, commitment, shared knowledge, member participation reinforced by strong economic incentives [18].

Result shown in the study of [1], the participation of the members is at the very core to achieve resilience. The inclusion of the local community to the programs of the cooperative as part of its mission, help builds trust and solidarity within the member of the cooperative. The cooperative should provide the members services which meet their needs and demand, to further create loyalty among members. Member's loyalty and commitment contributes to cooperative resilience as it impacted economic performance and stability [14].

As an organization ruled and governed by its members, the cooperative members thus possess the power to decide and manage their own enterprise. Being a self-help group entity, members are therefore should be capacitated by enhancing their skills, knowledge and attitude to harness their self-help value towards being more resilient in their organization. [45]. Result show that challenges in the operation can be overcome when all the members will contribute to their full potential, establish strong network, equity and cooperation among them.

Sudden switches in the environment resulting from a crisis may reveal underlying power structures in an organization, which is not always visible during more favorable times. For conventional enterprises, times of crisis usually compel managers to reconsider trade-offs to protect shareholders' interests, often resulting in decisions that save capital and cut on workforce and social commitments. But the cooperative model is different as it has a member that at the same time the owner of the organization who given the top priority and commitment under all circumstances.

The members of the cooperative which possess cooperative values are crucial for cooperative resilience. It is noted that a resilient organization was influenced by their assets especially in the social and human capital [9]. The cooperatives which invest in their member and to its well-being are thought to be considered as more resilient. This view is evident in the study of [9] in the different cooperatives in Honduras which enhance their human capital and put emphasis on it over other organizational obligations. In connection, to capacitate members and help them become more resilient as well as the organization, some pre-conditions are required and [34] enumerate it as knowledge, skills and investment in member education.

[14] Studied the Malawian Cooperative Movement in Africa, it was participated by cooperative union of different category. Result revealed that the membership with heterogenous membership displayed a more advantage over homogenous membership. This is true in the case of Savings and Credit Cooperatives, where most of the members are homogenous who only engages in one business endeavor. If affected by crisis, some members failed to repay their loan amortization which weakens the financial sustainability of the cooperative. Whereas, members coming from those heterogenous members and has diverse business engagement are more advantageous because they can create value-added to their products.

In addition to this, the resilience of cooperative depends on its economic performance exhibited by the commitment of the members to trade with the cooperative or to repay loans. As perceived by the Mzuzu Coffee Planters Union CEO, the loyalty of the member established when they feel that the cooperative satisfies their need. For instance, if the cooperative does not have the capacity to access the market for their members will force members to sell their produce to the middlemen in which ultimately lead to reduce loyalty of the members to the cooperative, disloyalty is the result of member's need instant cash [14].

As the top region having the most affected cases of COVID 19 where MSME's and cooperatives were also affected, [25] conducted research among cooperative in CALABARZON and examine how the cooperatives responded to curb the impact of crisis. It shows that the four cooperatives were able to strengthen members participation during the pandemic which created a resilience and cohesion among members. Cooperative A, through collective actions able to

come up decision to benefit all the members in accessing water spray and as a return cooperative buy the member's produce, thus enhanced their loyalty. Moreover, cooperative B, C and D to help their members in this time of crisis waived their loan interest. These impacted members participation in the cooperative, made them more loyal and committed.

### **2.8 Partnership and Linkages**

Establishing networks in an organization is one of the strong factors in its resilience. It can be achieved through horizontal or vertical access of resources thus leaders have an expected role to facilitate the establishment of this factor. Network is important for benchmarking and sharing of knowledge among stakeholders to generate new ideas and better understanding to streamline operations [14].

Cooperative's support to each other arises during crisis resulted to solidarity among cooperatives. This support was crucial to maintain a net of local (social cooperatives) and created a new partnerships for delivering additional social value to their members, strengthen the cooperation among cooperatives and entrepreneurial activities [1]. The strategic partnership and linkages are already exist in the operation of many cooperatives in all categories in the Philippines. It widens the cooperative's social link, reinforces business dealings and build a rigorous business atmosphere. However, partnership and linkages still not yet fully maximized among them [43].

This is evident in the Prairie Farms Producer Cooperative as one of the cooperative- participant in the study of [46] that through grants from external partners, it able to strategized its operation through upgrading machineries and equipment needed to produce its product as specialized in meat and egg production and in distribution of fruit and vegetables. Building strong and effective connections makes them efficient in their processing and distribution of their products and services.

For the cooperatives to access its external resources it is much strategic to establish its network and linkages as it enables self-organization, design its success and can enhance the organization's innovation through information buffering and benchmarking [40];[47];[48] that networks have significant roles in the resilience of cooperatives thereby producing both tangible and intangible results. Further, revealed in the study of [14] of the cooperatives in Africa, which emphasizes the importance of establishing strong networks and relationship among different cooperatives in times of stress and shocks contribute in building resilience. That they agree the need to establish apex organization participated by cooperatives in different sectors to channel training and capacity building, the need to financial institution for cooperatives is also noted.

A society's ability to manage resilience in times of disasters depends in its actors, the social networks, and the institutions in the community. The situation and resources in the environment and ecosystem that people utilized can make it an easy or a hard task for them. Thus, as a first step, it is helpful to properly identify this ability into capacities for self-organization, adaptation, and learning. Revealed in the study of [9], the cooperatives financial capital is positively affected by social capital. The cooperatives in Honduras extended their support to each other in times of shock from giving of medical supplies, foods to serving as financier to their producer since the pandemic began. Truly the essence of cooperative and its strength to collaborate each other in times of need would increase their capacity to adapt and absorbs shock [25].

The capacity for self-organization's system tested its ways in maintaining and re-creating its identity. Although the nature of the systems are linked to, and influenced by, other sub-systems, the systems of resilient self-organization are able to buffer the impacts of other systems and do not necessarily need to continuously invested in, subsidized, or replenished from external environment in order to be distinguished as persistence [49]. In learning to adapt to changes in the environment implies that a system can quickly get better in tracking a precise set of organization's goal and objectives over a period of time and at undertaking new objectives.

### **2.9 Innovation**

Employing innovation in cooperative's operation would have different levels that was explained in the study of [14]. It has a positive impact resulted from the application of new or existing knowledge, acquire technical knowledge from outside actors and upgrade its expertise. Innovation involves new ideas, products and processes that can create positive changes in efficiency, productivity and competitiveness.

Two main objective and purpose of having innovation in cooperative are to meet the unmet and changing needs and demand of the members and be able to respond to threat and adversities. It is a need for the cooperative to integrate innovation in its business operation to anticipate and immediately respond to distress in a more competitive and changing environment. This can be done through having a rigorous innovation process - from generating ideas to selection and finally funding them [50]. It is very evident in this new era of globalization that innovation is not any more an option rather a must in order for the cooperatives to keep abreast on the changing environment brought by

different forces inside and outside of its environment. Innovation manifested to a great extent among cooperatives under the study of [43], that cooperatives already embraced innovation in its operation however not as well established as to other firms due to budgetary constraints especially when adapting in more advanced technology and sometimes attributed to its culture. Moreover, it shows that small cooperatives much implemented their planned innovation because it is easy for them to accept changes and monitor the effect of that changes among its employees as well [43].

A study on coffee cooperatives in Honduras, found that during disaster, diversification in their operation can help cope the hardships brought by the pandemic. They found it relevant during this time of pandemic promoting their diversified existing lands [9]. This is a common thread between many cooperatives but engaging to diversification would require crucial time and cost. Nonetheless considering this, it is still a sensible decision to diversify so that a mix of activities will reduce the impact of different stresses or shocks, generating a more resilient system [51]

An identified extra challenge by having innovation in cooperatives is managing external collaboration because of decentralized form of the organization, hence in order for the cooperative to effectively achieve innovation in its operation, the internal and external partnership must be strengthened. Further, [46] suggested innovation as another enabling condition, as it allows organizations constantly and continuously anticipate and adjust to a broad range of turbulence.

The cooperative who were able to participate in union in the study of [14], said the impact to their cooperative resiliency is to have an innovation which benefited to them from the knowledge and specialized skills and expertise of international actors, development aid agencies and international buyers. The study further discusses the different innovative practices in achieving resiliency of cooperatives like the Mzuzu Coffee Planters Cooperative Union who able to upgrade the technology for their coffee processing and marketing. The Community Savings and Investment Promotion Cooperative Union able to introduce new services to micro insurance to their members and all of them had socially innovated through women inclusion in the organization and promotion of knowledge exchange between members.

Problem about disloyalty due to the need of the fast cash of the members was also addressed through innovation. The Mzuzu Coffee Planters Cooperative Union (MZCPCU) provided a pilot fund for emergency loan and proved to be successful. MZCPCU also improved leader's expertise through training lead farmers using technology such as internet and use mobile gadget [14]. As an over-all result, the employment of innovation in the cooperative union in Africa confirms the importance to established cooperative resilience.

A robust interpersonal relationship within organization contributed it to be more adaptive to innovation to strengthen more its current operation in times crises [51]. Innovation can be adopted from existing forms of knowledge by the external and internal actors in the cooperative. This is evident in Cooperative A in the study of [25] which strategically find an alternative solution to still continue delivering their products by using a plastic packaging instead of the coffee products which is available during ECQ. In case of cooperative D, they adjust their policy providing free transportation to both member and non-member who needs vehicle to transport their products. Further, the extensive use of technology like social media to continue advertising their product and zoom application as venue for meetings were also practiced to help cooperatives continue their operation. Adherence to the minimum health protocol, all cooperatives practiced skeletal work arrangement so daily operation will not be hampered. To sum it up, incorporating innovation affects cooperative resiliency during adversities.

Innovation is equally important in any organization in times of stress as it has a positive impact resulted from an application of new knowledge [14]. Incorporating innovation in the organization enable it to enhance its business' operation especially in terms of its technological and economic performance making it prepared when disturbance arises [25].

### **2.10 Government Support and Intervention**

The government is expected to have a vital role in helping self-help organization, it should create a favorable direction for self-reliance for the cooperative [27]. Further, to build resilience in an organization, government should provide enabling environment to include the economic, political, development of policy and infrastructure environment which can facilitate cooperative activities [14]. The development of cooperative resilience greatly envisages by the government, established an enabling environment by developing policy to highlight cooperative international principles and guidelines [14]. An Organization for Economic Cooperation and Development (OECD) study found that innovative risk governance can create resilience in the built environment and among stakeholders. Further, their study identified several measures that can aid governments in boosting resilience such as inclusiveness, trust, cooperation, and sharing.

These measures build social capital. This is evident in the cooperatives of Honduras that during the outbreak of COVID, coffee farmers were able to sell their produce in which contributed to increase their cash inflows because of the support of the local government initiative [9]. The role of the government was also acknowledged by the different

cooperative union participated in the study of [14] and agreed on their view that government must harmonize their policies for cooperatives in case of Malawian where various ministries are present that lead to confuse the unions. The policy highlighted to the development agencies who only used and acknowledged cooperatives as an exit strategy which impacted its resiliency. The government should implement policy to unlock cooperative potential. Mzuzu Coffee Planters Cooperative Union (MZCPCU) CEO emphasized the role of the government to create enabling environment promoting collaboration and partnership between cooperatives.

In assisting the cooperative sector, the tailor-fit rule is a must in order to appropriately address its current situation and needs, and they need to develop a more inclusive and long-term program [25]. It was evident in the four cooperatives in CALABARZON where the local government unit extended their help and that greatly influence their resiliency. Assistance such as provision of seeds for the farmers as a start-up to revive their plantation and extended financial assistance to be able to recover from the crisis by the Department of Agriculture (DA). The relationship between cooperative unions and federations and governments can be very important for cooperatives governance, independence of action and ability to innovate and meet new demands and market challenges. The history of state control in many developing and transitional countries has often undermined cooperative principles and the ability to create viable independent businesses.

### **2.11 Cooperative Profile**

The organization's capacity to respond to crisis depends on its exposure in the industry and the resources it utilizes. The cooperative profile is determined by the number of years in operation and cooperative size. [9] appears in his study that compared to younger organization, the older and longer-established and much larger ones display much more experiences in responding to crisis and have more established networks allowing them to receive more support and external assistance. The larger the cooperative, the larger the pool experience working within a group structure that would heighten this knowledge and enhance collective capabilities.

Number of years in operation and cooperative size will be used in the study as moderating variables. The cooperative size is determined based on its asset size into large (above Php 100million), medium cooperatives (Php 15million up to 100million), small cooperatives (Php 3million up to 15million) and micro (Php below 3million) (CDA, 2015). This is also evident in the study of [23] that part of the success of multi-purpose cooperatives in Oriental Mindoro is the number of years in operation, the number of members and capitalization which attributed to its size.

### **2.12 Synthesis**

Examining the broader intrinsic nature of cooperative and how its internal and external environment influence its resiliency during disruptions are greatly affected by several factors. The five factors that might influence the cooperative's resilience as identified by [14] in their analytical framework such as collective skills, membership, networks, innovation and the government has manifested a great contribution in building cooperative resilience as also evident in other related studies and researches. Moreover, the leadership is also crucial in the cooperative for it to build resilience and develop adaptive strategies under difficult circumstances. The literatures also present the significant moderating effect of the number of years in operation of the cooperative and its size determined by the cooperative asset to the leadership and management, collective skills, partnership and linkages, innovation and the government support and intervention and cooperative resilience.

However, other findings such as [43] only identified the leadership, innovation and partnerships that has impacted the operation of the cooperative and said that both the innovation are not yet well established and the strategic partnership and linkages are not yet fully maximized. Moreover, [9] only identified the effect of member participatio partnership, collective actions and the intervention of the government to building cooperative resilience.

## **III. Methodology**

### **3.1 Research Design**

The study was designed to analyze the factors that affect the operational resilience of cooperative in Region XII during the COVID 19 pandemic. The qualitative and quantitative design was used in this study. For the qualitative phase, the Key Informant Interview (KII) was done to determine the variables of the study. For the problem which requires the measurement of the variable and need to be statistically treated, the quantitative research design was used. The quantitative approach fits this study with the use of statistical tools to explain the trends and the level of variables in the study [55].

The study used descriptive design to describe the measure of central tendency and variability of the independent and dependent variables. Further, the descriptive correlational research design was used to analyze and describe the relationship between the variables in the study. It is useful in describing how one phenomenon can relate to another where one has no control over the independent variable [55].

### **3.2 Unit/s of Analysis**

The unit of analysis shows the parameter being used to investigate the study. According to Sekaran & Bougie (2016), it is the aggregate level of data collected resulted from subsequent analysis of the data. The study determined the factors affecting the operational resiliency of cooperatives in Region XII during the COVID 19 pandemic, the unit of analysis identified through the use of survey research questionnaire. The data gathered from the respondents was processed, analyzed, interpreted and discussed in the study.

#### **3.2.1 Variables in the Study**

The study determined the factors affecting the operational resilience of cooperatives in Region XII during the COVID 19 pandemic, the variables was categorized into three (3) parts. The first part showed the cooperative profile such as number of years in operation and the cooperative size that referred as the moderating variable of the study. The second part described the factors affecting the operational resiliency of cooperatives in Region XII during the COVID 19 pandemic to include leadership and management, collective skills, member participation, loyalty and commitment, innovation, partnership and linkages and government support and intervention referring to the independent variables of the study. And the last part was the operational resilience which is the dependent variable of the study.

The leadership and management determined by its ability to respond quickly to disruptions, the skill of the management as well as the leader's background and experience. The collective skills indicate open discussion among members, their access to training and their common vision. The member participation, loyalty and commitment depend on the member's active support and participation to the programs of the cooperative, how are they patronize the cooperative's business as well as promoting cooperative's products and services. The partnership and linkages indicate the cooperative practice of the cooperation among cooperatives principle and how it establishes relationship to its stakeholders. During pandemic, the cooperative innovates through engagement to other business, participate in the value chain and able to use and adapt the technology to make the operation better during the pandemic.

Moreover, the government is expected to support the cooperatives through provision of programs and projects to help mitigate the effect of the pandemic to its operation. The operational resilience can be determined by the cooperative's ability to adapt during disruptions and under changing environment in managing the business management functional areas such as production, marketing, human resource and financial and to include its ability to utilize the business continuity and contingency plan, flexibility of the policies set to the members, operational agility and maintain the liquidity of the operation.

#### **3.2.2 Types of Data**

The qualitative data were obtained from the conduct of Key Informant Interview (KII) which was the source of local literature. Moreover, quantitative data that was obtained from the respondents using survey questionnaire was used to analyze the result of the study. The 5-point scale response anchor was used in measuring the interval data of independent variables and the dependent variable, while the moderating variables such as the number of years in operation and cooperative size were both nominal data.

#### **3.2.3 Sources of Data**

The primary sources of data for this study were from the conducted Key Informant Interview (KII) which was participated by the invited managers of the different cooperatives in Region XII, and from the survey obtained directly from the respondents. However, secondary sources were coming from the book, peer reviewed journals and articles from ADDU e-library and from internet sources.

#### **3.2.4 Respondents**

The respondents of the study were the general managers of the multi-purpose cooperatives (MPC) in Region XII. They shall had been a general manager of cooperative for at least 5 years and directly manages the operation of the cooperative during the COVID 19 pandemic. The Region XII is composed of the provinces of South Cotabato, Sultan Kudarat, Sarangani, North Cotabato and the cities of Kidapawan, Tacurong and General Santos City. There is a total of 358 registered MPC in Region XII retrieved from CDA Regional Office XII dated July 27, 2021, thus it employed complete enumeration. However, only a total of 320 cooperatives responded in the survey. The remaining 38 cooperatives were excluded since they are non-compliant in status and no indicated contact numbers, email addresses and contact person in the list. Presented in Table 3.1 the number of cooperatives responded in the survey and its corresponding percentages.

Table 3.1. Number of Registered Multi-Purpose Cooperatives Responded in the Survey.

No.	Province	Responses		Total	%
		Online	On-site		
1	South Cotabato	129	19	148	46.25
2	North Cotabato	59	35	94	29.38
3	Sarangani	18	10	28	8.75
4	Sultan Kudarat	36	3	39	12.19
5	Cotabato City	10	1	11	3.43
	<b>Total</b>	<b>252</b>	<b>68</b>	<b>320</b>	<b>100</b>

Source: Cooperative Development Authority Region XII

### 3.2.5 Research Instrument

The questionnaire composed of three parts, Part I described the cooperative profile in terms of its number of years in operation and cooperative size. Part II determined the level of factors that affect operational resiliency of cooperatives in Region XII and the Part III measured the operational resilience of cooperative.

The study used a self-constructed questionnaire that was validated by three experts in the field, the pre-test was conducted to test its reliability to 33 cooperatives that was answered by second in rank or position of the manager. The reliability of the questionnaire was solved using SPSS version 20. Table 3.2 presented the result of the reliability test of the questionnaire, and it shows that all the 33 cases are valid and the reliability statistics was 0.969.

[52] Cronbach alpha reliability coefficient of 0.60 or greater is acceptable. Therefore, the figures indicate that they are satisfactory in terms of their internal consistency.

Table 3.2 Reliability Test Result

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.969	0.973	33

The post-hoc reliability test was also performed after the actual gathering of the data to compare its consistency in the pilot testing. The table 3.3 shows the Cronbach's Alpha value of 0.969, exactly the same result in the pre-test, thus indicate strong reliability and internal consistency of the research instrument.

Table 3.3 Post-Hoc Reliability Test Result

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.969	0.970	320

### 3.3 Data Collection Method

During the data collection method, a letter of request was sent to the Cooperative Development Authority (CDA) Region XII requesting the list of multi-purpose cooperatives in the region to determine the population of the study. A formal invitation letter addressed to the general manager of the cooperative was sent through messenger and email address as consent to be the participant and respondent of the study. The Key Informant Interview (KII) was first conducted to support the local literature of the study, this was done virtually through google meet. Moreover, during the data gathering stage, the researcher asked permission first from the SBG Dean before the conduct of the study.

Upon approval, the pretest was immediately conducted. The pretest was administered to 33 cooperatives came from the 320 total population of the study. This was responded by the second in rank position of the general manager. The reliability test was done in the pretest to test the instrument's reliability and consistency, after which, the actual gathering of the data were commenced. It was gathered online through google form; the link was sent to the registered email addresses of the cooperative in the list and to the general manager's face book or private message. However, due to slow responses from the respondents, the face to face gathering of the data was done with the help of the hired enumerator, moreover, follow up calls were also made to fast track the data gathering.

From the 320 total population, 252 were surveyed online and 68 were surveyed on-site or face-to-face. See Table 3.1 for presentation.

**3.4 Statistical Treatment**

The study used frequency count, mean and percentages in obtaining the result of the nominal data such as the cooperative profile. Moreover, to measure the relationship of the variables, the pearson-correlation model was used. Multiple Regression Analysis (MRA) is a tool used to measure the influence of the multiple independent variables to the dependent variable. It is being used to predict the values of the response (dependent) variable from a collection of predictors (independent) variable values. Further, the multiple regression analysis was also used in the study of [41] in measuring the performance of the cooperative as affected by the financial report and credit provision.

The study as well used the MRA to determine the effect of the independent variables such leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support to the operational resilience of the cooperative and identify the predictors of the operational resilience of the cooperative. In using the multiple regression analysis, it is assumed that these independent variables can predict the operational resilience of cooperative and can determine the best predictor the one with the highest p-value. The Table 3.4 is the matrix of the statistical treatment to the corresponding problems that the study addressed.

Table 3.4a Statistical Treatment Matrix

<b>Statement of the Problem</b>	<b>Type of Data</b>	<b>Hypothesis Statement</b>	<b>Statistical Treatment</b>
1. What is the profile of the cooperatives in terms of the number of years in operation and cooperative size?	Nominal		Frequency count, percentage
2. What is the level of these factors among the cooperatives in Region XII during the COVID 19 pandemic; a. Leadership and management; b. Collective skills; c. Member participation, loyalty and commitment;	Interval		Mean scores, weighted mean scores
d. Partnership and linkages e. Innovation Government support and intervention			
3.What is the level of resiliency of cooperatives in Region XII during the COVID 19 pandemic?			
4. Is there a significant relationship between the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention and cooperative resiliency?	Interval	There is no significant relationship between the leadership and management, collective skills, member participation, loyalty and commitment,	Pearson correlation model (Pearson's <i>r</i> )

		partnership and linkages, innovation and government support and intervention and the cooperative resilience.	
5. What are the predictors of resilience among the cooperatives in Region XII during the COVID 19 pandemic?	Interval	There is no predictor of cooperative resiliency.	Stepwise Multiple Regression Analysis
6. Do the number of years in operation and cooperative size significantly moderate the effect of the relationship of leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention to cooperative resiliency?	Interval	The number of years in operation and cooperative size in do not significantly moderate the effect of leadership and management, collective skills, Member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention to cooperative resilience.	Hayes Process Macro

### 3.5 Ethical Consideration

The study considered and observed the ethical standards and issues in the entire conduct of the study. The researcher wrote a formal letter to communicate respondents which was sent through email or private message. Identification and information of the respondents and all that were involved in the conduct of the study were protected and ensured its anonymity. Moreover, their participation was voluntary and no coercion or force. Information obtained from primary sources was treated with utmost confidentiality, were not divulged outside and utilized purely in the study. Additionally, respondents were informed regarding the result of the study.

## IV. Findings and Implications

This chapter discusses the findings of the study including the description, analysis and interpretation of factors that contributed to the resiliency of multi-purpose cooperative in Region XII during the COVID 19 pandemic. The presentation follows the order of the statement of the problem. It discusses here also its implications to the supporting literature, its theory and practice.

### 4.1 Results

The study employed complete enumeration to all multi-purpose cooperatives operating in Region XII. As per master list retrieved from the Cooperative Development Office Regional Office XII, there were a total of 358 MPCs, and out of the total population, 320 cooperatives responded to the survey.

Discussed in this section the profile of the cooperatives in terms of size and number of years in operation through

frequency count and percentages. This section also discussed the level of the factors that affect cooperative resiliencies such as leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation, government support and intervention; the level of operational resilience of cooperative; the predictors of operational resilience and the moderating effect of the cooperative profile in terms of the number of years in operation and cooperative size.

**4.1.1 Cooperative Profile**

The cooperative profile was determined by its number of years in operation and the cooperative size. Table 4.1 shows the frequency and percentage distribution of the profile of the multi-purpose cooperatives. Based on this table, most of the multi-purpose cooperatives in Region XII are operating between 16 to 20 years having a total of 146 or 46% of the total population, 88 cooperatives or 28% are operating between 11-15 years, followed by a total of 68 or 21% of the total cooperatives which has been in operation for 21 years and above. There were 14 cooperatives or 4% operating between 6 to 10 years and a total of 4 or 1% of the population was operating for 1 to 5 years.

Table 4.1. Frequency and Percentage Distribution of Cooperative Profile in terms of the Number of Years in Operation.

Years	Frequency	Percent
1 – 5 years	4	1
6 – 10 years	14	4
11 – 15 years	88	28
16 – 20 years	146	46
21 years and above	68	21
<b>Total</b>	<b>320</b>	<b>100</b>

The cooperative size was determined by the asset size. The result in the table 4.2 shows the frequency and percentage distribution of the number of multi-purpose cooperatives in terms of micro, small, medium and large category. Result revealed that a total of 151 cooperatives or 47% are small category with an asset size of 3 million to 15 million. It was followed by 106 or 33% micro category with an asset size below 3million. Moreover, 50 cooperatives or 16% are medium category with an asset size of 15 million to 100 million and 13 or 4% of the total population were large cooperatives with an asset size of 100 million and above. For the detailed presentation, see Appendix L.

Table 4.2. Frequency and Percentage Distribution of Cooperative Profile in terms of Cooperative Size

Cooperative Size	Frequency	Percent
Micro (below 3 million)	106	33
Small (3 million-15 million)	151	47
Medium (15 million-100 million)	50	16
Large (above 100 million)	13	4
<b>Total</b>	<b>320</b>	<b>100</b>

**4.1.2 Level of Cooperative Resilience Factors**

The cooperative resiliency during the COVID 19 pandemic was measured in terms of its leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention. Table 4.3 shows the mean and interpretation distribution of the cooperative resiliency in terms of leadership and management. Based on the table, results had a total grand mean of 4.48 which means that the leadership and management is always observed in the cooperative during the COVID 19 pandemic. For the detailed presentation, see Appendix L.

Table 4.3 Level of Cooperative Resilience in terms of Leadership and Management

Statement	Mean	Interpretation
1. The officers and management staff are performing well their duties and responsibilities	4.68	Always Observed
2. The oversight function is performed by the Board of Directors and is supported by a written policy.	4.67	Always Observed
3. The meetings are conducted regularly by the Board and committee.	4.60	Always Observed
4. The continuing education for officers is included in the coop training program	4.47	Always Observed

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5. The policies are formulated and implemented in accordance with laws, rules and regulations and by-laws.	4.59	Always Observed
6. The leaders are knowledgeable in the development of strategic plans and annual budget plan.	4.42	Always Observed
7. The management possesses creativity and dynamic in terms of decision making when situation abruptly changes.	4.43	Always Observed
8. There is a regular evaluation on the Business Continuity Plan (BCP) to update and assess cooperative's performance.	4.00	Often Observed
<b>Grand Mean</b>	<b>4.48</b>	<b>Always Observed</b>

<i>Legend:</i>	1.00 – 1.80	Not at all	3.41 – 4.20	Often Observed
	1.81 – 2.60	Seldom Observed	4.21 – 5.00	Always Observed
	2.61 – 3.40	Sometimes Observed		

The level of collective skills was also measured as factor affecting cooperative resiliency during the COVID 19 pandemic. The table 4.4 shows the level of collective skills factor having a total grand mean of 4.37 which means that collective skills are always observed in the cooperative during the COVID 19 pandemic. For the detailed presentation, see Appendix L. Table 4.4 Level of Cooperative Resilience in terms of Collective Skills

Statement	Mean	Interpretation		
1. There is a unity and collaboration among the employees/staff and board of directors	4.64	Always Observed		
2. The cooperative provided and facilitated related training to the management, employees and members, adopt the learnings to empower themselves and their families.	4.46	Always Observed		
3. The cooperative received training assistance from outside aid agencies and organizations	4.30	Always Observed		
4. The employees, staff and management are capacitated through education, trainings and seminars.	4.32	Always Observed		
5. There is sharing and exchanging of ideas among members during cooperative gatherings such as annual general assembly to attain collective decisions	4.46	Always Observed		
6. The cooperative is actively participated in the union or federation to learn and benchmark best practices.	4.07	Often Observed		
<b>Grand Mean</b>	<b>4.37</b>	<b>Always Observed</b>		
<i>Legend:</i>	1.00 – 1.80	Not at all	3.41 – 4.20	Often Observed
	1.81 – 2.60	Seldom Observed	4.21 – 5.00	Always Observed
	2.61 – 3.40	Sometimes Observed		

The Table 4.5 shows the mean and interpretation distribution of the cooperative resiliency during the COVID 19 pandemic in terms of member participation, loyalty and commitment. Based on this table, this factor has a grand mean of 4.32 which means that the member participation, loyalty and commitment is always observed in the operation of cooperative during the COVID 19 pandemic. For the detailed presentation, see Appendix L.

Table 4.5 Level of Cooperative Resilience in terms of Member Participation, Loyalty and Commitment.

Statement	Mean	Interpretation
1. The majority of the members are attending the Annual General Assembly.	4.49	Always Observed
2. The provision of capital build-up program in the by-laws is properly observed and implemented.	4.47	Always Observed
3. Members are regularly paying their monthly amortization, shows sensitivity in terms of due date in case of failure to pay.	4.10	Often Observed

4. The members are religiously supporting the programs and activities of the cooperative.	4.24	Always Observed	
5. The members are aware and religiously following the policies set by the cooperative.	4.37	Always Observed	
6. The members are patronizing the business of the cooperative.	4.38	Always Observed	
7. The promotion of cooperative’s products and services (e.g. word of mouth, social media) are also participated by the members.	4.17	Often Observed	
<b>Grand Mean</b>	<b>4.32</b>	<b>Always Observed</b>	
<i>Legend:</i> 1.00 – 1.80	Not at all	3.41 – 4.20	Often Observed
1.81 – 2.60	Seldom Observed	4.21 – 5.00	Always Observed
2.61 – 3.40	Sometimes Observed		

The Table 4.6 shows the level and the interpretation distribution of partnership and linkages in the operation of cooperative. A grand mean of 4.20 was generated which means that partnership and linkages are often observed in the cooperative’s operation during the COVID 19 pandemic. For the detailed presentation, see Appendix L.

Table 4.6 Level of Cooperative Resilience in terms of Partnership and Linkages

<i>Legend:</i> 1.00 – 1.80	Not at all	3.41 – 4.20	Often Observed
1.81 – 2.60	Seldom Observed	4.21 – 5.00	Always Observed
2.61 – 3.40	Sometimes Observed		

Further, in terms of innovation employed in the operation of cooperatives, the Table 4.7 presented the level of this factor. It revealed a grand mean of 3.97 which means that the innovation is often observed in the cooperative’s operation during the COVID 19 pandemic. For the detailed presentation, see Appendix L.

Table 4.7 Level of Cooperative Resilience in terms of Innovation

Statement	Mean	Interpretation
1. There is an access to external assistance from private companies/NGO/government to cooperative in times of need.	4.34	Always Observed
2. The principle of cooperation among cooperatives is being practiced by the organization	4.35	Always Observed
3. The cooperative can easily access assistance from outside resources like access to information and financial assistance.	4.20	Often Observed
4. The management of the cooperative could facilitate access to resources and knowledge	4.20	Often Observed
5. The cooperative is engaged/participated as member in union/association/secondary cooperatives.	3.91	Often Observed
<b>Grand Mean</b>	<b>4.20</b>	<b>Often Observed</b>

Statement	Mean	Interpretation
1. Improve products and services offered through venturing to other businesses	3.94	Often Observed
2. Able to strategically give considerations and special policies to be able to address the needs of the members without compromising the welfare of the cooperative.	4.20	Often Observed
3. The cooperative is able to improve its technological and economic performance through the use of online platforms like social media to ensure business continuity.	4.16	Often Observed
4. The cooperative can adequately finance or can access credit for possible expansion and development.	4.14	Often Observed

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5. The management is able to strategically expand its existing business through participating in the value chain through vertically and/or horizontally integrating its existing business.	3.71	Often Observed
6. The cooperative had upgraded its operation from manual to system.	3.66	Often Observed
<b>Grand Mean</b>	<b>3.97</b>	<b>Often Observed</b>
<i>Legend:</i>	1.00 – 1.80	Not at all
	1.81 – 2.60	Seldom Observed
	2.61 – 3.40	Sometimes Observed
	3.41 – 4.20	Often Observed
	4.21 – 5.00	Always Observed

On the level of government support and intervention factor in the operation of cooperatives, the Table 4.8 presented its total grand mean of 4.19 which explains that the government support and intervention is often observed in the cooperative's operation during the COVID 19 pandemic. For the detailed presentation, see Appendix L.  
Table 4.8 Level of Cooperative Resilience in terms of Government Support and Intervention

Statement	Mean	Interpretation
1. There is a presence of programs from the government supporting cooperatives.	4.46	Always Observed
2. The cooperative is able to access the programs and projects like DA-ACPC's loan from the government agency.	3.78	Often Observed
3. Access to government support greatly help cooperatives in times of crisis.	4.21	Always Observed
4. The government and other related agencies such as CDA and DA thru the Municipal Agriculture Office assist cooperatives through provision of training and seminar to better prepare it for sudden changes.	4.15	Often Observed
5. The CDA as the lead agency assisting cooperatives conduct a regular assessment in terms of audit and performance appraisal.	4.36	Always Observed
<b>Grand Mean</b>	<b>4.19</b>	<b>Often Observed</b>
<i>Legend:</i>	1.00 – 1.80	Not at all
	1.81 – 2.60	Seldom Observed
	2.61 – 3.40	Sometimes Observed
	3.41 – 4.20	Often Observed
	4.21 – 5.00	Always Observed

To summarize, the Table 4.9 presented the grand mean and its corresponding interpretation distribution of the factors that affect the cooperative resiliency such as leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention during the COVID 19 pandemic. Results revealed an over-all mean of 4.27 which means that all of these factors are always observed in the operation of multi-purpose cooperatives during the COVID 19 pandemic.

Table 4.9 Summary of Grand Mean and Interpretation Distribution of Cooperative Resiliency Factors in Region XII during the COVID 19 Pandemic

Cooperative Resiliency Factors	Grand Mean	Interpretation
1. Leadership and Management	4.48	Always Observed
2. Collective Skills	4.37	Always Observed
3. Member Participation, Loyalty and Commitment	4.32	Always Observed
4. Partnership and Linkages	4.20	Often Observed
5. Innovation	3.97	Often Observed
6. Government Support and Intervention	4.19	Often Observed
<b>Over-all Mean</b>	<b>4.27</b>	<b>Always Observed</b>
<i>Legend:</i>	1.00 – 1.80	Not at all
	3.41 – 4.20	Often Observed

1.81 – 2.60      Seldom Observed      4.21 – 5.00      Always Observed  
 2.61 – 3.40      Sometimes Observed

**4.1.3 Operational Resiliency**

On the level of operational resiliency measurement among the cooperatives, Table 4.10 shows the mean and interpretation distribution of operational resiliency. Results revealed a grand mean of 4.37 which implies that the resilience in the operation is always observed among the multi-purpose cooperatives in Region XII during the COVID 19 pandemic. For the detailed presentation, see Appendix L.

Table 4.10.a Mean and Interpretation Distribution of the Operational Resiliency in Region XII During the COVID 19 pandemic

Statement	Mean	Interpretation		
1. The cooperative able to respond quickly in times of disturbance.	4.61	Always Observed		
2. Efficiency is in place in delivering services to members during disruptions	4.57	Always Observed		
3. The cooperative possesses the ability to manage risk.	4.57	Always Observed		
4. The management and the board of directors takes an immediate action and solution when problems encountered.	4.53	Always Observed		
5. The cooperative able to use the Business Continuity Plan (BCP)	4.01	Often Observed		
6. The policies set by the cooperative possesses dynamic and flexibility.	4.50	Always Observed		
7. The cooperative’s contingency plan is present and useful during adversities	4.41	Always Observed		
8. There is a strong communication between the members, management and stakeholders.	4.48	Always Observed		
9. The cooperative has a sufficient fund to continue operation when disruptions occur.	4.37	Always Observed		
10. The internal generation of fund of the cooperative can suffice the operation during disruption.	4.17	Often Observed		
11. The reserved fund is maintained by the cooperative as mandated by the CDA.	4.30	Always Observed		
12. The cooperative is able to access financing outside to support internal generation in times of disasters	4.27	Always Observed		
13. The cooperative can still continue the operation even when there are changes in the generation of revenues.	4.42	Always Observed		
14. The cooperative effectively manages its resources such as human resource and financial resources in times of adversities.	4.44	Always Observed		
15. The cooperative puts premium on the welfare of its employees and workforce.	4.42	Always Observed		
16. The cooperative engages to new ways in promoting products and service such as use of online platform and social media	4.26	Always Observed		
17. Conduct of meetings and gatherings are still done virtually through online platforms such as zoom and meet.	4.03	Often Observed		
<b>Grand Mean</b>	<b>4.37</b>	<b>Always Observed</b>		
<i>Legend:</i>	1.00 – 1.80	Not at all	3.41 – 4.20	Often Observed
	1.81 – 2.60	Seldom Observed	4.21 – 5.00	Always Observed

**4.1.4 Correlational Relationship of the Variables**

In identifying the existing relationship between the leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation, government support and intervention and the operational resilience of cooperative in Region XII during the COVID 19 pandemic, Pearson’s Product-Moment Coefficient of Correlation (Pearson’s r) was used.

Table 4.11 shows that all the variables were significantly related to each other. It explains that when correlated with operational resilience the leadership and management displayed a pearson correlation value of 0.730. Similarly, when correlated with operational resilience the collective skills displayed a pearson correlation value of 0.660. More, when correlated with operational resilience the member participation, loyalty and commitment displayed a pearson correlation value of 0.753. In addition, when correlated with operational resilience the partnership and linkages displayed a pearson correlation value of 0.696. Further, when correlated with operational resiliency the innovation displayed a pearson correlation value of 0.729. Finally, when correlated with operational resiliency government support and intervention displayed a pearson correlation value of 0.612. For the detailed presentation, see Appendix L.

Table 4.11 Correlations of the Relationship Between the Independent and Dependent Variable

Mode 1 5		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		R-Square
		B	Std. Error				Beta	Tolerance	
	(Constant)	-.268	.172		-1.559	.120			.716
	MPLC	.289	.057	.253	5.035	.000	.358	2.795	
	In	.257	.049	.253	5.273	.000	.392	2.548	
	LM	.330	.055	.274	5.957	.000	.426	2.350	
	GSI	.112	.041	.117	2.752	.006	.502	1.991	
	PL	.101	.050	.101	2.020	.044	.362	2.765	

\*\*Correlation is significant at 0.01 level (2-tailed), N = 320

**4.1.5 Test of Multiple Regression Analysis (MRA) Assumptions**

Prior to presenting the result of MRA, the test on normality, collinearity, heteroscedasticity and sufficient number of observations were performed. On the normality test of the data, Table 4.12 shows the result of the Kolmogorov-Smirnov with p-value of .002 and Shapiro-Wilk test of normality with p-value of .000 which means that normality test is significant, thus data are not normally distributed. Further, the Figure 4.1 shows the graphical presentation through P-P plot to validate the normality test of the data. The graph shows no close fit to the 45° line in the graph which conforms that data are not normally distributed. In addition, according to [53], data above 200 samples or more reduces the detrimental effect of non-normality of data. Thus, test of normality of data was met.

Table. 4.12 Test of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	.066	320	.002	.961	320	.000

a. Lilliefors Significance Correction

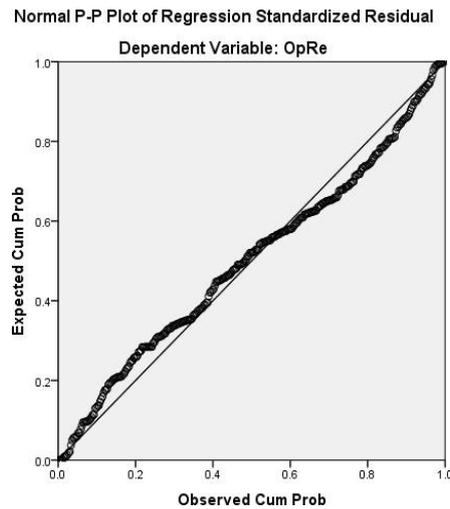


figure 4.1 normal p-p plot test of normality

To test the collinearity of data, the Variance Inflater Factor (VIF) should be less 5 to justify that there is no multicollinearity between the independent variables [53]. Table 4.13 shows that all VIF values of the explanatory variables are less than 5, thus no multicollinearity issue in the data. For the detailed presentation, see Appendix L.

Table 4.13 Regression Coefficients

Variables	Operational Resiliency		Interpretation	Decision
	R	Sig.		
Leadership and management	0.730**	0.000	High Positive	Reject H <sub>01</sub>
Collective skills	0.660**	0.000	Moderate Positive	Reject H <sub>01</sub>
Member participation, loyalty and commitment	0.753**	0.000	High Positive	Reject H <sub>01</sub>
Partnership and linkages	0.696**	0.000	Moderate Positive	Reject H <sub>01</sub>
Innovation	0.729**	0.000	High Positive	Reject H <sub>01</sub>
Government support and intervention	0.612**	0.000	Moderate Positive	Reject H <sub>01</sub>

\*at 0.05 level of significance

To test the homoscedasticity of the data, the scatterplot was used to determine if there is a presence of a diamond like or triangle shape that indicates a homoscedasticity issue. Showing the figure 4.2, there is no presence of such shape or pattern in the graph thus all variables are part of the model.

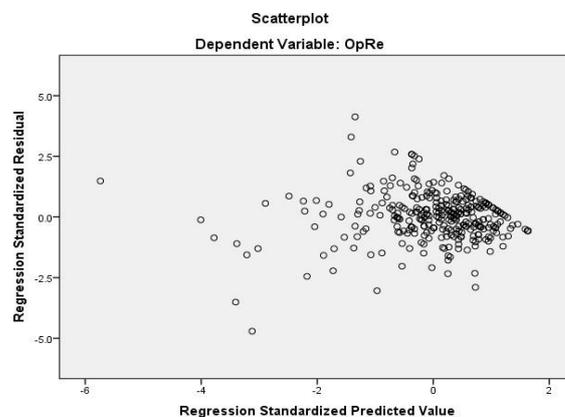


figure 4.2 scatterplot of dependent variable: operational resilience

Last assumption is the sufficient number of observations, according to [54] the ideal ratio per variable/parameter is 10 observations. In this study, there were 9 variables consisting of 6 independent, 1 dependent and 2 moderating variables. In

this case, minimum observation must be 90. The actual number of observations in this study was 320, thus assumption on the sufficient number of observations was met.

**4.1.6 Regression Model of the Factors Affecting Cooperative Resilience**

In identifying the explanatory variables of operational resiliency among cooperatives in Region XII during the COVID 19 pandemic, Stepwise Multiple Regression Analysis was used. Table 4.14 shows the model summary of the explanatory variables of operational resilience. Out of 6 factors, 5 were identified as explanatory variables of operational resiliency among the multi-purpose cooperatives. The Model 5 had the highest R<sup>2</sup> value of 0.716 which means that they are explanatory variables and that 71.6% in the variation of operational resilience are associated with member participation, loyalty and commitment, innovation, leadership and management, government support and intervention and partnership and linkages factors. For the detailed presentation, see Appendix L.

Table 4.14 Model Summary of Explanatory Variables of Operational Resilience of Cooperatives in Region XII during the COVID 19 Pandemic

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.753 <sup>a</sup>	.566	.565	.38531
2	.808 <sup>b</sup>	.653	.650	.34539
3	.837 <sup>c</sup>	.700	.697	.32161
4	.844 <sup>d</sup>	.713	.709	.31513
5	.846 <sup>e</sup>	.716	.712	.31360

- a. Predictors: Member Participation, Loyalty and Commitment (MPLC)
- b. Predictors: MPLC, Innovation (I)
- c. Predictors: MPLC, I, Leadership and Management (LM)
- d. Predictors: MPLC, I, LM, Government Support and Intervention (GSI)
- e. Predictors: MPLC, I, LM, GSI, Partnership and Linkages (PL)

The result of stepwise regression shows in table 4.15 there are five (5) explanatory variables of operational resilience which belonged to the model 5 with a p-values less than significance value of 0.05. This means that these variables significantly affect the resilience of cooperative’s operation during the COVID 19 pandemic namely: member participation, loyalty and commitment (B=.290, p=.000), innovation (B=.256, p=.000) leadership and management (B=.330, p=.000), government support and intervention (B=.112, p=.000) and partnership and linkages (B=.102, p=.000). The linear combination of these explanatory variables explained that 72% of the variability in operational resilience can be explained by this model (R<sup>2</sup>=.716, F=158.586, p<0.05). Moreover, the difference between R<sup>2</sup> and adjusted R<sup>2</sup> (.004) signifies a more reliable model.

Further, although all these variables significantly explained operational resilience, the unstandardized coefficients (Beta) explained which among the 5 explanatory variables has the highest or lowest explanation of operational resilience. The leadership and management have the highest predictor (β= .330) relative to others. On the other hand, the partnership and linkages (β=.102) was the lowest. For the detailed presentation, see Appendix L.

Table 4.15 Regression Coefficients of the Explanatory Variables

Variables in the Model	B	SE	B	t	P	VIF
Constant	-.271	.173		-1.570	.117	
Leadership and Management	.330	.056	.273	5.931	.000	2.352
Member Participation	.290	.057	.254	5.052	.000	2.797
Innovation	.256	.049	.252	5.258	.000	2.547
Government Support	.112	.041	.117	2.750	.000	1.991
Partnership and Linkages	.102	.050	.101	2.022	.044	2.764

**4.1.7 The Regression Equation**

The regression equation shows the explanatory variables of operational resilience of cooperative. The equation serves

as the basis in determining the level of operational resilience per unit increase or decrease of each factor. Thus, if each factor is equal to zero, the operational resilience is the value of the y-intercept of the line (-.271) implying a direct relationship. Further, to determine the level of operational resilience in Region XII during the COVID 19 pandemic, the following mean per factor is inserted in the equation; leadership ang management (4.48), member participation, loyalty and commitment(4.32), partnership and linkages (4.20), innovation (3.97) and government support and intervention (4.19). The regression equation is presented below.

$$\text{Operational Resilience} = -.271 + .330*\text{Leadership and Management} + .290*\text{Member Participation, Loyalty ang Commitment} + .256*\text{Innovation} + .112*\text{Government Support and Intervention} + .102*\text{Partnership and Linkages}$$

**4.1.8 Multiple Regression Analysis (MRA) Validation**

The data was validated using split-samples where the original data was split into two samples in the SPSS. When compared to real data, the following values were observed: main sample (R2=.716), split 1 (R2=.719) and split 2 (R2=.720), with the difference of .03 and .004 respectively from the main sample. This increase in result were very minimal comparing to the real data, thus implying generalization across the population of the study. The table 4.16 shows the result of the Multiple Regression Analysis (MRA) validation using split samples.

Table 4.16 Multiple Regression Analysis Validation Result in Comparison of Main Sample with Split Samples

Model Component	Main Sample (n=320)	Split Sample 1 (n=160)	Split Sample 2 (n=160)
Model Fit			
R <sup>2</sup>	.716	.719	.720
Adjusted R <sup>2</sup>	.712	.712	.715
Std. error of the estimate	.31360	.35944	.33921

**4.1.9 Moderation Analysis**

To analyze the effect of the moderating variables which are number of years in operation and cooperative size, the study used the process macro developed by Prof. Andrew F. Hayes (2022). It shows in the table 4.16 that the cooperative profile in terms of size and number of years in operation do not significantly moderate the effect of leadership and management, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention to the operational resilience of cooperative since no interaction p-value less than significant value of 0.05. For the detailed presentation, see Appendix M.

Table 4.17 Analysis of Moderating Variable

Moderator	R <sup>2</sup>	R <sup>2</sup> Change	Interaction	P
Years	.7310	.0092	Int 1	.9857
			Int 2	.4821
			Int 3	.5756
			Int 4	.5976
Size	.7310	.0046	Int 1	.0526
			Int 2	.0684
			Int 3	.7346

**4.2 Analysis and Interpretation of Results**

This section shows the analysis and interpretation of the result of the study.

**4.2.1 Cooperative Profile**

The result shows that in terms of number of years in operation, most of the multi-purpose cooperatives in Region XII are operating between 16 to 20 years which conforms to the study of [9] stated that compared to younger organization, the older and longer- established and much larger ones display much more experiences in responding to crisis situations. Explained further in the study of [43] that the long years of operation equates to years of experience in

handling cooperatives' operation as well as facing challenges of the cooperatives.

For the cooperative size, most of the multi-purpose cooperatives in Region XII were categorized as small with an asset size of 3 million to 15 million. It was followed by the greatest number of micro cooperatives having an asset size of below 3 million. This means that most of the cooperatives are in below medium size which needed internal and external support to heighten more knowledge and enhance collective capabilities [9].

### **4.2.2 Level of the Resilience Factors Affecting Cooperative Resilience**

This part analyzes and interprets the level of the factors which contributed to the resiliency of cooperatives in Region XII during the COVID 19 pandemic such as leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and the government support and intervention.

On the result of the leadership and management, result showed that out of the 8- item questions of this factor, seven (7) were always observed among the multi-purpose cooperatives on its operation during the COVID 19 pandemic. This means that this cooperative has a good leader and the situation during the pandemic is well managed, hence, good leadership equates good management.

This conforms to the study of [43] that leadership and management is an essential factor in achieving cooperative resilience and sustainability. For the organization to survive under severe economic and public health conditions of this pandemic, the knowledge-based management skills and quick adaptation became a determining factor for crisis resilience [44].

However, one (1) item question which focuses on the regular evaluation of the Business Continuity Plan (BCP) to update and assess cooperative's performance is often observed in the operation of cooperatives. This shows that the BCP is not regularly evaluated and updated and there are other cooperatives with no BCP. This is somewhat similar to the report of Cooperative Development Authority (CDA) on the survey they conducted in partnership with the Department of Trade and Industry (DTI) the alarming 39.80% out of the total number of cooperatives in the Philippines surveyed who do not have a Business Continuity Plan. It was also mentioned in the study of [25] that the Business Continuity Plan (BCP) must be incorporated in the mandated trainings of cooperatives for the management to be aware on the importance on the use of BCP which is now currently adopted by other countries.

For the collective skills result, it shows that this factor is always observed in their operation wherein five (5) out of six (6) item statement are always observed in the operation of the cooperatives during the COVID 19 pandemic, that according to MacPherson (2003), having a collective action in an organization means that there is an open relationship and communication between the members of the cooperative which enables them to learn through cooperation from experiences, knowledge and training for them to come up strategies and coping mechanism to better prepare during crisis, there is truly an associative learning among these cooperatives that is crucial to achieve resiliency in its operation [25].

One (1) item in the statements which focuses in cooperative's participation to the union and federation was often observed in the operation of the cooperatives. This means that the cooperative often participated or benchmark practices from other cooperatives. This is somehow similar to the result of the study of [14] that among the different types of cooperatives, the credit and savings are those usually adopting to the practices of other cooperatives for the culture of savings and entrepreneurial skills purposes.

For the member participation, loyalty and commitment, result showed that these factors were also always observed in the operation of cooperative during the COVID 19 pandemic. This implies that majority of the members are supporting the programs of the cooperative through attending the general assembly, they are aware of the policies of the cooperatives and patronizes its products and services as stated in its by-laws. That challenges in the operation can be overcome when all the members will contribute to their full potential, establish strong network, equity and cooperation among them and it is crucial in achieving resilience in the operation of cooperative the member's possession of the values and principles as also the one who is the owner of the cooperatives [9].

However, members attitude towards religiously paying their monthly amortization as well as in terms of promoting cooperative's products and services even during pandemic were often observed in their operation. Much of the cooperative's management as a whole to put premium on its human capital, [34] states that to capacitate members of the cooperative and to be able to help them more resilient individual and later on the cooperative as a whole, must invest in their knowledge, skills and education.

On the partnership and linkages result, result showed that it is often observed in the operation during the pandemic although they can access assistance from outside partners and the presence of cooperation among cooperatives are always observed because it is part of the guiding principles of the cooperative. And strengthen the cooperation among cooperatives and entrepreneurial activities is crucial to achieve the resilience [1]. However, participating as a member to secondary cooperatives, union and association facilitated by the cooperative management to access information, resources, knowledge and financial assistance are often observed in their operation during the pandemic. [14]

emphasizes the establishment of strong networks in the operation of cooperatives is always part to achieve its resilience which can be done both horizontally and vertically to generate new ideas and streamline operation but conforms to the study of [43] the partnership and linkages in the operation of cooperatives in the Philippines are still not yet fully maximized.

On the result of the innovation, it shows that the innovation is often observed in the operation of cooperative during the COVID 19 pandemic and where each item in the statements were rated under often observed. Based on the result, the item 2 which states that the cooperative strategically gave considerations and special policies to address the needs of the members contributes the greatest to the grand mean. This means that during pandemic, the management is giving considerations like granting of emergency loans, condonations of interests and penalties. Further, item 6 of the statements contributed lesser to the grand mean which focused on upgrading the operation of the cooperatives from manual to system, which means that most of them have not yet installed system to produce faster and efficient daily transaction. This is similar to the study of [43], most of the cooperative have not well established especially in terms of adapting to the new technology because of financial and budgetary constraints investing to the technology itself and learning to use it.

Result of the government support and intervention shows that this factor is often observed in the operation of cooperatives during the COVID 19 pandemic. Item 1 referring to the presence of programs from the government supporting cooperatives has the greatest contribution to the grand mean, which means that there are really existing programs from the different government agencies to help cooperatives during disaster because the government is expected to create and provide an enabling environment not just helping cope the current situation but promotes collaboration and partnership between cooperatives [14]. However, the access to additional loans to finance the cooperative's operation during pandemic contributed to lessen the grand mean of this factor. According to [25], in extending of assistance to cooperatives, the tailor-fit rule must be followed and observed to appropriately address the current situation and need of the different cooperatives, therefore not all multi-purpose cooperatives were extended by such program.

### **4.2.3 Operational Resilience**

The level of operational resilience of cooperative during the COVID 19 pandemic is always observed in its operation. This means that the management of these cooperatives manifested efficiency in utilizing their resources in all of the core functions of its business – production, marketing, human resource and financial. Result showed that the first 3 item questions contributed the greatest to the grand mean on the level of operational resiliency of cooperatives, which means that the cooperatives able to quickly respond to the disruptions, possesses the ability to manage the risk while ensuring the delivery of services to its members.

According to [19], the operational agility or ability to quickly respond to the disruption is important in the absorption level of the situation as well as the flexibility of the set policies of the management to quickly adjust to the situation in which ultimately promotes adaptability to the situation. This is also true to [26] who emphasized the advantage of cooperative as member-owned organization, who has a direct control over the organization that is putting premium to its members, thus making sure that decisions would have a greater positive impact to the cooperative as a whole.

However, the use of Business Continuity Plan (BCP), the internal financing of the cooperative and the adaptability on the use of technology such as online platforms to still conduct cooperative activities were rated low and often observed in the operation of cooperatives. This may be associated first to some of these cooperatives do not yet have the crafted BCP in their respective operations which also conforms to the report of CDA year 2021 the alarming number of cooperatives in the Philippines which do not have yet the business continuity plan. Further, according to [42], for the organization to be prepared and resilient, it should have a well-crafted contingency plan to be used in times of needs and to lessen the effect of the disruption to its operation.

Second, since most of these cooperatives are small, the internal generation of fund alone cannot suffice their operation during the pandemic thus it needs to have an access to external borrowings from outside partners and agencies as emphasized by [26] in his study that the cooperatives should establish strong partnership to local government and private sectors initiatives in building resiliency to achieve exchanges of support in all of its resources including financial to augment operation during crisis. Further, the easy access to funding will help micro, small and medium enterprises including cooperatives in developing additional capital to its operation [41].

### **4.2.4 Significance of the Relationship Between the Factors**

To measure the strength of the relationship of leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation, government support and intervention and the operational resilience of cooperative during the COVID 19 pandemic, the pearson correlation model ( $r$ ) was used. Result showed that all of these factors were significant within 5% level of significance which lead the decision to reject the null hypothesis.

This conforms to the study of [14] who identified five (5) key factors that contribute to cooperative resiliency under unfavorable condition namely collective skills, membership, network, government support and innovation and highlighted the member's loyalty and commitment which contributes to cooperative resilience as it impacted economic performance and stability. In addition, [43] said that the leadership, innovation and partnership are the factors that directly impacted the cooperative's operation, moreover, [9] also proved that the membership of the cooperative, their collective actions, the presence of partnership and the support from the government helps in building cooperative resilience.

### **4.2.5 Explanatory Variables of Cooperative Resilience**

The explanatory variables of cooperative resilience were also analyzed in the study. the  $R^2$  was measured to see the proportion of variance of dependent variable that explained by the independent variable. Result of the test showed that there are five (5) models that can explain operational resilience of cooperative. Examining these 5 models, it has an r-squared of more than 50% which means that more than half of the observed variation can be explained by these 5 models. Among the five models, the model 5 has the highest r-square value of 0.716 or 71.60% which included five (5) factors that can explain cooperative resiliency during the pandemic, these are; member participation, loyalty and commitment, innovation, leadership and management, government support and intervention and partnership and linkages.

This means that with these five (5) factors present in the cooperative, resilience to its operation can be achieved with strong and competitive leader, supportive and loyal members, embraces and practices innovative strategies in its operation and has established good relationship to outside partner agencies, then challenges and problems under unfavorable event can be well managed.

As mentioned in the study of [18], the cooperative advantage over other type of business enterprise is embedded in its membership being a member-owned enterprise, its success relies on the alignment of members interest and the purpose of the organization to attain loyalty, commitment, shared knowledge and member participation reinforced by strong economic incentives. This is the reason why the participation and support of the members to the cooperatives have great contribution to its success and sustainability. Innovation which generates from new ideas, technical knowledge and diversification helps cooperatives adapt quickly to the situation [9].

According to [1], the cooperation among cooperative as one of its guiding principles or the social cooperative helps establish partnership and linkages to streamline its operation, more so with the government support that cooperative must receive during disruptions especially the local government unit, they are expected to assist them, look on the current situation and address appropriately their needs and concern. This is highlighted in the recovery framework of the LGU Guide for Rehabilitation and Recovery from COVID 19 report of the DILG (2021). Furthermore, the leadership and management is vital in the cooperative's operation, wherein it must have a good and knowledgeable leader [43], dynamic leadership and sustaining roles and responsibilities [23] and leadership has a direct the relationship to organizational resiliency [24].

### **4.2.6 Moderation Analysis**

After applying the process developed by Prof. Andrew F. Hayes, the cooperative size do not significantly moderate the relationship of explanatory variables to operational resilience of cooperative. The leadership and management and the member participation, loyalty and commitment are both from the internal aspect of the cooperative. These are vital to its daily operation and in achieving operational resilience regardless how small or big is the cooperative. The innovation is always part of the operation of the cooperative in all sizes, it is important to create innovative ways in the operation of cooperative. Moreover, the government support and intervention and partnership and linkages are both an external aspect in the operation of the cooperative. The size of the cooperative does not matter in establishing the strong external relationship of these factors, thus this must be strengthen in the operation. However, this result and analysis contradicts to the study of [9] arguing that the larger the cooperative, the stronger it is to face challenges. Moreover, the number of years in operation also do not significantly moderate the relationship of the explanatory variables to operational resilience of cooperative. Regardless of how long the exposure of the cooperative in the industry, the leadership and management and member participation, loyalty and commitment as an internal aspect, plays a vital role in achieving resilience. Longer experienced operation or not, it must integrate an innovative way to improve business offerings to continuously meet the changing needs and demands of the members and the community. The government support and intervention and partnership and linkages must also be strongly established throughout the operation of cooperative to achieve operational resilience. This somehow also contradict to the study of [23] who argued that the more experience cooperative in the industry, and the larger the pool of experience working within a group structure, the more it would heighten their knowledge in the operation.

### **4.3 Implication to Theory**

This section explains the theoretical implication of the result of the study in discussing the explanatory variables of the

model such as leadership and management, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention factors that affect the operational resilience of cooperative in Region XII during the COVID 19 pandemic.

The model of this study conforms to the Analytical Framework by [14], Factors under this theory such as membership, innovation, government and network conforms to member participation, loyalty and commitment, innovation, government support and intervention and partnership and linkages that was included in the model of this study. These factors must be strengthened in the cooperative operation as it directly influences in achieving resilience of cooperative under challenges and difficult times. However, the theory and the model of this study differs in the collective skills factor that can affect cooperative resilience as collective skills was excluded in the model of the study and cannot significantly explain operational resilience cooperative. Further, the model of this study asserts that even without collective skills, resilience can be attained in the operation of cooperative.

The result of partnership and linkages confirms to System Theory by Katz and Khan. This factor is included in the model of this study and an explanatory variable of cooperative resilience. Further, the model explains that cooperative as an organization must have an interaction between its subsystems and external environment to access assistance and upholds the principle of cooperation among cooperatives which is essential to sustain its operation. The model of this study asserts that partnership and linkages is vital in the system of operation of the cooperatives.

Moreover, the leadership and management is an explanatory variable of the model of this study confirm to the Path-goal Theory of Path-goal Approach to Leadership Effectiveness by Robert House. This model explains and asserts that it is in the dynamic leadership style and effectiveness of the leaders lies the success of the cooperative, the leader's sustaining roles and responsibilities is crucial in managing effectively all its resources under all types of conditions. It further noted the ability of the leaders in cooperative including the management to anticipate problems and be able to move forward despite challenges along its operation.

The member participation, loyalty and commitment also an explanatory variable of the model of this study, confirm to the Social Change Theory by Durkheim. The cooperative serves a channel to augment social status of its members, it fills the gap resulted from crises and disasters which ultimately promotes loyalty and commitment. This study argues that the spirit of cooperativism among members is very important in cooperative as it is a member-owned organization, they are expected to show support and full participation to all its programs and activities bonded by common outlook and vision.

The innovation as explanatory variable confirms to Theory of Rogers that affects cooperative resilience. This theory highlights the adaption of new technology and innovation to advance its operation. The innovation can be in its operation system and increasing the cooperative business to meet the demands and need of the member and the society. This way will promote financial activities to augment operation of the cooperative. Emphasized also in this theory the essential role of the leaders to weigh the pros and cons in the innovation-decision process in adopting the technology and the possible impact to the operation of the cooperative as a whole. To emphasize the assertion of this theory, this study suggests that upgrading the system of cooperative is needed and that should be adapted for the efficiency on the delivery of its services.

#### **4.4 Implication to Practice**

This section of the paper presents the impact of the findings of this study to the management of the cooperatives. They are the top management, cooperative key officers and members. The resilience in the operation of the cooperative can be attained through collaborative efforts of the members and management in utilizing cooperative resources including both the internal and external factors.

The internal factors to include leadership and management, member participation, loyalty and commitment and innovation. Moreover, the external factors include partnership and linkages and the government support and intervention. These internal and external factors of cooperative operation is a system working harmoniously for the betterment of its operation.

It impacted the crucial part of the management of the cooperative especially the managers as the frontliners in the daily operation of the cooperatives. Also, it helps the setting of short-term and long-term plan of strategies in tandem with the board of directors. Their increasing roles and responsibilities in managing the cooperative is vital to efficiently and effectively utilizing their resources under favorable and unfavorable conditions. The importance of innovation in the operation of cooperatives in terms of diversifying coop business through partnering other cooperatives and business institutions that will later on promote internal resource generation program for independency and sufficiency of coop funds.

Further, this study is beneficial and impacted the business industry as a whole, especially the management, aspirant managers and practitioners in the field of business (e.g. Doctor of Business Administration, Management) in the application of learnings and knowledge in managing the constantly changing environment of the business.

#### **4.5 Implication to Research**

This study identified the factors that affects operational resilience of cooperatives in Region XII during the COVID 19 pandemic and determined the explanatory variables of its resilience. The factors in the equation explaining resiliency adds to the existing literature that can be used in future related researches and beyond the scope of this study.

The result of the study conforms to the existing literatures and theories of leadership and management, member participation, loyalty and commitment, partnership and linkages, innovation, government support and intervention which are the factors that can explain operational resiliency of cooperative in Region XII during the COVID 19 pandemic. In addition, research findings in international, national and local level supported the importance of these factors in cooperative operation therefore, it is applicable as well to other setting and environment.

However, the model of this study comprised only the explanatory variables that can explain cooperative resilience, hence, the model can be explored in the future researches and come up factors that are predictor of cooperative resilience. It can be further research to wider the scope and population to come up with the better model predictor of cooperative resilience.

The cooperative size and number of years in operation as moderating variable somehow contradicting to the existing literature especially in international setting however conforming in the Philippines setting by various authors. This can be further explored and verified by future researchers as basis and reference. In addition, it may include also cooperative category as moderating variable. Further, the model can be used to other types of cooperative or other forms of business. Moreover, a much more robust research design can also be used such as triangulation to filter other factors that can contribute to cooperative resilience and come up with the best predictor-model for this method.

### **V. Conclusion and Recommendation**

#### **5.1 Conclusion**

This study analyzed the factors the affects operational resilience of cooperative in Region XII during the COVID 19 pandemic. Based on the result, the following conclusions are drawn by the researcher:

1. Most of the multi-purpose cooperatives operating in Region XII belong to small and micro category which means it has an asset size ranging from 3million to 15million and that majority of them are already in operation for 20 years.
2. Majority of the level of factors affecting cooperative resilience namely leadership and management, collective skills, member participation, loyalty and commitment, partnership and linkages, innovation and government support and intervention are labeled as always observed in their operation making them resilient during COVID 19 pandemic. The leadership and management factor are rated the highest grand mean which means that these cooperatives have a good leadership showing good management during the pandemic.
3. The over-all operation of cooperatives in Region XII is resilient during the COVID 19 pandemic in its entire operation of their business core functions to include production, marketing, human resource and financial.
4. The leadership and management can explain 73% of operational resilience, the collective skills can explain 66% of operational resilience, the member participation, loyalty and commitment can explain 75% of operational resilience, partnership and linkages can explain 70% of operational resilience, innovation can explain 73% of operational resilience and government support and intervention can explain 61% of operational resilience. All the p-values are within the acceptance level below 0.05 therefore these factors can significantly influence cooperative resilience and this lead to reject the null hypothesis. This is strongly supported by literatures both international and local, therefore these factors are also applicable in Region XII settings.
5. The model 5 is the best predictor with the highest R<sup>2</sup> value which has an explanatory variable that can explain cooperative resilience to include the factors namely: member participation, loyalty and commitment, innovation, leadership and management, government support and intervention and partnership and linkages. The leadership and management factor have the highest coefficient ( $\beta$ ) value in the equation. It contributes the best in achieving resilience of the cooperative during the COVID 19 pandemic.
6. The moderating variable such as cooperative size and number of years in operation cannot significantly moderate the relationship of independent variable and dependent variable that conforms to the related studies in literature.

#### **5.2 Recommendation**

Based on the analysis the factors that affects operational resilience of cooperative in Region XII during the COVID 19 pandemic, the following are the recommendations:

1. Investment in related trainings and seminars such as Basic Cooperative Course (BCC), Leadership and Values Re-Orientation, Strategic Planning and Management, Organizational and Conflict Management, Financial

Management including Internal Control and Credit Management and Administrations and Policy Development. These relevant and mandatory trainings is very helpful and informative especially to cooperative top management, key officers and members so they will be more capacitated on their roles, functions and responsibilities in the cooperative.

2. Promotion of cooperation among cooperatives through membership to federation and unions of cooperatives such as Mindanao Alliance of Self-Help Societies- Southern Philippines Educational Cooperative Center (MASS-SPECC) and secondary cooperatives (Cooperative Bank of Cotabato, Kidapawan City Federation of Coop, Fonus Federation of Coop, Regional Seed Growers Producers Coop). This will promote partnership and linkages which is vital in the operation of cooperative to establish their relationship to outside partners and agencies to establish its linkages for easy access of assistance, benchmark and network. It is important to note the creation of in-placed Memorandum of Agreements (MOA) to strengthen partnership and linkages.
3. Increase the capitalization of the cooperative. Since most of them are small size, supplement the internal generation of fund with external borrowings to develop existing business operation. Avail loan to financial institutions which offer a minimal interest rate like government bank such as Land Bank of the Philippines (LBP), coop federation and secondary cooperatives which also assisting cooperatives in terms of financing.
4. Avail programs from the national government through Local Government Unit (LGU) particularly Office of the Municipal Agriculturist (OMAg). Program such as Agricultural Credit Policy Council (DA-ACPC) Agri-Negosyo Loan Program (ANYO) extended to cooperatives to help members especially farmers to have an additional capitalization for the development of their existing farms and projects. The Cooperative Development Authority (CDA) as the lead government agency assisting cooperatives through Provincial Cooperative Development Office (PCDO) and Municipal Cooperative Development Council (MCDC) provide relevant trainings such as making and crafting of Business Continuity Plan (BCP) and Contingency Plan. This will be helpful in making them prepared to any disaster like pandemic. Provision of training, short courses and research and development in partnership with the Department of Trade in Industry (DTI), Department of Science and Technology (DOST) and Department of Tourism (DOT) for product improvement to include processing, branding, promotion and in marketing of their products. Regular conduct of visitation and assessment such as meetings, consultation and audit of the CDA through its assigned personnel to different cooperatives, this will promote and strengthen communication between them and the cooperative.
5. In today's era of business especially during this pandemic, innovation is essential in business operation. First, to promote efficiency in their daily operation, digitalized one is recommended. Computerized operation boost coop image at the same time increases member participation and loyalty because it promotes trust in them. Considering the financial constraints, cooperatives can access assistance from federation such as MASS-SPECC that offers program upgrading coop operation from manual to computerized in a term basis with minimal interest. Second, innovation in business undertakings such as forward and backward integration. Serve as a channel of distribution to help market the member-farmer fam produced and engage in agricultural trade fair spearheaded by the Local Government Unit during municipal and provincial anniversary celebrations. In addition, diversifying the activities of the cooperative such as becoming a lending conduit for credit programs like DA-ACPC and 4P's grant programs, this will promote dynamic in the operation of cooperative at the same time strengthen the support of the local activities.
6. For future researchers, the model can be used in other type of businesses or cooperative in all category. They can do triangulation method by mix qualitative and quantitative approach to fully describe the factors affecting operational resilience of cooperative. In addition, the sample can be increased as well as the scope of the study to come up a predictor model of cooperative resilience. Moreover, for the academe both in private and publ institution to stress the importance of cooperative and inclusion in the curriculum offerings in the school.

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