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Ethnographical Study of the Different Traditional Practices of Santigwar in Rapu-Rapu, Albay

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ABSTRACT

Santigwar is one of the traditional practices found in the Bicol Region and is traced from the rich historical and cultural background of the Bicolano people. Despite the practice being recognized by the residents as a form of folk healing, their understanding of the cultural significance of santigwar is lacking due to limited literature on the subject matter. With this in mind, the study aimed to identify, document, and explain the different traditional practices of santigwar in Rapu-Rapu, Albay through interviews and theoretical incorporations in a qualitative approach. From the results, the researchers identified 4 distinct practices of santigwar namely: *Santigwar sa Itlog*, *Santigwar sa Dahon*, *Santigwar sa Patpat*, and *Santigwar sa Plato*. These practices utilized a variety of materials and procedures based on superstitious beliefs which contain rich cultural backgrounds. Furthermore, there was a central focus in terms of the utilization of prayers and the feature of a diagnostic and healing element in the practice of santigwar. It was concluded that despite the variation between santigwar, all were grounded in a syncretized belief of Roman Catholicism and Bikol spirituality. Finally, santigwar was considered an essential practice of the community because of its perception as a form of alternative medicine.

Keywords: Ethnography, Traditional Practices, Santigwar, Albay

INTRODUCTION

Background of the Study

The Philippines is a nation filled with a rich and diverse cultural background, with each region having its unique tradition and practices. In the Southeast portion of Luzon

Island, the Bicol region is located comprising six provinces namely: Albay, Camarines Norte, Camarines Sur, Catanduanes, Masbate, and Sorsogon. Each of these provinces in the region possesses its own unique culture and traditions resulting

from the varying geographic settings, but Bicol culture in general is rooted in family and religiosity (Cano-Beringuela, 2015). Likewise, Gerona (1988) also agrees that the average Bikolano is deeply religious and family-centered. Furthermore, he characterizes the Bikolanos as being highly sociable, practical, and having an extreme sense of personalism, meaning that they tend to “take things personally. Additionally, Gerona notes that Bikolano religiosity is an “interesting phenomenon”, as traces of pre-colonial traditions are still found when expressing their Roman Catholic faith.

Aside from the characteristics of the Bikolano people, the region has a wealthy abundance of traditional beliefs which are sometimes taken into practice. In Eden K. Nasayao’s (2010) book entitled “Bikol Beliefs and Folkways: A Showcase of Tradition”, Bikol’s beliefs encompass the entirety of human life starting from birth up until one’s death. Some of these themes in life include courtship, values, dreams, and health. Moreover, each theme is provided with several beliefs and practices such as (1) *Palabtik*, which is the first move that a man does when courting a woman; (2) *Pausok*, a health practice used to diagnose a person by engulfing them in smoke; and (3) *Baler*, a funeral practice where mourners stay and pray throughout the night at the house of the departed. However, one of the most notable Bikol beliefs is that of *Santigwar*.

The word “santigwar”, according to Labayo (2019), is rooted in the Latin word “*sanctificare*” which means “to sanctify” (Latdict, n.d.). Eventually, the Spanish “*santiguar*”, which also refers to the incantation of the Sign of the Cross (Educolingo, n.d.), reached its way to the Philippines through colonization. In the Bicol Region specifically, santigwar is generally perceived as a healing practice performed by practitioners called *parasantigwar* (Nasayao, 2010; Cerio, 2020; Bibon, 2021). This parasantigwar learned the practice either through apprenticeship or through circumstance (Bibon, 2021). Interestingly enough, the practice of santigwar varies throughout the region, with each parasantigwar utilizing different methods and paraphernalia which are evident in Cerio’s (2020) and Bibon’s (2021) respective findings. Furthermore, there is a lack of literature and research at present that deals with the cultural aspect of the said practice. With this in mind, the study commits itself to investigate the different traditional practices of santigwar in the region.

Rationale

In 2003, UNESCO formulated the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage, the purpose of which is to protect the cultural practices of a community. Similarly in the Philippines, the National Research Council conducted the 2nd National Research and Development Conference which proposed the National Integrated Basic Research Agenda (NIBRA) 2017 - 2022. One of the core components of this agenda is called “Inclusive Nation Building”, and under this is the focus on the documentation of traditional health practices (Department of Science and Technology [DOST], 2017). Finally, in the Bicol Region, the University of Santo Tomas - Legazpi Research Agenda (2022) states that Bikol

Culture is an area that has to be given importance. In conjunction with the mentioned agendas, the study fulfills their respective mandates by concerning itself with the traditional practice of santigwar.

Current State of Research in the Field

In 2020, Cerio's research documented the cultural beliefs of traditional health practitioners in the Partido district of Camarines Sur regarding folk healing. In his findings, santigwar was given a general description of how it is used for diagnosis and as a treatment. Similarly, Bibon (2021) conducted a phenomenological study on the parasantigwar of Cagraray Island, Bacacay. The study was mainly concerned with how and why the parasantigwar acquired or learned the practice of santigwar.

Problem in the Field

In reference to the two (2) studies mentioned beforehand, both studies provided some knowledge on santigwar in aspects such as its paraphernalia, methods, and acquisition. However, the findings of these studies did not focus on the cultural meanings of the practice.

Synthesis of the Art

On Traditional Practices

Tradition, according to Shils (1971), is a repeated pattern of beliefs and practices of a cultural group. On the other hand, Glassie (1995) characterizes tradition as a continuation of the past. While Green (1997), provides the modern concept of tradition as anything that is passed down from generation to generation. Synthesizing these three definitions, traditional practices can be regarded as beliefs, customs, or a way of life-based on the past which persists through each generation. A primary example of traditional

practices would be those that are rooted in religion. The Catholic Church (2012) in particular is rich in this concept, which is evident in the Sacraments, Liturgy, gestures, prayers, and other observances. Likewise, every locale in the world possesses its unique traditional practices because of culture. Consequently, these same practices are grounded in or influence the lives of many people around the globe.

In Bicol, the region is filled with numerous traditional practices owing to its pre-colonial and colonial influences (Gerona, 1988). Important to mention, is that the mix of these two influences further resulted in enriching the culture of the locale (Arriola, 2011). This wealth of traditional practices is testified in Nasayao's (2010) anthology of the beliefs and practices of the region. For reference, the book provided first-hand accounts of Bikolano's beliefs regarding birth, growth, courtship, marriage, death, relationships, interpretations, nature, illnesses, spirits, and rituals. In addition, a vast majority of these beliefs are still being practiced at present and are an important factor in the daily lives of Bikolanos. Another facet of traditional practices in the region is coming from the indigenous population. The Agta Tabangon communities in the region inherited practices regarding conflict resolution, amicable settlements, land, inheritance, marriage, family, and women documented by the National Commission on Indigenous Peoples Region V (2021). Similarly, a study conducted by Ceballo (2020) focused on the Ati population in the San Andres Resettlement Site. Here, she noted Ati's traditional language (Inati), belief system, leadership, and healing practices.

All things considered, traditional practices are relevant to the everyday life of an individual and community. Such practices can be considered essential in a functioning

society. Comparatively, *santigwar* can be treated as a traditional practice that is significant to Bikolano's way of life.

On Cultural Documentation

UNESCO's Universal Declaration on Cultural Diversity (2001) defines culture as "a set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs." Correspondingly, there is also a concept of intangible cultural heritage, which is essentially a type of culture that focuses on living expressions or traditions inherited from generation to generation (UNESCO, 2003). The UNESCO 2003 Convention encourages the documentation of such traditional knowledge. Similarly, Umerle (2017) introduces the concept of "documentation of culture" which he defines as "the practice of gathering and producing the information and data relevant to intangible cultural phenomena". In other words, cultural documentation is concerned with capturing the traditions or beliefs of a community to support its preservation (SIL International, 2013).

In the scholarly context, the anthology of Haddad et al. (2021) exhibited the numerous international charters, conventions & principles that collectively agree on the significance of cultural documentation as a tool in the conservation and preservation of cultural heritage. Furthermore, cultural documentation on the traditional food culture of the different tribes in Indonesia provided important data such as its recipe (Ramaidani & Navia, 2022; Sutrisno et al., 2021). In addition, the documentation of traditional medicinal plants (Suwardi et al., 2021) and traditional ritual plants (Sutrisno et al., 2020) was essential in

broadening the knowledge of traditional practices, in relation to plants, of the Indonesian tribes. Meanwhile, The International Information and Networking Center for Intangible Cultural Heritage in the Asia-Pacific Region under the auspices of UNESCO (ICHCAP) and NCCA jointly produced documentaries on Philippine intangible cultural heritage (Vivas, 2021). Moreover, these documentaries provided significant insight into the traditional practices of the country which increased cultural awareness.

To summarize, cultural documentation is an imperative medium in both recording and propagating knowledge of traditional practices. Indeed, cultural documentation on the different traditional practices of *santigwar* can lead to the spreading and increasing of its cultural value to the Bikolanos.

On Bikol Spirituality

Spirituality is a concept that cannot be easily defined because of its abstract nature. However, the Collins Dictionary (n.d.) describes spirituality as "the state or quality of being dedicated to God, religion, or spiritual things or values, especially as contrasted with material or temporal ones". Likewise, the Ontario Human Rights Commission (2018) suggests that spirituality is a form of worldview revolving around the concept of God, nature, and the universe as a whole. On the other hand, it is important to realize that there is another factor in spirituality which is "syncretism". Syncretism, as defined by the Cambridge Dictionary (n.d.), is "the combining of different religions, cultures, or ideas". This element is important in delving into Bikol spirituality as the region is diverse in its cultural history.

According to the Cano-Beringuela (2015), Bikolanos show the influence of Spanish religious doctrines and American materialism merged with its traditional animistic beliefs. In pre-colonial times, Bikol's spiritual beliefs revolved around nature and the spirit world. In Gerona's (2011) book, ancient Albayanos had strong spiritual beliefs linked to ancestral spirits (anitos), snakes, and the Mayon Volcano. Similarly, Realubit's (1999) work also notes the rich spirituality of the ancient Bikolanos, which she describes as "nature-worshippers" who venerate everything surrounding them. Additionally, Realubit mentions the belief of ancient Bikolanos towards their pantheon of gods namely *Gugurang, Tubigan, Paros, Dagat, Daga, Aldaw, Bulan, and Bitoon*. However, these pre-colonial deities of Bicolandia, have been replaced by the Christian God and Heavenly Host when the Spanish arrived (Realubit & Consing, 2022).

At present, the Bicol region is home to a large population of devout Roman Catholics, which is evident in their observance of religious practices such as their devotion to "Ina" or Our Lady of Peñafrancia. Despite this Spanish religious influence, Bikolanos still retain or syncretized their pre-colonial beliefs with the Christian faith (Arriola, 2011). An example of this would be their belief in an invisible or otherworld that is apparent in Nasayao's (2010) anthology of beliefs in the region. Furthermore, the practice of saying "*Tabi tabi po*" is a common and concrete testament to Bikol spirituality. Interestingly enough, this expression can also be related to the Catholic Nicene Creed which states "maker of heaven and earth, of all things visible and invisible". Going back, Bikolanos also have traditional practices related to health, where *para-bulong* or *arbulario* (folk doctor) give remedies to certain illnesses, such as *hilo* (poison), which is supernatural in nature.

(Realubit & Consing, 2022). There had been studies that investigated elements relating to Bikol spirituality such as *sino, hilot*, and *santigwar* itself (Dela Cruz & Hallare, 2017; Ceballo, 2020; Cerio, 2020; Bibon, 2021).

In essence, Bikol spirituality is a syncretized belief system borne of pre-colonial and colonial influences. In the same manner, the traditional practice of *santigwar* is incorporated with such spirituality. Wherein, it can provide the practice a deeper understanding and significance to the Bikolanos.

Research Gap

The review of related literature and studies cited previously provides some general background and ideas about the traditional practice of *santigwar*. In particular, current related literature presents surface-level knowledge of *santigwar* such as its history. On the other hand, studies that touched on *santigwar* transmitted data focused on its acquisition process (Bibon, 2021) and its aspect as a folk healing practice (Cerio, 2020). Despite these materials provided, they did not direct their attention to the cultural aspect of *santigwar*. Furthermore, an in-depth understanding of the practice is also lacking. With this in mind, the present study implements an ethnographic approach, synthesizing the theories of functionalism and symbolic interactionism, in filling the knowledge gap on the different traditional practices of *santigwar*.

Objectives of the Study

The study aims to provide a worldview of the different traditional practices of *santigwar*. To provide such knowledge, the following objectives are formulated:

1. To identify the different traditional practices of Santigwar in Rapu-Rapu, Albay;
2. To document the different traditional practices of Santigwar in Rapu-Rapu, Albay; and
3. To explain the different traditional practices of Santigwar in Rapu-Rapu, Albay.

Scope and Delimitations

The study mainly deals with the investigation of the practice of santigwar itself. Correspondingly, the study is not strict when it comes to the number and experience of the respondents as it will only be used for profiling purposes. This is because one respondent can provide multiple ways of practicing santigwar. Moreover, the study focuses on discovering the variations in practicing santigwar, as well as analyzing its cultural significance in light of related literature.

Theoretical Underpinnings

This research is primarily supported by two theories that are dealing with social interdependence and the products of society and its functions. These are the Theory of Functionalism and the Symbolic Interactionism Theory. The former holds the belief that society is relatively stable and that all social institutions have functions or otherwise do not exist. Similarly, the latter believes that society is not only interdependent but more dependent on the symbols existing within it, which are also believed to be the means of reality.

Functionalism

According to the French philosopher and sociologist, Emile Durkheim, in his treatise *The Division of Labor* (1893), “The

totality of beliefs and sentiments common to the average members of a society forms a determinate system with a life of its own. It can be termed a collective of creative consciousness.” From this, Durkheim’s idea of functionalism emphasizes the consensus and order that exists in society. Therefore, things in society arise for specific functions and these functions are needed to maintain stability (Stanford Encyclopedia of Philosophy, 2018). In addition, Malinowski (1944) as cited in Porth, Neutzling, & Edwards (2017), considers culture as an integral part of society. He believes that culture is manifested in the different functioning institutions of society such as education and beliefs. Furthermore, he argues that culture is a medium for humans to satisfy their needs.

From these concepts, the traditional practice of santigwar can be presumed to be borne of its utility to society. Moreover, santigwar may be practiced either as a source of livelihood or as an alternative to modern medicine.

Symbolic Interactionism

George Herbert Mead, an American philosopher, sociologist, and psychologist, together with Charles Horton Cooley, an American sociologist, originated the theory of Symbolic Interactionism where reality is viewed as a product of society’s dependence on symbols and communication. To them, the self, mind, society, and culture emerge from and are dependent on symbolic interactions for their existence. Moreover, symbols are interpreted differently based on a social institution’s history, knowledge, and beliefs which will eventually further develop their perspectives and opinions (Nickerson, 2021). Similarly, Blumer (1986) further explains that individuals formulate meanings according to their interactions with other people and society.

In this context, santigwar can be assumed to observe different practices.

Additionally, the theory acknowledges the importance of the symbolisms that can be derived from traditional practice.

Conceptual Framework

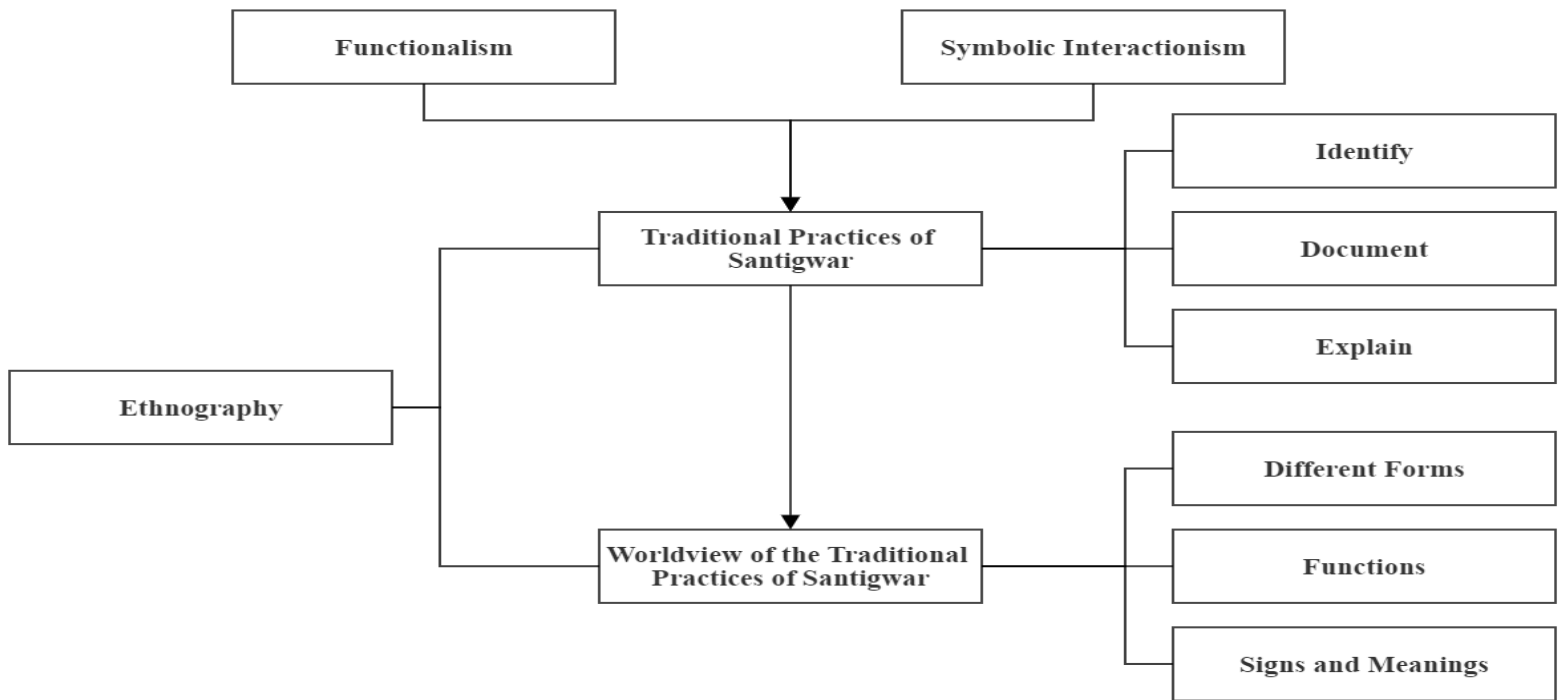


Figure 1. Conceptual Paradigm

The figure illustrated above is the conceptual framework of the study. It is an ethnographic research rooted in theories of functionalism and symbolic interactionism, which is also incorporated in the analysis of the traditional practices of santigwar. The study aims to provide a worldview of the different traditional practices of santigwar through identification, documentation, and explanation. Henceforth, this worldview

contains the functions, signs, and meanings, and the different forms of the traditional practice of santigwar.

METHODS

The study is qualitative by nature, utilizing the core concepts of both an ethnography and a case study. This is because the study focuses on a particular group of

people (parasantigwar) and investigates the different forms or cases of santigwar provided by the respondents. In identifying the parasantigwar, the researchers followed the referrals of the locals in the community of Rapu-Rapu, Albay. These 5 parasantigwar are then provided with a consent form that briefs them about the interview and documentation of their profile, insights, and practices. The results of the interview are then transcribed and translated into English in close relation to the original context of the respondent's account. In terms of data analysis, the study uses the theoretical incorporations of functionalism and symbolic interactionism in its interpretation.

Ethical Considerations

The study takes into consideration the rights and liberties of its respondents. All respondents who partook in this study did so through voluntary participation. Under the Data Privacy Act, the researchers ensure the

anonymity of the respondents through the use of code in the presentation of data. The researchers also recognize the right of the respondents to withdraw from the interview and the assurance that there will be no harm to the respondents. (Babbie, 2009). These ethical measures are found in the consent form which is to be given to the respondents before the conduction of the interview.

RESULTS AND DISCUSSION

A total of five parasantigwar were chosen to be part of the study in exploring their traditional practices. Unfortunately, two of the parasantigwar denied participating in the data gathering. From this, the total number of successfully interviewed informants was three. The succeeding texts are the valuable findings of the study based on the accounts provided by the participants.

Table 1. Demographic Profile of Parasantigwar

	Parasantigwar 1	Parasantigwar 2	Parasantigwar 3
Gender	Female	Male	Male
Age	63	53	81
Residence	Batan, Rapu-Rapu	Bagaobawan, Rapu-Rapu	Lagundi, Rapu-Rapu
Highest Educational Attainment	High School	Elementary	Elementary
Religion	Roman Catholic	Roman Catholic	Roman Catholic
Acquisition of Santigwar	From Grandfather	Self-Learned	Self-Learned
Experience in Practicing Santigwar	44-50 Years	39 Years	66 Years

As shown in the table above, the backgrounds of the parasantigwar exhibit

similarities in terms of religion and education. In the context of religious background, all respondents are professed

Roman Catholics. This may suggest that religion is a key factor in cultural practices, which according to Durkheim (1976), considers both religion and culture as intertwined concepts. In the field of education, all respondents did not reach the tertiary level. This is identical to the parasantigwar of Bibon's (2021) study, which may imply that education is another

major factor in the practice. When it comes to their acquisition of santigwar, only one of the participants learned through their family and the other two were self-taught. Similarly, Bibon (2021) also identifies parasantigwar

who learned the practice from the aforementioned methods. In addition, two of the respondents are classified as "old dependents" (65 years old and above) while the other is in the "working-age population" (15 – 64 years old). Consequently, the practice may be in decline due to the lack of youth inheriting the knowledge. As for their experience, the respondents in Rapu-Rapu have been practicing longer than those in Cagararay Island (Bibon, 2021). Accordingly, this opens the possibility that each locality may vary in the years of practice of the parasantigwar.

Status and Prospects of Selected Micro-Scale Agricultural Enterprises in the City of Legazpi

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ABSTRACT

Agribusiness refers to any commercial activity related to farming. Agriculture has traditionally been viewed as a single industry in which the coordination of both production and distribution was made possible by the functioning market processes. Micro-scale agribusinesses in the city of Legazpi were not given the recognition due to the increase of alternative products that are present in the market. The purpose of this paper is to analyze the status and prospects of the selected agricultural businesses in the city of Legazpi. This case study utilizes Needs, Opportunities, Improvements, Strengths, and Exceptions (NOISE) Analysis to evaluate the status of the selected agricultural businesses. The results revealed that the selected micro-scale agricultural businesses in the city of Legazpi tend to lack knowledge and skills on market principles: capital, marketing strategy and style, sales plan, stability, expansion plan, and sustainability plan in managing their business. Various measures were suggested to the selected agricultural businesses, both individually and collectively, to assist them in improving their operations.

Keywords: Agribusiness, Micro-scale, Marketing Principles

INTRODUCTION

Background of the Study

Agribusiness is a combination of the words “agriculture” and “business” and it refers to any commercial activity related to farming, it entails preparing plant and animal products for human consumption and distributing them to markets (Chen, 2021).

Agribusiness' main objective is to produce and supply agricultural goods for consumer use (Lip, 2022). The five sub-sectors that make up the Philippine agribusiness sector are crop production, livestock, and poultry production, forestry and logging, fisheries, including aquaculture, and agricultural support services and manufacturing (Bugador, 2019). Agribusiness financing may increase the added value of raw

materials, stimulate local rural economies, ensure nutrition and food security, and improve the standard lifestyles in numerous households at risk of discrimination and poverty (Ares, 2019). Because agricultural products can be exported, this industry is an important component of the economy in countries with arable land (Chen, 2021).

Agriculture has traditionally been viewed as a single industry in which the coordination of both production and distribution was made possible by the functioning market processes. This method does not take into consideration the actions carried out by private entities, such as farmers or businesses that collaborate with farmers. Following the publication of Davis and Golberg's "A Concept of Agribusiness" in 1957, the general perception of agriculture as a sector underwent a significant transformation. Their contributions created the groundwork for the contemporary knowledge of agribusiness and provided a fresh perspective on how to see and interact with the agricultural industry. From that point on, the industry was seen as an interconnected system that brought together a variety of people and organizations to produce and create food and fibers (Ecosystems United, 2020).

In the 1960s and 1970s, the Philippines' agricultural sector began to expand at a sufficient rate because of new technology of the time (e.g., the Green Revolution seeds). Agribusiness also began with important export commodities (such as pineapple and bananas), with sugarcane and coconut experiencing a surge in global

commodity prices. However, growth slowed down in the 1980s and 1990s before picking up again in the 2000s as a result of another price increase in the decade's final years. However, growth slowed to slightly about 2 percent in the 2010s. (Philippine Institute for Development Studies [PIDS], 2021)

According to the data recorded by the Business Permit and Licensing Office (BPLO), there are about 6074 established businesses in the city of Legazpi as of December 2022. The city of Legazpi's business industry is composed of 0.77 per cent large, 3.47 per cent medium, 7.43 per cent small, and 82.53 per cent micro-enterprises. Due to the saturated number of micro-enterprises resulting in a disproportionate amount of small, medium, and large enterprises (SMEs) in the area; micro-enterprises are having a hard time thriving and keeping a stable business.

Rationale

The Philippines provides agricultural and economic programs for the country's institutional framework or national agricultural development plan to enhance the agricultural production of the Philippines through adaptation to modern changes or crises that the country is encountering. With the fisherfolks and farmers experiencing difficulty under urbanization, the development of this sector was prioritized to establish balanced economic growth and decent work between Agricultural and Commercial Enterprises. In line with the endeavor of Sustainable Development Goal

No. 8 - Decent Work and Economic Growth, this research intends to improve the current state of agricultural enterprises within the City of Legazpi.

Current State of Research in the Field

The definition of agriculture in modern times goes beyond a farmer solely planting crops, raising livestock, or catching fish. Future agricultural difficulties will necessitate a paradigm shift from a production-focused to a market-focused approach (Baticados, 2018). Agri-entrepreneurs who innovate, find markets, and meet requirements by coming up with new methods of doing tasks are fostered by the combination of agriculture and business. Agri-entrepreneurship works in a range of agriculture-related and allied fields (Chan et al., 2017). Entailed in the Albay Provincial Agriculture Magazine Issue No. 1 Volume No. 1 of 2021, is an actual creation of a market-oriented facility which is called "Albay Farmers' Bounty Village or AFBVille", a One-Stop-Shop Complex. AFBVille is a 15-hectare village with establishments that showcases innovative agricultural technologies, and best farming practices, conduct farmer's training, entrepreneurship, and a learning site for students under an immersion program taking agricultural production (Albay Provincial Agricultural Office, 2022). It is a government project that was led by Gov. Al Francis Bichara for Albay that broadly aligns with the current research, wherein it suggests a system that encourages advancements in agriculture.

Problem in the Field

Despite being one of the three main sectors contributing to the economy of the Philippines, agriculture received the hardest blow as it dealt with the 'perfect storm' - the COVID-19 pandemic, African Swine Fever (ASF), and the Ukraine-Russia War. The Department of Agriculture stated that at the beginning of the crisis, food supply systems were constrained, restricting both the flow of individuals and products. These events affected the import and exportation activities and the economic performance in the Philippines which would also evidently affect the subject of the research which is the city of Legazpi.

Numerous agricultural enterprises have collapsed and stagnated for the reason that they have no entrepreneurial participation to cope with the fast-moving urban expansion. The fact that the most active segments of the capitalist class appear to have lost interest in agriculture as a source of income is also related to the poor status of agriculture. Sociologist Kenneth Cardenas claims that Filipino capitalists view land as a source of income for real estate development rather than for agricultural purposes. Those who depend on agriculture or activities connected to it for their livelihood are entangled in a low-value-added industry that is not a dynamic source of development (Bello, 2021). Agricultural enterprises having an entrepreneurial mindset to this type of business means that it involves all the stages involved in producing, processing, and distributing an agricultural product for sale; maintaining awareness of the competition;

and using modern technology (Chen, 2021). These are activities that agricultural enterprises in the city of Legazpi need to adapt.

Synthesis of the Art

The review of related literature for the current research includes insightful arguments from authors and writers whose claims are distilled based on their similarities.

On agribusiness. Agriculture as a whole is a dynamic industry with several opportunities for entrepreneurship across the entire company value chain as stated by Baticados (2018) in the study of the effect of the production of agri-business under the changes in the industry along with its consequences in the economy. Same perspective to the studies of Concepcion (2017); Medina (2022); and Mapa (2022) under the concept of economic influence in the agri-businesses. Within this type of business, agribusiness uses resources from the natural setting such as geographic biomes. As these provide living and nonliving organisms that may be consumed by the consumers. While some may undergo production before consumption. With several ways to produce new products in the natural resources, agribusinesses gain a variety of business, as businesses are constantly expanding, agribusiness management has become the routine of their progress. Agribusiness management includes many facets of the economy, including agricultural producers, companies that supply goods and services to the producers, companies that add

value to agricultural products, and companies that help sell agricultural products to a constantly expanding market. In the concept studied by Tallada (2019); Mosier et al. (2022); Abante et al. (2022); Sumalde and Quillooy (2015), emphasis on the practices under management in developing agri-business for greater production and successful commercialization. As these agribusinesses progress, they innovate for the betterment of their operation. According to Indrinangish (2018); Hapinat et al. (2022); Fertilizer and Pesticide Authority (2022); Sokolova (2020); and Far (2019), idea of approaching an entrepreneurial framework in agricultural business, aiming to establish a future economic state. Thus, this might help the study improve on what needs to change in establishing agricultural enterprise for implementation of new ideas heavily influencing the success of creative development, describing the challenges, issues, lessons learned, and best practices that the company underwent to become one of the top agricultural businesses. Other relative studies of Otha (2022); Ehora (2022); Schwoob (2018); Maitra et al. (2017) tend to speak about the similar innovation and modernization in agri-businesses by adapting modern progress.

Entrepreneurial resilience during a crisis. Although some studies and articles about agribusinesses speak about its improvement, other studies and articles concern the existing problems wherein it explains other factors that affect the function of the agribusiness itself, and/or explain why such things affect the result when it's being conducted. Some studies such as the studies

of Brown et al. (2018); and Conde (2020) reflect on natural disasters' effect on local agricultural enterprises' income and the difficulties that the Philippines' agriculture industry. Thus, they described and discussed what would happen to the agricultural sector during the course of the following three to five years using the Gross Value Added (GVA) data.

David (2022); and Gregorio (2020) regard studying what caused a lot of damage to agricultural production; which is why resilient, sustainable, productive, and inclusive agricultural systems are needed to ensure Southeast Asia's future and to accomplish the recovery from the epidemic, these industries must be revived, to lead the researcher to interview some local Filipino business people and entrepreneurs on how the nation will bounce back from the loss of sales brought on by the pandemic. The correlative studies of Perlas (2020); and Moya (2018), highlights the government's efforts in food security initiatives are put at risk by climate change's effects on the resilience of irrigation facilities as the Philippines is attempting to modernize and improve its agriculture industry, with both the government and private enterprises encouraging the use of advanced technology and smart farming methods to increase yields and minimize losses.

Research Gap

Within the related literatures and studies, a deeper understanding of agricultural enterprise itself has been least

provided as a topic. The majority of studies are quantitative in nature, which is different from the nature of the current study in that it concentrates on data and insights gleaned from operating agricultural enterprises. With agricultural enterprise as the core concept, the majority of the related studies placed more emphasis on the difficulties in starting an agricultural enterprise in the Philippines as a whole. Less focus is paid to how we should overcome these obstacles and more attention is paid to what the challenges are. Furthermore, none of the studies specifically addressed the situation in the city of Legazpi and how it might be resolved; instead, the majority of them concentrated on the issue of the incorporation of micro and small-scale firms generally. As to the setting of the study, none has conducted a case study of micro-scale agricultural businesses in the city of Legazpi and suggested measures to further improve their operations, resulting in the development of agriculture's contribution to the city's economy.

Locale

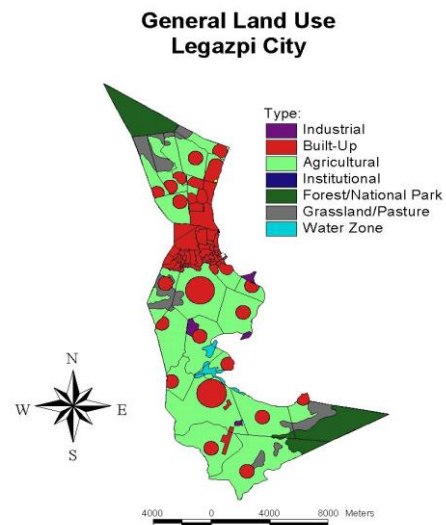


Fig. 1 Locale of the Study

Objectives

To improve the operations of the identified established agricultural enterprises, the current research suggests measure(s) in an effort to assist micro-scale agricultural enterprises within the city of Legazpi. The objectives are as follows:

1. determine the status: A) capital B) marketing style and strategy C) sales plan D) stability E) expansion plan F) sustainability plan of the selected agricultural enterprises in the City of Legazpi;
2. evaluate the selected agricultural enterprises via Needs, Opportunity, Improvements, Strengths, and Exceptions (NOISE) Analysis;
3. suggest general and specific measures for the selected agricultural enterprises according to the status: A) capital B) marketing style and strategy C) sales plan D) stability E) expansion plan F) sustainability plan.

Theoretical Underpinnings

Context, Input, Process, Product (CIPP) Evaluation Model. The CIPP evaluation model was initially created for educational programs and is now being adapted into philanthropy, social programs, health professions, business, construction, and the military (Stufflebeam, 2003). It often focuses on the management-oriented evaluation and concentrates on the four areas of the program for continuous improvement: the business's goals or mission (Context), its plans and resources (Input), activities

(Process), and outcomes or objectives (Products). The phase of evaluating the context aids in decision-making related to planning and allows the evaluator to identify the needs, assets, and resources of a group in order to provide programming which will be helpful (Fitzpatrick et al., 2011; Mertens & Wilson, 2012).

The next stage, which is the input evaluation, intends to pick a suitable strategy to implement to fix the program's issue (Fitzpatrick et al., 2011). Adding to the two previous stages, the process evaluation stage is an important element that reviews the quality of the program. Finally, the product evaluation assesses the positive and negative impacts of the program on its receivers (Mertens & Wilson, 2012). From the beginning, the CIPP evaluation model was meant to provide systematic information for decision-making as a proactive evaluation. Thus, an evaluation is described as a process for planning, obtaining, and providing useful information needed to make decisions (Stufflebeam, 1971). The Context, Input, Process, Product (CIPP) Evaluation Model is a decision-oriented model used to improve a program or organizational effectiveness, it gathers information about a program to seek the strengths and limitations in content or delivery (Yale, n.d.). It evaluates an organization based on its needs, assets, and resources, provides a solution, and receives feedback from the organization, which is relevant to the current research, in which the researchers will profile, evaluate, and suggest measures to agricultural enterprises.

Theory of Change. Theory of Change is an attempt to fill the "missing middle" between what a program or change initiative does (its activities) and how these activities lead to the achievement of desired goals. It works by first identifying the desired long-term goals and then working backward to identify all of the conditions (outcomes) that must be fulfilled for the goals to be met. These are all mapped out in an Outcomes Framework. The Outcomes Framework then serves as the foundation for determining what kind of activity or intervention will result in the outcomes identified as prerequisites for achieving the long-term goal. The precise link between activities and the achievement of long-term goals is better understood using this approach. This results in better planning because activities are linked to a detailed

understanding of how change occurs. It also leads to better evaluation because it is possible to track progress toward long-term goals that go beyond identifying program output. Center for Theory of Change (2021, January 30).

The theory of change assists in identifying solutions to effectively address problems that hinder progress and guide decisions on which approach should be taken. In relation to the current study, identifying the causes of problems that impede the progress of micro-scale manufacturing and merchandising agricultural enterprises allows researchers to propose solutions to help the selected agricultural enterprises develop their operations.

enterprise, and b) have been operating for at least three years within the city of Legazpi. The status of the selected agricultural enterprises was first be determined according to: A) capital B) marketing style and strategy C) sales plan D) stability E) expansion plan F) sustainability plan. Then, a Key Informant Interview (KII) was conducted with the selected agricultural enterprises in order for the researchers to evaluate their status and prospects with the assistance of the Context, Input, Process, Product (CIPP) Evaluation Model and the Theory of Change, and to identify their needs, opportunities, improvements, and strengths. The consent form was sent to the informants beforehand.

Finally, measures were suggested to each of the selected agricultural enterprises and potentially suggest general measures for all of the selected agricultural enterprises if similarities among the needs, opportunities, improvements, and strengths of the businesses were found.

In the conduct of the interview for this research, the interviewers implemented anonymity as a practice for protecting the Data Privacy Act of 2012 (DPA) and the informants' personal information including their name, sex, age, address, and others.

Along with an act of confidentiality as security whenever they provided any information during the interview. The researchers also applied objectivism in conducting the research to refrain from being tainted by any bias or any personal opinion as well as Integrity upholding honesty, rigor, transparency, verifiability, and other moral principles in providing trustworthy research evidence. For the entire conducting research, this paper follows the non-plagiarism to abide cybercrime law of the Republic Act 10175.

RESULTS AND DISCUSSION

After gathering information from informants in selected agricultural businesses, the researchers interviewed ten (10) selected agricultural businesses in the city of Legazpi. Seven (7) of the businesses have been qualified for the research criteria, whereas three (3) of the agricultural businesses were disqualified because the businesses did not meet the criteria as selected in conducting the research. The seven agricultural businesses are enlisted below with their code number, type of business/organization, type of ownership, year of operation, and status of each agricultural business.

Table 1. Profile of the businesses

Code No.	Type of Business	Type of Ownership	Years of Operation
001	Manufacturing	Sole	5 years
002	Merchandising & Manufacturing	Sole	28 years
003	Manufacturing	Sole	6 years
004	Merchandising	Sole	7 years
005	Manufacturing	Sole	4 years
006	Merchandising & Manufacturing	Sole	15 years
007	Merchandising	Partnership	10 years

1. Status of Selected agribusinesses

This section discusses the many elements that would characterize the status of the selected

agricultural businesses, including capital, marketing strategy and style, sales plan, stability, expansion plan, and sustainability plan.

Table 2. Status of Business 001

Capital	Php. 200,000
Marketing Strategy and Style	Relies on the traditional "by word of mouth" marketing technique.
Sales Plan	The sole proprietorship evaluated the feasibility of new products and their viability in the marketplace.
Stability	Reaching sales quota by offering to sell products immediately to customers.
Expansion Plan	Penetration of product within the Hotel's OTOP centers.

Sustainability Plan	Setting higher goals every year. For instance, buying new machines and hiring a new set of manpower.
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Table 3. Status of Business 002

Capital	Php. 90,750
Marketing Strategy and Style	Increase popularity at the beginning through trade fairs and promote the business to a larger market.
Sales Plan	Settled the business at a location with a large pedestrian flow.
Stability	Improve products according to trends.
Expansion Plan	Innovation on products, but no plans of opening a new branch.
Sustainability Plan	Consistent production and interaction with the customers.

Table 4. Status of Business 003

Capital	Php. 70,000
Marketing Strategy and Style	Promoting the products via online advertising on Facebook and distribution of flyers to attract more resellers
Sales Plan	Supermarkets and convenience stores only accept businesses that are registered with the FDA LTO. This company intends to expand its product distribution through malls.
Stability	Patronizing customers with products that are always available and essential
Expansion Plan	Looking for a bigger working area to increase production
Sustainability Plan	Maintain the marketing strategy while retaining the original resellers and manpower.

Table 5. Status of Business 004

Capital	Php. 715,542
Marketing Strategy and Style	The business focuses more on direct marketing in-person and through calls. On in-person direct marketing, it is done at the store, and via the truck's daily routine.
Sales Plan	Set the fixed products and add a new section for some newly introduced products.
Stability	Monitor supplier or seller's stocks to maintain daily operations of the store and prevent cases of out-of-stock.
Expansion Plan	Adding new products but not opening a new branch.
Sustainability Plan	Maintaining relationships with suppliers, customers, and trucking services in order to keep up demand and supply.

Table 6. Status of Business 005

Capital	Php. 158,294.88
Marketing Strategy and Style	Uses a non-aggressive marketing strategy called cross-trade marketing as the business becomes a supplier to other businesses rather than competing in gaining sales for customers only.
Sales Plan	By reaching the sales quota of the business selling products and implementing their knowledge to teach other farmers to grow mushrooms as passive income.
Stability	The business creates sales through interconnection with other businesses as suppliers and consumers, and by offering products under the value chain of the production process to keep the business stable.
Expansion Plan	In seminars and advertisements, the business became well-known in different regions to expand consumers' demand in gaining profit.

Sustainability Plan	The business thrives with great effort in marketing for sustainability.
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Table 7. Status of Business 006

Capital	Php. 128,530.00
Marketing Strategy and Style	The business chose to focus on production, the materials used are washable, which is quite unique locally, helping the business to stand out in the market.
Sales Plan	Designing the products into a practical style yet able to be marketed as souvenirs.
Stability	Sustaining regular supply and exportation.
Expansion Plan	The business attempted to open a branch at the terminal of the city of Legazpi but was later closed due to the lack of customers during the pandemic.
Sustainability Plan	Product innovation to attract and maintain customers.

Table 8. Status of Business 007

Capital	Php. 500,000.00
Marketing Strategy and Style	Operates cross-trade marketing whereas the business becomes a supplier and consumer of other businesses.
Sales Plan	The business participates in trade fairs in the Philippines and promotes itself online through its website. Additionally, the company advertises itself on the packaging of the goods it rebrands.
Stability	The Department of Trade and Industries (DTI) offers free admission to trade shows.
Expansion Plan	Building different branches throughout the city of Legazpi, province of Albay, and Bicol Region.

Sustainability Plan	The business's strategy is to deliver products in different outlets.
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Theoretical Incorporation

Context, Input, Process, Product (CIPP) Evaluation Model. The CIPP Evaluation Model is a model evaluating an organization based on its status, including its needs, assets, and resources, then providing solutions that will let the organization maximize their resources, on the identified needs to increase its assets (Fitzpatrick et al., 2011). Using the CIPP Evaluation Model has made the decisions of the organizations more effective. The seven businesses have the elements that would characterize them as agricultural enterprises. All of them have implemented the CIPP evaluation model to ensure decision-making for continuous improvement of their businesses.

Incorporation of Related Literatures and Studies

The status of each agricultural business demonstrated the prospects of their goals and activity in developing the business; similar studies talk about innovation and modernization in adapting to current advancement (Otha, 2022; Ebor, 2022;

Schwoob, 2018; Maitra et al., 2017). The expansion plans, sales plans, and marketing strategies of every business showed various ways of operating the business for a long-term; common to the study of implementing under the effect of the production changes of each business based on the economic consequences (Baticados, 2018). Same way to of implementing of new ideas especially under the concept of stability and sustainability plan that heavily influence the success of describing creative development, describing the challenges, issues, lessons learned, and best practices that the company underwent to become one of the top agricultural businesses (Indrinangish, 2018; Hapinat et al., 2022; Fertilizer and Pesticide Authority, 2022; Sokolova, 2020; & Far, 2019).

2. Evaluation of Selected Agricultural Businesses through NOISE Analysis

Given the elements that are shown in Table 2 – 8, this part evaluates the elements using NOISE analysis.

Table 9. Summary of the Statuses of the Selected Agribusinesses on the Elements of NOISE Analysis

Code No.	N	O	I	S	E
001	<ul style="list-style-type: none"> * Capital and Source of Raw Materials *Packaging, Formulation, and Production of Quality Products *Passion, Innovation, Promotion 	<ul style="list-style-type: none"> * DTI promotion of products * DTI Assistance for day-to-day operations * Feedback, Advice, and Criticisms on Packaging and Taste 	<ul style="list-style-type: none"> * Own processing area * Packaging and Taste of products * Products approved by FDA 	<ul style="list-style-type: none"> * Production of Products and sales to various resellers * Flexibility * Innovative 	<ul style="list-style-type: none"> *Flexibility
002	<ul style="list-style-type: none"> * Capital and Location * Customer size 	<ul style="list-style-type: none"> * Promotion via trade fairs and exhibitions * Enhance promotion and supply to Manila 	<ul style="list-style-type: none"> * Investments went possible * Increased number of customers 	<ul style="list-style-type: none"> * Ability to identify and cope with trends * stable supply and production 	<ul style="list-style-type: none"> * Good Location
003	<ul style="list-style-type: none"> * Outsourcing raw materials * Capital *Seeking more resellers 	<ul style="list-style-type: none"> * DTI Promotion *DTI assistance * Resellers from universities, hospitals, etc 	<ul style="list-style-type: none"> * Ability to mass-produce products * Increase in the number of orders 	<ul style="list-style-type: none"> * Health benefits of products * Substitute food for patients with disability 	<ul style="list-style-type: none"> *Health benefits of products
004	<ul style="list-style-type: none"> * Capital * Consistent Supplying 	<ul style="list-style-type: none"> * Location of the business * Few competitors 	<ul style="list-style-type: none"> * Customer size increased * Expansion in products variety 	<ul style="list-style-type: none"> * Products are necessities * Daily delivery to customers in nearby areas 	<ul style="list-style-type: none"> * Daily delivery to nearby areas

005	* Capital * Growing house and equipment * Trainings for production skills	* Experience business problems * Promotion * Gain profit through cultivation without sun exposure	*Quality of Equipment * Increase the number of workers * From wood to Cemented Growing house *Teaching on cultivating mushroom through training and seminar	*Vegan eater *The value chain *The potential of the products	* Teaching on cultivating mushroom through training and seminar
006	* Promotion	* Exportation * As souvenir products	* Increase in the number of regular customers	* Washable and rubberized products * Consistent supply * Pedestrian flow	* Washable and rubberized products
007	* Pedestrian Flow * Proper receipting * Consignment * Capital	* Trade fairs and stalls * Supplier Training * Large Market Size	* Increase in market size * Increase in capital * Opening of branch/es	* Rebranding * Line agencies' promotion * Affordability and Quality	*Rebranding

Needs

Majority of the agribusinesses saw capital as their primary need for operation. However, the agribusinesses had different individual needs as identified by the participants: 1) Packaging and formulation of quality products, 2) Location and customer size, 3) Seeking more resellers, 4) Consistent supplying, 5) Growing house, equipment, and training for production skills, and 6) Pedestrian flow, properties receipting, and consignment.

Some agribusinesses found it challenging to raise money. Even if the situation of some of the chosen enterprises has already improved,

several still need help to generate money to expand their operations and boost revenue. The variation in location might be the cause of this. Customers of certain enterprises are affected by their distance from Legazpi City's core. Aside from this, continuous supply also became an issue to the businesses. There are shortages due to inadequate supplies, which has a detrimental effect on the enterprises.

Opportunities

The selected agribusinesses placed a greater emphasis on promotion among the 7Ps in terms of opportunities. Many of the said businesses benefited from DTI advertisements

and support. Organizing trade shows and exhibits in and around Legazpi also aided in the promotion of their business. The selected agribusinesses still continued to discover possibilities to sell their products in different manners at the start of their businesses. As described by the participants, the opportunities are 1) Feedback, advice, and criticisms on packaging and taste, 2) Enhance promotion and supply to Manila, 3) Resellers from universities, malls, etc., 4) Daily delivery to consumer in nearby location 5) Experience business problems, advertisement, and gain profit through cultivation without sun exposure, 6) Products as souvenir products, and 7) Supplier training and large market size.

There are agribusinesses around Legazpi City that found alternative ways to generate funds. Aside from the occasional trade fairs in malls and other shopping districts, the selected agribusinesses satisfied their needs in various ways. Some agribusinesses deliver and advertise their products to their consumers. This creates an opportunity for the businesses to receive useful feedback regarding the company and will also be promoted by word of mouth.

Improvements

All of the seven businesses have improved on at least two of the 7Ps in the marketing mix due to the fact that DTI's interference has made the businesses' promotion of their products a given as they all had the opportunity to be in business trade fairs organized by DTI. However, the seven businesses had their own improvements unique to themselves which can be seen as follows: 1) Own processing area, 2) Increased number of

clients/customers, 3) Ability to mass-produce products, 4) Expansion in product variety, 5) Quality of equipment, 6) Increase in the number of regular customers, and 7) Opening of branches.

The selected agribusinesses had applied certain actions on their previously identified needs to improve, and some of them made use of the opportunities their business had. Almost half of the businesses saw improvements in their production area, while the other half saw improvements in their operations.

Strengths

The businesses exert intense efforts on the features and quality of the products, which helps them in being recognized in the market and stabilize and sustain their business. However, the businesses had unique strengths that helped them stand out in the market. As transcribed across the participants, the strengths are 1) Flexibility, 2) Ability to identify and cope with the trends, 3) Stable supply and production, 4) Few competitors, 5) Product offering under the value chain, 6) Large pedestrian flow due to its location, and 7) Rebranding of supplies for brand recognition.

Some of the businesses identified their strengths from the features of the modality of their businesses. Online selling and physical stores have significant and distinct strengths that provide different forms of convenience, wherein businesses had benefited from. Another portion of the selected businesses seeks their strengths from a producer's perspective.

Exception

Exceptions pertain to each of the highlighted established improvements, image, or business identity of the businesses, which can be seen as follows: 1) Flexibility 2) Good location, 3) Health benefits of products, 4) Daily delivery to nearby areas, 5) Public lecture on cultivating mushroom through trainings and seminars, 6) Increase of products interconnection in branches, and 7) Rebranding.

One of the businesses had a strategic location, where they could meet their target market. Two of the businesses feature the attributes of the products, one promotes the health benefits, and another promotes the durability of the products. A part of the businesses perceives their mode of operation and marketing strategy unique; the businesses have no physical store, rather, they chose to deliver directly from their processing area, conduct or attend seminars, and join trade fairs to promote their business; another business was given the permission to rebrand the product to increase brand recognition.

3. Suggestions

Based on the results and discussions, the researchers formulated measures for the interviewed agribusinesses individually and collectively. In recognition of the premises seen in the Theory of Change, the following are to be considered: improvement, strengths, and recommendations of the seven agricultural businesses

General Recommendations

- Invest time in gaining knowledge about the ideas, principles, and theories of business management.
- Find other ways to promote products that are also effective.
- Join associations or organizations.

Specific measures

001 - make changes on the feature and packaging of the products and on the sales plan

002 - refine the features of the products

003 - search for more resellers from places with massive pedestrian flow

004 - seek for more resellers in the nearby areas for recognition

005 - equip proper facilities for cultivation and enhance promotion

006 - intensify promotion

007 - increase brand recognition through international trade fairs

CONCLUSION

The purpose of this study is to identify the underlying problem that is occurring within the micro-scale agricultural businesses in the study's locale. The capital of the selected micro-scale agricultural businesses ranges from Php 90,000.00 to Php 700,000.00. The majority of them rely on the traditional marketing technique called 'by word of mouth' due to its convenience, and DTI's promotion of their products through trade fairs because they lack the technological literacy necessary for modern marketing strategies. Due to their lack of knowledge about the underlying concepts and implications of the said status, the informants have not provided

meaningful or pertinent responses beginning with the Sales Plan onwards. Due to the aforementioned premises, it is suggested that the selected micro-scale agricultural companies (a) Invest time in gaining knowledge about the ideas, principles, and theories of business management (b) Find other ways to promote products that are also effective and © join associations or organizations.

RECOMMENDATION

The current study concentrates on the underlying problems within the selected agricultural businesses and does not take into consideration the societal factors that contribute to the under recognition despite their innovative nature. This study proposes a fresh line of inquiry into the social roots of the situation at hand.

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PAPER MAKING USING THE FIBERS OF BAMBOO (*BAMBUSA*) AND THE PITH OF POMELO (*CITRUS MAXIMA*)

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ABSTRACT

Paper waste is a major problem in workplaces and industries. Around 68 million trees are cut down to make paper. The researchers' study focused on creating paper out of bamboo trees and pomelo pith. Using bamboo as a paper pulp has the advantage of growing quickly because of its growth cycle of 3-5 years. The researchers were able to put the Pomelo pith into good use through its reduction as waste. A study has shown its good water-holding capacity and can form a strong gel when added to the bamboo forming a durable paper. Scrap papers were also gathered as an additive for the paper-making process. Several tests were conducted to compare the finished product with the commercial papers. The said tests were coin drop, and water drop. These tests concluded that the papers made out of fibers of pomelo pith and bamboo can be used as an alternative for commercial paper as it offers safer, and more sustainable options. The durability and the properties of the paper made out of pomelo pith and bamboo was comparable to commercial papers.

KEYWORDS: Paper making, Fibers of bamboo, Pith of pomelo

INTRODUCTION

“The goal of life is living in agreement with nature.” As the needs are changing, and never-ending, humans have the responsibility to make use of resources to take care of the Earth. According to Environment Acting Secretary Jim Sampulna, despite the implementation of Republic Act (RA) 9003 or the Ecological Solid Waste Management in 2000, waste segregation remains to be a leading problem in the Philippines. This is a global problem as negligence can lead to pollution, water contamination, and the like. These effects are the reason to find alternatives to the products that are currently used (Pr, 2022).

Paper was derived from the word *Papyrus* widely known as water reed, which was used by the ancient Egyptians from the Nile River 5,000 years ago. The Greeks and Romans also used this as a medium for their best works (Ameh, Ozor, Mgbachi, et al., 2017).

Landfills are composed of 26 per cent of paper wastes. Yearly, 68 million trees are cut down to make paper. (The World Counts, 2013)

Paper waste is a major problem in many workplaces and industries. The pulp and paper industry is the largest user of water, the largest water polluter, and the third largest emitter of global warming pollution in most industrialized nations. (Henry & Goldstein, 2010). Chlorine-based bleaches are used during the manufacturing process, resulting in toxic materials being released into water, air, and soil. (The World Counts, 2013). The health effects of exposure to volatile organic compounds, sulfur dioxide, nitrogen oxides, total reduced sulfur compounds (Aneja et al., 2009), and other hazardous air released by paper pulps are of particular concern. Paper landfill emissions can produce strong odors in the communities where they operate, exposing children, the elderly, people with respiratory conditions, and others who may be sensitive to air pollutants. (Jungbauer et al., 2005). Wasteful paper production

can lead to many problems. One might not notice that they are facing one of them. Excessive use of woods, and water in paper production can cause a bad effect in our environment as it can still fill landfills. While pomelo pith can occupy in waste once it is disregarded after eating the pomelo fruit. Studies have shown that it increases the risk of communicable diseases for the community.

Bamboo, which has a long fiber length and a high length-to-diameter ratio, is used as an alternative for paper making in Malaysia, China, India, and other countries due to wood fiber shortages in other countries. The use of bamboo as a paper pulp has the advantage of growing quickly, and the various species can grow anywhere from the tropics to the mid latitudes. In comparison to wood, bamboo has a shorter growth cycle (3 to 5 years), self-reproduction, and low maintenance and regeneration costs. (Chen, Z., Zhang, H., He, Z., Zhang, L., and Yue, X., 2019).

Bamboo is known as "the second forest." It is a graminaceous plant that grows quickly, considering its chemical composition, bamboo is a better fiber raw material for pulping and paper making compared with other non-wood fibers such as rice, wheat, straw, reed, and bagasse. (Wei *et al.* 2016). Bamboo fibers are comparable to hardwood fibers in terms of fiber length, aspect ratio, and fibrous cell wall cavity ratio. (F. Rusch *et al.* 2019)

Pomelo Pith, on the other hand, is a thin, white, sponge-like fibrous membrane that separates the sections of the pomelo fruit. When fruits are eaten, inedible parts of the fruits are discarded leading to environmental pollution. By using the Pomelo pith, the researchers are able to put the Pomelo pith into good use as it reduces the waste occupied by the Pomelo Pith in garbage. (Bjarnadottir, MS, RDN, 2019)

The peels of pomelo contribute about 30 percent of the fruit weight and the consumption of this fruit has

resulted in the production of a huge amount of peel. Therefore, pomelo peel can be considered as an agricultural waste, by the fact that it was discarded and it may contribute to the environmental problem. Moreover, fibers from citrus peel have an additional advantage due to the presence of associated bioactive compounds with antioxidant properties. (Fernández-López *et al.*, 2004). Different peels conditions were studied ranging from mature and young peels with and without drying up to storage time of four months. It was found that pomelo pith resulted in comparable yield approximately 20 grams to 100 grams, respectively. (Gamonpilas *et al.*, 2021) The contents of total, soluble and insoluble dietary fibers and the recovered pomelo fiber was shown to have good water holding capacity and form a strong gel to add with the bamboo to form a durable paper.

Paper has been made from bamboo for hundreds of years. The commercial process uses actual bamboo canes for pulp. Bamboo can be used for paper making, however, bamboo fibers are very tough and need a lot of processing, including a long fermenting period. An easier way to make paper from bamboo is to use the sheaths from new bamboo culms (canes). These are the outer coverings on new bamboo canes that drop to the ground (in most cases) as the canes mature. They have a texture that is very similar to dry corn husk. (Anon., 2007)

Citrus Maxima Pith, also known as pomelo pith, is the thick, white, and sponge-like structure of the pomelo. This well-known citrus fruit that is usually harvested between November and January, possesses about 6 grams of fiber per piece. (Shoemaker, 2019) Fiber is essential in the paper making process as it is a key ingredient to the paper's strength, durability, and flexibility. (Britt, 1999), thus, making it essential in paper making.

Bamboo is widely distributed in subtropical and tropical areas. The main producing areas of bamboo are in the Asian-Pacific Region, the Americas Region, and Africa. About 80 percent of bamboo

forest lands in the world are in the Asia and Pacific regions. Furthermore, India and China together account for approximately 70 percent of the bamboo forest in Asia (Mera and Xu, 2014). From the view of forest conservation or sustainable economic development, bamboo is an important non-wood fiber raw material for pulping and papermaking, especially in these developing countries.

Compared with wood, bamboo has the advantages of a short growth cycle of about 3 to 5 years, self-reproduction, and low cost in maintenance and regeneration. As a fast growing graminaceous plant, bamboo contains 57 to 65 percent by weight cellulose, 27 to 30 percent by weight hemicellulose, and 4.9 to 5.0 percent by weight lignin (Wei et al. 2016).

There are many challenges for using bamboo as a pulping and papermaking raw material, including bamboo forest plantation, logging, storage and transportation of bamboo materials, and technical issues in the alkaline spent liquor recovery process of bamboo pulping.

The citrus industry (oranges, lemons and grapefruits) is important in tropical and subtropical zones and particularly in Spain which is one of the major producers and exporters of various kinds of citrus fruits. Per capita consumption of citrus juice in Spain accounts to more than 3.8 L (MAPA, 2001).

Pomelo (*C. maxima*) is a kind of citrus fruit widely cultivated in Southeast Asia region, China, USA, Mexico and South Africa (Xiao, Ye, Zhou, & Zhao, 2021). The global production of grapefruits (including pomelo) was approximately 9.3×10^6 tons in 2019 (FAO, 2021). With more than 2.0×10^5 tons of annual production in Thailand, there is a considerable amount of pomelo peels generated as by-products from domestic consumption and fresh fruit export factories. Such issue has led to various researches on how to achieve comprehensive and efficient valorisation of these pomelo peels (Xiao et al., 2021).

Cellulose is a polysaccharide (i.e. carbohydrate) built of long, straight chains of D-glucose units. They are bound together with 1→4 β-glycosidic bonds.

Cellulose chains that are aligned are bound together with hydrogen bonds forming a cellulose sheet.

The cellulose sheets are placed on top of each other and stabilized with van der Waals bonds. This creates elementary fibrils with a size of 3 x 3 nm, which in average contains 36 cellulose chains.

Aggregated elementary fibrils forms microfibrils with a diameter of 10-20 nm and a length of at least 40 μm. Microfibrils can be further aggregated into macrofibrils. Cellulose is a crystalline material with a highly structured order (Lennholm & Henriksson 2009; Daniel 2009).

A fiber consists of several cell wall layers, which has various composition, thickness and microfibril angle. This gives the cell wall layers different properties. The outer layer is called middle lamella (M) and is a thin layer that contains almost only lignin (Henriksson 2009; Daniel 2009; Fengel & Wegener 1989). This layer “glues” different fibers together with each other. Primary wall (P) is the first layer that is developed during the growth of a cell. The microfibrils are placed in an irregular crossing pattern, this gives the cell wall its ability to expand during further growth of the fiber (Daniel 2009; Fengel & Wegener 1989).

This research not only allowed the researchers to acquire a deeper knowledge and understanding of the topic, and gave the researchers more ideas to improve and expand the materials needed to create a paper and transform it into an enhanced one, but also ameliorated the life of the community. Initially, it can help the environment to reduce the excessive cutting of trees and enormous amounts of biodegradable waste. A bamboo can grow approximately in 3 to 5 years (Schröder, 2021) as compared to the common ingredient used in making paper, a tree that can take 20-30 years to fully grow. (Kilgore, 2023), while biodegradable wastes can

breed rats and mosquitoes that can be possible carriers of viruses and bacteria leading to a community health disease. As stated in an article by Popoola in 2022 entitled, “Biodegradable Waste”, microbial flora is abundantly found around the biodegradable waste, which threatens communicable diseases in plants, humans, and animals to arise. Thus, using pomelo pith regarded as biodegradable waste can help lessen the risks mentioned. Second, it can help alleviate the economy by helping businesses to showcase innovation. New ideas can help in the growth of a stagnant market. Thereby allowing businesses to create an identity for their brand and having an edge in the market. (Cote, 2022) Lastly, consumers can have safer, sustainable, and a variety of options for their papers.

The researcher’s study will focus on knowing if the said materials can be used as an alternative for paper production to promote environmental sustainability. Specifically, it aims to create paper from bamboo and pomelo pith, to compare the improvised paper to a commercial paper, and to identify possible material of the paper making from bamboo and fibers of pomelo pith.

MATERIALS AND METHODS

PREPARATION OF MATERIALS

The following materials were employed in the study as follows: Bamboo and Pomelo Pith as the makers ingredients, Water to dissolve pulp concentrate, Medium-sized stock pot for boiling, Mesh strainer to filter the materials from the liquid, Cotton Cloth to transfer the wet sheet from the mould, rolling pin to press and flatten the pulp, 30cm by 20cm mold and deckle to shape the mixture in perfected edges, Foam Sponge to absorb excess liquid in the pulp, pH strips for standard surface charge of the cellulosic fibers, the fiber swelling, and the paper strength (Jansson, 2015), 10% solution of Na_2CO_3 to separate the cellulose fibers from the plant material, blade to strip the bamboo and pomelo pith in pieces (Abdul Karim

et al., 2022), 165 grams of scratch paper for thickening and serves as the foundation for the paper itself, a large tub where the mold and deckle was immersed, and Personal Protective Equipment as the procedure involves chemicals and sharp objects. Prepare the bamboo culm sized 3 feet then chop into 3 pieces and begin tilting the bamboo 15 degrees to get 250 grams of bamboo strips. Peel two 3 kilograms of pomelo. Remove the peels and collect the whites. Prepare the 165 grams of paper and let it sit in a bowl of water for 3 hours to soften the pulp.

COLLECTION OF MATERIALS

The researchers collected the scratch papers from their respective classrooms. After use, such waste was gathered until 165 grams were obtained. The bamboo culm was purchased from a local city market in Tabaco. While the Pomelo was grown from one of the researchers' farms in Davao. The chemical Na_2CO_3 and pH strips were obtained from the school’s laboratory. Other materials were available at home while equipment like the mold and deckle were purchased from bookstores in the city of Legazpi.

PROCEDURE OF PULP-MAKING

The researchers added 250 grams of bamboo strips to a pot with 2 cups of water to boil. After the first 30 minutes of boiling, the researchers added 15 mL of 10 per cent concentration of Na_2CO_3 .

The researchers dipped the pH test strip for two seconds in the boil and waited ten seconds. The ideal pH value for the solution should be 10 to 11. Enough solution are required to cover the fibers. Brought back to a boil, and reduced to a simmer. The researchers took 2 to 3 hours to simmer. Stirred every 30 minutes. Once soft, the researchers allowed the solution to cool for 5 minutes.

The researchers strained and rinsed the drained fibers with water with the use of wired mesh several

times. Study recommends that it is critical to remove all traces of the chemicals.

The fibers must be beaten in order to separate. The researchers added the bamboo strips in the blender and added 1 Liter of water. The researchers blended the bamboo strips for 5 minutes in medium-level capacity. The researchers poured the pulp from the blender to the tub and let it sit for 30 mins.

Alongst waiting, the researchers added 800 grams of pomelo pith and 2 cups of water in a pot and turned to a boil. After 5 minutes of boiling, the researchers added 10 per cent concentration of Na_2CO_3 and let it boil. The researchers turned off the stove after 20 minutes of boiling. The researchers strained and rinsed the mixture with water, and added the fibers to the blender with 1 Liter of water and blended for 1 minute in medium-level capacity. The researchers poured the pulp from the blender to the tub along with the bamboo pulp.

The researchers removed the soaked scratch paper from the water and blended it with 500mL of water for 3 minutes in medium-level capacity. The researchers poured the pulp from the blender to the tub along with the rest of the pulp. The researchers added another 4 liters in the tub.

MOLDING AND COUCHING OF PAPER PULP

A paper pulp molding is a manufacturing process in which a mixture of paper pulp is molded into a desired shape. The paper pulp is made by breaking down paper into individual fibers and mixing it with water to create a pulp.

The molding process involves pouring the paper pulp slurry into a mold and allowing it to harden into the desired shape. This technique is often used to create a wide range of products, such as packaging materials, disposable tableware, and architectural elements.

The researchers stirred the vat of pulp and hold the mould and deckle at a 45 degree angle, and dipped the

mould and deckle to the bottom of the tub and scooped up, holding the mould and deckle horizontally. As lifted up out of the mixture, the researchers gave the mould and deckle a quick shake back and forth, and left to right to align the fibers and make a more uniform sheet. The researchers stopped shaking before the sheet is fully drained. The researchers let the water drain to a drip for 3 minutes.

Couching defines to transfer the wet sheet from the mould to a flat, absorbent surface. Wool felts are ideal, but there are many other options: wool blankets, smoother towels, thick paper towels, non-fusible interfacing or pellow, sham-wows, or bed sheets (Babcock & Wickstrom, 2014).

The researchers discharged the pulp from the mold and deckle to the flat surface, slowly by placing the mold face down right to left. The researchers placed the cotton cloth above the pulp. Using the foam sponge, the researchers pressed gently at first, then pressed firmly with as much pressure as possible. Above the cloth felt, the researchers slowly lifted from the initial edge. The researchers squeezed to dry the foam sponge and continued couching until no more water is absorbed. The researchers used the rolling pin to flatten out the couched paper more.

DRYING OF THE BAMBOO-POMELO PITH PAPER

The researchers removed the cotton cloth from the mold and took the wet sheet and gently pressed onto a flat, non-porous surface. The researchers let the paper sun-dry for 16 Hours. Due to the gloomy humidity at the time of research, the researchers added the wet sheet to a laboratory oven for 6 hours at 37 degrees. Study shows that 16 hours sun-dried paper and 6 hours oven-dried paper have the same terms.

DURABILITY

Several tests were carried out to compare the paper in terms of its durability, and its uniqueness amongst the commercial papers.

RESULTS AND DISCUSSION

The group conducted three trials. On two trials, the materials that were used were: Shredded bamboo and shredded pomelo pith as well as Na_2CO_3 .

The first trial, 195 grams of Bamboo and 900 grams of Pomelo Pith, resulted in the production of a brittle, thin paper, while the second trial, 600 grams Bamboo pulp and 400 grams Pomelo Pith, created a thick, see-through, abaca-like sheet. The third trial was successful when the researchers added 165 grams of recycled paper to the mixture of 250 grams of bamboo and 800 grams of pomelo pith.

Table 1. The Physical Properties of the Created papers.

Trials	pH level	Physical Properties	Result
1	8	Rough, brittle, looked like abaca	Failed
2	7	Brittle and stiff	Failed
3	10	Smoother texture, looks close to store-bought paper	Successful

PHYSICAL PROPERTIES

The physical properties of the improvised paper in terms of its texture, color, size and thickness are similar to that of a commercial paper, however, the texture of the improvised paper was slightly

dissimilar to the commercial paper. The minor difference of the improvised paper's texture has the impression of a table tissue paper, though thick and writable. The surface area of the improvised paper is that of the mould and deckle the researchers used, which is 30 x 20 cm. Utilizing a microcaliper found in the Science laboratory, its thickness is approximately 1 millimeter.

COIN DROP TEST

To test the strength of the paper, the researchers conducted a coin drop test using a pouch filled with 30 ₱10 coins weighing 240 grams.

Table 2. Results of Coin Drop Test.

Type of Paper	Ability to withstand a pouch filled with ₱10 coins
Paper made out of the fibers of Bamboo and Pomelo Pith	Did not tear
Store-bought paper	Did not tear

WATER DROP TEST

Using a syringe and water, the researchers have tested the absorption of both papers by dropping 1 mL to 3 mL of water.

Table 3. Results of Water Drop Test.

Type of Paper	1 mL of Water	2 mL of Water	3 mL of Water
Paper made out of the fibers of Bamboo and Pomelo Pith	No leakage	No leakage	No leakage

Store-bought paper	No leakage	No leakage	No leakage
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CONCLUSION

As the researchers have conducted numerous tests, the researchers therefore deduce that the paper made out of the fibers of pomelo pith and bamboo can be used as an alternative for commercial paper as it offers safer, sustainable options. The paper made out of fibers of pomelo pith and bamboo's properties and its durability were comparable to that of commercial paper.

RECOMMENDATIONS

The researchers suggest adding the pomelo peels as an alternative instead of pomelo pith or fiber to increase as much as possible the strength of the paper. It is also recommended to conduct furthermore experiments and studies to improve the texture, quality of the paper and writability of the paper. More blending time and such use of a high-end machine to crush the bamboo into a finer substance. A specific tool like mesh strainer may be used to help the paper's texture, appearance, surface, quality, and composition to smoothen the bamboo-pomelo pith paper furthermore. A certain chemical or ingredient like agar-agar, cornstarch and gelatin may also be added to the blended bamboo to increase the consistency, durability, solidity, stability, firmness and to strengthen the final product. During the papermaking process, a faster way may be achieved by using the oven at a medium level to dry the blended and sifted bamboo-pomelo pith in the mold and deckle. Using different techniques to flatten out the paper furthermore. Concerning the odor, some specific chemical additives may be used to lessen its smell. Few household staples such as baking soda, distilled water, coffee grounds, and vanilla extract can be added to neutralize the odor it brings. Lastly, the researchers suggest perennial (in season) fruits that

can be utilized in this study and can be helpful in the paper making process.

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Bamboo pulp fibers; Periodate oxidation

A VIEW ON MANDATORY ROTC IMPLEMENTATION OF UST-LEGAZPI GRADE 10 SCIENCE HIGH SCHOOL MALE STUDENTS

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ABSTRACT

The Reserve Officers Training Corps (ROTC) is a program that offers postsecondary students military training in order to motivate, organize, and mobilize them for national defense readiness. President Ferdinand "Bongbong" Marcos Jr. advocated for mandatory ROTC for Senior High School students during his first State of the Nation Address. The purpose of this study was (a) to determine the level of agreement of Grade 10 Science High School male students on mandatory ROTC; (b) to determine the factors that affect their level of agreement; and (c) to propose suggestions and recommendations based on the results. The study used a sequential explanatory design and included a quantitative and qualitative phase of data collection and analysis in order to find the students' level of agreement. A survey questionnaire was completed by 58 male students, and 12 students were chosen using the Fishbowl Method to participate in a Focus Group Discussion (FGD). The study concluded that 81% of respondents believe that the mandatory ROTC program is vulnerable to abuse. Furthermore, 81% of respondents disagree that the program makes students feel more connected to their school. The implications of the study suggest that mandatory ROTC has more disadvantages than benefits for students.

Keywords: ROTC, mandatory, implementation, R.A. 9163

INTRODUCTION

The Philippines' National Service Training Program (NSTP) was established by Republic Act No. 9163 in 2001 and went into effect in 2002 (Oracion, n.d.). According to Pacatang and Montallana (2022), the NSTP is comprised of three components, as specified in Section 4 of the aforementioned law, namely the Civil Welfare Training Service (CWTS), the Literacy Training Service (LTS), and the Reserved Officer Training Corps (ROTC).

Literacy Training Service (LTS) is a program designed to train students to become teachers of literacy and numeracy skills to children in school, out-of-school youth, and other segments of society who are in need. Civic Welfare Training Service (CTWS) is composed of programs or activities that contribute to the general welfare and betterment of life of the members of the community or enhance the facilities, especially those that are devoted to improving health, education, the environment, entrepreneurship, safety, recreation, and morals of the citizens. The Reserve Officers Training Corps (ROTC) is

a program institutionalized under Sections 38 and 39 of the Republic Act. 7077, designed to provide military training for tertiary students in order to motivate, organize, and mobilize for national defense preparedness. ROTC is a college-to-military program that trains students to become commissioned officers while also earning academic degrees (TheBestSchools, 2022).

In the Philippines, the National Service Training Program (NSTP) was established with the goal of promoting values education, transformative leadership, and patriotism among youth, as well as improving their physical, intellectual, and social well-being. Furthermore, the NSTP promotes student involvement in public and civic affairs, as well as community and national development, through activities that address societal needs. The ultimate goal of the NSTP is to produce citizens who are well-rounded, responsible, and committed to nation-building. While undergoing training in any of the three program components, the program promotes defense preparedness and service ethics. Various components are specifically designed to increase the active contribution of youth to the general welfare. Students of any baccalaureate degree course or at least two-year technical vocational courses in public and private educational institutions are required to complete one of the NSTP components as a requirement for graduation. Exemptions only apply to students who have already completed NSTP as part of a prior degree, transferees, and shiftees who have completed NSTP, and foreign students (UP Diliman, n.d.).

Moreover, the Philippine Constabulary arranged the first military training at the University of the Philippines in 1912, and ROTC was formally established in the

country. The first ROTC unit was born on July 3, 1922, with the establishment of the Department of Military Science and Tactics at the University of the Philippines. After 13 years, President Manuel Quezon signed Commonwealth Act 1, commonly known as the National Defense Act of 1935, making ROTC mandatory. After the war, the country could not afford to keep a large military force without draining its resources, so the ROTC units were disbanded and demobilized. Former President Ferdinand Marcos Sr. restored the ROTC as a mandatory program in 1967 with Executive Order 59. Due to the numerous problems that plagued the program in the 1980s and 1990s, ROTC became voluntary when the National Service Training Program Act of 2001 was passed into law. In 2006, Alfredo Lim sponsored Senate Bill 2244 and Representative Eduardo Gullas sponsored House Bill 5460, hoping to make ROTC mandatory again. In June 2013, Department of National Defense Secretary Voltaire Gazmin aired a proposal to make ROTC once again mandatory for college students only, a move ardently protested by groups such as Anakbayan. In February 2017, former President Rodrigo Duterte approved the proposal to revive mandatory ROTC training for Senior High School Students in both public and private schools (The Kahimyang Project, n.d.). On July 25, 2022, during President Ferdinand “Bongbong” Marcos Jr.’s first State of the Nation Address (SONA), he pushed for mandatory ROTC and NTSP for Senior High School students (Inquirer.Net, n.d.). The researchers wished to find out the views and opinions of male Science High School student and the factors that affect their opinions. Only the male students were asked, as in history, it had only been males who were covered by mandatory ROTC. (Philstar, 2018)

The researchers gathered related studies and literature in relation to the benefits of implementing the mandatory ROTC program. In a study by Campbell (2017), he investigated leader development inside the collegiate Reserve Officer Training Corps (ROTC), insights from ROTC student participant perceptions provided evidence of the uniqueness of leader identity and the importance of gaining a leader psyche as a component of an effective leader development program. A study by Rey (2018) mentioned that higher moral principles will be instilled through ROTC training, which will also show and promote responsible citizenship. The views of the followers may be influenced by the leader's advocacy for social support (Zhang et al., 2014). In line with that, according to Brown et al. (2014), military officers need to have a solid moral foundation, a commanding physical presence, and the ability to inspire others. These abilities can be developed through the leadership training offered by the ROTC program. Along with that, discipline is also instilled, as stated by Lutz and Bartlet (1995).

Additionally, the researchers have gathered relevant studies and literature that speak to the drawbacks of making ROTC mandatory. However, ROTC is also known for cases of hazing, abuse, and corruption within the program. As stated by Kelly et al. (2015), the ROTC is an obvious and important target for hazing prevention. There is also the prevalence of psychological issues experienced by cadets. Eating disorders have become more rampant, as mentioned in a study by Smith et al. (2020). This was heavily caused by the excessive workload of the cadets, in balancing training and academics. Furthermore, since the recent request to

amend Republic Act No. 7077, also known as the Citizen Armed Forces of the Philippines (AFP) Reservist Act, in order to reinstate the obligatory Reserve Officer's Training Corps (ROTC), many students and professors nationwide have vehemently opposed the ROTC program. The Department of National Defense (DND) received a student complaint alleging UST-ROTC corruption, which sparked a significant anti-ROTC campaign that was launched after the student's passing (Adil, 2018). According to the literature, Mandatory ROTC was widely disapproved of, and numerous colleges and students voiced their opposition to its implementation.

Based on the review of related literature and studies, there is currently no study examining the views of actual grade 10 male students that were supposed to be taking mandatory ROTC in grade 11.

The current study aimed to:

- a. determine the level of agreement of Grade 10 SHS male students on mandatory ROTC,
- b. determine the factors that affect their level of agreement, and
- c. propose suggestions and recommendations based on the results.

The study focused on the viewpoints of male students in the Science High School Curriculum in Grade 10 on the implementation of mandatory ROTC. This study was conducted at the University of Santo Tomas - Legazpi, Junior High School Department, during the academic year 2022 - 2023.

Female students, other UST-Legazpi Junior High School programs, and other

grade levels were not included in this study. The male respondents from the Grade 10 Science High School Curriculum were sufficient to answer the study's objectives. The participants were chosen because they are more accessible and adequate to cover the scope of the study.

The generalization of this study will be highly significant and beneficial to the following people and entities.

Students. This research study will be of great contribution and benefit to students, particularly Grade 10 Science High School students at the University of Santo Tomas - Legazpi. From this, the students can express their views and opinions, as well as enhance their skills and physical, mental, social, intellectual, and spiritual readiness.

Educators. University of Santo Tomas-Legazpi teaching personnel will acquire knowledge from this research study, which will serve as a guide on how to assist students in understanding the nature of why ROTC is implemented.

The University of Santo Tomas-Legazpi. As the researchers determine the perspectives of grade 10 students, the university will be provided with information regarding the knowledge, readiness, and possible suggestions of the said study population.

The Community. This study will benefit the community as it can raise awareness of Grade 10 students' ideas and misconceptions as future contributing citizens of the community, as well as help them understand the importance of ROTC in the country's development and security. The ROTC program can be enhanced by determining the students' perspectives.

The Department of Education (DepEd). This research may be of help to the Department of Education in evaluating and further suggesting or recommending methods for future proposals involving ROTC or decisions on its implementation.

To Future Researchers. The findings of this study will be utilized as a source of information and resource materials for their research. This will encourage them to conduct additional research related to this study.

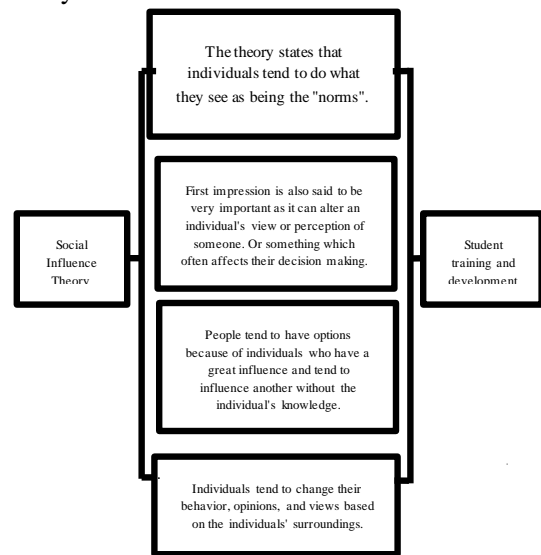


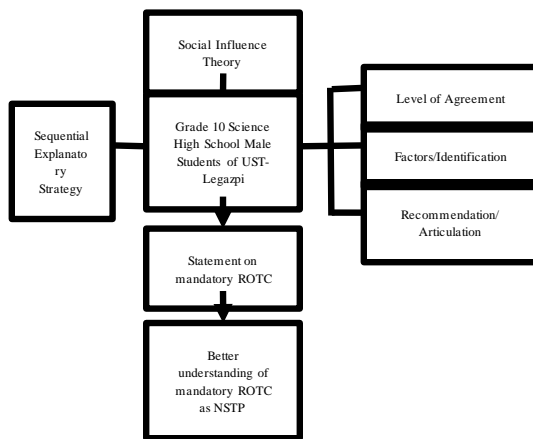
Figure 1. Theoretical Framework Model

This study was anchored on the theoretical support of the Social Influence Theory by Kelman (1958). The Social Influence Theory is a psychological theory that explains how individuals' behaviors, attitudes, and beliefs are influenced by the presence and actions of others. This theory's fundamental concept is that a person's beliefs, attitudes, and actions are shaped by others they perceive as influential, and this happens through three processes: compliance, identification, and internalization.

Compliance is the process whereby individuals conform to the induced behavior to gain rewards or approval and avoid punishment or disapproval. Identification is the process by which individuals adopt the attitudes and behaviors of others in order to feel connected. This process often occurs when individuals look up to or admire someone and want to do the same. Internalization is the process by which individuals internalize the values, beliefs, and attitudes of others and make them their own. This process occurs when individuals fully accept and adopt the beliefs and behaviors of others, and may even act on those beliefs without any external pressure to do so.

In the context of studying the views of the Grade 10 Science High School male students on the implementation of Mandatory ROTC, Social Influence Theory could be relevant in understanding how the attitudes and beliefs of students about ROTC were influenced by the attitudes and beliefs of the student's peers and other individuals in the students' social environment.

Figure 2. Conceptual Framework of the Study



Based on the theory anchored in this study, the researchers were able to formulate three objectives: (a) determine the students'

level of agreement; (b) determine the factors that affect their opinions; and (c) propose suggestions and recommendations based on the results. In order to achieve these objectives, the researchers utilized the Sequential Explanatory Strategy.

METHODS

In this study, the sequential explanatory strategy was used as part of a mixed methods research design. The sequential explanatory design is a mixed method consisting of two particular phases: qualitative and quantitative. The researcher first collected and analyzed quantitative data in this design. In the research process, qualitative data was gathered and examined after the quantitative data had been obtained.

This data was used to provide further insights and explanations for the initial quantitative results. The second phase of the study, which focused on qualitative data, builds upon and complements the first, quantitative phase. These two phases were linked in the middle stage of the research (Ivankova, et al., 2006). The study's primary data sources were survey questionnaires and a focus group discussion. In the quantitative portion, the researchers distributed survey questionnaires using the 4-point Likert scale to all 58 male students from the Grade 10 Science High School Department and analyzed the results. Following the survey, the researchers formed a Focus Group Discussion (FGD) based on the survey results for the qualitative portion. There were 12 chosen respondents through the Fishbowl Sampling Method for the focus group discussion. The researchers used the frequency count mean for analyzing the quantitative data. To identify the percentage

of respondents who agree or disagree with the statements, the formula for the general weighted mean shall be used. This is done by dividing the number of respondents who agree or disagree by the population and then multiplied by 100.

All 58 Grade 10 Science High School male students at UST-Legazpi who were required to participate in the ROTC program as part of their curriculum were included in this study. This group of students was the study's focus, and any findings or conclusions drawn from the study were limited to this population.

Agreement	Value	Range	Adjectival Description
Strongly Agree	4	3.26-4.00	91% to 100% are willing/able to take the mandatory ROTC.
Agree	3	2.51-3.25	81% to 90% are amenable in taking the mandatory ROTC.
Disagree	2	1.76-2.50	71% to 80% agree in taking the mandatory ROTC.
Strongly Disagree	1	1.00-1.75	60% to 70 % are in favor of taking the mandatory ROTC .

Table 1. Interpretation of Data for Four-point Likert Scale

The integrity of science, respect for human rights and dignity, and cooperation between science and society all depend on research ethics. These guidelines ensure that study subjects' involvement is free, informed, and secure. Whether intentional or not, ethics are always required to protect participants against long-term or extreme harm (Bhandari 2022).

The researchers sent a consent form to those who took part in the survey. The information provided by the respondents were kept confidential and accessible only to the researchers who conducted the study.

RESULTS AND DISCUSSIONS

This study focused on the factors that affect the views of male science high school grade 10 students on mandatory ROTC implementation. The researchers aimed to (1) determine the level of agreement of Grade 10 SHS male students on mandatory ROTC; (2) determine the factors that affect their level of agreement; and (3) propose suggestions and recommendations based on the results. The results of the data-gathering were divided into two sections: the first section focused on the quantitative data from the survey questionnaires, and the second section focused on the qualitative data from the responses of the chosen participants during the Focus Group Discussion.

Table 2 presented the average weighted level of agreement on each statement in relation to the effects and traits of mandatory ROTC. As shown in the table, among the positive statements, which are

indicators 1-6, the one with the highest level of agreement is about how ROTC helps in the development of students' leadership skills, with 77% out of the 58 respondents agreeing. On the contrary, the positive statement with the least level of agreement is about how ROTC helps the students' connection with schools with only 19% of the respondents agreeing.

In line with Brown et al. (2014), military officers need to have a strong moral foundation, a commanding physical presence, and the capacity to motivate others. These skills can be acquired through the leadership training offered by the ROTC program. Through leadership development, participants can learn positive traits, such as

making more moral decisions and setting a good example. Research has shown that effective leadership results in adaptive outcomes. For instance, when the psychological importance of group membership and goal achievement is recognized, followers' confidence levels rise, subordinates support leaders, and leaders are seen as being more effective. According to Zhang et al. (2014), the leader's promotion of social support can also affect the views of the supporters, which is in line with the Social Influence Theory. This results in an improvement in task performance. Followers who have a stronger sense of group equality are more likely to display adaptive performance behaviors.

INDICATORS	FREQUENCY								WEIGHTED MEAN	INTERPRETATION
	1 Strongly Disagree		2 Disagree		3 Agree		4 Strongly Agree			
	F	M	F	M	F	M	F	M		
1. Promotes positive character education.	4 (6.9%)	0.07	26 (44.8%)	0.90	23 (39.7%)	1.19	5 (8.6%)	0.34	2.50	Disagree
2. Fosters a safe learning environment.	5 (8.6%)	0.09	32 (55.2%)	1.10	16 (27.6%)	0.83	5 (8.6%)	0.34	2.36	Disagree
3. Reduces discipline referrals in schools.	5 (8.6%)	0.09	24 (41.4%)	0.83	25 (43.1%)	1.29	4 (6.9%)	0.28	2.49	Disagree
4. Stresses community service.	4 (6.9%)	0.07	10 (17.2%)	0.34	40 (69.0%)	2.07	4 (6.9%)	0.28	2.76	Agree
5. Helps students feel connected to the school.	13 (22.4%)	0.22	34 (58.6%)	1.17	9 (15.5%)	0.47	2 (3.4%)	0.14	2.00	Disagree
6. Aids in the development of students' leadership skills.	5 (8.6%)	0.09	8 (13.8%)	0.28	30 (51.7%)	1.55	15 (25.9%)	1.03	2.95	Agree
7. Is a possible subject for corruption.	5 (8.6%)	0.09	16 (27.6%)	0.55	28 (48.3%)	1.45	9 (15.5%)	0.62	2.71	Agree

INDICATORS	FREQUENCY								WEIGHTED MEAN	INTERPRETATION
	1 Strongly Disagree		2 Disagree		3 Agree		4 Strongly Agree			
	F	M	F	M	F	M	F	M		
8. Is a possible subject for abuse.	3 (5.2%)	0.05	8 (13.8%)	0.28	31 (53.4%)	1.60	16 (27.6%)	1.10	3.03	Agree
9. Affects one's mental health negatively.	1 (1.7%)	0.02	15 (25.9%)	0.52	27 (46.6%)	1.40	15 (25.9%)	1.03	2.97	Agree
10. Distracts students from their academics.	7 (12.1%)	0.12	9 (15.5%)	0.31	24 (41.4%)	1.24	18 (31.0%)	1.24	2.91	Agree
11. Increases discipline referrals in schools.	3 (5.2%)	0.05	19 (32.8%)	0.66	28 (48.3%)	1.45	8 (13.8%)	0.55	2.71	Agree
12. Makes students more involved in violence.	3 (5.2%)	0.05	18 (31.0%)	0.62	23 (39.7%)	1.19	14 (24.1%)	0.97	2.83	Agree

Table 2. Levels of Agreement of the Respondents on the Implementation of Mandatory ROTC on the Positive Statements

There is an implication that ROTC does not help in strengthening the connection of students to their schools, as the respondents agreed in another indicator that ROTC distracts students from their academics. As stated by Smith et al. (2020), the cadets' added workload is a large factor that affects the students' performance in school.

For the negative statements such as indicators 7-12, the one with the highest level of agreement pertains to ROTC being a possible subject of abuse, with 81% believing that. On the other hand, the indicators with the lowest mean were about ROTC being a possible subject for corruption and how ROTC causes an increase in discipline referrals in schools, with 64% and 62% agreeing respectively. Though both are the lowest, both are still more than half of the total respondents.

Moreover, after the conduct of the Focus Group Discussion involving 12 chosen male students via fishbowl method, the students think that; (1) mandatory ROTC puts too much physical and mental burden on students, (2) mandatory ROTC is too sudden and the students are not yet ready, (3) mandatory ROTC aids in developing students' discipline and leadership skills, (4) mandatory ROTC having more cons than pros, (5) the lack of transparency about the program, and (6) the views of others that also affect the students' views.

In addition, the natural and significant target for the prevention of hazing is the ROTC. Given the respect they command on many campuses and their background in military training, ROTC can have a significant impact on the success of any program to prevent hazing (Kelly et al.,

2015). Hazing, abuse, and incidents of corruption in the ROTC are not new to the Philippines, with one of the most notable incidents the death of Mark Welson Chua, who allegedly revealed anomalies in the university's ROTC program (Adil, 2018).

Supporters assert that ROTC instills discipline and changes the behavior of misbehaving youths to help students become contributing members of society (Lutz and Bartlet, 1995). Therefore, reducing discipline referrals in schools.

After the conduct of the Focus Group Discussion, as presented at Table 4 (Appendix E), the majority of the respondents stated that a main drawback of mandatory ROTC is the mental and physical burden that is a result. An opinion from one of the participants stated that with the workload from school added with the possible workload from ROTC, a strain in the students' mental health will be a result. Another opinion stated that the students of the country were not yet ready for the sudden implementation as this batch of students were the ones who were in quarantine for more than two years with no physical social interactions. The transparency of the program is also a problem as stated by one participant. On the other hand, the students also mentioned that a good thing about mandatory ROTC is that the leadership skills of the students are further developed and discipline is nurtured. To summarize, all participants stated that there were more disadvantages than advantages.

According to Smith et al. (2020), eating disorders were prevalent in the program regardless of gender. Due to the numerous responsibilities ROTC cadets have (such as their college coursework, military

training, volunteer commitments, etc.), there is more pressure to maintain the physical fitness of cadets and activity levels in order to meet the physical demands of all military branches. The pressure to maintain weight and pass physical training requirements is similar for cadets in ROTC programs to that experienced by traditional military cadets in basic combat training; however, the addition of being a student enrolled in classes at the same time may be an additional risk factor for feeding disorders and disordered eating behaviors.

The limitations the researchers encountered in the conduct of this study is that the researchers were not able to monitor the respondents while answering. Hence, possible questions of the students were not answered accordingly. The lack of doing so resulted in answers that may have been just the student's guess or answers that were not further expanded on.

CONCLUSION AND RECOMMENDATIONS

Generally, based on the gathered results of the conducted survey questionnaire the students mostly agree with the negative statements. The results showed that 81% of the respondents believe that the mandatory ROTC program is vulnerable to abuse. Furthermore, 81% of the respondents disagree that the program makes students feel more connected to their school. The percentage that agreed was derived from the highest weighted mean of 3.03, which was 47 out of 58 respondents, and the percentage that disagreed was derived from the lowest weighted mean of 2.00, which was also 47 out of 58 respondents.

After the conduct of the survey questionnaire, the researchers conducted the Focus Group Discussion with 12 chosen male students via fishbowl method. Based on the conducted focus group discussion the factors that affect the respondents level of agreement were; (1) the students think that mandatory ROTC puts too much physical and mental burden on students, (2) mandatory ROTC is too sudden and the students were not yet ready, (3) mandatory ROTC aids in developing students' discipline and leadership skills, (4) mandatory ROTC having more cons than pros, (5) the lack of transparency about the program, and (6) the views of others that also affect the students' views.

Furthermore, the researchers recommend that as a comprehensive program, ROTC has to be contextual, community-based, and corollary to the vision and mission of the respective educational institution. Part of the ROTC, a comprehensive program has to promote basic human rights and liberties, a sense of democracy, and a sense of citizenship, and preserving national values every Filipino should reimburse. Additionally, ROTC should promote and advocate for self-actualization and community development. ROTC should be part of transformative education leading towards cultural transformation by promoting national,

cultural, and personal values. The ROTC program has to be consistent with the given curriculum of a degree program. The recommendation came from the results of the conducted Focus Group Discussion and Survey as a recommendation addressed to the NSTP ROTC program.

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