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“*Aka*” is a Hanunuo Mangyan term for “first born.” The Occidental Mindoro State College (OMSC) believes this publication is first of its kind in the MIMAROPA Region. It is an academic, multidisciplinary and faculty and expert-reviewed journal devoted to the rapid dissemination of current research. It is published annually to document the research endeavors of the students presented in the Annual Student Research Congress.

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EDITORIAL**SUSTAINING STUDENT'S RESEARCH CHARACTER**

Artemio M. Gonzales Jr., MPH, MAN

Editor-in-Chief

As academic and research institutions lay the groundwork for integrity through training and policies. It is equally important to recognize the influence of research mentoring and the academic community in upholding research integrity. Together, these factors underscore the collective responsibility of both institutions and individuals to maintain the highest standards of ethical conduct (Çelik & Razi, 2023; Huybers et al., 2020).

Research character pertains to the qualities and traits that students develop to excel in the realm of research. It comprises elements of curiosity, critical thinking, persistence, and dedication to ethical behavior, all of which serve as the foundation for a successful researcher's path. Curiosity drives the pursuit of knowledge and inspires discoveries. Critical thinking helps students discern information amid a deluge of data and ensures rigorous, ethical research. Perseverance enables students to overcome obstacles and make groundbreaking discoveries. Ethical conduct is the bedrock of credible research, emphasizing integrity and transparency. Communication skills, collaboration, and time management are essential for sharing research findings and maintaining a sustainable research journey (Amerstorfer & Von Münster-Kistner, 2021). Students became motivated by their personal interest in research, followed by the utility value of the experience (Ceyhan & Tillotson, 2020). By fostering these attributes, we enable students to evolve into future academic leaders, innovators, and effective problem solvers (Kolstoe & Pugh, 2023).

However, several challenges have arisen in research ethics and integrity promotion. Academic institutions are still dealing with several research misconduct such as fabrication, falsification, plagiarism, data mismanagement, and conflicts of interest (Alfaro-Núñez, 2022). Some explain that the occurrence of research misconduct is somehow considered a bad apple and organizational culture which happens because we think that other members of the institution or other institutions have displayed similar behavior (Haven & Van Woudenberg, 2021).

Other institutions made progress in promoting research integrity by using a closely linked 4-pillar promotion framework such as policies and regulations, institutional management, researchers' education and training, and misconduct case handling. First, policies and regulations may include guidelines for ethical conduct, data management, authorship, and conflicts of interest. Clear policies and regulations help set the standards for ethical research within an institution. Second, effective institutional management focuses on creating a culture of research integrity. This may involve promoting a climate of ethical conduct, fostering transparency, and providing resources and support for research. It can also

encompass accountability structures and mechanisms for addressing research misconduct. Third, it is important to provide researchers with the knowledge and skills necessary to conduct research with integrity. Education and training may cover topics like responsible authorship, data management, and ethical decision-making. Lastly, institutions may consider having procedures to investigate and adjudicate misconduct cases, ensuring due process and fairness, and taking appropriate actions when misconduct is substantiated (Chou et al., 2023; DuBois & Antes, 2018). Considering this framework, the role of academic institutions, government agencies, and researchers is pivotal in maintaining research integrity practices by promoting a culture of research integrity and maintaining high ethical standards in the pursuit of knowledge (Lee & Kalichman, 2016).

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RESEARCH ARTICLE

DIFFERENT AMOUNTS OF KANTUTAY (*Lantana camara*) LEAF EXTRACT AS BOTANICAL INSECTICIDE AGAINST POD BORER (*Helicoverpa armigera*) OF MUNGBEAN (*Vigna radiata*)

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ABSTRACT

This study was conducted to determine the effect of different amounts of *Kantutay* [*Lantana camara*] leaf extract as botanical insecticide against pod borer [*Helicoverpa armigera*] in mungbean [*Vigna radiata*]. It was conducted at Vegetable Production, OMSC-Murtha San Jose, Occidental Mindoro from October 14 to December 5, 2022.

A total of 20 mungbean plants were randomly assigned to five treatments with four replications, each replication has 1 plant. Plants were given the same care and management practices for 1½ months. The Completely Randomized Design (CRD) experiment was utilized and had the following treatments, T0= Control; T1 - 250g *Kantutay* + 750 ml distilled water; T2 - 500g *Kantutay* + 500 ml distilled water; T3 -750g *Kantutay* + 250 ml distilled water. While the control group was provided with recommended chemical insecticide.

A total of 200 pod borer larvae were collected from the field and introduced to 20 experimental plants with net cover to prevent pod borer larvae to getting out from experimental sites. Spraying of *Kantutay* leaf extracts begun two hours after the introduction of pod borer with the frequency of three applications at one day intervals. Mortality rates, percentage damaged leaves and percentage damaged pods were the parameters considered in the study.

Result revealed that the highest mortality rate of pod borer obtained on Treatment 3 and also registered as effective in reducing damaged leaves and damaged pods. However, this is not comparable in treatment 0 and treatment 4. The treatment with higher concentration of *Kantutay* leaf extract show higher number of mortality rate, lesser percentage of damaged leaves, and lesser percentage of damaged pods.

Keywords: *Kantutay, botanical insecticide, leaf extract, mungbean, pod borer*

INTRODUCTION

Green mungbean (*Vigna radiata L.*) is an important pulse consumed all over the world, about 8.5% of the global pulse area grown and consumed by most households in Asia, including the Philippines. Also known as an excellent source of protein, dietary fiber, minerals, vitamins, and becoming a popular functional food in promoting good health (Hou et al., 2019). In the Philippines, it is locally known as “munggo” and considered as high value crops that represents a good opportunity for farmers to earn additional income. Mungbean production requires minimal inputs and it is a short duration crop which can contribute millions of pesos to the local economy (Yap, 2018). However, production can be affected by several constraints such as erratic weather, poor management practices, use of inferior or low yielding varieties insect pest and diseases (Department of Agriculture, 2019).

On the other hand, among biotic stresses, pod borer has been reported to be one of the widest spread and destructive pests of mungbean (Joshi et al., 2018). Pod borer (*Helicoverpa armigera*) is a major mungbean pest that attack at any stage from seedlings to late pod fill and become most attractive from budding onwards (Australian Mungbean Association, 2019). According to Riaz et al. (2021) it has wide and diverse host range and causing estimated global economic losses of over 3 billion US dollars annually and possess the ability to enter diapause in order to survive adverse climatic conditions. On the other hand, Barmukh et al. (2021) stated that management of pod borer is mostly dependent on insecticide applications. However, the indiscriminate use of synthetic insecticide has led to the problem of environmental pollution, health problems, pest resurgence, insecticidal resistance in insects, and increased in cost for pest controls (Usman, et al., 2018).

Kantutay (Lantana camara) is a perennial shrub and considered to be one of the most invasive plant species worldwide. Leaves extract showed more potent effect having many phytoconstituents of medicinal value which can be exploited as eco-friendly biocontrol agents against harmful insects (Alghamdi & Basher, 2020). It is also a valuable source of biologically active compounds, and phytochemical studies including terpenoids, saponins, phenylethanoid, glycosides, and flavonoids (Elumalai et al, 2017). The pesticidal components of the triterpenes and saponins provide protection against pathogens and pests. The presence of glycosides, tannins, and sterols that wild sage contains affects only the target insects excluding the beneficial natural enemies. Alkaloids act as protective substances against the animal or insect attacks (Gonzales, 2020). This shrub is commonly found throughout the Philippines and widely grows in many parts of San Jose, Occidental Mindoro.

MATERIALS AND METHODS

Research Design

This study used the experimental method of research following layout in Complete Randomized Design (CRD).

Experimental Layout

There were five treatments and each treatment were replicated four times. The CRD is appropriate in the experiment, since; the researchers, employed a controlled environment

condition in the field by constructing an improvised greenhouse and provided net cover in each plot. This was to prevent other insects from infesting the experimental plants and to avoid pod borer larvae crossing over to different plot. The treatments and the corresponding replications were randomly assigned in the experimental unit using draw lots.

T ₁ R ₄	T ₀ R ₃	T ₂ R ₄	T ₄ R ₄	T ₄ R ₂
T ₃ R ₂	T ₀ R ₂	T ₁ R ₃	T ₃ R ₃	T ₁ R ₂
T ₂ R ₁	T ₂ R ₂	T ₀ R ₁	T ₀ R ₄	T ₄ R ₁
T ₁ R ₁	T ₂ R ₃	T ₃ R ₁	T ₄ R ₃	T ₃ R ₄

Preparation of Treatment Application

Kantutay leaves were collected at Sitio Yaw Yawi 1, Barangay Murtha, San Jose, Occidental Mindoro. Extraction was done to obtain the plant's necessary component for the production of plant based. Different concentrations were used for each of the treatment, namely; treatment 1- 250g of *Kantutay* leaves boiled in 750ml distilled water; treatment 2- 500g of *Kantutay* leaves boiled in 500ml distilled water; and treatment 3- 750g of *Kantutay* leaves boiled in 250ml distilled water. The distilled water was boiled for 20 minutes. Ten mL per plant was the application rate used in all of the *Kantutay* treatments

The boiled materials were squeezed out through a clean cloth to separate the extract from the solid materials. Subsequently, the extract was placed in a basin and prepared to be applied in the treatment. On the other hand, chemical insecticide was 10mL of diluted and applied in treatment 4.

Construction of Improvised Greenhouse

An improvised greenhouse was constructed with an area of 56 sq. m. It was made of round posts, bamboo slots and net screen. Seventeen posts were arranged inside the greenhouse following the experimental lay-out in Complete Randomized Design (CRD).

Cultural Practices

- **Potting Media Preparation:** Soil medium was collected and dried under the sunlight. Potting media was a mixture of garden soil and carabao manure at 2:1 ratio.
- **Drilling of Mungbean Seeds:** Two pieces of mungbean seeds were sowed on each sack at 4cm deep and watered to provide preliminary moisture for germination. There were two sacks on every treatment.
- **Water Management:** After sowing of mungbean seeds, adequate water was supplied to give the water requirements for growth and development of experimental plants. Watering was done twice times a week or as needed.
- **Installation of Net Enclosure:** Net screen served as a confinement of the pod borers in vivo. Each treatment was covered with garden net screen, containing two hills of mungbean in each. Low-cost materials like bamboo stick were used to serve as framework for the screen. Net screen was installed after one-week seed emergence to protect the mungbean from insect. Top of the screen can be opened and closed for the data gathering.

- **Collection and Introduction of Pod Borer:** Pod borers were collected in mungbean farms around San Jose and Rizal, Occidental Mindoro. Two hundred pod borers were collected carefully. The collected pod borers were attached to the leaves of mungbean plants to avoid stressing them. The collected pod borers were placed in a rectangular transparent container. Ten pod borers were introduced per treatment at 6:00 pm on the afternoon and was acclimatized in vivo for 2 hours. This was done at 51 days after sowing of mungbean plants.
- **Application of Kantutay Leaf Extract:** Various amounts of leaf extracts were applied in all treatments except for the T₀- Control and T₄- Chemical insecticide. These were applied late in the afternoon at 9:00 pm. After application, close monitoring for 2 hours was done to see the response of the pod borer on the insecticides applied at 51 DAS, 2nd application at 52 DAS and 3rd application at 53 DAS.

Data Collection

The following parameters were measured taken from the experimental set-up:

- Mortality Rate:** Dead larvae were counted and recorded every two hours after application of botanical insecticides. Larva that was not moving and changed its color to black was counted as dead. Observation and counting begun a day after application of botanical insecticides. Mortality rate was calculated using the following formula: $\text{total number of dead pod borer} / \text{total number of pod borer} \times 10$
- Percentage of Damaged Leaves:** This was obtained by getting all the damaged leaves caused by pod borer using graphing paper to get the percentage of damage per leaves. Percentage leaves damaged was calculated using the following formula: $\text{damaged parts per leaves} / \text{total area per leaves} \times 100$
- Percentage of Damaged pods:** This was measured by getting all the damaged pods using graphing paper to get the percentage of damaged per pods. Percentage of pods was calculated using the following formula: $\text{damaged parts per pods} / \text{total area per pods} \times 100$

Data Analysis

Various data gathered were processed using the Analysis of Variance in Completely Randomized Design (CRD) at 5% and 1% levels of significance. The Least Significant Difference (LSD) test was used to identify the significant difference between treatments means. All of the data were processed using Statistical Tool for Agricultural Research (STAR) which was developed by the International Rice Research Institute (IRRI).

RESULTS

The results demonstrate that the use of chemical insecticide (T4) was the most effective treatment in reducing mortality, the percentage of damaged leaves, and the percentage of damaged pods in kantutay plants. This treatment significantly outperformed the other treatments. Treatments involving varying concentrations of Kantutay extracts also showed positive effects, with higher concentrations generally leading to better outcomes. These findings provide valuable insights into pest control strategies for kantutay plants and may have implications for broader agricultural practices.

Table 1. Effect of different amounts of *Kantutay* leaf extract as botanical insecticide against pod borer in mungbean.

Treatments	Mortality	Percent damaged leaves	Percent damaged pods
T0 - Control	7.5 ^d	26.07 ^a	57.20 ^a
T1 - 250g <i>Kantutay</i> + 750ml distilled water	25.00 ^c	17.25 ^b	38.20 ^b
T2 - 500g <i>Kantutay</i> + 500ml distilled water	35.00 ^{bc}	13.02 ^c	35.13 ^{bc}
T3 -750g <i>Kantutay</i> + 250ml distilled water	45.00 ^b	10.41 ^c	23.43 ^c
T4 - Chemical insecticide	70.00 ^a	4.89 ^d	7.21 ^d
F-value	18.34	49.64	15.11
P-value	0.000	0.000	0.000
Coefficient of Variation	29.80%	15.75%	29.55%

DISCUSSIONS

Mortality Rate

Result revealed that the highest mortality rate of pod borer was observed in T4 (chemical insecticide) with a mean of 70.00 percent. Superiority of T4 in terms of killing effect could be attributed to its highly concentrated toxic substance. Thus, the pod borer in the treatment 4 was controlled.

On the other hand, different amounts of *Kantutay* leaf extract could also control pod borer but of lesser efficacy as compared with chemical insecticide. Treatment 3 with 750g *Kantutay* + 250ml distilled water obtained a mean of 45.00% percent mortality rate. This was followed by T2 with 500g *Kantutay* + 500ml distilled water with a mean of 35.00 percent and T1 with 250g *Kantutay* + 750ml distilled water with a mean of 25.00 percent mortality rate of pod borer. This result indicates that as the amount of *Kantutay* leaf extract increases, its efficacy to kill pod borer also increases due to higher concentration of its toxic substance. This is supported by Murugesan et al. (2016) that *Lantana camara* leaves extract had a presence of triterpenoids, steroids, alkaloids, flavonoids and tannins, which expressed potent insecticidal

behavior. On the other hand, T0 (Control) got the lowest mortality rate with mean of 7.50% for having no application of *Kantutay* leaf extracts and chemical insecticides. Having no application of leaf extract, the mortality is attributed to external factors such as presence of ants as biological control agent.

Statistically, there is a significant difference between the treatment means. T1 and 2 have comparable effect and similar result was observed between T2 and T3. On the other hand, T0 and T4 have significant difference among all treatment means. Moreover, treated plants with *Kantutay* leaf extract have higher in effect compared to control but lesser to chemical insecticide.

The result shows that the computed F-value of 18.34 is higher than critical value of 4.89 at 1% level of significance. Therefore, the null hypothesis is rejected. Indicating that there is a significant difference in the effect of different amounts of *Kantutay* leaf extract against pod borer. These findings support the study of Dusane et al. (2018) that *Kantutay* leaf extracts at their highest doses and longer exposure time shows very high mortality rate.

Percent Damaged Leaves

The percentage of damaged leaves by pod borer larvae three days after application of *Kantutay* leaf extract shows that T4 (chemical insecticide) obtained the less damaged leaves with a mean of 4.89% due to its highly concentrated toxic substance. On the other hand, different amounts of *Kantutay* leaf extract could also control pod borer but of lesser efficacy as statistically compared with chemical insecticide. T3 obtained a mean of 10.41 percent damaged leaves, followed by T2, with a mean of 13.02 percent damaged leaves, while T1 got a mean of 17.25 percent. As gleaned in the table, the highest percentage of damaged leaves was observed in T0 (control) with a mean of 26.07 percent, since there is no application of either chemical or *Kantutay* leaf extract in this treatment. Statistically, there are significant difference among treatment means. The effects of *Kantutay* leaf extract on pod borer resulted in the interruption in their feeding activity. As amounts of botanical insecticide increase, the lesser is the percentage of damaged leaves. This was supported by the findings of Gonzales (2020) that *Kantutay* leaves have chemical constituents contributed to the insecticidal property.

Statistical analysis revealed that there is a highly significant difference among the treatments in terms of effect in reducing the percentage of damaged leaves. The computed F-value of 49.64 is higher than critical value of 4.89 at 1% level of significance. This implies that the analysis of variance detects that there is a significant difference between and among the treatment means. This indicates that the null hypothesis on the effect of different amounts of *Kantutay* leaf extract against pod borer in terms of percent damaged leaves is rejected. Based on the observation, pod borer was inactive and immobile when sprayed with *Kantutay* leaf extract. This finding corroborates to the study of Melanie et al. (2020) that antifeedant effect of *Kantutay* extract can deter the larval feeding activity.

Percent Damaged Pods

Percentage damaged pods in the control Treatment got the highest mean of 57.20 since there is no application of either chemical insecticide or *Kantutay* leaf extract. On the other

hand, the percentage damaged pods were reduced in Treatment 1 with a mean of 38.20 percent, Treatment 2 with a mean of 35.13 percent and Treatment 3 with a mean of 23.43 percent.

As expected, Treatment 4 (chemical insecticide) obtained the lowest percentage damaged pods with a mean of 7.21 percent. Furthermore, the comparison of treatment means using LSD revealed that those treated with *Kantutay* leaf extract, Treatments 1 and 2 had a comparable effect in percent damaged pods. Treatments 2 and 3 had also a comparable effect. The reduction in damaged pods was highly significant in contrast to the damaged pods in the control.

As revealed by the analysis of variance using complete randomized design, there is a highly significant difference among treatment means in terms of percentage damaged pods as affected by different amounts of *Kantutay* leaf extract. This is supported by the calculated F-value of 15.11 which is higher than the critical value of 4.89 at 1% level of significance. Thus, the null hypothesis is rejected. This is supported by Melanie et. al (2019) the phytochemical constituents of *L. camara* leaf extract are potentially good antifeedant activity. They also claim on their other study that antifeedant can reduce the attack of pest insects on host plants Melanie et. al (2020).

CONCLUSIONS

Effects of different amounts of *Kantutay* leaf extracts as botanical insecticide against pod borer in mungbean are found highly significant in mortality rate, percentage of damaged leaves, and percentage of damaged pods. Furthermore, the treatment with higher concentration of *Kantutay* leaf extract show higher number of mortality rate, lesser percentage of damaged leaves, and lesser percentage of damaged pods.

Treatment 3 containing the mixture of 750g *Kantutay* + 250ml of distilled water effectively control pod borer on mungbean.

Application of different amounts of *Kantutay* leaf extract have significant difference in the effect from the control and chemical insecticide in terms of mortality rate, percentage of damaged leaves, and percentage of damaged pods.

Based on the highly significant findings of this study, it is recommended that *Kantutay* leaf extracts be considered for practical implementation in pest management strategies for mungbean cultivation. Specifically, the use of 750g *Kantutay* leaf extract mixed with 250ml of distilled water, as demonstrated in Treatment 3, is encouraged for effective pod borer control. Further research and field trials should be conducted to validate the practical application of *Kantutay* leaf extracts on a larger scale and in different geographical regions to assess their efficacy under diverse environmental conditions. Additionally, studies on the long-term effects of *Kantutay* leaf extracts and their potential impact on non-target organisms and the ecosystem should be conducted to ensure sustainable and environmentally responsible pest management practices. Finally, farmers and agricultural practitioners are encouraged to explore the adoption of *Kantutay* leaf extracts as a safer and more ecologically sound alternative to chemical insecticides in mungbean cultivation.

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RESEARCH ARTICLE

**PRODUCTIVITY AND PROFITABILITY OF NATIVE PIGS (*Sus Scrofa*)
SUPPLEMENTED WITH GOLDEN APPLE SNAIL
(*Pomacea Canaliculata*) SILAGE**

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ABSTRACT

This experiment following the Completely Randomized Design was conducted to determine the productivity and profitability of native pigs (*Sus scrofa*) supplemented with Golden Apple Snail (GAS) silage. It was conducted at Sitio Baulan, Murtha, San Jose, Occidental Mindoro from July 2022 to December 2022. Twenty experimental native pigs were used. These were randomly distributed in four treatments with five replications with one piglet per experimental unit. Native pigs were supplemented with GAS silage following the treatments. T0 = rice bran + forage, T1 = rice bran + 5% of GASS + forage, T2 = rice bran + 10% of GASS + forage and T3 = rice bran+ 15% of GASS + forage.

Results revealed that inclusion of 15% GAS silage (T3) improved native pigs' productivity in terms of gain in weight and feed conversion efficiency. It also revealed that different amounts of GAS silage increased the profitability of native pigs in terms of net income and return on investment (ROI).

Fifteen percent (15%) inclusion of GASS on rice bran is therefore recommended. Also, Follow-up studies to include meat yield and quality should be undertaken.

Keywords: *golden apple snail, silage, native pigs, productivity, profitability*

INTRODUCTION

One of the common breeds of pigs raised in backyard farms is the Philippine native pigs [*Sus scrofa philippinensis*]. It is a small black pig with straight to low-set back and short legs and has a long snout and small and erect ears (Manipol et al., 2014). Since Philippine native pigs are well-adapted to the country's environmental condition, they do not require expensive housing and minimal care, which makes them easier and cheaper to raise than commercial breeds (Guerrero III, 2016).

According to DOST-PCAARRD (2017), native pig provides much importance in terms of additional income, high quality protein food, and socio-cultural and economic services; particularly during cultural celebrations and ceremonies. Other characteristics of native pig are its adaptability to local environment conditions; apparent resistance to diseases; and the unique texture and taste of its meat. There are enough reasons to invest on research and development (R&D) initiatives to improve the country's native pig.

In Occidental Mindoro, one of the best characteristics of native pigs is its ability to use local feed sources such as rice bran, cassava and taro root to survive (Santiago, 2018). According to the findings, using rice bran can influence and contribute to the growth and weight of native pigs. However, several farmers are still hesitant to engage in native pig production because of their perception that it is not a profitable venture (Cabriga, 2016). However, lechon or whole roasted pig is still the most popular dish and an important status symbol for large family gatherings. Native hogs are said to have the best flavor, giving free-range farmers having opportunities to expand both locally and globally (Yan, 2020). The province of Quezon, being the biggest source of native pigs for the lechon market, shipped out 67,227 heads in 2014. This includes pigs of both local and external origins. Of this total, 60,320 heads came from various municipalities while 6,907 heads were procured by seven Quezon traders from Burias Island, Masbate (1,835 heads), Marinduque (4,790 heads), and Mindoro (282 heads) (Bureau of Agricultural Research, 2014). According to Jawa et al. (2020), which showed that adding golden snail meat flour 15% (R3) in broiler chicken rations tend to give the best results on feed conversion with an average of 1.87. This is because the consumption of rations in treatment R3 is lower than other treatments so that it can affect the feed conversion efficiency value. The giving of golden snail meat flour in broiler chicken rations has a very significant effect on increasing weight gain, final body weight, and decreasing Feed Conversion Ratio (FCR) and significantly influencing the consumption of rations, giving GAS meat flour in rations can increase weight gain and final body weight of pigs.

According to Kaensombath (2005), making silage from apple snail meat has been described as a low cost and simple method for small-scale production because snail meat contains mostly protein and minerals, the addition of a source of carbohydrates such as molasses or rice bran is required for making good silage. Golden apple snail, though considered a pest in the Philippines, may be made beneficial through fermentation. In that way, golden apple snail will not be famous as being detrimental, but instead, it can be useful in the near future. Fermentation profile was used to predigest the fibrous protein in golden apple snail meat and preserve the golden apple snail nutritional profile (Rattanaporn et al., 2006). Supplementation of fermented golden apple snail has a great potential in the production

performance of native chicken [Buctot Jr., 2018]. However, during the review, it was found out that there was limited document that provide information with regards to the productivity of native pigs of Occidental Mindoro supplemented with fermented golden apple snail. It is in this context that this study was conceptualized to determine the productivity and profitability of native pigs supplemented with Golden Apple Snail Silage [GASS].

Generally, this study aimed to determine the productivity and profitability of native pigs supplemented with GASS as protein supplement. Specifically, this study intended to: (a) determine the productivity of native pigs supplemented with golden apple snail silage, in terms of gain in weight; feed consumption; and feed conversion efficiency; (b) Analyze the profitability level of native pigs supplemented with golden apple snail silage, in terms of: net income; and return on investment; (c) Find out the best inclusion rate of golden apple snail silage.

MATERIALS AND METHODS

Materials

Table 1a presents the materials that were used in the course of this research. It includes the materials' quantity, unit, and description.

Table 1. Materials used in the study.

Quantity	Unit	Particular
20	Head	Piglets (one month old native, 2-3 kilos)
31	Kilogram	Golden Apple Snail
31	Kilogram	Molasses
11	Bag	Rice bran (50kg per bag)
1	Piece	Digital weighing scale (5000g capacity)
1	Piece	Crane scale (50kg capacity)
3	Piece	Pail (10L capacity)

Research Design

This study was experimental in nature. It followed the Completely Randomized Design [CRD] to determine the productivity of native pigs supplemented with golden apple snail silage. There were four treatments replicated five times and one piglet in every experimental pen, with a total of 20 piglets.

Experimental Lay out

Twenty pens were used in this study. It was separated into two sections, each division had 10 experimental units which served as treatment per replication.

T₃R₅	T₂R₄	T₃R₃	T₂R₃	T₀R₄	T₁R₁	T₀R₃	T₂R₂	T₃R₂	T₁R₃
T₀R₅	T₃R₄	T₁R₅	T₁R₂	T₁R₄	T₂R₅	T₂R₁	T₃R₁	T₀R₂	T₀R₁

Fig. 1. Experimental layout.

Preparation of Golden Apple Snail Silage

The procedure used by Barroga (2004) was adapted in the preparation of Golden Apple Snail (GAS) silage. The golden apple snails were collected from the pond and rice field in Central, San Jose, Occidental Mindoro. The GASS was prepared by boiling for 30 minutes, then removed meat using a stick. The GAS meat was mixed with molasses and allowed to ferment for 30 days.

Experimental Management Practices

Housing Preparation

The experimental house of the native pigs was made up of locally available materials. Partitions walls were made up of bamboo while roof was *burri* leaves. The housing was divided into 20 experimental pens with alley at the middle. Each experimental pen has a measurement of 4 x5 feet with concrete feeding and watering through.

Procurement of Stock

Native piglets were procured from the Indigenous people of Bato-Ili, Monteclaro, San Jose, Occidental Mindoro. Experimental piglets were active, weighed about 2-3 kilos, 35- 45 days of age and with no signs of diseases. Piglets were acclimatized for seven before they were randomly distributed to the treatments and replicates.

Management Practices

Feeds and Feeding

The same care and management were given to test animals except for the amount of GAS Silage. On the first 7 days, experimental native pigs were fed with rice bran. On the 8th day, GAS silage was introduced using the following ratio: Control group pure rice bran + forage, T1= rice bran+5% GASS + forage, T2= rice bran+10% GASS + forage, and T3 = rice bran+ 15% GASS + forage.

Water Management

All experimental native pigs were given clean water. Water was supplied frequently to make the native pigs hydrated at all times due to the warm environmental conditions. All watering trough were regularly cleaned.

Diseases and Pest Management

Native pigs were dewormed twice using commercial dewormer. Oral anthelmintic was given 3 days upon arrival of the piglets and three weeks before the end of study. No vaccination and other vet drugs were administered.

Sanitation and Waste Management

The experimental area was cleaned daily using cleaning materials. Shovel was used to collect the feces and it were placed in the composting pit covered with other organic litter and rice hull. Hence, the native pig house was far away from household to avoid distraction and to minimize the unpleasant odor.

Data Gathering

The following was carefully observed and recorded to serve as basis for analysis and evaluation of productivity and profitability of native pigs supplemented with golden apple snail silage.

1. **Initial weight** – This was collected by getting the weight of native pigs before the start of experimentation with the use of crane scale.
2. **Final Live weight** – This was obtained by getting the total weight of native pigs after 120 days of experimentation.
3. **Gain in Weight** – This was obtained by subtracting the initial weight from the final weight of the native pigs after 147 days of growing period. Mathematically, it is expressed as: Gain in weight = Final live weight – Initial weight
4. **5. Feed Consumption (FC)** – This was obtained daily by getting the difference between the amounts of feeds given with the amount of feed left. This was obtained using the weighing scale and was recorded in kilograms. Mathematically, it is expressed as: FC = Amounts of feeds given – Amounts of feeds left
5. **Feed Conversion Efficiency** – This was obtained by dividing the total amount of feeds consumed with the gain in weight. Mathematically, it is expressed as: FCE = Total amount of feed consumed / Total gain in weight
6. **Net Income.** It refers to the profit after four months. In this study, it was calculated by getting the difference of the total expenses with the total sales.
7. **Return on Investment.** It refers to the financial ratio that measures the gain or loss from an investment in relation to the initial investment. This often used to determine the profitability of an expenditures. In this study, proponents used this formula: ROI = Net Income / Total Expenses x 100%

RESULTS

Gain in Weight

Table 2a presents the gain in weight of the native pigs supplemented with golden apple snail silage for the period of 147 days. It can be noticed from the table that in experimental native pigs in Treatment 3 provided with rice bran + 15% golden apple snail silage registered highest mean gain in weight of 11.52 kg. It was followed by T1, and T2 with the means of 10.88 kg, 9.90 kg respectively. On the other hand, Control group treated with rice bran + forage registered the lowest mean of 8.26 kg. This suggests that the inclusion of rice bran + 15% of golden apple snail silage improve the gain in weight of the native pigs. This can be attributed to the fact that golden apple snail silage is rich in protein and other nutrients which are needed by pigs for them to grow.

Table 2a. Gain in weight (kg) of experimental native pigs supplemented with golden apple snail silage for the period of 147 days.

Treatments	Gain in Weight					Treatment Total	Treatment Mean
	R ₁	R ₂	R ₃	R ₄	R ₅		
T ₀ (RB+forage)	10.2	7.8	7	8	8.3	41.3	8.26
T ₁ (RB+5% GASS+forage)	11.4	13.6	8.7	13.6	7.1	54.4	10.88
T ₂ (RB+10%GASS+forage)	9.7	8.3	10.2	11.2	10.1	49.5	9.90
T ₃ (RB+15%GASS+forage)	11.6	10	12.6	13	10.4	57.6	11.52
Grand Total						202.8	
Grand Mean							10.14

Feed Consumption

Table 3a presents the feed consumption of experimental native pigs applied with different amounts of golden apple snail silage for the period of 147days. It can be observed that native pigs in Treatment 3 rice bran +15% GASS + forage has the highest feed consumption with a mean of 42.44 kg. This was followed by Treatment 2 rice bran +10% GASS + forage with a mean of 42. 20 kg, and control group rice bran + forage obtained a mean of 41.40 kg. On the other hand, least feed consumption was from Treatment 1 rice bran + 5% GASS + forage with a mean of 41. 31 kg. This suggests that the inclusion of rice bran + 15% of golden apple snail silage slightly improved the appetite of the native pigs.

Table 3a. Feed consumption (kg) of experimental gain in weight (kg) of experimental native pigs supplemented with golden apple snail silage for the period of 147 days.

Treatments	Feed Consumption					Treatment Total	Treatment Mean
	R ₁	R ₂	R ₃	R ₄	R ₅		
T ₀ (RB+forage)	41.38	41.71	41.30	41.18	41.45	207.02	41.40
T ₁ (RB+5%GASS+forage)	41.96	42.41	38.58	42.26	41.33	206.56	41.31
T ₂ (RB+10%GASS+forage)	42.18	41.44	42.64	42.69	42.06	211.02	42.20
T ₃ (RB+15% GASS+forage)	42.42	42.21	42.76	42.43	42.37	212.19	42.44
Grand Total						836.79	
Grand Mean							41.84

Feed Conversion Efficiency (FCE)

Table 4a presents the feed conversion efficiency of experimental native pigs applied with different amounts of golden apple snail silage for the period of 147 days. As presented in Table 4a, results revealed that native pigs in Treatment 3 applied with rice bran +15% golden apple snail silage +forage had the highest feed conversion efficiency of 3.72. This takes a significant difference with other treatments. Further, Treatment 1 rice bran +5% golden apple snail silage + forage registered the mean of 4.03 which is second to the highest FCE. On the other hand, control group registered the lowest feed conversion efficiency with the mean of 5.08 which is comparable to the Treatment 2 rice bran + 10% golden apple snail silage + forage

with a mean of 4.30. This implied different amount of GASS increased and improved the FCE of experimental native pigs.

Table 4a. Feed conversion efficiency (kg) of experimental native pigs supplemented with different amounts of GASS for the period of 147 days.

Treatments	Feed Conversion Efficiency					Treatment Total	Treatment Mean
	R ₁	R ₂	R ₃	R ₄	R ₅		
T ₀ (RB+forage)	4.06	5.35	5.90	5.15	4.99	25.44	5.08 ^a
T ₁ (RB+5% GASS+forage)	3.68	3.12	4.44	3.11	5.82	20.16	4.03 ^b
T ₂ (RB+10% GASS+forage)	4.35	4.99	4.18	3.8	4.16	21.49	4.29 ^{ab}
T ₃ (RB+15% GASS+forage)	3.66	4.22	3.39	3.26	4.07	18.61	3.72 ^b
Grand Total						85.72	
Grand Mean							4.28

ab= Means with the same letter are not significantly different.

Net Income

Table 5a presents the net income of experimental native pigs as affected by different amounts of GASS. It can be noted that Treatment 3 attained the highest net income (PhP 742.70). This was followed by Treatment 1 and Treatment 2, which obtained (PhP707.15) and (PhP406.46) respectively. On the other hand, control group (PhP81.44) gained the lowest net income. This implies that T₃, T₁ and T₂ is higher than T₀ (control). It indicates that T₃ (9.11 times) higher than T₀. It was followed by T₁ (8.68 times) and T₂ (4.99 times) respectively. This means that different amounts of GASS was profitable. Though expenses are higher, it ensures higher returns.

Table 5a. Net income (PhP) of experimental native pigs supplemented with golden apple snail silage.

Treatment	Sales	Expenses	Net Income (PhP)
T ₀ = rice bran + forage	PhP11,340.00	PhP10,932.82	81.44
T ₁ = rice bran + 5% GASS +forage	PhP14,595.00	PhP11, 059.24	707.15
T ₂ = rice bran + 10% GASS+ forage	PhP13,230.00	PhP10, 597.66	406.46
T ₃ = rice bran + 15% GASS+forage	PhP15,036.00	PhP11, 322.48	742.70

Note: Cost of Native pigs per kg- live weight (PhP210.00)

Return on Investment

Return on Investment is determined by dividing the net income by the total expenses and multiplied by 100%. Table 5b presents the Return on Investment (ROI) of experimental native pigs supplemented with golden apple snail silage. It can be noted that the Treatment 3 attained the highest ROI (32.80%). This was followed by Treatment 1 (31.97%), Treatment 2 (18.15%) while Control group gained the lowest ROI which is (3.72%).

Table 5b. Return on Investment (ROI) of experimental native pigs supplemented with golden apple snail silage.

Treatment	Net Income (PhP)	Return on Investment (%)
T ₀ = rice bran + forage	81.44	3.72
T ₁ = rice bran + 5% Golden Apple Snail Silage + forage	707.15	31.97
T ₂ = rice bran + 10% Golden Apple Snail Silage + forage	406.46	18.15
T ₃ = rice bran + 15% Golden Apple Snail Silage + forage	742.70	32.80

The Analysis of Variance in CRD (Table 2b) for the gain in weight as affected by different amounts of GASS revealed no significant difference among treatment means. The computed F- value of 3.15 is lower than the critical F- value of 3.24 at 5% level of significance, therefore, it failed to reject the null hypothesis. This implied that different amounts of GASS is the same effect with the control.

Table 2b. Analysis of Variance in Completely Randomized Design for gain in weight of experimental native pigs supplemented with golden apple snail silage for the period of 147 days.

Source of Variation	Degree of Freedom	Sum of Square	Mean Square	Computed F-value	F critical
Treatment	3	30.22	10.07	3.15 ^{ns}	3.24
Error	16	51.09	3.19		
Total	19	81.31			

ns = not significant; CV = 17.62%

However, the Analysis of Variance in Completely Randomized Design (Table 3b) for the feed consumption as affected by different amounts of golden apple snail silage revealed no significant difference among treatment means. It is indicated by the computed F- value of 2.26 which is lower than the critical F- value of 3.24 at 5% level of significance. Therefore, it failed to reject the null hypothesis. This implied that different amounts of golden apple snail silage did not affect to the experimental native pigs.

Table 3b. Analysis of Variance in Completely Randomized Design for feed consumption of experimental native pigs supplemented with golden apple snail silage for the period of 147 days.

Source of Variation	Degree of Freedom	Sum of Square	Mean Square	Computed F-value	F critical
Treatment	3	4.80	1.60	2.26 ^{ns}	3.24
Error	16	11.33	0.71		
Total	19	16.13			

ns = not significant; CV = 2.01%

Table 4b shows the ANOVA for feed conversion efficiency. It registered a calculated F-value of 3.26 which is higher than the critical value of 3.24 at 5 % level of significance. Thus, the null hypothesis is rejected. This indicates that feed conversion efficiency was influenced by the different amounts of GASS in experimental native pigs. This implies that T3 (rice bran + 15% golden apple snail silage + forage) showed better FCE. The findings corroborated with the study of Jawa, Suwitari, & Sanjaya (2020), that adding GAS meat flour 15% (R3) in broiler chicken rations tends to give the best results on feed conversion. This is because the consumption of rations in T3 is lower than other treatments so that it can affect the FCE value. The giving of GAS meat flour in broiler chicken rations has a very significant effect on increasing weight gain, final body weight, and increasing FCR (Feed Conversion Ratio) and significantly influencing the consumption of rations, giving GAS meat flour in rations can increase weight gain and final body weight.

Table 4b. Analysis of Variance in Completely Randomized Design of FCE of experimental native pigs supplemented with GASS for the period of 147 days.

Source of Variation	Degree of Freedom	Sum of Square	Mean Square	Computed F-value	F critical
Treatment	3	5.14	1.72	3.26*	3.24
Error	16	8.43	0.09		
Total	19	13.57			

*significant; CV = 16.93%

DISCUSSION

The findings presented in this study offer valuable insights into the effects of supplementing native pigs with golden apple snail silage (GASS) on various parameters relevant to pig farming. These findings have implications for both small-scale and commercial pig production.

The observed increase in weight gain among native pigs when supplemented with GASS, particularly at a 15% inclusion rate, suggests that GASS can be considered an effective dietary component for enhancing the growth of native pigs. The improved weight gain can be attributed to the protein and nutrient content of GASS, which complements the dietary requirements of the pigs for growth. This finding supports the notion that GASS silage is a valuable resource for pig farmers looking to improve the performance of their animals (Cromwell, 2015).

The study also revealed that native pigs fed a diet including GASS showed slightly increased feed consumption, indicating improved appetite. This suggests that GASS can have a positive impact on the palatability of the diet. Enhanced feed intake is crucial for meeting the nutritional demands of pigs, especially in intensive production systems. The increased feed consumption in the presence of GASS may contribute to the observed weight gain, making it an advantageous feed supplement for pig farming (Rodrigues et al., 2022).

Treatment 3, which included rice bran and 15% GASS, demonstrated the highest FCE. This finding is significant as FCE is a critical parameter in pig farming. A lower FCE value

indicates that pigs are converting feed into body weight more efficiently, which is a desirable trait for economic and sustainable pig production. The results suggest that the inclusion of GASS in pig diets, particularly at a 15% rate, can significantly improve the FCE of native pigs, potentially reducing feed costs and environmental impact (Patience et al., 2015).

While this study focused on native pigs, the positive impact of GASS supplementation on weight gain, feed efficiency, and economic returns has broader implications for livestock farming. These findings suggest that GASS can be a beneficial feed supplement for other livestock species, potentially improving overall production efficiency and profitability (Delsart et al., 2020). The study's results align with previous research, such as the work of Jawa et al. (2020), which supports the notion that GASS can improve feed conversion and weight gain in livestock. This consistency reinforces the validity of the findings and their practical applicability. The findings of this study underscore the potential benefits of incorporating golden apple snail silage into the diets of native pigs. The improved weight gain, feed efficiency, net income, and ROI associated with GASS supplementation make it a promising option for pig farmers seeking to enhance the performance and profitability of their operations. These findings contribute to the growing body of knowledge on alternative and sustainable feed resources for livestock and highlight the potential of GASS in livestock farming. Further research and on-farm trials are recommended to confirm and extend these findings, particularly in different pig production systems and regions.

While the findings of this study offer valuable insights into the potential benefits of supplementing native pigs with golden apple snail silage (GASS), it is essential to acknowledge several limitations that may affect the generalizability of the results. This study focused exclusively on native pig populations and their response to GASS supplementation over a 147-day period. The results may not fully represent the effects of GASS on other pig breeds or longer-term feeding scenarios. Therefore, caution should be exercised when extrapolating these findings to diverse pig populations and extended production cycles. The study did not account for potential environmental variability, such as climatic conditions, which could influence pig performance and feed requirements. Different regions and seasons may yield varying results when implementing GASS in pig diets. Thus, the outcomes presented here may not be universally applicable and should be interpreted within a specific context. In light of these limitations, it is crucial for future research to expand the scope, consider environmental variability, and investigate the practical application of GASS in diverse pig farming settings. This will help provide a more comprehensive and realistic assessment of the impact of GASS supplementation on native pigs and other livestock species, ultimately contributing to more informed and context-specific recommendations for livestock management practices.

CONCLUSIONS

Considering the pertinent findings, the researchers drew several conclusions regarding the impact of golden apple snail silage on the productivity and profitability of raising native pigs. Firstly, it was observed that the utilization of varying amounts of golden apple snail silage had a positive effect on the feed conversion efficiency (FCE) of the native pigs, contributing to improved productivity. Secondly, the inclusion of different quantities of golden apple snail silage

was found to enhance the overall profitability of raising native pigs. Notably, the study identified that a 15% inclusion rate of golden apple snail silage emerged as the most optimal, suggesting that this level of incorporation yielded the best results in terms of both productivity and profitability in native pig farming. These findings have significant implications for optimizing the utilization of golden apple snail silage in the swine industry, promoting economic sustainability and efficient resource management.

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RESEARCH ARTICLE

**LIVED EXPERIENCE OF LGBTQIA+ STUDENTS OF OCCIDENTAL
MINDORO STATE COLLEGE**

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ABSTRACT

Limited research on this topic has left a significant knowledge gap regarding the LGBTQIA+ sector. Consequently, this study was undertaken to delve deeper into the experiences of LGBTQIA+ students at Occidental Mindoro State College, seeking answers regarding their acceptance, challenges in expressing their gender identity, and the support available to them.

This descriptive phenomenological study involved nine LGBTQIA+ respondents, selected using a purposeful sampling method. The analysis of their responses revealed four key themes: the confidence of LGBTQIA+ students in expressing their gender, the feeling of acceptance among LGBTQIA+ students, the desire for acceptance from others, and the challenges LGBTQIA+ students face in terms of gender expression, perception, and religious beliefs. These experiences also influence their behavior and interactions, as well as expose them to various forms of discrimination.

Furthermore, the study underscores the significance of the school environment in fostering a sense of love, care, and support for LGBTQIA+ students. It plays a pivotal role in shaping their characters and behavior, emphasizing the importance of inclusive educational settings in facilitating positive experiences for these individuals. This research sheds light on both the positive and negative aspects of LGBTQIA+ students' lives, contributing to a better understanding of their interactions with the wider community and their unique challenges.

Keywords: *LGBTQIA+, gender expression, acceptance, support, lived experiences*

INTRODUCTION

Having a school that creates a safe and supportive learning environment for all students, and having caring and accepting parents are especially important. Positive environments can help all youth achieve good grades and maintain good mental and physical health. For youth to thrive in schools and communities, they need to feel socially, emotionally, and physically safe and supported (Mowen, 2013).

As reflected in the study of Human Right Watch in 2017, schools should be safe places for everyone. In the Philippines however, students who are lesbian, gay, bisexual, and transgender (LGBT) too often find that their schooling experience is marred by bullying, discrimination, lack of access to LGBT-related information, and in some cases, physical or sexual assault. These abuses can cause deep and lasting harm and curtail students' right to education, protected under Philippine and international law. The Social workers are responsible to promote policies, laws, and programs that affirm, support, and value LGBTQ individuals, families, and communities (Thoreson, 2023). Mistreatment that students faced in schools was exacerbated by discriminatory policies and practices that excluded them from fully participating in the school environment. Schools impose rigid gender norms on students in a variety of ways for example, through gendered uniforms or dress codes, restrictions on hair length, gendered restrooms, classes, and activities that differ for boys and girls, and close scrutiny of same-sex friendships and relationships (Scheitle et al., 2021).

In light of this compelling body of evidence elucidating the adverse repercussions of childhood bullying, and considering the substantial amount of time children typically spend in the company of their peers, significantly surpassing their interactions with parents prior to reaching the age of 18, it is rather remarkable that childhood bullying has not garnered greater prominence as a paramount subject within the domain of public health concern, particularly in the context of scientific discourse. Bullying by peers has been mostly ignored by health professionals but should be considered as a significant risk factor and safeguarding issue (Wolke & Lereya, 2015).

The widespread and systematic human rights violations based on sexual orientation, gender identity, and homosexuality persist in the Philippines. Rights policy emphasized that the arrests, harassment, and discrimination faced by lesbian, gay, bisexual, and transgender (LGBT) people in the Philippines demonstrate the urgent need for the Government of the Philippines to act. They further stressed that LGBT persons are entitled to their full rights, in order to protect access and enjoyment of these rights the Government of the Philippines must take positive steps to repeal discriminatory laws and combat violence targeted as LGBT individuals. There is an urgent need for the Committee to take appropriate action to ensure LGBT people can enjoy the rights within the Convention to which they are entitled (Abesamis & Alibudbud, 2023).

In the context of Occidental Mindoro State College, positive actions have been implemented to safeguard the needs for equal treatment of the members of the LGBTQ. This is reflected in the inclusion of topics related to Gender Awareness Development (GAD) in the syllabuses and distance learning materials of the students. However educational and positive these actions may be, still there is a need for a deeper study and analysis of the lived

experience and support received by the LGBTQIA+ member-students of OMSC. Thus, the initiative of this study.

MATERIALS AND METHODS

Research Design

The study employed a descriptive phenomenology research design, based on the philosophical framework of Edmund Husserl, to investigate and elucidate the lived experiences of individuals, recognizing their construction of meaning within both their personal and social contexts.

Study Site

This study was conducted in Occidental Mindoro State College Main Campus. The Occidental Mindoro State College is the lone state college in the province of Occidental Mindoro. Its Main Campus is in Labangan Poblacion, San Jose, Occidental Mindoro. Considering the diverse population and gender of students residing at the said campus it is seen by the researchers perfect to conduct a study.

Respondents of the Study

This study comprised nine (9) participants selected from the college level of Occidental Mindoro State College, Main Campus, employing a purposeful sampling technique, which is a form of non-probability sampling involving the researcher's judgment in participant selection. All participants in this study are members of the LGBTQIA+ community and are currently enrolled at Occidental Mindoro State College.

Research Instrument

In this study used semi-structured interview questionnaires validated by experts in the field. The interview had an interaction where verbal questions were posed by an interviewer to elicit verbal responses from an interviewee and collect facts and information. The interviewer does not strictly follow a structured list of questions; instead, an open-ended question was used, allowing for a deeper discussion with the interviewee rather than a straightforward question and answer format (McIntosh & Morse, 2015).

Data Collection

The data collection run from March to May 2022 utilizing the face to face and virtual platform in interviewing the participants through the use of semi-structured interviews by Thomas Groenewald which relies on asking question as basis of facts. Moreover, the researchers also secured a permission to the college deans and informed consent to clients in conducting the interview.

Ethical Consideration

Participation to the study is voluntary and withdrawal of the participants in the conduct of the data gathering is allowed. Reinforcement of confidentiality to the participants personal

information and responses. Permission to the institution and informed consent to the participants were also secured. Researchers also applied the observance of safety protocols through the wearing of facemask and the practice of social distancing of each participant.

Data Analysis

The data collected by the researchers through audio recording and video recording were extracted and scrutinized through the use of explicitation process it has five 'steps' or phases, which are: Bracketing and phenomenological reduction, Delineating units of meaning, Clustering of units of meaning to form themes. Summarizing each interview, validating it and where necessary modifying it, and Extracting general and unique themes from all the interviews and making a composite summary. After the transcript of the interview was examined and checked.

With the following steps of the Colaizzi process for phenomenological data analysis was utilized to analyzed and interpret the data (Colaizzi, 1978; Morrow et al., 2015). (1) Each transcript should be read and re-read in order to obtain a general sense about the whole content. (2) For each transcript, significant statements that pertain to the phenomenon under study should be extracted. These statements must be recorded on a separate sheet noting their pages and lines numbers. (3) Meanings should be formulated from these significant statements. (4) The formulated meanings should be sorted into categories, clusters of themes, and themes. (5) The findings of the study should be integrated into an exhaustive description of the phenomenon under study. (6) The fundamental structure of the phenomenon should be described. (7) Finally, validation of the findings should be sought from the research participants to compare the researcher's descriptive results with their experiences.

RESULTS

The themes emerged in the lived experience of LGBTQIA+ students of Occidental Mindoro State College are: acceptance experience; gender expression challenges; reasons why; and support system.

Acceptance experience

The confidence of LGBTQIA+ students

Creating a safe space, a supportive environment, and having a support system for the students may help them develop a sense of self-belonging that can have a positive outcome for all students, including building confidence.

"Simple lang, sobrang saya dahil nakakapagpakatotoo ako nang walang kahihyan" - [Respondent 9]

"Masaya, kase parang nakalabas ka, parang kulungan ganun. Nakalaya ka, nakakahinga ka ng maayos ... na wala ka ng tinatago sa pamilya mo, sa kaibigan mo."
[Respondent 2]

To feel accepted

When a student comes out as LGBTQIA+, some parents tend to react in different ways such as hard to accept the identity of their child or on the other hand, some parents may also welcome their child by expressing their love and support and same as with the people that surrounds them. As a result, the student may feel acknowledged and respected.

"lahat naman ng naging kaklase ko nagkaroon kami ng mga oo LGBT mga kaibigan ko, yung mga lalaki tanggap naman nila ako pati yung mga babae tanggap nila kung sino kami as an LGBT." (Respondent 9)

"In positive way, sobrang blessed ako na kahit kami'y mga LGBT, meron kaming mga taong tinatanggap at minamahal sa lipunan, kahit may mga paghihigpit, tulad ng haba ng buhok, na sana'y magbago sa hinaharap." (Respondent 8)

On the other hand, there were students that also was afraid of not being accepted as who they are.

"Yun 'yung nakakaiyak na part, pamilya mo 'yun (crying). Dapat sila 'yung una mong kakampi, pero nahirapan silang tanggapin kung sino ako (crying)!" (Respondent 4)

"Pero Pagdating ko sa bahay takot pa akong mag-out, magsabi sa kanila kaya pagdating sa bahay sobrang limited nung words na nasasabi ko even interaction sa family." (Respondent 5)

Seeking acceptance from others

All along, people tend to seek acceptance and pleasing others in order for them to feel that they belong and are accepted. Furthermore, LGBTQIA+ students also tend to prove themselves that they are worthy and capable of doing what the others are doing as they seek validation.

"Kahit LGBT ako, may nagagawa pa rin ako sa lipunan. Ipinakita kong may talento ako, lalo na sa pagpapatawa, para maipakita na tayo'y dapat tanggapin." (Respondent 3)

"Sa pamilya, alam na nila mula pagkabata ko. Sa mga kaibigan, naging confident ako at ginamit ang talento, tulad ng pagmamanicure, para kumita." (Respondent 6)

Gender Expression Challenges

LGBTQIA+ Student Experiences: Open Expression in School

The LGBTQIA+ student openly express that they are experiencing difficulties in school such as discrimination, social pressure and acceptance because of their gender identity. This explains why there were still a LGBTQIA+ students are hard to express who they really are.

"Kinukutya at inaapi nila ako, naranasan ko ang diskriminasyon at pang-aalipusta. Hindi ko na gustong lumabas ng bahay, dahil ayaw kong mapagtawanan dahil sa pagiging tapat sa sarili." (Respondent 3)

"Naranasan ko ang masasakit na salita at mga subtextual na komento mula sa iba. Hindi man diretsong sinasabi, malinaw ang kanilang intensyon." (Respondent 4)

"Negative way that we experience is yun na nga yung parang hindi pa rin tanggag ng school or ng ibang estudyante ang pagiging gay na kinikwestyon pa rin nila na "bakit ka naging bakla?". (Respondent 8)

LGBTQIA+ Students' Gender Expression Challenges

The LGBTQIA+ students face judgement, discrimination, and harassment because of the way they express themselves in the society. As a result, there are still some students that can't really express and not yet coming out as who they really are. The respondents talk about the feeling of "criticism, petrified" after they come out as they are part of the LGBTQIA+ community.

"Sa pananamit, nahihirapan akong suotin ang mga damit na gusto ko dahil sa mga negatibong komento. Marami sa amin ang nahihiya pa na ipahayag ang totoong sarili." (Respondent 6)

"Marami sa amin ang nahihiya pa na ilabas kung sino talaga sila at hindi pa kayang ipahayag ang kanilang sarili. Parang inuutay-utay nila bago tanggapin ng iba." (Respondent 9)

LGBTQIA+ perceptions and beliefs

People had different perception and views in religion and gender, therefore they also had these beliefs and norms regarding men and women. At some point, it was hard for the LGBTQIA+ members to express the part of themselves of being feel of a woman for the gays and transwomen, lesbian and transmen for being have a part of man and also for the other gender identity.

"Meron ding parte na natatakot ako na majujuge ka kasi hindi yun normal sa atin lalo na Pilipinas to unlike sa ibang bansa, dahil sa bibliya kung ano ang sinasabi doon tayo". (Respondent 1)

"A lot of things that questioning about my gender, "bakit ka nagbakla eh ang pogi pogi mo?". (Respondent 8)

"May mga pagkakataon na napag-iisipan ko kung bakit ako LGBT at nahirapan akong tanggapin ang sarili dahil sa takot na hindi ako matanggap ng ibang tao (Respondent 3)

"Nakatanggap rin ako ng negatibong feedback na nagsasabing sana maging tunay na lalaki na lang ako, at ito ay nagdulot ng sakit sa aking pride at pagtataka kung bakit may ganitong mga opinyon tungkol sa LGBT." (Respondent 4)

Reasons Why

LGBTQIA+ experiences impact student behavior

The experience the LGBTQIA+ students received inside and outside of school makes them feel uncomfortable and tend to be shy or become hesitant to show who they are because other people make fun of them in the environment they belong to.

"Nahihiya ako na baka pagtawanan ako ng mga tao kasi ito ako e, ito ang kasarian ko, Ganito ang pagkatao ko baka hindi nila ako matanggap". [Respondent 3]

"Sa CR, naramdaman kong kinakantiyaw ako dati sa dati kong paaralan, at iyon ay offensive para sa akin." [Respondent 5]

Diverse discrimination in environments

The LGBTQIA+ students experience minor physical abuse in their former school which results in the minor assault. Having received condemnation from their family and relatives, when they came out as members of LGBTQIA+. And facing inequality such as struggles, unfair gender treatment, and showing biased views between them and straight genders in the environment.

"Sobrang ayaw ko pumasok that time kasi natatakot ako na everyday kasi yun nangyayari na kapag nakikita nila ako sa corridor ayon maghihiyawan sila, kakantiyawan na parang iba parin ang dating ng LGBT sa kanila." [Respondent 5]

"Nahihirapan ako kasi yung mga tao sa paligid ko hindi nila ako noon una tinanggap. Pinagtatawanan nila ako, talagang yung mga masasakit na salita natanggap ko galing sa kanila." [Respondent 3]

"meron akong kakilala na ano lesbian siya tapos hindi siya pinapayagang magsuot nung uniform na gusto niya kaya ang ending nagdrop siya" [Respondent 6]

Support System

School System

The first theme is security for the members in the school, in this theme, the researchers thrive on sub-themes. The first is safety, some of the LGBTQIA+ feel secure and safe within the institution because they are free to express themselves. Nurture explained that most of the students received a supportive environment that has a broad understanding of the LGBTQIA. Lastly, the awareness tackles that the school showcases its love for LGBTQIA+ by being open and knowledgeable about their gender. However, not all LGBTQIA+ students received the same treatment. Respondents talk about the feeling of "safety, nurture, awareness" from the support received of LGBTQIA+ students after they come out as they mentioned in their answers to the questions given to them.

"Sa ngayon, oo mas nafefeel kong secure ako with the institution knowing that the faculty that we have in college programs di naman sila nag discriminate with the gays and LGBT." [Respondent 5].

"Para po sa akin, opo malaya naman po dahil meron naman po tayong tinatawag na guidance at responsableng mga guro upang aksyonan kung nababastos ka man or may ginawa silang sexual harassment." [Respondent 8]

"Thankful ako sa school kasi kahit sila gumagawa ng way upang maintindihan ng marami ang pagkakaiba iba ng gender preference ng bawat isa lalo kapag wala ka pang alam sa usapang lgbtq" and added "Hindi naman mawawala yun sa tao diba nga maraming judgemental pero dahil nagkakaroon na tayo ng mga seminar gawa sa paaralan, community mas nagiging open yung iba". (Respondent 1)

"Wala pa akong nakikitaang effort ng school. Siguro yung paunti unti na ano ko na tanggap nila yung mga LGBT yun lang." (Respondent 2)

Guidance and supportive system

The next theme is the guidance and supportive system. Here the sub-themes are motivation that the institution has quite of few supportive teachers that promote inclusivity and giving living motivations that support LGBTQIA+ students. Several students of LGBTQIA+ received respect from other students. Lastly, most of LGBTQIA+ students receive equal treatment and opportunity from the teachers, peers, and school. Respondents discuss their feelings of "motivation, voluntary acceptance, recognition of equality" after coming out in their responses to the questions posed to them.

"Sinusuportahan ako ng mga guro at kklase ko. Positive angtrato sa akin, at sana ay maipamulat sa iba ang pagiging bukas at pagtanggap." (Respondent 3)

"Nararamdaman ko ang espesyal na trato mula sa mga kklase ko, at ito ay isang positibong bagay para sa akin." (Respondent 5)

"Sana'y maging bahagi ng iba pang asignatura ang pagtuturo ng pag-unawa at respeto para sa aming LGBTQ+ community, hindi lang sa amin kundi sa lahat." (Respondent 4)

DISCUSSIONS

The findings of the lived experience of LGBTQIA+ students at Occidental Mindoro State College reveal several key themes: acceptance experience, gender expression challenges, reasons behind these experiences, and the support systems that play a crucial role in their well-being. This discussion will delve into these themes, drawing attention to the significance of each with citation from the provided results.

The acceptance experience of LGBTQIA+ students is central to their overall well-being. The study underscores the importance of creating a safe and supportive environment, along with having a support system in place for these students. The study emphasizes that fostering a supportive environment can enhance the students' sense of self-belonging and confidence (Cha et al., 2022). The results reveal that the reactions of family and peers upon a student coming out can have a profound impact on their acceptance experience. Some parents offer love and support, which fosters a sense of acknowledgment and respect, while others may struggle to accept their child's identity. The varying responses from families and the wider social circle directly influence how LGBTQIA+ students feel about themselves and their place in society (Mills-Koonce, 2018). The need for acceptance is a universal human desire, but for LGBTQIA+ students, it can be even more crucial as they may seek validation from others. The

study underscores that these students tend to strive to prove their worth and capabilities as a means of seeking acceptance from their peers and society (Ceatha et al., 2019).

The study highlights the difficulties faced by LGBTQIA+ students when it comes to expressing their gender identity openly. Discrimination, social pressure, and acceptance issues create barriers to free expression. This reflects the broader societal challenge of acceptance and understanding of diverse gender expressions (Russell & Fish, 2016). The LGBTQIA+ students mentioned that they often face judgment, discrimination, and harassment for expressing themselves authentically. This leads to a significant number of students not being able to openly express their true selves, resulting in a reluctance to come out. The emotions of "criticism" and being "petrified" after coming out underline the immense pressure and challenges that these students face (Henriquez & Ahmad, 2021).

The study also reveals that LGBTQIA+ students experience discrimination and even physical abuse, such as minor assaults, in their previous schools. This is exacerbated when they come out to their family and relatives. The unequal treatment and biased views further emphasize the importance of addressing the structural and societal issues that LGBTQIA+ students confront (Meyer, 2003).

The support system is a critical aspect of the LGBTQIA+ students' experiences. The research identifies different aspects of the support system, including the school system. The study suggests that many LGBTQIA+ students feel secure and safe within their school environment, which allows them to express themselves more openly. Supportive schools, with a deep understanding of LGBTQIA+ issues, can create a nurturing environment. Moreover, schools that openly display their acceptance and knowledge of gender diversity play a crucial role in fostering an inclusive atmosphere (Leung et al., 2022; Russell et al., 2021). However, it is important to note that not all LGBTQIA+ students receive the same level of support. This underlines the importance of ensuring that all schools provide a safe and accepting space for LGBTQIA+ students (Jackson et al., 2021).

In this study exploring the lived experiences of LGBTQIA+ students at Occidental Mindoro State College, there are notable limitations. Firstly, the small sample size of nine participants, selected through purposeful sampling from a single campus, raises concerns about representativeness and introduces selection bias. Potential researcher bias is another consideration, as the study does not explicitly address the steps taken to minimize the influence of researcher perspectives. The temporal limitation of data collection from March to May 2022 may not capture the most current experiences. Geographical limitations are also relevant, as findings may not be broadly applicable beyond the study location.

Additionally, ethical considerations could be further addressed regarding participant well-being and psychological impact. The study lacks detail on measures taken to enhance reliability and validity. Lastly, the absence of discussion regarding resource and time

constraints may have impacted data depth. Future research should aim for larger and more diverse samples, address potential biases, consider broader geographical and temporal contexts, enhance methodological transparency, and provide a more comprehensive ethical framework.

CONCLUSIONS

The themes that emerged from the lived experiences of LGBTQIA+ students at Occidental Mindoro State College underscore the profound impact of acceptance, the challenges faced in expressing their gender identity, and the role of support systems, especially within educational institutions. These findings emphasize the need for broader societal acceptance, the importance of supportive families, and the role of educational institutions in creating safe and inclusive environments for LGBTQIA+ students. Addressing these issues can lead to improved well-being and mental health outcomes for these students.

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RESEARCH ARTICLE**COMPANIES' OPERATING CASH FLOW RATIOS AND THE PERFORMANCE OF THEIR STOCKS: EVIDENCE FROM PHILIPPINE STOCK EXCHANGE**

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ABSTRACT

The law of supply and demand and principle of risks and rewards are fundamentals to realization of extraordinary profits in stock investing and trading. The same complex business opportunities are present in the Philippine Stock Market. The increase in stock market participants has become significant in the recent years. This study is essentially conducted to identify specific patterns within the Philippine stock market to ultimately improve models for profitable stock investing and trading. This study has purposively selected three industrial classifications and took all companies operating within these industries, able to provide needed information during 2017-2021, as samples. This study analyzed the capability of operating cash flow to predict the behavior of stocks within the context of the Philippine stock market. Additionally, the differences in stock movement was studied between groups of companies according to industrial classification and firm size. It was found that computed operating cash flow ratios cannot predict stock price and stock volatility. Also, difference in stock price are found significant between companies according to firm size.

Keywords: *Operating cash flow ratios, stock price, stock volatility.*

INTRODUCTION

The economy can be significantly impacted by changes in the stock market. Market forces, such as seller supply and buyer demand, determine stock prices. Stock prices are influenced by fundamental factors such as a company's earnings and profitability from creating and selling goods and services (Harper, 2021). A firm's stock price represents its worth to investors; if a company's stock price is high, then its value to investors is high, and vice versa; thus, the share price is significant for the company (Purnomo, 2008). A written article by Hong, Bian and Lee (2021), stated that the movement of the stock prices makes the stock market volatile. As the stock prices move up and down, their volatility can have a positive or negative impact on the economy. That is why knowing how to analyze and predict the movement of stock prices will be beneficial to the market participants.

Stocks with high levels of volatility are more attractive to investors (Iqbal et al., 2015). High volatility is preferred by short term investors, while long-term investors are more attracted to stocks with low volatility rate. Company profits make a better determinant than economic performance (Almeida, 2016). If a company's net income goes up, the stock price will probably increase (Adkins, 2017). Matar et al. (2018) provided a correlation between company size and profitability, showing that larger businesses can profit more. It cannot, on the other hand, be related to market to book value (MBV), which is crucial since firm size is frequently more strongly tied to basic and core values than to market value. The company's profitability will improve as a result of this.

In this study, the researchers determined the potential effect of operating cash flows on the corresponding stock price of Philippine Stock Exchange (PSE) listed companies. According to Laksitaputri (2012), in an effective capital market, stock prices reflect all important information, and if the stock price changes, the market will react. The question is, whether the entities' profiles and operating cash flows wield significant effect on their stocks' performances. There are several debates arising on the relationship between cash flows and stock price, which is the driving force behind this research. Some find a significant causal relationship between the two; others do not find any substantial relationship especially in the context of developing countries. These debates are the reasons for undertaking this research and to innovatively assess the relationship between cash and stock performance of the companies in the context of PSE.

MATERIALS AND METHODS

Research Design

This study utilized descriptive-predictive research design. Regression analysis was used to determine if cash flow ratios exert influence on stock prices and volatility.

Research Instrument

As this study thrived through documentary review, no survey was conducted for data gathering. Needed and used information in analyzing the relationship under study are retrieved from the public financial statements of the companies. Throughout this study, a total of 37 corporations were studied: nine (9) from construction, infrastructure, and allied services

industry, 19 from food and beverage services industry, and nine (9) from transportation services industry. Having a different nature and design, this study did not utilize survey questionnaires. Collected data consist of information covering 2017 to year 2021. This study captured information on the financial statements of PSE-listed companies from Market Watch – a website where such data are held available.

Data Collection

The researchers retrieved the data on the companies’ respective industrial classifications; worth of periodic (annual) total assets – to measure of firm size; proceeds of annual operating cash flows, and value of assets, liabilities, equity, and net income – which were used to determine cash flow ratios; and year-end and monthly valuation of related stock price. The website offers comprehensive financial statements including the balance sheet, income statement, statement of cash flows, and stock price charting from which needed data are captured accurately. Retrieved data is consolidated into a dataset through Microsoft Excel useable for analysis.

Data Analysis

Produced dataset through Microsoft Excel are analyzed by the statistician using IBM SPSS version 23. Frequency and percentage distributions are also used in presenting the profile of the companies, while the mean and standard deviation is employed to describe the cash flows ratios and stock price behavior. Moreover, multiple regression analysis is used to determine which of the operating cash flow ratios can predict stock price and volatility. One-way analysis of variance is used to determine the significant difference in independent variables between industries and firm sizes.

RESULTS

The breakdown of the 37 publicly listed companies under study according to their industrial classification and firm size. It shows that most of the companies studied belong to Food and Beverage service having 51.40% while the two remaining industries equally have 24.30% of population [Table 1].

Table 1. Profile of the companies (n=37).

Company Profile	Frequency	Percentage
Industrial Classification		
Construction, infrastructure, and allied service	9	24.30
Food and beverage service	19	51.40
Transportation service	9	24.30
Firm Size		
Small	13	35.13
Medium	17	45.95
Large	7	18.92

The results show the companies' operating cash flow ratios observed during the 5-year period studied. These ratios include operating cash flow to total assets ratio, operating cash flow to total liabilities ratio, operating cash flow to total equity ratio, and operating cash flow to net income ratio [Table 2] and average stock price and volatility of the studied companies for 2017-2021 [Table 3].

Table 2. Mean and standard deviation of operating cash flow ratios from 2017 to 2021.

Cash Flow Ratios	Year	Mean	SD
Operating Cash Flow to Total Assets Ratio	2017	0.056	0.079
	2018	0.058	0.072
	2019	0.081	0.068
	2020	0.065	0.080
	2021	0.041	0.067
	5-year Average		0.061
Operating Cash Flow to Total Liabilities Ratio	2017	0.173	0.342
	2018	0.152	0.273
	2019	0.108	0.580
	2020	0.162	0.190
	2021	0.141	0.233
	5-year Average		0.146
Operating Cash Flow to Total Equity Ratio	2017	0.127	0.239
	2018	0.140	0.202
	2019	0.387	0.911
	2020	0.103	0.589
	2021	0.155	0.358
	5-year Average		0.182
Operating Cash Flow to Net Income Ratio	2017	-4.204	26.609
	2018	4.082	14.023
	2019	0.540	4.522
	2020	1.871	11.226
	2021	11.556	45.340
	5-year Average		2.769

Table 3. Observed average stock price and volatility of the studied companies for 2017-2021.

Variable	Year	Mean (Php)	SD
Stock Price	2017	30.29	55.69
	2018	30.28	59.29
	2019	25.26	44.05
	2020	23.18	40.70
	2021	29.66	55.04
	5-year Average		27.73

	2017	0.14	0.09
	2018	0.13	0.08
Stock Volatility	2019	0.16	0.12
	2020	0.15	0.08
	2021	0.14	0.15
	5-year Average	0.14	0.07

The results shows that the food and beverage services companies had the highest average stock price (PhP 33.42 ±61.74), followed by transportation services (PhP 29.32±43.79), while construction, infrastructure, and allied services had the lowest (PhP 14.13±20.41). Moreover, on stock volatility, construction, infrastructure, and allied services industry is most volatile (0.17±0.08), followed by transportation services (0.14±0.09), while food and beverage had the lowest average volatility (0.13±0.05). Furthermore, it showed that there were no significant differences among the three different industry classification both for stock price [F (2,34) = 0.449, p= 0.642], and stock volatility [F (2,34) = 1.468, p= 0.245] [Table 4].

Table 4. Differences in stock price and stock volatility in terms of industrial classification and firm size.

Variable	Stock Price				Stock Volatility			
	Mean	SD	F (2,34)	p- value	Mean	SD	F (2,34)	p- value
I. Industry Classification								
Construction, infrastructure, and allied service	14.13	20.41			0.17	0.08		
Food and beverage services	33.42	61.74	0.449	0.642	0.13	0.05	1.468	0.245
Transportation services	29.32	43.79			0.14	0.09		
II. Firm Size								
Small	10.39	20.03			0.18	0.08		
Medium	12.51	11.75	14.577	<0.001	0.13	0.05	3.602	0.038
Large	96.92	82.87			0.10	0.03		

Legend: p-value > 0.05 not significant; ≤ 0.05 significant

The model derived from the results of multiple regression analysis performed to determine which among the cash flows ratios predict stock price and stock volatility is presented in Table 5.

Table 5. Regression analysis for cash flows predicting stock price and stock volatility.

Variable	B	T	p-value	R ²	F	p-value
Stock Price						
(Constant)	6.44	0.493	0.625			
Cash flows to assets ratio	278.677	1.289	0.207			
Cash flows to liabilities ratio	2.631	0.061	0.952	0.133	1.226	0.319
Cash flows to equity ratio	18.642	0.537	0.595			
Cash flows to net income ratio	0.175	0.141	0.889			
Stock Volatility						
(Constant)	0.146	8.599	0.00			
Cash flows to assets ratio	0.299	1.063	0.296			
Cash flows to liabilities ratio	-0.136	-2.417	0.022	0.449	2.024	0.115
Cash flows to equity ratio	-0.046	-1.009	0.320			
Cash flows to net income ratio	0.002	0.983	0.333			

DISCUSSIONS

According to the findings of the study, 20% of the companies were classified as large firms. This means that out of every 5 corporations in the industries under study, one company has total assets of more than 100 billion pesos. This indicates that a significant portion of the industry is dominated by these large companies. Most of the companies studied were medium-sized firms, comprising 45.95% of the total. This suggests that medium-sized companies are an essential part of the industry, and they play a vital role in the economy.

In contrast, small-sized firms represented only 35.13% of the companies studied. This indicates that small companies are not as prevalent in the industry, and they may face more significant challenges compared to larger firms. Furthermore, the study reveals that 2 out of every 3 corporations studied have less than 100 million pesos in total assets, indicating that most of the companies are relatively small in size.

As presented in Table 2, the average CFLR for 2017-2021 of the companies studied is 14%. This implies that for every 100-peso liability incurred, the companies are generating around 14 pesos. Meanwhile, CFER has a five-year average of 18%. Meaning, there is 18-peso cash inflow for every 100-peso investment by the owners. Moreover, it can be noticed that CFLR was lowest during 2019. This may indicate that companies were incurring high cost of liabilities that year and that creditors are also willing to lend financial resources. This is supported by the 2020 observation where CFLR has risen which may indicate that creditors were hesitant in lending during the pandemic, and the inverse observations in CFER.

While the recorded highest CFAR was during 2019, the CFAR in 2021 may not conclusively indicate that the companies failed to operate efficiently recently as this may also have been caused by relative significant increase in assets owned due to the global pandemic. Ultimately, the 6% average CFAR for the 5-year observation indicates that during 2017-2021, companies studied have generated 6-peso cash inflow for every PhP 100 asset owned. While this may

indicate disturbingly low returns on investment it must be noted that the operating cash flow was compared with the accumulated total assets of the companies throughout their operating lives, not the worth of asset increase for the particular year.

A CFLR which is greater than one implies that a company has generated more cash in a period than what is needed to pay off its current liabilities. On the other hand, a high CFER would naturally be more attractive to investors as it may be a good indication that their investments in a company yield favorable returns. Consequently, the CFLR and CFER will have an inverse relationship.

The adverse effect of the global economic recession caused by the global pandemic (The World Bank, 2020) is evident in the Philippine stock market, the 2021 CFLR and CFER may imply that the Philippine service industry is again operating on a profitable level.

Furthermore, as seen in Table 2, 2021 recorded the highest CFNIR of 110.56%. While the lowest CFNIR is recorded in 2017 with -420.40%. Although this study cannot conclusively indicate whether this implies good economic conditions or good investing opportunities, the table may imply that the net income for 2021 was significantly high or that some of the companies are significantly operating better than they did before the pandemic. It should be noted that one of the industries studied is the Transportation service industry. While consumption for public transportation has been significantly and adversely affected, the shipping services may have benefited greatly from the recent surge in demand for eCommerce. By participation of 73 million online active users, the Philippine eCommerce market earned 17 billion dollars during 2021 (ECommerce, 2022).

The analysis focuses on the period from 2017 to 2021, revealing trends in average stock prices and volatility. It is noted that the stock market in the Philippines appears to have rebounded in 2021, despite earlier impacts from the global economic recession. However, this overall recovery masks variations in stock prices for specific companies, some of which have seen higher stock prices during and after the pandemic than before. It indicates fluctuations in stock volatility, with a decrease in 2021 compared to 2020 but an increase compared to 2018. The five-year average suggests improved market stability compared to the turbulent year of 2020. The result emphasizes that stock prices are influenced by various factors, both internal and external to individual companies, and are driven by supply and demand dynamics, reflecting investor perceptions of profitability. Across different industries, the study finds no significant differences in stock prices and volatility, suggesting that investors approach various sectors similarly. Analysis examines the influence of firm size on stock performance, showing significant differences among small, medium, and large companies in terms of stock price and volatility. Multiple regression analysis indicates that only the operating cash flow to total liabilities ratio significantly predicts stock volatility. However, the model derived from the regression analysis is also non-significant.

This multiple regression analysis indicates that the stock price and stock volatility of companies in the Philippine stock market cannot be predicted with the proposed model based on operating cash flow ratios. This implies that the demand-supply which ultimately dictates the movement of stocks cannot be predicted by these specific financial attributes (cash flow ratios) of the companies (with the exception of operating cash flow to liability ratio). While

operating cash flow is a good measure of how much cash can a business undertaking generate through its operations, it may not be specifically considered by investors and traders whose interests affect stock price. With the rise of stock market participants in recent years (Dumalao-Abadilla, 2021), mostly contributed by hirelatively younger investors, to earn extraordinary yields from investing in stocks would ultimately require calculated risk-taking with consideration of external economic conditions and internal financial conditions of these publicly-held companies.

CONCLUSIONS

The study explores publicly listed companies in construction, infrastructure, food and beverage, and transportation industries in the Philippines. Many of these firms are financially stable, and this abundance suggests a favorable climate for investment. Cash flow ratios appear low, but when considered in relation to total assets, liabilities, and equity, they indicate the Philippine stock market's recovery from the pandemic-induced recession. Average stock prices from 2017-2019 are reasonable, and the 14% stock volatility is suitable for risk-averse investors. Operating cash flow to liabilities predicts stock volatility, but operating cash flow ratios do not forecast stock price movements. Stock prices and volatility do not significantly differ across industries but do vary with firm size. Larger firms have higher stock prices and less stock price volatility.

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RESEARCH ARTICLE

**EFFECTIVENESS OF INVENTORY MANAGEMENT AND PRODUCTIVITY OF
DAPI-MAMBURAO WOMEN PRODUCERS COOPERATIVE**

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ABSTRACT

This research delves into the assessment of inventory management effectiveness and productivity at the DAPI-Mamburao Women Producers Cooperative, situated in Sitio Dapi, Barangay Payompon, Mamburao, Occidental Mindoro. A total of 25 respondents participated in this study, employing a descriptive-correlation research design to comprehensively evaluate inventory management and productivity. The research instrument, a self-constructed questionnaire, was meticulously validated by five experts and rigorously tested for reliability using Cronbach's Alpha. Employing a 4-Point Likert scale, the study utilized statistical tools such as Mean and Kendall Tau Correlation Coefficient for data analysis. The study findings unveiled that most of the respondents demonstrated high proficiency in inventory tracking, demand forecasting, lead time management, and controlling inventory costs. Furthermore, most respondents exhibited commendable performance in areas like employee development, income generation, and resource utilization. Crucially, the research uncovered significant relationships between the effectiveness of inventory management and the extent of productivity. In light of these findings, the study recommends that the DAPI-Mamburao Women Producers Cooperative diligently monitor and manage their inventory, ensuring consistent production for organizational profitability and productivity. Additionally, it is advised that producers actively participate in training and seminars organized by the Cooperative Development Authority to enhance their inventory management effectiveness and drive productivity to new heights.

Keywords: inventory management, productivity, cooperative organizations, organizational profitability

INTRODUCTION

Inventory management has a great impact in a firm. Effective Inventory management is an important factor to the success and growth of organizations (Augustine & Agu, 2013). Inventory management is defined as the process of directing and administering the holding, moving and converting of raw materials through value adding process to deliver finished products to the customer (Relph & Milner, 2016). According to Schreiberfeder (2017) says inventory management replenishing stock in inventory with the right quantity, of the right item in the right location and at the right time. In other word inventory management minimize carrying cost of inventory and make arrangement for sale of slow-moving items and minimize inventory ordering cost.

However, ineffective inventory management is a disadvantage for the company. If inventory management is not maintained properly, the production cannot meet the customer's demand leading to loss of revenue for the firm (Oluwaseyi et al., 2017). Ineffective inventory leads to many problems such as overproduction, underproduction excessive stocks and delays in delivery of materials (Munyao et al, 2015). Inconsistencies of inventory levels can lead to losses because of over, under-stocking, expiry inventory; failure to meet demand and quota and low morale of organization. Even a too small problem in inventory can cause business failures. The importance of productivity in the workplace is a simple concept to understand. The more productive your members are, the more work they're getting done, and the more benefits you'll see. The necessity for high levels of productivity is something no business can ignore. It's inevitable that certain factors and take successful measures when they do occur, you can easily increase productivity (Zhenjing et al., 2022).

Data from the World Development Indicators database showed productivity among the Philippines employed labor force amounted to \$20,630 per worker in 2020, down five-point six percent from 2019 (World Bank, 2019). One of the main causes of decrease in employee productivity is simply the inability to focus on one task. The modern worker often tries to multitask and is not able to concentrates, losing valuable time doing several tasks. Or they simply do not train the employees properly or offer good advice, leading to employees being lost (Lui & Lui, 2022).

According to Cooperative Development Authority Republic act 9520 Article 6 and 7, the purpose of cooperatives is to generate funds and extend credit to the members for productive and provident purposes; to develop expertise and skills among its members; and provide goods services to its members to enable them to attain increased income, savings, investment, productivity, and purchasing power, and promote among themselves equitable distribution of net surplus through maximum utilization of economies of scale, cost-sharing and risk-sharing. One of those CDA sanctioned cooperatives is the Dapi - Mamburao Women Producers Cooperative.

Effective inventory management must be utilized because it is a potential driver for enhancing the productivity of cooperatives. Therefore, the purpose of this study is to assess the effectiveness of inventory management and determine the productivity of DAPI-Mamburao Women Producers Cooperative. And proponents decided to conduct this research to help cooperatives achieve success cooperative by proper inventory management and to be

productive. This study was undertaken to determine the effectiveness of inventory management and productivity of DAPI - Mamburao Women Producers Cooperative.

METHODOLOGY

The research study was conducted at Dapi-Mamburao Women Producers Cooperative located at Sitio Dapi, Barangay Payompon, Mamburao, Occidental Mindoro. The respondents of the study are 25 producers who manufacturing the finish product of Dapi Mamburao Women Producers Cooperative. The researchers employed descriptive-correlation research design. In order to collect the most reliable and accurate data from the respondents, the researchers created a self-constructed questionnaire following the process of content validation, validated by five experts and conducted a pilot test to 25 individuals for the reliability test. After this process, the researchers accomplished letters and handed-over to the concerned officials for approval and we ask permission to respondents. Then, researchers distributed the research instrument, survey and interview was conducted among the respondents. Mean and standard deviation were computed from responses in inventory tracking, forecast demand, lead time, and inventory cost. To explore potential relationships between the level of effective inventory management and the extent of productivity of the Dapi - Mamburao Women Producer Cooperative, Kendall's Tau b correlation analysis was applied. This statistical method was employed to determine the presence and strength of associations between these variables.

By employing these methods, the study aimed to gain insights into the perceived level of effective inventory management and productivity within the cooperative, as well as any potential relationships between the two.

RESULTS

The study assessed the perceived effectiveness of inventory management among participants based on several indicators. The mean scores for these indicators were as follows: inventory tracking (mean=3.87±.264), forecast of demand (mean=3.80±.387), lead time (mean=3.88±.289), and inventory cost (mean=3.80±.445). The overall effectiveness of inventory management is high (mean=3.84±.346) [Table1]. These values reflect a moderate to high level of perceived effectiveness in the various aspects of inventory management. The relatively small standard deviations suggest that responses were consistent and clustered closely around the respective means, indicating agreement among participants. These findings provide valuable insights into the cooperative's inventory management practices.

Table 1. Level of effectiveness of inventory management.

Indicators	Mean	Std. Deviation
Inventory tracking	3.87	.264
Forecast of demand	3.80	.387
Lead time	3.88	.289
Inventory cost	3.80	.445
Effectiveness of inventory management	3.84	.346

The results in Table 2 reveal the perceived level of productivity across different indicators. Employee development is highly rated (mean=3.93±0.243), indicating effective efforts in this area. Income generation is moderately rated (mean=3.36±0.141), suggesting a moderate level of productivity. Resource utilization is perceived as highly effective (mean=3.95±0.202). Overall, the extent of productivity (mean=3.75±0.189) reflects a moderate to high level of perceived productivity.

Table 2. Extent of productivity.

Indicators	Mean	Std. Deviation
Employee development	3.93	.243
Income generation	3.36	.141
Resource utilization	3.95	.202
Extent of productivity	3.75	.189

Table 3 presents the relationship between the level of effectiveness in inventory management and the extent of productivity within the Dapi - Mamburao Women Producer Cooperative. Notably, there are significant correlations between various aspects of inventory management and productivity. Inventory tracking shows a strong positive correlation with forecast of demand ($r = 0.50, p < 0.01$) and lead time ($r = 0.69, p < 0.01$), as well as a weak negative correlation with inventory cost ($r = -0.17, p < 0.05$). Additionally, lead time is positively correlated with income generation ($r = 0.51, p < 0.01$) and resource utilization ($r = 0.39, p < 0.05$). Income generation and resource utilization also exhibit a strong positive relationship ($r = 1.00, p < 0.01$). These findings suggest that more effective inventory management practices are associated with enhanced productivity within the cooperative, particularly in aspects like employee development, income generation, and resource utilization.

Table 3. Relationship between the level of effectiveness of inventory management and extent of productivity.

Variable	N	M	SD	1	2	3	4	5	6	7
Inventory tracking	25	3.87	.26	-						
Forecast of demand	25	3.80	.39	.50**	-					
Lead time	25	3.88	.29	.69**	.50**	-				
Inventory cost	25	3.81	.45	.17**	.42**	.17	-			
Employee development	25	3.93	.24	.10	.56**	.13	.23	-		
Income generation	25	3.36	.14	.45*	.37	.51**	.39*	.39*	-	
Resource utilization	25	3.95	.20	.45*	.37	.51**	.39*	.39*	1.00	-

DISCUSSIONS

Demand forecasting enables an organization to take various business decisions, such as planning the production process, purchasing raw materials, managing funds, and deciding the price of the product. An organization can forecast demand by making own estimates called guess estimate or taking the help of specialized consultants or market research agencies

[Yunishafira, 2018]. Lead time plays an important role in the success of a business. Reduced production time increases the productivity and fast production process helps in providing satisfaction to customers and to generate more and more profit [Zygiaris et al., 2022]. Successful inventory management minimize inventory, lowers cost, and improves profitability. An optimal inventory level can be based on consideration of the incremental profitability to the opportunity cost of carrying the higher inventory balances [Oluwaseyi et al., 2017].

Inventory management plays an important role in every company as any ineffective inventory system will result in the loss of customers and sales. Effective inventory management can generate more sales for the company which directly affects the performance of the company [Bin Syed et.al, 2016]. Further, providing employee development opportunities to workers provides companies with ways to retain talent, as well as ensures that there are always new people coming in with fresh ideas. Employee development brings a lot of excellent advantages and develops employees' skills and knowledge to benefit your business [Tan & Olaore, 2021]. Another, the greater the amount of capital held by the cooperative, the greater its ability to purchase more efficient technology, invest in staff training and education and make other improvements to the running of the business [Sacchetti & Tortia, 2020]. Profitability can be improved your profitability by getting the most from your existing resources. Higher firm productivity leads to higher profitability [Molinos-Senante et al., 2022].

This study was conducted within the specific context of the Dapi-Mamburao Women Producers Cooperative, which may limit the generalizability of the findings to broader cooperative settings. The sample size of 25 producers is relatively small and may not fully represent the entire cooperative. Additionally, the research employed a descriptive-correlation research design, which provides insights into associations but does not establish causation. The data collection relied on self-reported measures and responses from the participants, which may be subject to response bias. Furthermore, the study did not investigate external factors or market dynamics that could influence inventory management and productivity.

Considering the study's findings and limitations, several recommendations emerge for both the Dapi-Mamburao Women Producers Cooperative and cooperative organizations in similar contexts. Firstly, to enhance the effectiveness of inventory management and productivity, cooperatives should broaden their scope by including a more extensive and diverse sample of cooperatives in future research, ensuring a better understanding of the variations in practices and contexts. Longitudinal studies could further investigate the causal relationships between inventory management and productivity over time, contributing to a deeper understanding of these dynamics. To gain a comprehensive perspective, future research should also examine external factors, such as market demand, economic conditions, and competition, which could impact inventory management and productivity. Moreover, the implementation of specific employee development programs designed to enhance skills and knowledge may lead to increased productivity and cooperative performance. Lastly, a focus on capital allocation and resource optimization is essential, allowing cooperatives to invest in technology and staff training to improve overall productivity and profitability. By addressing these recommendations, cooperative organizations can bolster their inventory management

and productivity, ultimately leading to enhanced cooperative performance and long-term sustainability, thereby benefiting their members and the broader community.

CONCLUSIONS

This study highlights the effectiveness of inventory management and productivity at the DAPI-Mamburao Women Producers Cooperative. Most members demonstrate proficiency in inventory management, which positively correlates with productivity. These findings underscore the importance of streamlined inventory management for consistent production and profitability. The cooperative serves as an exemplar, and the recommendations emphasize the value of continuous monitoring and training. These insights offer cooperative organizations a path to operational efficiency, benefiting both members and the broader community. Effective inventory management is pivotal for cooperative success, contributing to economic and social well-being.

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RESEARCH ARTICLE

**UTILIZATION OF DIGITAL MARKETING PLATFORMS AND THEIR EFFECTIVENESS
IN PROMOTING LOCAL TOURISM ESTABLISHMENTS
IN THE MUNICIPALITY OF CALINTAAN**

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ABSTRACT

This research investigates the utilization of digital marketing platforms and their effectiveness in promoting local tourism establishments in the municipality of Calintaan, Occidental Mindoro. Employing a descriptive correlational research approach, the study provides a comprehensive analysis of the impact of Facebook, email, websites, and YouTube on brand awareness, patronage, and customer satisfaction within these establishments.

The findings reveal that local tourism establishments in Calintaan effectively utilize these digital platforms to engage with their target audiences. Facebook demonstrates a strong presence, offering information, amenities, and frequent updates. Email is found to be a valuable tool for communication, feedback, and promotions, while websites are considered useful for information and reservations. YouTube plays a pivotal role in attracting guests through engaging videos.

The results underscore the pivotal role of digital marketing strategies in enhancing the overall appeal of local tourism establishments, demonstrating their substantial impact on the tourism landscape in Calintaan.

In conclusion, this research sheds light on the effective utilization of digital marketing platforms by local tourism establishments in Calintaan and their profound impact on brand awareness, patronage, and customer satisfaction. These findings contribute to the understanding of digital marketing strategies and their role in shaping the tourism industry, providing insights for both practitioners and researchers.

Keywords: *Local Tourism, Marketing Platforms, Utilization*

INTRODUCTION

Digital marketing is a large aspect. There is no other development that would affect the tourism and hospitality business as quickly and significantly as digital technologies. Tourism and hospitality organizations who employ all digital channels and communication tools generate 25% more revenue on average than other companies in the sector. Marketing experts should consequently be proficient in digital marketing given the current state of the tourist and hospitality industries. A contemporary tool for marketing a travel and hospitality product, trademark, or brand through all digital media is digital marketing (Hristoforova et al., 2019)

The use of websites in content marketing produces an appealing online destination brand experience because, when created properly online information on websites is neatly categorized, making it easy to navigate the content to follow the tourism destination's attractions. Tourists now view content promoted on websites as more reliable than content on social media platforms since the quality of the information provided there has increased with time. This is because of the fact that official destination information makes up the majority of content on tourism websites. The goal of content marketing is to attract and keep customers by regularly producing pertinent and quality material that can alter or improve consumer behavior. Content developed for consumers should have this objective. A trend that is anticipated to keep growing in popularity is letting customers produce and share their own content. Customers are likely to participate considerably more actively in the creation of digital content that may be utilized for marketing because of the rise of user generated content (UGC) platforms. This is since relationships are formed and grown through UGC, decisions about travel are made, and daily travel experiences are shared through the usage of images, videos, blogs, and reviews (Jiménez-Barreto et al., 2020).

The fundamental purpose of this research is to make tourist establishments appear more appealing, hence increasing the number of individuals who visit local tourism establishments in the municipality of Calintaan. Out of all the areas here in San Jose Occidental Mindoro, the researchers promote the beauty and abundance of this spot through the use of social media for the goals of this study. The findings of this study were to provide insight and encourage local tourism establishment owners to continue using social media if we can confirm its usefulness. It allows visitors to find, grow, and engage with the tourism establishments they want to visit.

MATERIALS AND METHODS

Research Design

This study utilized a descriptive correlational research approach to collect original data regarding the utilization of digital marketing platforms and their effectiveness in promoting local tourism establishments in Calintaan municipality. Unlike experimental or normative approaches, this method focuses on providing insights into existing conditions, events, and observations. The descriptive approach is commonly used across scientific disciplines and social sciences to outline and analyze observed situations and phenomena.

Study Site

This research was conducted in Calintaan, Occidental Mindoro. Specifically, to the municipality's well-known tourism establishments: Apo Reef Club, Erona Beach Resort, Camper's Point, Holiday Ocean Resort and Labros Adventure Camp & Waterfront.

Sample

This research utilized purposive sampling to select participants based on specific traits or experiences relevant to the study's purpose. The researcher personally approached potential respondents during visits to tourist attractions, inviting them to participate. The method was repeated until a minimum of 50 willing participants were secured.

Research Instrument

The study utilized a self-administered questionnaire that was subjected to validity and reliability of the test. The instrument was submitted to the research instructor, adviser, data analyst and critic reader to ensure its legitimacy and consistency. Using questionnaire, the information that is being needed in this study classifies the task and the intentions that seek to nurture the attention of the five (5) selected local tourism establishments in the municipality of Calintaan. The research questionnaire has two major parts. The first part determined the level of the utilization of digital marketing platforms in the municipality of Calintaan and it has twenty (20) questions which are equally divided among the four indicators for the independent variable. And the second part determined the level of effectiveness in promoting local tourism establishments in the municipality of Calintaan and it has fifteen (15) questions which are equally divided among the three indicators for the dependent variable. Responses were recorded on a four-point Likert scale from 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. This was designed through a checklist type of questionnaire as the data collection instrument for this study.

Data Collection

The researchers collected data based on the accessibility and willingness of target respondents. Permission letters were granted by tourist attraction owners for data collection. Face-to-face interactions were used to distribute questionnaires, following safety protocols, including wearing masks and maintaining a one-meter distance from respondents. Upon approval, the questionnaire was administered, and the study's objectives were explained to build trust. Confidentiality was assured. Respondents had ample time to complete the instrument, and inquiries were addressed for data validity and reliability. Questionnaires were collected and sent for statistical analysis.

Ethical Consideration

Prior to data collection, the researchers obtained formal permission from the owners of the participating tourist attractions. Informed consent was obtained from all respondents, with an assurance of data confidentiality. All interactions with respondents adhered to safety protocols recommended by the Inter-Agency Task Force (IATF) to ensure the well-being of all

parties involved. This study also adhered to ethical standards, such as respect for the autonomy and privacy of the respondents, ensuring their voluntary participation, and addressing any inquiries or concerns they may have had during the research process. The collected data were treated with the utmost care and used exclusively for research purposes, with no harm or discomfort inflicted on any of the participants.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive data such as mean, and standard deviation, were calculated. Kendall's tau-b (τ_b) correlation coefficient was used to assess the correlation between the variables, with statistical significance set at a p-value of $\leq .05$.

RESULTS

The findings revealed that on Facebook, these establishments demonstrated a strong presence (mean=3.96±0.20), providing information, amenities, and frequent updates. Similarly, email (mean=3.24±0.40) was found to be effective for communication, feedback, and promotions. Websites (mean=3.16±0.47) were considered useful for information and reservations, although slightly lower in guest access. YouTube (mean=3.49±0.23) played a pivotal role in attracting guests through videos, and their consistency in posting content contributed to their recognition. Overall, local tourism establishments in Calintaan showcased a good digital marketing presence (mean=3.49±0.23), indicating their effectiveness in utilizing these digital platforms to promote tourism.

Table 1. Utilization of digital marketing platforms.

Indicators	Mean	SD
Facebook		
1. The local tourism establishments in Calintaan have Facebook pages that they use to promote their hotels and resorts.	3.96	.20
2. The local tourism establishments' phone number is located on their Facebook page for guests who require more assistance or information.	3.89	.33
3. Links to the website for additional information and direct bookings are provided on the "About" page of the local tourism establishment's Facebook page.	3.80	.40
4. The amenities of the local tourism establishments are displayed on the Facebook page for the comfort of the guests.	3.80	.40
5. The Facebook page is updated frequently with fresh and interesting content to promote tourism to nearby businesses.	3.67	.56
Weighted Mean	3.82	.19
Email		
1. Providing email for each establishment is helpful for the guests where they can send their inquiries and ask for further information about the local establishments in Municipality of Calintaan.	3.54	.50

2.	Email is one of the most important methods of connecting with guests, such as asking for feedback throughout their stay at a tourism establishment and currently utilize by the tourism establishments.	3.16	.62
3.	Email marketing is a simple and effective way to draw clients and gather customer information.	3.04	.57
4.	Establishments send their customers promotional discounts and special offers that help tourism establishments in Calintaan to stand out from others	3.20	.67
5.	The email enhances communications by quickly disseminating information and providing fast response to customer inquiries.	3.24	.72
Weighted Mean		3.24	.40
Website			
1.	Website is one of their social media platforms where it gives essential details about the local tourism establishments.	3.46	.61
2.	Website easily locates tourist attractions as well as additional information for reservations online.	3.32	.65
3.	There is a convenience where tourist and guests can access the website that appear online provided by tourist establishments in Calintaan.	3.02	.71
4.	The availability of website is strictly provided to guests where it provides a map.	2.92	.70
5.	The website is always available since it provides a map or directions to their local tourism establishments.	3.10	.71
Weighted Mean		3.16	.47
Youtube			
1.	Guests are pleased and picks interest in the beauty of local tourist establishments by watching video posted in YouTube.	3.92	.27
2.	The local tourism establishments of Calintaan is consistent in updating new and attractive videos about the hotel and resort via YouTube.	3.80	.40
3.	The YouTube video's original and inventive material always assist local tourism businesses become well-known.	3.82	.39
4.	The accessibility, activity, safety, and cost are heavily promoted through YouTube the aids for visitors' decision.	3.46	.56
5.	YouTube provides link that will direct guest to the site for further information and direct bookings.	3.50	.58
Weighted Mean		3.49	.29
Overall Mean		3.49	.23

The study investigated the digital marketing impact on brand awareness, patronage, and customer satisfaction in local tourism establishments. The findings indicate that these establishments effectively use social media platforms to enhance brand awareness (mean=3.45±0.45), including promoting promotions, sharing guest experiences, and customizing

advertisements for different audiences. Regarding patronage (mean=3.32±0.45), they employ various strategies such as offering discounts, souvenirs, complementary services, and newsletters with special offers to foster customer loyalty. For customer satisfaction (mean=3.16±0.47), establishments provide easy booking and high-quality e-services, encourage feedback, and use digital marketing for prompt responses. The overall mean rating is 3.48±0.35, suggesting that digital marketing plays a significant role in promoting local tourism establishments, enhancing patronage, and ensuring customer satisfaction.

Table 2. Effectiveness in promoting local tourism establishments.

Indicators	Mean	SD
Brand Awareness		
1. The tourist establishment's social media outlets notify subscriber, if there is a promotion posted.	3.78	.41
2. The customers have found that using social media to raise awareness has benefited them in making better decisions when it comes to choosing a local tourism establishment.	3.44	.70
3. The local tourism establishment owners advertised what Calintaan businesses have to offer guests to attract potential guests and generate sales.	3.30	.68
4. The customers become aware of the brand and the products/services offered by local tourism establishments, and they use social media to share their experiences or to recommend it to others.	3.34	.63
5. Local tourism businesses that use social media advertising customize their adverts for their intended audience (e.g. bloggers, social media content creators, foreign and local tourists).	3.40	.67
Weighted Mean	3.45	.45
Patronage		
1. The local tourism establishment's reward repeats guests with discounts and referrals to value the loyalty.	3.70	.51
2. The local tourism businesses give loyal clients free gifts like souvenirs, especially when they visit on special occasions (e.g. holidays).	3.10	.65
3. The local tourism establishments provide complementary services to the regular customers to appreciate the patronage.	3.06	.68
4. The local tourism businesses pay close attention to every interaction with customers to express their gratitude for their business.	3.22	.76
5. To express gratitude for their business, the neighborhood tourist attraction distributes newsletters to regular clients that include special offers for the season.	3.52	.58
Weighted Mean	3.32	.45

Customer Satisfaction

1. The local establishments provide an easily booking reservation through social media where destinations could fulfil the guest's desire.	3.68	.51
2. The local tourism establishments upload films containing what activities/entertainment to meet the satisfaction of the guests.	3.46	.50
3. The local tourism establishments provide high-quality e-services to its guests through utilizing social media platforms.	3.46	.54
4. The local tourism establishments encourage customers to post feedbacks online to know if they meet the guest's satisfaction.	3.40	.64
5. The local tourism establishments use digital marketing as a tool to respond on client questions in order to assure customer satisfaction	3.42	.67
	Weighted Mean	3.16
	Overall Mean	3.48
		.47
		.35

The results revealed that Facebook demonstrated negligible correlations with brand awareness ($r=-0.002$, $p\text{-value}=0.985$), patronage ($r=-0.032$, $p\text{-value}=0.780$), customer satisfaction ($r=0.088$, $p\text{-value}=0.455$), and overall effectiveness ($r=0.006$, $p\text{-value}=0.957$). In contrast, email ($r=0.368$, $p\text{-value}=0.001$) and website ($r=0.369$, $p\text{-value}=0.001$) displayed significant positive correlations with all effectiveness indicators, emphasizing their pivotal role in enhancing brand awareness, patronage, and customer satisfaction. Youtube exhibited only minor correlations with patronage ($R=0.086$, $p\text{-value}=0.447$) and customer satisfaction ($r=0.240$, $p\text{-value}=0.037$). The overall analysis highlighted the effectiveness of email, website, and digital marketing platforms in significantly influencing brand awareness, patronage, and customer satisfaction within local tourism establishments.

Table 3. Correlation between the utilization of digital marketing platforms and their effectiveness.

Digital Marketing Platforms	Effectiveness							
	BA		P		CS		OE	
	R	p-value	R	p-value	R	p-value	R	p-value
Facebook	-.002	.985	-.032	.780	.088	.455	.006	.957
Email	.368**	.001	.503**	.000	.240*	.031	.536**	.000
Website	.369**	.001	.543**	.000	.325**	.003	.597**	.000
YouTube	.033	.776	.086	.447	.240*	.037	.124	.261
Overall	.346**	.001	.494**	.000	.325**	.003	.564**	.000

Legend: Brand Awareness (BA); Patronage (P); Customer Satisfaction (CS); Overall Effectiveness (OE)

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

DISCUSSIONS

The results show that according to the table of 50 respondents, Facebook, Email, Website, and YouTube are the digital marketing platforms used by tourism establishments in promoting. Most customers are accustomed to selecting the local tourism establishments they desire from among the four parameters, and they believe that Facebook and YouTube provide all the information. It is simpler to access even the reservations or inquiries they require because these platforms are also widely used. Because customers can make a reservation and pay online, they do not need to physically visit the establishment in the municipality of Calintaan, which makes it more convenient. Then they simply go to the tourism establishments they wish to have a suitable time. According to Mkwizu (2019) digital marketing, mobile, and content marketing opportunities are stimulated by technology users such as Facebook and YouTube subscribers. Digital marketing benefits customers in a wide range of ways, which include quicker access to product information. Sales and customer satisfaction have increased because of digital marketing efforts.

Customers' satisfaction stands out among the three parameters since every local tourism establishment uses social media to offer a variety of services to satisfy customers. Every customer should have a positive experience and suggest local tourism establishments to others because they were delighted with the high-quality services they received and the prompt response to their queries. Companies with a higher level of digital marketing practice achieve better business performance [Al-Dmour et al., 2023].

Local tourism establishments can benefit by using digital marketing platforms to better understand how customers utilize internet resources like Facebook, email, websites, and YouTube to make destination choice. It is more efficient to continue promoting the establishments to customers through brand awareness, patronage, and customer satisfaction. It might have a significant influence on customers and local tourism establishments in the municipality of Calintaan. According to Magano and Cunha (2020) digital marketing is critical for those who want to succeed in the tourism and hospitality industries. Consumers can now communicate with other internet users and their favorite brands. As a result, opportunities for new collaboration among stakeholders have emerged. To succeed in the industry, tourism organizations must grasp digital marketing and take advantage of mobile technology's possibilities. Customers are heavily impacted by the factor of confidence when looking for relevant information online.

The limitation of this study was the fact that the study focuses primarily on local tourism establishments in the specified area of Calintaan, Occidental Mindoro. However, like any other existing research study, this research paper has limitations, primarily due to the limited local tourism establishments that offer amenities and accommodation, as well as the pandemic. Because of the strict health protocol, there may be a limited source of information and difficulty gathering responses and data. Furthermore, the researchers must adhere to their timeline and schedule of completing the study within the academic year 2022-2023.

CONCLUSIONS

This study sheds light on the digital marketing strategies employed by local tourism establishments in Calintaan and their impact on customer behavior. It is evident that Facebook stands out as a preferred platform for customers to engage with local tourism services, owing to its user-friendly interface and accessibility to information about desired amenities. Customer satisfaction is nurtured through the receipt of positive feedback, contributing to a more immersive guest experience. While patronage levels may vary, with rewards and complementary services reserved for select clients, this approach strategically piques interest in visiting the charming tourist destinations of Calintaan. The comprehensive findings affirm the effectiveness of digital marketing platforms, encompassing Facebook, email, website, and YouTube, in elevating brand awareness, patronage, and customer satisfaction for local tourism establishments. This research underscores the pivotal role of digital marketing strategies in enhancing the overall appeal of these local establishments, demonstrating their substantial impact on the tourism landscape.

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RESEARCH ARTICLE

LEVEL OF COMPLIANCE OF TRICYCLE DRIVERS ON TRAFFIC RULES AND REGULATIONS IN SAN JOSE, OCCIDENTAL MINDORO

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ABSTRACT

The study was conducted to determine the level of compliance of tricycle drivers on traffic rules and regulation in San Jose, Occidental Mindoro. The study used descriptive correlational research design to utilize the study wherein the quantitative data were gathered using survey questionnaire. The questionnaires were distributed to 105 selective TODA'S member. Part I covers profile of the respondents, Part II dealt with the level of compliance on ten commandments for a safe drive, level of compliance on pavement markings and level of compliance on traffic sign/signals and islands.

Result showed that most of the respondents were middle-adult, male who reached high school level and are operating for 10 years and more.

It was revealed that the tricycle drivers are highly compliant on the ten commandments of safe drive, pavement markings and traffic signs/signal and island.

Further, the level of compliance of tricycle drivers on traffic rules and regulation decreases when they get older, it also decreases if they are operating for a long period of time. Lastly, the level of compliance of the drivers decreases as their educational attainment increases.

Keywords: *tricycle drivers, traffic rules and regulation, compliance, safe driving*

INTRODUCTION

Every day, tricycle drivers play an important role in the lives of passengers; they are the mode of transportation for many commuters, so it is critical that they follow traffic rules and regulations. However, tricycle drivers contribute to traffic congestion such as traffic, violation of traffic rules, and accidents. Passengers were unaware of road safety features such as road signs and markings and relied heavily on the drivers' ability to follow rules and regulations (Castillo, et al., 2019). The drivers are knowledgeable but not compliant, which is concerning because the majority of the drivers are licensed and should be well-versed in traffic rules and regulations, but it is also expected that they will be obedient (Aydinan, 2020).

Traffic rules, regulations, and guidelines must be established and adhered to by drivers in order to reduce the serious risk of an accident (Nilkamal Pvt Ltd, 2018). According to the Philippine Statistics Authority, motorcycle-related injuries account for 69 percent of all reported transportation incidents in the country (Lu, 2016). Due to these statistics, it is beneficial for motorcycle drivers to understand the most common cause of accidents so that they can use it to reduce their risk (Oltaye et al., 2021; Oxley et al., 2013). The most significant cause of road traffic accidents was drivers' lack of awareness of traffic rules, regulations, and laws, as well as their noncompliance with these rules and regulations (Al-Khalidi, 2006).

A compliance survey, which can be used to determine population knowledge and attitudes about traffic rules and regulations on the road, is a powerful tool that can be used to determine population knowledge and attitudes (Vandamme, 2009). The researcher was prompted to conduct this study in order to raise issues related to tricycle drivers' level of compliance with road traffic rules and regulations in San Jose, Occidental Mindoro. When it comes to traffic rules and regulations, this study can be beneficial to the Land Transportation Office (LTO) and traffic enforcers.

METHODOLOGY

Research Design

This research used the descriptive correlational research design. The method describes and integrated what exist. The Descriptive correlational research involves collecting data in order to test hypothesis or answer questions concerning the status of the subject of the study. It also involves description recording, analysis and interpretation of conditions that now exist. This further describe the level of compliance of tricycle drivers on traffic rules and regulation.

Study Site

This study entitled was conducted at San Jose Public Market Area. It is located at Barangay Poblacion IV and V of the said town where the TODA is located.

Sample

The respondents of the study are the professional and non-professional drivers of Tricycle Operators and Drivers Association (TODA) of San Public Market, San Jose, Occidental Mindoro. The participants were chosen purposively to get the necessary information. A total of 105 respondents were selected, the number of respondents was calculated based on the

number of parameters. Since this study has 7 parameters multiplied by 15, then the calculated number of respondents is at least 105 to have strong data analysis.

Research Instrument

To get appropriate data needed, the researcher adopted questionnaire from (Aydinan, 2020). This study used questionnaire that answer the problem and it will be consisting several questions and divided into three parts. The first part aimed to determine the profile of respondents in terms of age, sex, years of operation, and educational attainment. The second part aimed to determine the level of compliance of tricycle drivers in traffic rules and regulation in terms of Ten Commandments of safe driving, pavement markings, tricycle driver's traffic signs/Signals and Island. The third part aimed to determine the significant relationship between the profile of the respondents and the level of compliances of tricycle drivers' traffic rules and regulations in San Jose Occidental Mindoro.

Data Collection

Having found the research instrument reliable and valid, the researchers proceeded in requesting authorization from the research committee to perform the study based on the proposal validation. Prior to conducting research, a letter of approval will be sent to barangay hall of barangay 4. Then the researcher proceed in asking permission and approval from the tricycle drivers where they are the respondents. Upon approval, the researcher administered the primary questionnaires to the respondents. The tricycle drivers personally answered the questionnaires. The researchers immediately Retrieved the questionnaires after the respondents were through answering. After which, the data gathered were organized, summarized and analyzed, tabulated and collected for better analysis and interpretation.

Data Analysis

This study used descriptive statistics such as frequency count, percentage analysis, weighted mean and Kendall's Tau-b were the statistical tools in this study to describe the level of compliance of tricycle drivers on traffic rules and regulation

RESULTS

The result shows that most of the respondents belong to middle-adult (36.2%), male (84.8%), operating for 10 years and more (56.2%), and at least reached high school (54.3 %).

Table 1. Profile of the respondents.

	Profile	Frequency	Percentage
Age			
	21-30	14	13.3
	31-40	26	24.8
	41-50	38	36.2
	50 above	27	25.7

Sex		
Female	16	15.2
Male	89	84.8
Years of Operation		
1-3 years	17	16.2
4-6 years	22	21.0
7-9 years	7	6.7
10 years above	59	56.2
Educational Attainment		
Elementary	13	12.4
High School	57	54.3
College	35	33.3

Level of compliance of tricycle drivers

The result shows that the respondent of the study is highly compliant with the Ten Commandments for safe drive [4.63+.72]. Moreover, they are also highly compliant with the pavement markings [4.06+.72]. Additionally, they are highly compliant with the traffic sign/signals and islands [4.13+.72].

Table 2. Level of compliance on the traffic rules and regulations.

Compliance Variables	Mean	SD
Ten Commandments for a safe drive		
Giving way to pedestrian	4.66	0.62
Do not use gadgets while driving	4.50	1.10
Using signal light when turning	4.89	0.35
Not overtaking in solid yellow lane	4.51	0.77
Following the speed limits	4.59	0.73
Do not hog the passing or overtaking lane	4.67	0.80
Always keep cool when driving	4.50	1.02
Not parking at do not park signs	4.73	0.49
Do not driving while in the influence of alcohol	4.64	1.02
Weighted Mean	4.63	0.72
Level of Compliance in Pavement Markings		
Overtaking only in a single white dotted lane is present and opposing lane is clear	4.63	0.70
Overtaking when there is single continuous lane	4.18	1.08
Overtaking by passing over the solid white lines on four lanes	4.25	0.95
Overtaking when double yellow or white line	2.40	1.40
Overtaking when there is single yellow or white dotted line and the solid line is in my side	3.82	1.09
Passing on the passing lane if it is present on the road	4.30	0.88
Stopping and loading or unloading in pedestrian lane	2.93	1.59

Following the directional arrows	4.77	0.59
Stopping at stop line before intersection or pedestrian lane	4.57	0.93
Avoiding bumping on traffic cones in case of accident	4.79	0.68
Weighted Mean	4.06	0.88
Level of Compliance in Traffic Sign/Signals and Islands		
Observing caution when triangle traffic signs are present on the road	4.83	0.43
Following prohibited signs and restrictive signs like "No Entry"	4.89	0.40
Following the mandatory signs like "Minimum Speed"	4.58	0.72
Following the stop and yield signs	4.79	0.55
Unloading and loading passengers on designated areas on the road	4.48	0.96
Parking on pedestrian island	2.50	1.44
Counter flowing when there is division island	4.22	1.17
Following channelize island especially on intersection	4.57	0.79
Following rotary island if it is present	4.73	0.79
Weighted Mean	4.13	0.69

Scale: 5.00= Very High, 4.00-4.99= High, 3.00-3.99= Moderate, 2.00-2.99= Low, 1.00-1.99= Very Low

Correlates of the level of compliance of tricycle drivers' traffic rules and regulations

The result shows that the level of compliance with the traffic rules and regulation has significantly negative correlation with the number of years of operation (r-value=-.80, p-value ≤0.001); age (r-value=-.90, p-value≤0.001), and educational attainment (r-value=-0.78, p-value ≤0.001). [Table 3].

Table 3. Correlates of the level of compliance of tricycle drivers' traffic rules and regulations.

Profile	TCSD		PM		TSSI		LOC	
	R	p-value	R	p-value	R	p-value	R	p-value
Years of Operation	-.516	.000*	-.797	.000*	.794	.000*	-.795	.000*
Age	-.705	.000*	-.878	.000*	-.874	.000*	-.868	.000*
Educational Attainment	-.785	.000*	-.783	.000*	-.799	.000*	-.777	.000*

Legend: Ten commandments of safe drive (TCSD); pavement marking (PM); traffic sign/signals and Islands (TSSI); level of compliance (LOC)

Note: * p-value of <0.05 is significant

DISCUSSIONS

The results demonstrates that the transportation sector is still controlled by men strengthens the notion that driving is still primarily done by men. (Ames, et al. 2014). Younger drivers were also more likely to be non-compliant (Stephens, et al., 2017). Employed drivers have an increased road traffic violation tendency (Macharia, 2022).

The respondents are often using their signal lights when they are turning to be able to avoid collision or further accident. Drivers can effectively communicate with one another by using their turn signals and lane change indications. Turn signal use also has important safety

ramifications [Muley, et al., 2022]. Tricycle drivers are always in a hurry, even if there is approaching traffic, and because they are confident that their vehicles are small enough to pass through other large vehicles, they are remarkably more likely to engage in unsafe behavior than other vehicle drivers, even during traffic, especially on straight roads [Uzondu, et al., 2019].

In pavement markings among all the indicators it showed that the drivers are often avoiding bumping on traffic cones. They are highly compliant in order to avoid further accident and also to lessen the probable traffic. Meanwhile the respondents occasionally overtaking when a double yellow or white line is present. The double yellow lane is strictly prohibited to overtake or counter-flow in order to avoid the accident but the respondents are disregarding it. Relative to the foregoing findings, it shows that drivers can adapt their driving accordingly by using markings and traffic signs to give them timely and accurate information about an impending danger. Road markings distinguish the roadway surface and give drivers visual cues. Road markings have been used since they were originally introduced and are now a regular component of transportation infrastructure [Babić, et al., 2020].

In traffic sign/signals and islands the respondents often follow the "no entry" signs. It tells that the drivers are always following the no entry sign in order to avoid the citation ticket on their violation. The result is supported by the idea that drivers' knowledge of traffic signals mostly depends on its quantity in the area the respondent frequently travels through and the ease of a layout that is simple enough for a driver to understand [Fernandez, et al., 2020].

The result shows that the drivers go older the least they are following the traffic rules and regulation. The findings supported the study of Lee, et al. (2014) that stated that driving skill of older drivers was found to decline with age also logistic regression analysis, the cognitive abilities associated with the crash occurrence were working memory, decision making under pressure of time, and confidence in driving at high speed. The result shows that the longer the driver is operating the tricycle; they are being not compliant with it. The findings supported the study commission of traffic violations increased with increasing driver experience whilst the frequency of violation of traffic regulations on speeding and overtaking when prohibited [Akaateba, et al., 2015]. The result shows that the higher the education they get the least they follow the traffic rules. Relative to the foregoing finding, it shows that the likelihood of being a high-risk driver in Spain increases with educational attainment [Martínez-Gabaldón, et al., 2019]. Additionally, drivers trained from driving schools reported an overall higher mean frequency of commission of traffic violations compared to other drivers [Akaateba, et al., 2015].

While the descriptive correlational research design employed in this study served as a valuable approach to investigate the level of compliance of tricycle drivers with traffic rules and regulations in San Jose Occidental Mindoro, it is essential to acknowledge several limitations inherent in the research methodology and data collection process. The descriptive correlational research design is primarily focused on describing and correlating variables, which makes it challenging to establish causal relationships. This limitation prevents the study from identifying the underlying causes or factors contributing to tricycle drivers' compliance with traffic rules and regulations. Future research may benefit from more advanced research designs, such as experimental or quasi-experimental approaches, to explore causality more

rigorously. The sample size for this study was determined based on a parameter calculation, resulting in 105 respondents. While this sample size was deemed adequate for the specific parameters considered, the study may face limitations in terms of generalizability. The findings may not represent the broader population of tricycle drivers in different geographical regions or cultural contexts. Further research with larger and more diverse samples could enhance the external validity of the results. Data collection relied on self-reported information from the tricycle drivers. Self-report data can be influenced by various biases, including social desirability bias, where respondents provide answers, they believe are socially acceptable. This subjectivity could affect the accuracy and reliability of the data. Combining self-report data with objective observations or external verification methods could strengthen the data quality. While this study has contributed valuable insights into the compliance of tricycle drivers with traffic rules and regulations in a specific locale, these limitations should be acknowledged when interpreting and applying the findings. Addressing these limitations through more robust research designs, broader sampling, culturally adapted instruments, and objective data verification could enhance the validity and applicability of future research in this area.

CONCLUSIONS

This study offers valuable insights into the demographics and compliance behaviors of tricycle drivers in San Jose Occidental Mindoro. The findings suggest that tricycle drivers, while generally highly compliant with traffic rules and regulations, may benefit from targeted interventions aimed at addressing the decline in compliance associated with factors such as age, experience, and educational attainment. These conclusions can serve as a basis for developing policies and programs designed to enhance road safety and regulatory compliance among tricycle drivers, ultimately contributing to safer and more orderly transportation in the region. Further research and interventions are warranted to build upon these findings and foster a safer road environment for all road users.

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RESEARCH ARTICLE

TIME MANAGEMENT, E-LEARNING EDUCATIONAL ATMOSPHERE, AND ONLINE LEARNING STRATEGIES OF BACHELOR OF ELEMENTARY EDUCATION STUDENTS OF THE COLLEGE OF TEACHER EDUCATION IN OCCIDENTAL MINDORO STATE COLLEGE

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ABSTRACT

This descriptive correlational study aimed to explore the relationship of time management, e-learning educational atmosphere, and online learning strategies of Bachelor of Elementary Education Students of the College of Teacher Education in Occidental Mindoro State College.

A total of 140 students were selected as respondents who participated in the study. The researchers employed an adopted research questionnaire of Time Management Questionnaire (TMQ), E-Learning Educational Atmosphere Measure (EEAM), and Online Learning Strategies Scale (OLSS). Results were interpreted through descriptive statistics such as frequency and percentage while Pearson Product Moment Correlation Coefficient was utilized to find the relationship of the respondents' time management, e-learning educational atmosphere, and online learning strategies.

Findings revealed that the majority of students responded in this study have a high level of time management. The level of time management of the students is significantly correlated with their extent of online learning strategies and the level of e-learning educational atmosphere of the students is significantly correlated with their online learning strategies. Furthermore, there is no significant relationship between the level of time management and the extent of online learning strategies.

Keywords: *time management, e-learning educational atmosphere, online learning strategies, bachelor of elementary education*

INTRODUCTION

Time management is the language of education and is very important to every individual most especially to someone who has a lot to do. Students' time management skills are becoming more and more crucial in today's hectic environment (Razali et al., 2018). The realities of being part of the modern world demand that young people have abilities in efficiency and productivity, notwithstanding the desire for a simpler time when time seemed to flow more slowly. Time must be used wisely because it is a limited resource, much like energy and money (Haddock et al., 2022). Planning and regulating the amount of time spent on a particular task is the essence of time management. Time is needed to be managed to end up the day with accomplishments given that time cannot be turned back. Most students run out of time when an assignment is assigned to them, and they are not able to finish it before the last date while others have plenty of time as they are trained to manage their time effectively (Al-Yami et al., 2021).

Furthermore, students' greatest challenge was linked to their learning environment at home, while their least challenge was technological literacy and competency. The findings further revealed that the COVID-19 pandemic had the greatest impact on the quality of the learning experience and students' mental health (Barrot et al., 2021). The researchers would like to find out if the students of elementary teacher education have the same experiences as they have before, especially the freshmen. It also aroused the researchers' interest on how the students handled the circumstance despite juggling multiple assignments, lesson plans, demonstration lessons, thesis, and field studies in a novel setting. The researchers further believe that to accomplish the demands of academic related tasks in their chosen program, one must be able to manage their time wisely, choose a conducive learning environment, and develop their own learning strategies. Additionally, what methods of instruction elementary teacher education students employ to complete the task efficiently and how do they carried out with a well-planned approach that will not put them under strain or cause them distress due to the high standards they must meet to remain in their course.

Moreover, there are no studies that have determined the potential relationship among time management, e-learning educational atmosphere and online learning strategies. What more is, considering difficulties and hurdles college students face, this could lead to the creation of solutions that would help them manage their time more effectively. As a result, the study aimed to determine the time management, e-learning educational atmosphere, and online learning strategies of Bachelor of Elementary Education students at College of Teacher Education in Occidental Mindoro State College.

METHODOLOGY

The study adapted the descriptive-correlational survey design. The design is considered suitable for the study as it involves gathering data from members of the population in order to determine its current status with regard to the descriptive statistics of time management, e-learning educational atmosphere, and online learning strategies and the relationship between these variables.

The 140 respondents of this study were selected using simple random sampling from 276 Bachelor of Elementary Education students at the College of Teacher Education in Occidental Mindoro State College for the academic year 2021-2022. The total population of the students was 276. This study used random sampling technique. The study used questionnaires as basic instruments in gathering data. The level of the time management of the respondents was measured using the Time Management Questionnaire (TMQ) by Alay and Koçak (2002), composed indicators such as time planning, time attitude, and (3) time awasters. To measure the level of the e-learning educational atmosphere of the respondents, this study used the E-Learning Educational Atmosphere Measure (EEAM) which was developed by Mousavi et al. (2020) with indicators such as program effectiveness, teaching quality, ethics and professionalism, learner support, safety and convenience, and awareness of the rules. Moreover, the study utilized the Online Learning Strategies Scale (OLSS) to measure respondent's online learning strategies which includes indicators such as anxiety, attitude, study aids, self-awareness, internet literacy, and concentration. The items in time management questionnaires were rated on a 1 ['Never'] to 5 ['Always']. Both e-learning educational atmosphere and online learning strategies questionnaires are rated on a 1 ['Very Low'] to 5['Very High'].

Prior to data gathering, the researchers sought the permission of the Dean of College of Teacher Education of Occidental Mindoro State College to conduct their study. Upon approval of the conduct of the study, the questionnaires were encoded in Google forms and distributed to the respondents online. After the data gathered, they analyzed, tabulated, and interpreted.

RESULTS

Level of the Respondents' Time Management

The results shows that the elementary teacher education responded in the study have high level of time management skills (mean=3.62). Further, data revealed that the students favor time attitudes out of the three-time management (mean = 3.84). The finding also shows that the respondents are highly capable in planning their use of their time by setting goals and deadlines and scheduling activities for the foreseeable future (mean = 3.74). The respondents reported still moderate levels of time wasting (mean = 2.76) [Table 1].

Table 1. Level of the respondents' time management.

Indicators	Mean	Interpretation
Time planning	3.74	High
Time attitudes	3.84	High
Time wasters	2.76	Moderate
Grand Mean	3.62	High

Legend: VL = 1.00-1.49; L = 1.50-2.49; M = 2.50-3.49; H = 3.50-4.49; VH = 4.50-5.00

Level of the Respondents' E-Learning Educational Atmosphere

This study revealed that the elementary teacher education students responded in this study have a high level of e-learning educational atmosphere (mean=3.75). The results also show that the respondents perceived high level of program effectiveness (mean=3.74), teaching quality (mean=3.85), ethics and professionalism (mean=3.97), learner support (mean=3.63), safety and convenience (mean=3.51), and awareness of the rules (mean=3.65). However, despite this, there is still an observed misuse of online learning resources among the students, specifically in terms of proper citation of their sources of information which is a part of the proper educational research system (Table 2).

Table 2. Level of the respondents on e-learning educational atmosphere.

Indicators	Mean	Interpretation
Program effectiveness	3.74	High
Teaching quality	3.85	High
Ethics and professionalism	3.97	High
Learner support	3.63	High
Safety and convenience	3.51	High
Awareness of the rules	3.65	High
Grand Mean	3.75	High

Legend: VL = 1.00-1.49; L = 1.50-2.49; M = 2.50-3.49; H = 3.50-4.49; VH = 4.50-5.00

Extent of the Respondents' Online Learning Strategies

The study examined the extent of respondents' strategies for online learning, considering various indicators. The results indicate that anxiety levels are at a moderate (mean=2.68), suggesting that while some respondents exhibit moderate levels of anxiety regarding online learning, it is not overly pronounced. Respondents also demonstrated a moderate attitude (mean=3.33), indicating a balanced outlook on online learning. Study aids is highly utilized (mean=3.52), highlighting that many respondents actively utilize additional resources to support their online learning endeavors. Self-awareness (mean=4.13) suggests a reasonable understanding of individual strengths and weaknesses in online learning. Internet literacy (mean=4.33) indicates the ability to navigate online platforms effectively. However, concentration levels were notably low (mean=1.98), indicating challenges in maintaining focus during online learning. Overall, there is a moderate overall level of online learning strategies (mean=3.35) among the respondents. These findings offer valuable insights into the strategies and challenges associated with online learning for this group.

Table 3. Extent of the respondents' strategies for online learning strategies.

Indicators	Mean	Interpretation
Anxiety	2.68	Moderate
Attitude	3.33	Moderate
Study aids	3.52	High
Self-awareness	4.13	Moderate
Internet literacy	4.33	Moderate
Concentration	1.98	Low
Grand Mean	3.35	Moderate

Legend: VL = 1.00-1.49; L = 1.50-2.49; M = 2.50-3.49; H = 3.50-4.49; VH = 4.50-5.00

Relationship between the Respondents' Level of Time Management and Their Strategies for Online Learning

The results revealed that the respondent's level of time management is positively correlated with their strategies for online learning ($R=0.325$; $p<0.001$). However, the relationship is weak by which the respondent's level of time management cannot account strongly for the changes of online class strategies. Further, results revealed that the respondent's level of satisfaction on e-learning atmosphere is positively correlated with their strategies for online learning ($R=0.533$; $p<0.001$). The moderate positive relationship indicates that the students' level of satisfaction in the e-learning atmosphere corresponds to their level of strategies for online classes [Table 4].

Table 4. Correlation between satisfaction with the e-learning atmosphere, time management, and strategies for online learning.

Variables	Strategies for Online Learning	
	β Coefficient	p-value
Time management	0.325	<0.001
Satisfaction on e-learning atmosphere	0.533	<0.001

Legend: p -value < 0.05 = Significant

DISCUSSIONS

Managing one's time is an important skill that college students must have, especially for board programs such as the Bachelor of Elementary Education. This skill not only assures the appropriate division and allocation of time of the students, but also allows them to vet which activities must be prioritized and how much time must the said activities consume. In a highly competitive environment such as the College of Teacher Education of Occidental Mindoro State College-San Jose Campus where retention and admission policies are observed to the dot, the ability of the student to effectively manage his/her time for his/her activities may mean the difference it takes to stay in the college. The elementary teacher education students responded in this study have a high level of time management. This supports the findings of Broadbent (2017) that managing one's time is an art that every learner must command and familiarize the skill for the sake of betterment.

The students who responded in this study are generally highly satisfied with the educational atmosphere they are experiencing in their online classes. This supports the findings of Chang et.al (2015) who determined the features of technology-supported learning environments base on participants' perception through relevant literature from 1998 to 2014. Students tend to be more productive in a welcoming and conducive learning environment. As such, it is important that such an environment is provided for the students regardless of age and level of education. This is often done by ensuring a bias-free and inclusive learning environment in the class.

There is a lot of research exploring the students' online learning strategies. However, many of these focuses primarily on the students' online learning skill set and their technological skills. It is equally important that the emotional readiness of the students is explored so that the appropriate learning designs and classroom instruction strategies be employed to address students' affective concerns in terms of online learning strategies. This study shows that the elementary teacher education students in this study are moderately prepared for online learning. This supports the findings of Joosten and Cusatis (2020) as their study revealed that online learning offers students the opportunity to decide, what, where, and how to learn.

It is hypothesized in this study that the level of time management of the respondents is related to their level of online learning strategies, that is, the more skillful the students are in managing their time, the higher their level of strategies will be. Supporting this finding is that of Hung et al. (2010) where they found that as the time management of the students becomes established, they tend to become more ready in learning using online platforms.

Finally, it was found that there is moderate positive relationship indicates that the students' level of satisfaction on e-learning atmosphere corresponds to their level of strategies for online classes. Like this finding, it is also found in their study that when students have a better perception of their e-learning educational atmosphere, the higher their strategies in learning using the online learning modality (Lee & Mendlinger; 2011).

CONCLUSIONS

Based on the findings of this study, the following conclusions are drawn. The students could use their time effectively or productively, especially in their studies. With this, it is suggested that students may leave enough time for entertainment in social media to maintain the level of their time management. The students have a high fulfillment of expectations, or needs, or the pleasure derived from e-learning educational atmosphere. As such, it is important that such an environment is provided for the students regardless of age and level of education. This is often done by ensuring a bias-free and inclusive learning environment in the class.

The students are able or willing to do something using the online learning modality. The more the students can manage their time management, the more that they are ready to learn using the online learning modality. Time management and online learning satisfaction may be considered by teachers in providing activities that aim to improve students' online learning strategies as they were found to significantly influence the students' strategies in the new learning modality. When students are satisfied with e-learning educational atmosphere, their strategies for online learning are also at a higher extent. It is equally important that the

emotional readiness of the students is explored so that the appropriate learning designs and classroom instruction strategies be employed to address students' affective concerns in terms of online learning strategies.

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RESEARCH ARTICLE

CHALLENGES AND COPING MECHANISMS IN ONLINE LANGUAGE LEARNING OF ENGLISH MAJOR STUDENTS AT OCCIDENTAL MINDORO STATE COLLEGE

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ABSTRACT

The pandemic has forced higher education institutions into online learning, affecting language learning, especially English. This study examines the challenges language learners face and their coping mechanisms in this new environment. We employed a descriptive-correlational research design focusing on English major students at Occidental Mindoro State College-San Jose Campus, utilizing a five-point Likert Scale and a validated questionnaire for data collection.

Analysis of the data revealed that English major students encountered moderate challenges in online language learning, with low internet accessibility, moderate learning environment issues, and high workload concerns. Students employed coping mechanisms to a moderate extent, particularly in managing behavioral distractions, behavioral activation, and seeking social support. The study also found a direct influence of internet accessibility on coping with behavioral distractions, while learning environment challenges had an inverse impact on coping mechanisms related to social support.

Keywords: *online language learning, challenges, coping mechanism, behavioral distractions, behavioral activation, COVID-19,*

INTRODUCTION

The unexpected onset of the COVID-19 pandemic has precipitated a sweeping transformation in various facets of society, most notably in education. To ensure the continuity of learning, especially in higher education, traditional face-to-face instruction rapidly transitioned to online platforms (Mahyoob, 2020). This shift significantly impacted language education, catching both educators and learners unprepared (Hartshorn & McMurry, 2020).

Online language instruction became the new norm, compelling higher education institutions to adapt (Beatty, 2013). This study examines the adjustments and challenges faced by students, with a focus on English language acquisition. Filipino students encountered multifaceted challenges, including internet connectivity issues, reduced peer interaction, and limited speaking practice (Francisco, 2021). These challenges prompted resourceful coping strategies, such as relocating for better connectivity and peer support. However, ESL Filipino college students often found themselves self-reliant due to limited access to assistance from teachers and peers (Agum et al., 2021).

This study centers on Occidental Mindoro State College (OMSC), which initiated the transition to online learning in the 2019-2020 academic year. OMSC's diverse experiences with online learning platforms, such as Zoom, Google Meet, Messenger, and social media networks, garnered positive feedback from graduate students (Casanova & Paguia, 2021). Yet, it is evident that online learning presents challenges for tertiary students, especially in the realm of language education.

The abrupt shift to online learning, necessitated by the pandemic, has underlined the disparities between traditional and online learning, making language acquisition, particularly English as a foreign language, a formidable task for Filipino learners. Recognizing the vital role of technology in education during the pandemic, it is imperative to investigate the extent of challenges faced by students and the coping mechanisms employed in online language learning. This study, with a specific focus on English major students at OMSC-San Jose Campus, aims to shed light on these issues, given the evolving landscape of education and its impact on language acquisition.

METHODOLOGY

Research Design

The study employed a descriptive-correlational research design, which explored the challenges and coping mechanisms in online English language learning. This approach involved both descriptive analysis of the challenges and a correlational examination of how these challenges related to the coping mechanisms used by the respondents. Additionally, the study had a predictive aspect, identifying which challenges best predicted the specific coping mechanisms employed in online language learning.

Study Site

The researchers conducted the study at Occidental Mindoro State College – San Jose Campus, Quirino St., San Jose, Occidental Mindoro, Philippines during the second semester of Academic Year 2021-2022. The figure shows the locale where the study was conducted.

Sample

The researchers selected a total of 43 respondents who are second, third, and fourth-year English major students from the College of Teacher Education of Occidental Mindoro State College for the Academic Year 2021-2022 through complete enumeration. They were chosen respondents according to their involvement in studying English in their curriculum.

Research Instrument

The research instrument used in this study was a researchers-made questionnaire and was designed based on the review of related literature and studies and the conceptual framework to measure the independent and dependent variables. The questionnaire was divided into two sections. To measure the independent variable of the study, the first section of the questionnaire consisted of three challenges encountered in online language learning: internet accessibility, learning environment, and workload issues. Meanwhile, the second section of the questionnaire measured the dependent variable of the study using three coping mechanisms used in online language learning: behavioral distraction, behavioral activation, and social support. Each section consisted of 15 questions, making a total number of thirty questions in the questionnaire. Respondents were asked to respond to the items provided on a scale rated on five sequential points, always=5 to never=1.

The questionnaire was validated by the experts to ensure that the questionnaire used can cope with the standard level of the test administration.

Data Collection

In this study, the researchers gathered the data through an online survey with the following procedures: First, the researchers created a research-made questionnaire that answered the needed data for the study. Subsequently, the researchers underwent the questionnaire for validation. Then, the researchers sent a letter to the dean and program head requesting their approval to conduct the survey. Afterward, the survey questionnaire was distributed to the respondents through Google Forms. Lastly, after all the data was collected, the researchers tallied, analyzed, and interpreted it according to the specific problems set forth.

Ethical Consideration

Participation in the study was required among the participants or English majors involved. Complete anonymity of the research participants was also observed. The respondents were informed of the right to confidentiality and privacy. Any clarifications were entertained by the researchers to facilitate an easy understanding of the statements and terminologies in the research instrument. The questionnaire was utilized through Google forms where the result was coded and listed in a separate sheet; the code from the list was later matched after data collection. Specific information on the questionnaires could not be linked to specific individuals. Access to the data was limited only to the researchers.

Data Analysis

For the analysis of the gathered data, the researchers organized and encoded the data using statistical software. The data collected were also organized and presented in tabular form for simple interpretation. Meanwhile, to address the problems of this study, descriptive statistics, such as the computation of the mean, were employed in determining the extent to which the respondents have experienced challenges in online language learning. Likewise, it is also used in measuring the extent to which the respondents used coping mechanisms in online language learning. Moreover, Pearson product-moment correlation was used to examine the relationship between the extent of the challenges encountered and coping mechanisms used in online language learning.

RESULTS

Data presented in Table 1 shows that respondents are moderately experiencing challenges in online language learning (grand mean=3.15). It also reveals that workload issues (overall mean=3.94) are perceived as the highest and internet accessibility (overall mean=2.46) is perceived as the lowest.

Table 1. The extent of challenges encountered by the respondents in online language learning.

Indicators	Mean	Interpretation
<i>Internet Accessibility</i>		
I cannot attend online language classes due to the poor internet connection in my location.	2.42	Low
I cannot attend online language classes due to insufficient data caused by a poor internet connection.	2.23	Low
I have difficulty accessing online language lectures and downloading materials due to poor network connections.	2.53	Moderate
Due to slow internet speed, I encounter disruptions and difficulty when taking online tests and assessments.	2.79	Moderate
I cannot submit my assignments and activities on time due to slow internet speed.	2.30	Low
Overall Mean	2.46	Low
<i>Learning Environment</i>		
I find it more difficult to concentrate in class because of the distractions (e.g., household chores and noises).	3.65	High
I am distracted by using smartphones or other devices while having online language classes (e.g., messaging others, frequent notifications, surfing social media).	3.60	High
I procrastinate doing my activities and assignments because of lack of motivation and feedback from teachers.	3.00	Moderate
I procrastinate doing my activities and assignments because of lack of motivation from my parents.	2.23	Low

I am less motivated to attend online language classes because of lack of face-to-face interactions with teachers and classmates and collaboration with peers.	2.74	Moderate
Overall Mean	3.04	Moderate
<i>Workload Issues</i>		
I experience increased stress in doing assignments and activities during online language learning.	4.00	High
I find my activities and assignments in online language learning more difficult than in face-to-face language classes.	3.53	High
I experience an increase in stress in receiving many tasks from different teachers at the same time.	4.30	High
I experience increased stress in having activities with a very short deadline.	4.14	High
I experience difficulty in managing my time at home and school.	3.74	High
Overall Mean	3.94	High
Grand Mean	3.15	Moderate

Data presented in the Table 2 shows that respondents are using coping mechanisms in online learning to a moderate extent (grand mean=3.18). It also reveals that behavioral activation (overall mean=3.27) is perceived as the highest and behavioral distraction (overall mean=3.11) is perceived as the lowest.

Table 2. The extent of coping mechanisms used by the respondents in online language learning.

Indicators	Mean	Interpretation
<i>Behavioral Distractions</i>		
I watch television to divert my attention away from the stressful activities of online language learning.	2.49	Low
I listen to music to help me cope with the stress of online language learning.	3.95	High
I engage in recreational activities such as physical exercise (e.g. stretching and a 10-minute walk) to relieve stress.	2.42	Low
I spend my time doing my hobbies, such as reading books, to relieve stress and feel relaxed.	3.37	Moderate
I spend time on instant messaging to relieve the stress of online language learning.	3.33	Moderate
Overall Mean	3.11	Moderate
<i>Behavioral Activation</i>		
I incorporate offline features into my learning strategies to cope with online language learning (e.g., downloading the tasks and working on them offline).	3.58	High
I ask my teacher to consider extending the deadline of my activity if I am experiencing an unstable internet connection.	2.93	Moderate

I avoid spending too much time browsing on social media to be productive.	3.12	Moderate
I create timetables to manage my time well.	2.84	Moderate
I take breaks when I am overwhelmed by online language learning activities.	3.91	High
Overall Mean	3.27	Moderate
<i>Social Support</i>		
I receive encouragement from my family in dealing with the challenges during an online language class.	3.21	Moderate
I am assisted by my parents when completing school-related tasks and activities.	2.29	Low
I feel motivated by the social support that I am getting.	3.40	Moderate
I feel less stressed with the social support that I am getting.	3.44	Moderate
I have a positive mindset toward learning because of the empathy I receive from my teachers.	3.42	Moderate
Overall Mean	3.15	Moderate
Grand Mean	3.18	Moderate

The study revealed that the challenges encountered in terms of internet accessibility have a significant positive relationship with coping mechanisms in terms of behavioral distractions ($r= 0.499, p=0.001$). However, the learning environment ($r= 0.275, p=0.074$) and workload issues ($r= -0.001, p=0.997$) were not significantly correlated with coping mechanisms in terms of behavioral distractions. All of the three indicators of challenges encountered in online language learning which are internet accessibility ($r=0.285, p=0.64$), learning environment ($r= -0.094, p=0.549$), and workload issues ($r=0.057, p= 0.715$) have no significant relationship with coping mechanisms in terms of behavioral activation. The three indicators of challenges encountered in online language learning which are internet accessibility ($r=0.285, p=0.64$), learning environment ($r= -0.094, p=0.549$), and workload issues ($r=0.057, p= 0.715$) have no significant relationship with coping mechanisms in terms of behavioral activation.

Table 3. Relationship between the challenges encountered and the coping mechanisms used in online language learning.

Challenges in online language learning	Behavioral Distractions		Behavioral Activation		Social Support	
	<i>R</i>	<i>p-value</i>	<i>R</i>	<i>p-value</i>	<i>R</i>	<i>p-value</i>
Internet accessibility	0.499	0.001	0.285	0.064	0.285	0.064
Learning environment	0.275	0.074	-0.094	0.549	-0.094	0.549
Workload issues	-0.001	0.997	0.057	0.715	0.057	0.715

Legend: $p\text{-value} \leq 0.05$ – Significant

DISCUSSIONS

The pandemic has negatively impacted educational systems worldwide that leads to greater challenges and a complete transition to online language learning for language learners (Hartshorn & McMurry, 2020). The findings of the current study show that the respondents are moderately experiencing challenges in online language learning. Studies have revealed that students struggled in the new normal setup of education and they used coping mechanisms to overcome it all (Gheshlagh et al., 2022). Some of the studies that support the current study indicate that students in online language learning are having the burden with difficult assignments or tasks given by different teachers at the same time (Agustina et al., 2020) and use online learning platforms with slow-speed internet sometimes (Famularsih, 2020). However, the findings of the current study are opposed to the study by Muslem (2021), which indicates the main factors of the difficulties students face in online learning are lack of internet data packages, unbalanced internet data, and running out of internet data due to utilizing internet-consuming applications.

Due to the challenges of online learning, students have developed learning strategies to help them learn more efficiently and effectively (Ariffin et al., 2021). The findings of the current study show English major students are sometimes exhibiting coping mechanisms to deal with and survive all the stressors in online language learning. Such finding is affirmed by a study by Rotas and Cahapay (2020) that Filipino students employ several coping strategies in order to overcome adversities and succeed in distance online learning in the midst of the crisis. The current study affirms the study of Wasil et al. (2021) that behavioral activation was one of the most frequently reported effective strategies used by students who take online courses.

The results show that there is a significant positive relationship between the challenges encountered in terms of internet accessibility with coping mechanisms in terms of behavioral distractions. The more students face the problem with internet accessibility, the more they use coping mechanisms in terms of behavioral distractions. Such finding is not parallel to the study of Matswetu et al. (2020), that instead of diverting the students' attention toward the stress and problem they face in online learning, students who do not have access to the internet will look for all options to find good and stable internet connectivity. Likewise, the study's finding is not aligned with the study conducted by Cakrawati (2017), which indicated that students sought to find better places to get a high-speed internet connection for their studies.

On the other hand, the learning environment and workload issues were not significantly correlated with coping mechanisms in terms of behavioral distractions. Students rarely employ coping mechanisms in terms of behavioral distractions whenever they experience challenges in the learning environment and workload issues. Instead of diverting attention, the students, who are taking online courses move to a quieter location (Barrot et al. (2021), practice time management, do learning activities ahead, and extend the time for learning activities rather than diverting their attention to other activities.

In addition, the results indicate that internet accessibility, learning environment, and workload issues have no significant relationship with coping mechanisms in terms of behavioral activation. Students did not use behavioral activation, as a coping mechanism, in dealing with their difficulties and challenges in terms of internet accessibility, learning

environment, and workload issues. However, such finding contradicts the study of Wasil et al. (2021), which indicated that behavioral activation was one of the most frequently reported effective strategies used by students to their difficulties in online learning amidst COVID-19.

The results also show that there is a negative significant relationship between the challenges encountered in online language learning in terms of the learning environment and coping mechanisms in terms of social support. The findings imply that the more the students face challenges in the learning environment in an online language class, the less they receive social support, as a coping mechanism, and vice versa. Such finding is in line with the study of Maqableh and Alia (2021) which indicated that students taking online courses found it difficult to concentrate during online classes as the distractions at home were more prevalent and the lack of an organized learning environment made it more difficult for students to focus during class. However, internet accessibility and workload issues were not significantly correlated with social support. The students did not receive social support, as a coping mechanism, when it comes to the challenges in terms of internet accessibility and workload issues. This is not aligned with the study of Wasil et al. (2021) that revealed social support is one of the most frequently, commonly, and effectively used coping mechanisms by students taking online courses and wherein English language learners incorporate social support from teachers, parents, and peers as factors that enhance their learning engagement in the virtual classroom (Luan et al., 2020.)

A limitation of this study was the fact that the study utilized a small sample of English major students as it is the whole population of English majors in the research site. This research does not claim findings representative of all English major students in the country. It is important to conduct further studies to validate the quality, frequency, and limiters of the different kinds of challenges and coping mechanisms used in the study.

CONCLUSIONS

The study shows that the English majors of Occidental Mindoro State College are encountering challenges in online language learning to a moderate extent, specifically low in terms of internet accessibility, moderate in terms of learning environment, and high in terms of workload issues. The results also show that the English majors are coping with online language learning to a moderate extent, specifically, their extent of usage of the different coping mechanisms in online language learning is moderate in terms of behavioral distractions, behavioral activation, and social support. Lastly, it was found that the challenges encountered in online language learning in terms of internet accessibility directly influence the coping mechanism in terms of behavioral distraction, while the challenges in terms of the learning environment inversely influence the coping mechanism in terms of social support.

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RESEARCH ARTICLE

FOOD SAFETY AWARENESS AND FOOD HYGIENE PRACTICES OF FOOD PROCESSING STUDENTS OF SAN JOSE NATIONAL AGRICULTURAL AND INDUSTRIAL HIGH SCHOOL

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ABSTRACT

The main purpose of this study was to determine the level of food safety awareness and food hygiene practices of food processing students of San Jose National Agricultural and Industrial High School. It also sought to examine the relationship between these variables. In this study, a descriptive-correlational research design was employed to analyze the relationship between food safety awareness and food hygiene practices. There were seventy respondents in the study, and they were chosen purposively. Furthermore, the findings of the study revealed that food processing students have a high level of food safety awareness and a high level of food hygiene practices. The correlation analysis showed that food safety awareness in terms of purchasing and cooking has a significant correlation with food hygiene practices in terms of personal hygiene. Meanwhile, food safety awareness in terms of purchasing, cooking, and reheating showed a strong connection with food hygiene practices in terms of hand washing. Additionally, food safety awareness in terms of cooking and storing revealed a favorable link with food hygiene practices in terms of personal protective equipment. In general, the results of the study revealed that food safety awareness has a positive significant relationship with food hygiene practices. It implies that respondents with sufficient awareness of food safety demonstrated proper handling practices for foods.

Keywords: *Food safety awareness, food hygiene practices, food processing students*

INTRODUCTION

Food processing has become a rewarding career option; it is an area of food science where a variety of technologies and procedures are employed to transform raw ingredients into finished goods. It is a process by which food is made ready for ingestion by both humans and animals. Additionally, it entails the skills necessary to treat food by salting, curing, and smoking, fermentation and pickling, sugar concentration, drying and dehydration, and thermal application. Each of the aforementioned skills includes the responsibility of packing processed food and using basic packing machinery (Amit et al., 2017).

Furthermore, in this discipline, food processing students are involved in food handling, packaging, and operating common food processing equipment. Students practice food safety and sanitation before packaging processed or finished products, likewise implementing good manufacturing procedures. In addition, they are qualified to become food processors, producers, packers, and quality control personnel in the food industry (Şanlıer & Konaklıoğlu, 2012).

However, foodborne diseases (FBDs) have been a concern for all civilizations since the beginning of time and are a rising global public health issue. Foodborne infections are serious, ongoing problems that cause significant morbidity and frequent death. Each year, millions of people are anticipated to get sick, and thousands of them pass away after consuming contaminated food as a result of improper food handling. Diarrheal infections account for around half of all foodborne illnesses worldwide, sickening 550 million people annually and killing 230,000 people (Azanaw et al., 2019). To reduce the risk of foodborne illnesses, it is crucial to understand the knowledge, attitudes, and practices of food handlers in the areas of food safety. As a commodity where consumption is not only a question of choice but ultimately a matter of life and death, food safety is a corporate social duty. Food handlers are crucial individuals to consider when thinking about food safety. Their sanitation measures impact the consumers, who rely on them for their meals (Assob et al., 2012).

Thus, children should also be aware of the risks associated with food to protect their health as well as the welfare of others, especially as they become more responsible for food preparation as they grow older. However, self-reported practices revealed unsafe habits for cross-contamination, food preservation, hazardous food reheating, and preparing food with open wounds on the hands. These findings show that it is still vital to teach children about fundamental food safety concepts in a systematic manner beginning in elementary school (Ovca et al., 2014). Therefore, this study aimed to determine the food safety awareness and food hygiene practices among Grade 8 to Grade 12 food processing students of San Jose National Agricultural and Industrial High School, as they have a high possibility of engaging in important societal sectors like the food service industry in the future.

METHODOLOGY

Research Design

This study used a descriptive-correlational research design. It sought to describe characteristics of the variables in the study through systematic collection of information about the variables and careful measurement of it. The design was considered suitable for the study

as it involves gathering data from members of the population in order to determine its current status with regard to the descriptive statistics of food safety awareness and food hygiene practices and the relationship between these variables.

Study Site

This study was conducted at San Jose National Agricultural and Industrial High School since the chosen respondents are the Grade 8 to Grade 12 food processing students located at Yaw Yawi I, Murtha, San Jose, Occidental Mindoro. It is 14 kilometers away from the town and near Yaw Yawi I Elementary School and Occidental Mindoro State College-Murtha Campus.

Sample

The respondents of the study were the Grade 8 to Grade 12 food processing students which consist of 70 students out of its total population of 229 students. They were the chosen respondents because they are exposed to food preparation and food handling as part of their curriculum. In the selection of the respondents, purposive sampling was utilized.

Research Instrument

In this study, a questionnaire was used in gathering data. It consists of two parts which were preceded by the letter for the respondents that states the purpose of conducting the study. The first part of the tool is the questionnaire for measuring the level of food safety awareness of the respondents consists of 25 items and is divided into five subcategories which are purchasing, method of washing, cooking, storing, and reheating. The respondents were asked about the degree of their awareness in the items provided using the 5-point Likert Scale form.

The second part of the instrument is the questionnaire for measuring the extent of food hygiene practices of the respondents. It consists of 15 items and is divided into 3 subcategories which are personal hygiene, hand washing, and utilizing of personal protective equipment. The original questionnaire was developed by Akabanda et al. (2017) which consists of 11 items and has a good reliability index of between 0.70 and 0.78. For this instrument, some items were modified and some were added by the researchers.

Data Collection

The researchers collected data through online survey questionnaires. A letter seek permission from the Principal of San Jose National Agricultural and Industrial High School was sought to conduct the study. Upon approval, links to the questionnaires were provided to the selected respondents. Following that, the data were collected, tabulated, and analyzed.

Ethical Consideration

Participation in the study was voluntary and the participants received assurances from the researchers that their answers would be kept private. They were also given enough time to complete the questionnaire. Additionally, access to data was limited only to the researchers.

Data Analysis

In the analysis and interpretation of the data, Microsoft Excel and statistical software were used. Descriptive statistics used frequency, standard deviation, and mean. To determine the level of food safety awareness and food hygiene practices, frequency and mean were used. The standard deviation was used to describe the homogeneity of the responses. Moreover, to determine if there is a significant relationship between level of food safety awareness and food hygiene practices of the respondents, Pearson Product Moment Correlation was used with the aid of statistical software.

RESULTS

With grand mean of 3.86, it can be noted that the respondents have a high level of food safety awareness. Among all the factors of food safety awareness, the results revealed that purchasing is the highest with an weighted mean of 4.12 interpreted as "high". Conversely, the lowest weighted mean is reheating with an weighted mean of 3.60 interpreted as "high" [Table 1].

Table 1. Level of food safety awareness of the respondents.

Indicators	Mean
<i>Purchasing</i>	
Cracked, dirty, broken raw materials should not be purchased.	4.03
Food that has some changes in appearance should not be purchased.	3.86
Labels on food should give information about allergic content.	4.33
Integrity of food package and expiration date should always be checked to ensure the quality of foods.	4.27
During purchase freshness of food should always be considered.	4.10
Weighted Mean	4.12
<i>Method of Washing</i>	
Wash cutting board used to cut raw meat or poultry with cold water before using it to chop vegetables.	3.79
Wash knife used to cut raw meat or poultry with water and soap then apply sanitizer before using it to chop vegetables.	3.83
Proper cleaning and sanitization of utensils decrease the risk of food contamination.	4.00
Washing hands before work reduce the risk of food contamination.	4.30
Hands after touching raw meat or poultry should be washed.	4.20
Weighted Mean	4.02
<i>Cooking</i>	
Poultry should be checked if sufficiently cooked by thermometer.	3.80
It is necessary to use proper attire when serving and cooking.	4.13
Well-cooked foods are free of contamination.	3.71
Using gloves while handling food reduces the risk of food contamination.	4.20

Food handlers who have abrasions or cuts on their hands should not touch foods without gloves during cooking.	3.83
Weighted Mean	3.94
<i>Storing</i>	
The correct temperature for storing perishable foods is 5°C.	3.39
Raw and uncooked foods should be stored separately to reduce the risk of food contamination.	3.84
Raw meat or chicken should be stored in clean, sealed containers on the bottom shelf of the fridge.	3.97
Hot, ready-to-eat food should be kept at temperature of 65°C.	3.40
It is necessary to check thermometer setting of refrigerators, freezers and store at least twice a day.	3.54
Weighted Mean	3.63
<i>Reheating</i>	
Reheat food to temperature of 74°C.	3.34
Improper heating of food causes foodborne illnesses.	3.61
Leftover foods should be reheated before consumption.	3.68
The correct way of reheating the leftover food is until boiling.	3.47
Reheating food will make the food safe to eat.	3.87
Weighted Mean	3.60
Overall Mean	3.86

The extent of food hygiene practices of the respondents is high with the grand mean of 4.39. Among all the factors of food hygiene practices, the results revealed that hand washing is the highest with an weighted mean of 4.70 interpreted as "very high" [Table 2].

Table 2. Extent of food hygiene practices of the respondents.

Indicators	Mean
<i>Personal hygiene</i>	
Cutting of nails before food processing.	4.57
Wearing of nails polish in handling food.	3.74
Taking a bath before preparing food.	4.07
Wearing of jewelry when preparing food.	4.03
Tying or trimming of hair before food preparation.	3.86
Weighted Mean	4.06
<i>Hand washing</i>	
Washing hands with water and soap before starting work or handling food.	4.79
Washing hands after using the toilet.	4.86
Washing hands after blowing nose, sneezing or coughing.	4.59
Washing hands after touching garbage like food waste or bin bags.	4.63
Washing hands after handling uncooked meat, poultry, seafood, flour, or eggs.	4.65

	Weighted Mean	4.70
<i>Utilization of personal protective equipment</i>		
Using apron while working to hinder clothes from coming in contact with food.		4.46
Wearing of hairnet to prevent hair from falling into the food.		4.39
Using facemask to avoid splashing of saliva on food.		4.39
Wearing of gloves to reduce the risk of cross-contamination.		4.49
Using of protective shoes during food preparation.		4.34
	Weighted Mean	4.41
	Overall Mean	4.39

Relationship between Food Safety Awareness and Food Hygiene Practices

Food safety awareness of food processing students has a positive significant relationship with food hygiene practices with r-coefficient of .381 ($p=.001$) [Table 3].

Table 3. Correlation analysis between food safety awareness and food hygiene practices.

Variables	r-coefficient	p-value	Interpretation
Food Safety Awareness vs. Food Hygiene Practices	.381**	0.001	Significant

*Legend: **p-value is significant under 1% level of significance*

DISCUSSIONS

The food processing students have a high level of food safety awareness which implies that they have satisfactory knowledge in areas of food safety. This finding relates with the previous studies wherein a high level of food safety knowledge was observed among the participants (Ferk et al., 2016; Stratev et al., 2017; Samuel & Lucy, 2021). When it comes to purchasing, the level of food safety awareness among the respondents was high. This signifies that respondents pay attention to the physical characteristics, labeling, and packaging of food products when making a purchase (Jain et al., 2018; Del Carmen et al., 2020; Esguerra et al., 2017). Moreover, in terms of method of washing, the respondents have a high level of food safety awareness. This indicates that students have sufficient knowledge of the right cleaning methods to stop the spread of harmful bacteria and viruses that could result in food poisoning (Chellaiyan et al., 2018; Asmawi et al., 2018; Chen et al., 2018). Furthermore, respondents have a high level of food safety awareness in terms of cooking. This finding implies that respondents are aware of the importance of using thermometer and wearing protective clothing to guarantee food safety (Evans et al., 2021). The respondents have a high level of food safety awareness in storing. This signifies that respondents are knowledgeable of the proper food storage to maintain the quality of raw materials, extend the shelf life of food and reduce the risk of food contamination (Esguerra et al., 2017; Munir & Ali, 2019; Evans et al., 2021). Lastly, the respondents have a high level of food safety awareness in heating which indicates that they

are aware of the proper way of reheating food, its importance and the negative effects of improper reheating (Grappasonni et al., 2018; Gautam & Curtis, 2021).

Apart from that, the extent of food hygiene practices of the respondents is high. This signifies that food hygiene is often practiced by the respondents in food preparation. In relation to this, food handlers in the study of Akabanda et al. (2016) demonstrated satisfactory practices about hygiene measures, cleaning, and sanitation processes. In their study, most food handlers understand the need of general hygienic measures such as hand washing at work, wearing gloves, thorough cleaning, and detergent use. Moreover, the respondents have high food hygiene practices in terms of personal hygiene. This relates to the findings of the study conducted by Dajaan et al. (2018) where a greater number of respondents had a neat appearance and the majority kept their fingernails short. In addition, the respondents also have a very high extent of hand washing practices. This indicates that the respondents always practice hand washing throughout the food preparation to reduce the risk of contamination. According to the study of Hossen et al. (2020), all respondents highly believe in hand washing before work, as well as in hand washing after work. The majority have the awareness that washing hands could adequately reduce the risk of contamination and almost all are aware that merely water could not thoroughly clean their hands. Furthermore, the respondents' extent of utilization of personal protective equipment is high. This implies that the participants have an outstanding practice in utilizing personal protective clothing to ensure food safety. In support to this, the majority of food handlers in the study of Gador (2021), reported satisfactory practices with respect to handling practices related to proper attire when handling foods such as wearing gloves, apron, mask, hat or head covering.

In the context of food processing education, it is found that higher levels of food safety awareness among students are significantly and positively associated with the implementation of effective food hygiene practices. Therefore, food handlers with sufficient knowledge in food safety demonstrated proper handling practice of foods (Alquarashi et al., 2019; Gador, 2021).

CONCLUSIONS

The study findings indicate that food processing students exhibit a satisfactory level of knowledge in the realm of food safety, actively engage in food hygiene practices during food preparation, and are cognizant of the importance of these practices. Moreover, those students possessing a heightened awareness of food safety demonstrated proficient food handling techniques. Consequently, this study recommends that educators incorporate hands-on activities to enable students to apply their robust food safety awareness in practical settings, diversify food processing exercises to consistently reinforce food hygiene skills, and organize seminars to augment their knowledge and practices. In addition, educational institutions are encouraged to integrate food safety training within their curricula as a means of sustaining and enhancing students' adherence to food safety and hygiene principles.

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IMPLEMENTING GUIDELINES IN WRITING AND CONDUCTING UNDERGRADUATE AND GRADUATE RESEARCH

I. Requirements before Enrolling Undergraduate Research

1. The student must have passed English 10 or its equivalent (Methods of Research/Technical Writing for BAT) where a research proposal is required and completed (Chapters 1-3).
2. The student must have an adviser of his/her choice or designated by the Research Chair. The adviser has technical knowledge of the research topic the student is pursuing.
3. The student must have successfully defended his/her research proposal before a panel on pre-oral defense.
4. The student reports regularly to his/her adviser for direction and guidance in the conduct of his/ her research.
5. A consultation sheet is secured from the Chair's Office where records of the transaction or consultation with the adviser are reflected for purposes of monitoring and supervision.
6. A certificate of **Ready for pre-oral/final defense** signed by panel member, critic reader, statistician and financial critic must be secured by the students before the pre-oral or final defense.
7. The student must provide panelists copies of the manuscript at least one week before the final defense.

II. Thesis Adviser

1. The student has the option to choose an adviser from the list of advisers provided by the Research Chair. The thesis adviser chosen by the student has technical knowledge regarding the research problem he/she is pursuing. If possible, the adviser and the advisee must have the same field of interest/specialization.
2. The thesis adviser should be a permanent faculty or employee of the Institution, if possible.
3. In cases where students cannot choose an adviser, the Research Chair will designate an adviser based on the adviser/student's specialization/major.
4. In case the student changes his/her adviser for any acceptable reason, a **permit to change adviser** must be secured from the Research Chair. Both the "changed" adviser and the new adviser must affix their signature on the permit.

III. Selection of the Members of the Panel, Statistician, Financial Critic, and Critic Reader

1. The student is free to choose at most three members of the panel who have technical knowledge on the research he/she is pursuing, one statistician, one financial critic, and one critic reader.
2. The student selects from the list of panel members, statistician, financial critic, and critic reader provided by the Research Chair.

IV. Role of a Thesis Adviser

1. The adviser is a faculty member of the Academic Department who provides guidance and direction, encouragement, and motivation to his/her advisee in the process of thesis writing.
2. He/she recommends the manuscript for oral defense and signs a particular form for this purpose. The adviser sees to it that his/her advisee is prepared for the oral defense.
3. He/she guides and briefs the advisee on the mechanics of oral defense and prepares him/her on what to expect during the proceeding.
4. He/she must be present during the oral defense but should refrain from answering questions for the advisee or negate views of the members of the panel. He/She may clarify or simplify questions for the advisee and take down notes on suggestions and recommendations.
5. He/she makes concrete suggestions and acts promptly and wisely on parts of the manuscript which require correction or revision. He/She sees to it that his/her advisee follows the prescribed format in writing the manuscript.
6. He/she monitors the progress of the research work of his/her advisee. Members of the panel should also help the adviser in ensuring that the advisee does what is expected of him/her.
7. He/she certifies the approval of the final manuscript.

V. Role of the Members of the Panel

1. The panel members assess the research papers and give comments, suggestions, and recommendations for the improvement of the research paper.
2. They may approve/disapprove the research proposal. Disapproved paper means it has not satisfactorily met the basic requirements of a good research paper.
3. They help monitor the student's research work in coordination with his/her adviser.
4. They evaluate and rate the paper using standard criteria as part of the computation of final grade in Methods of Research or Thesis Writing.
5. They certify the approval of the final manuscript.

VI. Role of a RECO Member

1. The RECO member is a staff of R&D Unit/representative from the pool of experts and is duly designated by the R&D Director.
2. The RECO member is a regular member of the panel during the pre-oral and final defense. He/She informs the new trends in research undertakings.
3. He/she helps monitor the student's research work in coordination with his/her adviser.
4. He/she evaluates and rates the paper using standard criteria as part of the computation of final grade in Methods of Research or Thesis Writing.
5. He/she endorses a student's research proposal for possible funding in the R&D Unit.
6. He/she certifies the approval of the final manuscript.

VII. Role of a Statistician

1. The statistician guides the student in the use of appropriate statistical tools for his/her research paper.
2. He/she gives advice in data encoding and interpretation of the research results.
3. He/she certifies the correctness of the methodology and statistics used in the research manuscript.

VIII. Role of a Critic Reader

1. The critic reader must proofread the manuscript.
2. He/she certifies the correctness in the writing of the manuscript.

IX. Role of a Research Chair

1. The Research Chair helps in implementing policies on the conduct of thesis research paper.
2. He/she prepares the schedule of the pre-oral and final defense.
3. He/she certifies the approval of oral defense of the students.
4. He/she acts as the Chair of the research panel.
5. He/she performs research monitoring in coordination with the adviser.
6. He/she consolidates the evaluation sheets as a basis of grade or rating of the students.
7. He/she certifies the approval of the final manuscript.

X. Requirements for Oral Defense

1. The student must have a written recommendation from his/her thesis adviser in terms of his/her readiness/preparedness for the oral defense.
2. The student must have a certification from the Statistician/Financial Critic as to the approval of statistical/financial requirements of his/her paper.
3. The student must have a certification from a critic reader as to the appropriate grammar and language use.
4. The student must likewise have an approval from the Methods of Research Instructor and Department Chair prior to his/her oral defense.
5. Required copies of the research papers should be submitted at the Research Office with the adviser's certification at least one week before the scheduled defense.
6. The students who failed to defend his/her thesis on schedule will not be allowed to conduct off-campus practice teaching and will not be included in the list of graduating students.

XI. Decorum in the Conduct of Oral Defense

1. The student must be in proper attire.
2. The members of the panel must be in semi-formal or formal attire during oral presentation.
3. The audience must observe silence throughout the presentation.

XII. Submission Procedures

1. Students who failed to defend his/her thesis on schedule will only be allowed to conduct OJT/RLE activities within OMSC Offices/Department/Unit.
2. The deadline for submission of loose-leaf theses and is at least one workweek before the last day for the submission of grades for graduating students to provide sufficient time for binding. For example, if the deadline for submission of grades is May 7, theses must be approved for binding before April 30.
3. Undergraduate theses must be hardbound using green leatherette with gold lettering.
4. To facilitate future open-access repository, digital copy of theses must be submitted to the College Research Coordinator for safe keeping. With file name: College_Year of Graduation_Last Name of the First Author_Title of Thesis
Example: CTE_2023_Dela Cruz_Case Study of Occidental Mindoro State College
5. An undergraduate student should submit the following to the College: Four hardbound copy for the department, library, adviser, and student. One digital copy (in PDF with scanned copy of the signed documents) for the department.
6. Addition of Permission Page (Republic Act No. 8293 - Intellectual Property Code of the Philippines). Theses will be classified into one of only four categories:
 - I: has patentable or registrable invention or registration
 - P: author wishes to publish the work personally
 - C: confidential information of a third party is embedded
 - R: a regular work, i.e., it has no patentable invention or creation, the author does not wish for personal publication, there is no confidential information.

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Effectivity: starting First Semester, Academic Year 2023-2024



OCIDENTAL MINDORO STATE COLLEGE

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