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Compressive strength of concrete hollow blocks with upcycled plastics as partial replacement for choker aggregates

¹Mark Anthony R. Meñez & ²Ersyl T. Biray

Abstract

This study was conducted to test the compressive strength of concrete hollow blocks prepared from three treatments with upcycled plastics as partial replacement to choker aggregates, find out which proportion of concrete hollow blocks with upcycled plastics was the most acceptable in terms of compressive strength, and ascertain the cost analysis of concrete hollow blocks. The study used Randomized Complete Block Design (RCBD) replicated three times composed of the three proportions with upcycled plastics and the control group cured in 28 days. The Universal Testing Machine (UTM) was used to test the compressive strength. Results of the study showed that the control group had a highest compressive strength. Treatments B and C had equal compressive strength. Treatment C had the lowest compressive strength of 2.00 MPa. The results of all treatments passed the minimum compressive strength of 1.50 MPa. In addition, the masses of the concrete hollow blocks in all treatments, including the control group were lightweight. As to cost, results indicated that the concrete hollow blocks prepared from 0% upcycled plastics obtained the lowest price in terms of cost analysis. With these results, the use of concrete blocks using upcycled plastics as construction materials in projects is highly forwarded. Concrete and manufacturing industries may also venture into the production of concrete blocks using upcycled plastics to encourage backyard economy, recycle wastes, and help in the conservation of the environment.

Keywords: *concrete hollow blocks, compressive strength, upcycled plastics, choker aggregates, cost analysis*

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Introduction

Plastic waste is increasing day by day throughout the world much more in the Philippines. The National Solid Waste Management Commission (NSWMC) reported that there is a total of 30,000 tons per day of solid waste in the Philippines. In addition, plastics account for 17% of total solid waste generated in the country. In the world famous Boracay Island in Western Visayas alone, the Department of Environment and Natural Resources has reported that there are 100 tons of trash, including plastic waste, generated daily that are hauled to mainland Aklan for disposal. With the bulk of garbage collected, sooner or later, this would become a problem unless a solution is put forward (Teves, 2018).

In this regard, the Philippine government has pushed forward the recycling of wastes that include plastics. As the quantity of waste generated increases yearly, recycling these wastes can minimize the bulk and burden of plastic waste. Recycling plastic has advantages since it is widely used worldwide and has a long service in life where plastic wastes are collected and removed from the waste stream. However, only 8.4% of plastic waste is recycled in the Philippines (Madlangbayan et al., 2017). The Bulacan-based company, The Green Antz Builders, Inc., has experimented on manufacturing concrete bricks added with plastic waste in their infrastructure construction (Galang, 2015). Although a number of studies has shown that concrete blocks added with plastic waste additives decrease their strength (Lejano et al., 2019), the combination of plastic waste aggregates with other waste materials as mussel shell and fly ash has increased their compressive strength (De Jesus et al., 2017; Madlangbayan et al., 2017; Shoubi et al., 2013; Wonderlich, 2014).

It is on this context that this study was undertaken to find out the possibility of using upcycled plastics as replacement for choker aggregates in the manufacture of concrete hollow blocks (CHB). It would specifically test the compressive strength of the CHB mixed with upcycled plastics as partial replacement of choker aggregates in different proportions.

The results of this experimental study would benefit particularly the end users or consumers who can find in the market a replacement or an alternative to the high cost of commonly sold concrete hollow blocks made from sand and cement. This would also be beneficial to the hollow block fabricators and manufacturers as the material cost as well as the return of investment may be more efficient than the popularly marketed product. More

importantly, the use of upcycled plastics as substitute to choker aggregates would lessen the bulk of plastic wastes affecting the environment.

Methodology

This experimental research utilized the Randomized Complete Block Design (RCBD) where investigation specifies a control group and an experimental group. This method involves control, randomization, and manipulation (Kabir, 2018), tests hypothesis concerning cause and effect relationship, and represents the most valid approach to the solution of problems (Gay & Airasian, 2003, in Binag, 2016). The RCBD is a design in which the experimental material is divided into blocks/groups of homogeneous experimental units, and each block/group contains a complete set of treatments which are assigned at random to the experimental units (Ullah, 2019).

The study was conducted at a hollow block fabrication site, and the finished concrete hollow blocks (CHB) were tested at a concrete and material testing laboratory. Field notes were used throughout the study to record all the materials, tools, equipment, and procedures utilized including his observation from Day 1 of the experiment up until the testing of concrete hollow blocks at the experimental site.

Standard size concrete hollow blocks were utilized as test specimens whose mixture was composed of cement, fine sand, choker aggregates, water, and upcycled plastics cured for 28 days. Upcycled plastics replaced a certain volume of choker aggregates by weight at different levels of percentage with a constant volume of cement and water ratio.

The study adopted the standard concrete masonry unit dimensions set by the National Building Code of the Philippines and National Structural Code of the Philippines for non-load-bearing walls with dimensions of 4" x 8" x 16". The treatments were: Control – 0% upcycled plastics and 100% choker aggregates; Treatment A – 1% upcycled plastics and 99% choker aggregates; Treatment B – 2% upcycled plastics and 98% choker aggregates; and Treatment C – 3% upcycled plastics and 97% choker aggregates. Data were gathered in three ways: (1) pre-experimental stage, (2) experimental stage, and (3) post-experimental stage. The analysis of the CHB compressive strength used the Jamovi Statistical Software while percentage, mean, and standard deviation were used to analyze the descriptive data. Kruskal Wallis was used to

determine the significant difference of compressive strength with the level of significance for the acceptability of the null hypothesis is 0.05.

All ethical issues related to study were addressed and secured, including health protocols.

Findings

Results of the experiments showed that the mass of the control group composed of 80kg choker aggregates, 9L water, 20kg cement and 40kg fine sand has the highest mean of 11.36 kilograms while Treatment C composed of 77.6kg choker aggregates, 9L water, 20kg cement, 40kg of fine sand and 2.4kg of upcycled plastics had the lowest mass of 10.49 kilograms. Moreover, Treatments A and B had almost the same mean mass of 11.04 and 11.06 kilograms, respectively. The mass of the all treatments was categorized as lightweight.

The compressive strength of the control group had the highest mean of 4.67 MPa while Treatment C had the lowest compressive strength with a mean of 2.00MPa. In addition, Treatments A and B had the same compressive strength of 2.67 MPa.

There is no significant difference in compressive strength in three proportions of concrete hollow blocks with upcycled plastics since the p-value is 0.062.

The most acceptable proportion of concrete hollow blocks with upcycled plastics was the control group having the highest compressive strength of 4.67 MPa where the minimum compressive strength for non-load bearing concrete hollow blocks was 1.50 MPa.

As to cost analysis, findings revealed that the concrete hollow blocks prepared without upcycled plastics had the cheapest price of Php12.22 while Treatment C had the most expensive price of Php17.88 per piece.

Conclusion

Based on the findings, it can be deduced that the different proportion of concrete hollow blocks on the composition of materials in the fabrication of concrete hollow blocks resulted to varying mean scores but had not affected the mass.

Generally, the concrete hollow blocks with upcycled plastics in all treatments including control group passed the minimum compressive strength of 1.50 MPa. This indicated that the

concrete hollow blocks replacing choker aggregates at 1-3% by weight can be used in the construction as a non-load-bearing concrete hollow block. Although statistical test showed that the compressive strength of concrete hollow blocks was not significant, the increase in compressive strength is a testament that the partial replacement of upcycled plastics for choker aggregates from 1% to 3% by weight is not detrimental to the strength properties of concrete.

As to the Return of Working Capital (ROWC), it can be concluded that the more the upcycled plastics is incorporated in concrete hollow blocks, the higher the ROWC. This implies that the higher the return, the more expensive the price of concrete hollow blocks per piece becomes.

Thus, concrete and manufacturing industries may consider the use of concrete blocks using upcycled plastics as part of construction materials in projects as the compressive strength and price are comparable with the commercial hollow blocks. They may also venture into the production of said concrete blocks using upcycled plastics to encourage backyard economy, recycle wastes, and help in the conservation of the environment.

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Pedagogical problems and coping strategies of elementary teachers during a pandemic

¹Gimel T. Tomazar & ²Mary Cherry Lynn M. Tabernilla

Abstract

This descriptive correlational study anchored on Lazarus and Folkman's Coping Theory identified the pedagogical problems met and the coping strategies adapted by elementary school teachers during the pandemic in one school district in the Division of Aklan during the height of the pandemic in 2021. This also tried to find out the extent of pedagogical problems experienced by the teacher respondents related to curriculum, fellow teachers, learners, school, and parents, and the coping strategies applied to manage the problems they encountered. Forty-six grade school teachers purposively selected in the identified elementary schools in the district participated in the study. A researcher-made survey questionnaire validated by experts was used in the gathering of data. Findings revealed that teacher respondents were between 31-40 years old, mostly female and single, with average monthly income from 10,000 to 20,000, travel less than 6 km from their homes to the work station, and are proficient in terms of ICT competence. The extent of pedagogical problems experienced by the respondents related to curriculum and fellow teachers was slightly a challenge; and to learners, school-related aspects, and parents as not at all considered as challenges. To cope with these challenges, the respondents' top three activities were attending webinars for professional growth, enjoying quality time with their families, and going to and praying in the church. These imply that grade school teachers are more particular about improving themselves professionally and strengthening their faith in God than doing other things that affect their physical and mental health.

Keywords: *pedagogical problems, coping strategies, elementary teachers, pandemic, curriculum, descriptive correlation*

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Introduction

The outbreak of the pandemic in 2019 has affected almost all aspects of life around the globe – from political governance to basic services, including education. As schools were closed to cope with the global pandemic, students, parents, and educators have felt the unexpected ripple effect of this pandemic. While governments, frontline workers, and health officials are doing their best in slowing down the outbreak, education systems are trying to continue imparting quality education to all during these difficult times.

Since classroom learning delivery by teachers has been stopped and face-to-face classes were replaced by distance learning through synchronous and asynchronous modalities, modules have been popularly used as a substitute in behalf of teachers' presence supplemented by videos played up on television and social media. Grade school learners got emotionally and mentally frantic while parents grope as home mentors. The teacher, who is considered the second mother of a student, is having a tough time addressing the new normal. As was observed in many schools in the Division of Aklan, almost all teachers received the most challenging tasks from the preparation of the learning materials to facing and resolving complaints from wards and parents. They remain steadfast as they seem and this is worth looking into. Thus, it would be noteworthy to determine the pedagogical challenges that teachers face as they complete their tasks, and what coping mechanisms they used to adapt to these concerns. Specifically, it aimed to establish the demographic profile of the respondents, their ICT competence, the extent of pedagogical problems they experienced, and the extent of various adaptive strategies applied by the teachers to manage the pedagogical problems they have encountered. Likewise, it would be significant if the relationships between the demographic profile of the respondents and the extent of pedagogical problems experienced by them, the extent of various adaptive strategies they apply to manage the pedagogical problems they have encountered, and the extent of pedagogical problems as experienced by the teachers and the extent of various adaptive strategies applied by them to manage the pedagogical problems they have encountered.

This study was anchored on Lazarus and Folkman's Coping Theory (1984, as cited by Chowdhury, 2020) and the Career Adaptability Theory (Savickas, 1997; Savickas & Porfeli, 2012) which define an individual's resources for coping with current and anticipated tasks,

transitions, and traumas in their occupational roles that alter their social integration to either a large or small degree. These two models served as points of reference in the gathering, analyses, and interpretation of data on pedagogical problems and coping mechanisms of respondents.

Methodology

The descriptive correlational research design was used in this study as it investigates relationships between variables without the researcher controlling or manipulating any of them. A correlation reflects the strength and/or direction of the relationship between two (or more) variables. The direction of a correlation can be either positive or negative (Bhandari, 2021). It also used a one-shot survey to collect the necessary data from the respondents. This design is suitable for the study because its main objective was to describe the characteristics of the respondents as well as their identified pedagogical problems and coping strategies.

The respondents of this study were all the 46 elementary grade teachers with permanent plantilla positions in the identified cluster schools in one of the districts in the Division of Aklan.

A researcher-made survey questionnaire consisting three parts was used in gathering data. Part I collected the demographic characteristics; Part II gathered information about the pedagogical problems met during the pandemic; and Part III asked about the coping strategies to manage the challenges. This questionnaire was subjected to content validation and pilot-tested for reliability.

To establish the demographic profile, pedagogical problems, and coping strategies of the respondents, percentage, mean, frequency and rank using the Statistical Package for Social Sciences was utilized. The relationship between two variables whether significant or not was based on the p-value of 0.50% generated by the computer. The level of correlation was based on the scale adapted from Dancey and Reidy (2006).

Findings

Based on the data gathered, interpreted, and analyzed, results showed that most of the teacher respondents were within the age range of 31-40 years old (17 or 37%), female (39 or

84.8%), and single (38 or 82.6%). Majority of the respondents (37 or 80.4%) reside less than 6 km away from the school while only four or 8.7% reside 11-15 km away from the school. As to average family income, 21 or 45.7% of them have Php 10,000 - Php 20,000 income, with 16 or 34.78% earning an average monthly income of between Php 21,000 - Php 30,000. As to level of ICT competence, 18 or 39.1% of the respondents are proficient, 17 or 37.0% are approaching proficient while only two or 4.4% have advanced level of proficiency.

The extent of pedagogical problems experienced by the respondents to curriculum-related aspects and teacher-related aspects had overall means of 1.62 and 1.57, respectively, described as slightly a challenge. Pedagogical problems experienced under the learner-related, school-related, and parent-related aspects had overall means of 1.10, 1.31, and 1.09, respectively, all described as not at all a challenge.

The various coping strategies applied by the teacher respondents to manage the pedagogical challenges they have encountered included the top three coping strategies: attending webinars for professional growth, enjoying quality time with their families, and going to church and praying. Blogging through social media and drinking liquors were the last activities they would do to manage the problems brought about by the pandemic.

The relationship between the demographic profile in terms of age and civil status of the respondents, and the extent of pedagogical problems that included curriculum-related, teacher-related, learner-related, parent-related, and school-related aspects was found as significant. No significant relationship was established between gender and average monthly income while all pedagogical related problems, except for school-related and curriculum-related aspects, had significant relationships. The relationship between ICT competence and all the pedagogical-related problems was found to be highly significant.

The relationship between demographic profile of the respondents and the extent of various coping strategies applied by them to manage the pedagogical challenges they encountered was found to be significant in terms of age, gender, and distance of residence from school but not significant in terms of average monthly income. Only in ICT competence that the coping strategies had a highly significant relationship. Finally, the relationship between the extent of pedagogical problems as experienced by the respondents and the extent of various

adaptive strategies applied by them to manage the pedagogical challenges they encountered were all found to be highly significant.

Conclusion

Most of the teachers employed in the cluster schools of a district in the Division of Aklan are in their mid-adulthood, single females with 6-10 years in service residing near the schools, earning monthly income of between Php 10,000 – Php 20,000, and are proficient in ICT.

Problems encountered by teachers during the pandemic are not at all a challenge. They may just have been moved by the eventual change of modality but they have fast recovered from the challenges they met during the height of the health emergency.

The flexibility and resilience of the teachers during emergencies are observable as expressed by the modes of coping they have selected to maintain a positive outlook despite the problems that come their way. Coping strategies depend upon the age, gender, distance of residence from schools, and competence in ICT but not on income. The coping strategies they adopt depend upon the pedagogical problems they encounter.

Thus, it is apparent that school administrators should likewise consider as important the physical and mental health of the teachers as this affect their performance and the service they deliver to their learners. The conduct of annual activities such as gender and development programs, outdoor human capability building workshops, and benchmarking opportunities to enhance, revitalize and energize teachers in their day-to-day challenges may be an option.

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The moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage of drugstores in Region XI

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Abstract

The intense global business competition has triggered companies to establish effective strategies to realized long-term competitive advantages. The purpose of this study was to determine the moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage and to determine the relationship between supply chain agility, ICT capability, and competitive advantage among 300 drugstores in Region XI in the Philippines. It made use of quantitative research design, specifically the descriptive-correlational. An adapted and modified research instrument was used in gathering the data. Hierarchical logistic regression was used to analyze the moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage. The findings revealed that the overall levels of supply chain agility, ICT capability, and competitive advantage of drugstores are all high. The interrelationship among variables was found to be significant. Finally, supply chain agility and competitive advantage relationships were not significantly moderated by ICT capability.

Keywords: *business management, competitive advantage, supply chain agility, ICT capability, moderating effect*

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Introduction

Today's business world is indeed highly competitive, with global competition intensifying, posing challenges for companies to establish long-term competitive advantages (Abourokbah et al., 2023). As highlighted in the study by Gardner (2019), more than half of small businesses fail within the first five years due to a lack of strategies to maintain a competitive advantage. Moreover, Seeley and Singh (2021) pointed out that drugstores, in particular, are also facing intensifying competition, requiring them to adopt strategies to maintain their competitive advantage. In the global arena, the pharmaceutical industry is grappling with numerous challenges, including drug shortages, high costs, and the complexities of the work (Jorgenson, 2023). These issues are further exacerbated in the Philippines, where the national drug policy is struggling to address specific problems with providing adequate drugs and achieving rational use with systemic issues like staff shortages, poor management, and supply chain bottlenecks (Mina, 2020), while Amazona (2018) cited the absence of licensed pharmacists as a major issue in drugstores.

Competitive advantage is a key determinant of business success and survival, allowing firms to outperform rivals (Wells, 2018). Factors that contribute to competitive advantage in various industries include customer service, product range, and operational efficiency (Jorgenson, 2023). Maintaining a competitive advantage is imperative for drugstores to remain viable and provide quality, accessible healthcare services (InternationalTradeAdministration, 2022). It allows these businesses to provide superior value to their customers, thereby gaining a larger market share (Yuleva-Chuchulayna, 2019). The social relevance of this study lies in its potential to enhance the efficiency and effectiveness of drugstores in Region XI, ultimately benefiting the local community by ensuring the timely and reliable provision of essential pharmaceutical products.

Several studies have highlighted the relationship between supply chain agility (SCA), information and communication technology (ICT) capability, and competitive advantage (CA). The study of Patel and Sambasivan (2021) revealed in their studies that there is a positive relationship between supply chain agility and competitive advantage, which indicates a widespread recognition that the vital component of the supply chain is supply chain agility. Results from the study by Qosasi et al. (2019) indicate that ICT capability contributes to

competitive advantage, emphasizing the role of ICT capability as a key tool in management processes that contribute to sustained competitive advantage for businesses.

Several studies have investigated whether ICT capability moderates the relationship between supply chain agility and competitive advantage. While previous research has explored these concepts separately, the researcher has not yet found a study that combines the three components in a drugstore setting. The proposed study focused on drugstores and examined the potential moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage. By investigating these three components in a specific industry context, the researcher provides valuable insights into the interactions between ICT capability, supply chain agility, and competitive advantage in drugstores. This will contribute to the existing literature on the role of ICT capability in moderating the relationship between supply chain agility and competitive advantage in various industries.

This study sought to determine the moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage of drugstores in Region XI. More specifically, this sought to answer the following research questions:

1. What is the status of the competitive advantage, supply chain agility, and ICT capability of drugstores in Region XI?
2. Is there a significant relationship between: supply chain agility and competitive advantage; and ICT capability and competitive advantage?
3. Is the relationship between supply chain agility and the competitive advantage of the drugstore in Region XI significantly moderated by ICT capability?

Hypothesis

The following null hypotheses were tested at 0.05 level significance:

- Ho1. There is no significant relationship between supply chain agility with competitive advantage and ICT capability with competitive advantage.
- Ho2. ICT capability does not significantly moderate the relationship between supply chain agility and competitive advantage.

Methodology

The study employed a descriptive-correlational design utilizing a moderation analysis to investigate the relationship between supply chain agility, ICT capability, and competitive advantage in the drugstore context. The descriptive research design was used to characterize the population, circumstance, or phenomenon to explore one or more variables without modifying them but merely observing and measuring them (Eyassu et al., 2021). In this study, the descriptive research design was utilized to describe the status of supply chain agility, ICT capability, and competitive advantage in drugstores.

Furthermore, according to Creswell and Creswell (2018), correlation research design is a model that aims to identify and determine the connection between two or more variables, as well as the degree of their existing relationship. In the context of this study, correlation was crucial in understanding the extent to which supply chain agility and competitive advantage were related to each other. Additionally, the study utilized a moderation analysis, which involves exploring the influence of a moderating variable on the relationship between two other variables (Bouichou et al., 2022). In this case, the moderation analysis was employed to explore how ICT capability moderated the relationship between supply chain agility and competitive advantage in drugstores.

The study was conducted in Region XI, Philippines, known for its thriving drugstore industry with a significant number of registered drugstores as stated by Ken Research (2019). The Food and Drug Administration (FDA) reported that there were a sizable number of registered drugstores in the area (Kushwaha, 2022), which led to the selection of the pharmacies in Region XI. Specifically, the study was conducted in selected drugstores located in different parts of Region XI, namely Davao City, Davao del Norte, Davao del Sur, Davao de Oro, Davao Oriental, and Davao Occidental.

According to data from the Food and Drug Administration (FDA), there were 24,660 registered drugstores in the Philippines in 2023, with 1,371 located in Region XI. Data from eFOI (2023) stated that in Davao City, there were 597 drugstores, while Davao del Norte, Davao del Sur, Davao de Oro, Davao Oriental, and Davao Occidental had 335, 162, 133, 110, and 34 drugstores, respectively.

The research had 300 respondents, primarily regular pharmacists managing retail drugstores, who had been engaged in the drugstores for more than one year and were involved in ICT operations related to pharmacy work in Region XI. As suggested by Hair et al. (2018), this sample size was deemed appropriate for conducting business research.

The study employed proportionate stratified random sampling techniques. By using proportionate stratified random sampling, researchers could obtain a representative sample that accurately reflected the characteristics and diversity of the entire population (Hayes, 2023). In this study, the researcher identified the representative population in each of the provinces in Region XI in proportion to the population of drugstores in each province.

The researcher utilized three sets of questionnaires adapted from various authors and validated by experts on questionnaire construction. Additionally, after expert validation, pilot testing took place to guarantee the reliability of the research instruments. The research instruments used a 5 point Likert type scale of which 5- Very High and 1- Very Low.

Competitive Advantage. This survey questionnaire was adapted from Li et al. (2006) and consisted of five dimensions with 16 item constructs. Furthermore, the measurement's reliability score was high, with a Cronbach's alpha of 0.965.

Supply Chain agility. The questionnaire was adapted from Gligor (2013) with a Cronbach's alpha of 0.975. It has five dimensions: alertness, accessibility, decisiveness, swiftness, and flexibility, and consists of a 14-item construct.

ICT capability. The ICT Capability survey questionnaire was adapted from Parida et al. (2016). This tool contains a 13-item construct with a Cronbach's alpha value of 0.970.

The data collection process for this study began with obtaining permission from the Dean of Graduate School. Subsequently, the researcher secured ethical clearance from the University of Immaculate Conception Research Ethics Committee (UIC-REC) to review compliance with policies and guidelines and approve data collection. With the letter of approval from the UIC Graduate School and the certification from the Research Ethics Committee released on October 2023, the researcher wrote a permission letter to 300 drugstore owners, managers, and pharmacists in Region XI through the Food and Drug Administration

via eFOI. After obtaining permission, the researcher began collecting data by contacting pharmacists who met the study's criteria.

Furthermore, the researcher hired enumerators in each municipality to administer the survey. The enumerators were trained and compensated according to the number of survey questionnaires administered. With the approval granted, the researcher began gathering data by providing the list of drugstores per municipality to the identified enumerators. The enumerators then located the respondents who met the study's criteria. After the respondents were identified, the enumerators began administering the survey.

The survey questionnaire was divided into two parts: the informed consent form and the study questionnaire. Each respondent was required to sign the informed consent form before participating. The entire survey questionnaire was expected to take about ten to fifteen minutes. Since the data collection was conducted face-to-face, the entire process was completed within two months, from October to November 2023.

The study utilized these statistical tools to provide a more comprehensive interpretation and analysis of the data gathered. Mean was used to measure the levels of competitive advantage, supply chain agility, and ICT capability in drugstores in Region XI. Standard Deviation (SD) was used to measure the dispersion of a set of data from the mean. The higher the distribution of variability, the greater the SD and the more significant the magnitude of the deviation from the mean's value. The Pearson Product Moment Correlation was used to determine the relationships among competitive advantage, supply chain agility, and ICT capability of drugstores in Region XI. Hierarchical Logistic Regression Analysis and Modgraph were used to ascertain the predictive power of competitive advantage, supply chain agility, and ICT capability of drugstores in Region XI. Further, it was also used to determine the moderating effect of ICT capability on the relationship between supply chain agility and competitive advantage.

Findings

The status of Competitive Advantage (DV) has an overall mean of 4.07, described as high. This means that Competitive Advantage is evident most of time in the drugstores. This finding supports the study of Holdford (2018) that an evidence-based pharmacy practice and

business's long-term success depends on its unique resources and capabilities as well as business strategies in terms of price, quality, delivery dependability, innovation and time to market. Likewise, Supply chain agility (IV) got an overall mean score of 4.12, indicating that supply chain agility is evident most of the time among drugstores in Region XI. This high mean value suggests that drugstores are well-equipped to adapt and respond effectively to dynamic market conditions. This is consistent to the idea of Chen (2019) who emphasized the significance of supply chain agility and innovativeness in enhancing firms' competitive advantage. Moreover, the high mean value of ICT capability (ModV), with a mean of 3.76, suggests that ICT capability was most of the time manifested in drugstores of Region XI, which could significantly influence competitive advantage. These findings align with the study by Yunis et al. (2017) emphasized the impact of ICT-based innovations, highlighting the emphasis on leveraging ICT to enhance operational capabilities and potentially drive competitive advantage within the sector.

The correlation between supply chain agility and competitive advantage, as shown in the table, demonstrates a significant and strong positive relationship ($r = .698$, $p < 0.05$) between these variables, thus rejecting the null hypothesis that there is no significant relationship between supply chain agility and competitive advantage. This demonstrates that as supply chain agility increases, competitive advantage also increases within the pharmaceutical industry. This correlation is aligned with the study of Isfianadewi and Anindityo (2022), which found that supply chain agility has a positive and significant association with competitive advantage. Similarly, the correlation ($r = 0.565$, $p < 0.05$) between ICT capability and competitive advantage indicates a positive relationship, leading to the rejection of the null hypothesis. This implies that as ICT capability increases, competitive advantage also increases, signifying a significant relationship between the two, in corroboration with the study of Qosasi et al. (2019).

Furthermore, the hierarchical regression analysis which was employed to test the hypothesis on moderating effect. The independent variable, supply chain agility, was entered into the hierarchical procedure as step one. The first model only includes the variable of supply chain agility. The unstandardized coefficient (B) is 0.682, and the standardized coefficient (Beta) is 0.698. The t-value is 16.805 ($p < 0.05$), indicating that supply chain agility significantly predicts competitive advantage. The R squared change is 0.487, indicating that supply chain

agility explains about 48.7% of the variance in competitive advantage. This aligns with previous studies by Isfianadewi and Anindityo (2022), and Patel and Sambasivan (2021) that have established a positive relationship between agile supply chain capabilities and competitive advantage.

Moving to the second model, the addition of ICT capability alongside supply chain agility further enhances the predictive power for competitive advantage. Both supply chain agility and ICT capability exhibit significant positive relationships with competitive advantage, as indicated by their unstandardized coefficients of supply chain agility and ICT capability of 0.541 and 0.166, respectively, and both variables exhibited significant levels ($p < 0.05$), indicating both variables predict competitive advantage in their capacities as separate variables. The R squared change of 0.053 indicates that the inclusion of ICT capability explains an additional 5.3% of the variance in competitive advantage. The study by Yunis et al. (2017) emphasized the impact of ICT innovations, highlighting the potential of ICT capability to make a difference in organizational performance. This indicates a strong emphasis on leveraging ICT to enhance operational capabilities and potentially drive competitive advantage within the sector.

However, in the third model, which introduces an interaction term for supply chain agility and ICT capability, the results show that the interaction between these two variables is not a significant predictor of competitive advantage. The unstandardized coefficient for this interaction term is -0.029, and the standardized coefficient is -0.264. The t-value is -0.878 ($p > 0.05$) with a minimal R square change of 0.001.

In addition to the hierarchical regression analysis, the results support the hypothesis that ICT capability does not significantly moderate the relationship between supply chain agility and competitive advantage. For instance, Dubey et al. (2019) and Tarafdar and Qrunfleh (2016) highlighted that IS capability for agility plays a crucial role, but it may not act as a significant moderator in the relationship between supply chain agility and competitive advantage. The study by Chen (2019) claimed that ICT capability does not significantly moderate the relationship between supply chain agility and competitive advantage.

On the contrary, there are also studies that provide evidence contradicting the hypothesis. Qosasi et al. (2019) found that business agility strengthens the indirect link

between ICT capability and competitive advantage, signifying that ICT capability may play a moderating role in improving competitive advantage through business agility. Ullah and Narain (2021) stated that the use of ICTs has a significant impact on the relationship between their dynamic capabilities and their performance, indicating that ICT capability may have an impact on organizational performance through dynamic capabilities.

To validate the result of the regression, a modgraph was provided to visually verify the result of the regression from the interaction. The graph showed three parallel lines, according to Jose (2013), a graph showing three parallel lines implies that the moderator has no interaction with the main effect. This means that at high or low level of ICT capabilities, the effect of supply chain agility on competitive advantage of drugstores in Region XI is depicted to be the same. It implies that changes in the levels of ICT capabilities do not significantly affect the variation in supply chain agility in an attempt to influence competitive advantage. Although the result revealed that there is no significant moderating effect of ICT capabilities on the relationship between supply chain agility and competitive advantage, relationship between variables was established through correlation. The positive relationship between supply chain agility, ICT capabilities, and competitive advantage aligns with the resource-based theory of competitive advantage (Holdford, 2018) and support the concepts of supply chain agility (Gligor, 2020) and pharmacy informatics (Cortes, 2019), which involve the adoption of ICT capabilities to improve pharmaceutical service delivery.

Conclusion

Based on the findings of the study, it is evident that the drugstores exhibit a very high level of competitive advantage, particularly in terms of quality and price, and a high level of delivery dependability, product/service innovation, and time-to-market. The drugstores also demonstrate a very high level of supply chain agility, particularly in terms of accessibility, as well as high alertness, flexibility, decisiveness, and swiftness. Additionally, the drugstores' ICT capability is reported to be high.

The study also establishes a significant relationship between supply chain agility and competitive advantage, as well as between drugstores' ICT capability and competitive advantage. However, it is noted that ICT capability does not moderate the relationship between supply chain agility and competitive advantage.

Theory confirmation. The findings of the study align with Porter's Theory of Competitive Advantage, emphasizing the capacity of an industry to innovate and upgrade as a key determinant (Porter, 2023). The drugstores' high level of competitive advantage, supply chain agility, and ICT capability are in line with Porter's theory, focusing on local market demand conditions, factor conditions, related and supporting industries, firm strategy, structure, and rivalry (Fainshmidt et al., 2016). Supply chain agility provide strategic advantages and innovations to respond to market uncertainty, aligning with Porter's emphasis on innovation and local market demand conditions (Rahman, 2021). The role of ICT capability emphasized the role of local market resources and capabilities in determining competitiveness (Nugraha et al., 2022). Additionally, the study by Chen (2019) demonstrated IT integration positively affects a firm's competitive advantage, aligning with Porter's emphasis on local market demand conditions and related industries as determinants of competitive advantage.

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Online teaching Philippine folk dances and learning competencies among grade 7 MAPEH students

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Abstract

This study assessed the effectiveness of the online learning platform in teaching Philippine folk dances to develop an online module for MAPEH teachers. Using descriptive-correlational research design, the study was conducted and participated by one hundred (100) Grade 7 MAPEH students from Dolores Macasaet National High School, a secondary public school in Candelaria, Quezon. Using 4-point Likert scale self-constructed questionnaire, the study found out that students acquire sufficient intrinsic, germane, and extraneous knowledge on Philippine folk dance through online teaching. Students believe that online teaching is highly effective medium in learning Philippine folk dances as to appropriateness and delivery. The students also perceived that the online teaching of Philippine folk dances is effective in terms of video and audio, ease of use, and technological efficiency. With the use of the online platform, the students were able to effectively achieve the learning competencies required for the dance in terms of nature and background of dance and skills execution. Students are within the merging level of the MELCs of MAPEH dance criteria in terms of sequence of steps, beat and style while developing in terms of attitude. The correlation test shows that there is significant relationship between the nature and background of dance and skills execution with the online teaching of Philippine folk dances and there are some variables which were not significant and there are some with significant relationship between online teaching Philippine Folk Dance and MELCs.

Keywords: *online teaching, Philippine folk dances, MAPEH, MELCS, ICT*

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Introduction

The 21st century teaching and learning is associated with innovative and creative ideas in the delivery of the different levels and classes. In fact, DepEd Order No. 21, s. 2019 expects teachers in full use of Information and Communications Technology (ICT) in the delivery of curriculum contents. This integrates ICT framework to equip students with the necessary skills including information, media, and technology skills, learning and innovation skills, communication skills and life and career skills. Thus, teachers from all levels are expected to follow through with their research-based innovative teaching methodologies.

The introduction of the K to 12 program ushers' new paradigm in the integration of new methodologies and new concepts in different key subject areas. For instance, the MAPEH (Music, Arts, Physical Education and Health) curricula which is grounded on student-centered, spiral progression and performance-based learning, expect learners to be empowered through active involvement and participation. In a more specific stance, the Physical Education (PE), which aims for lifelong fitness, offers physical fitness, games and sports, rhythms and dance, movement skills and body management. Along these physical activities, teachers are expected to integrate ICT and innovative methodologies to develop the various skills of the students. With the advent of social media technology, various websites offer different helpful platforms that aid in the delivery of fitness, sports, and dances. These online resources enable the integration of teaching-learning process with the virtual methods of independent learning.

According to Husin et al. (2021), Online learning is a revolutionary method that eliminates the need for learners to physically attend a traditional classroom or college setting. Instead, lectures and courses are given online. It is a technical education and preparation program that uses telecommunications technology to deliver educational knowledge (Latip et al., 2020). Where students can practice independently at their own pace rather than in a normal classroom setting is not seen as a paradigm of digital education. During the COVID-19 phase, when many students had no choice but to use cutting-edge online information and communication technologies to accomplish their academic assignments, it acquired pace and recognition as a learning platform (Al-Kumaim et al.,2021).

There are numerous studies on the effectiveness of online learning and the associated challenges in its use. For instance, Irfan and Iman (2020) contend that online learning is ineffective and is conducted inappropriately due to unsuitable internet facilities, teachers'

inability to implement online learning, and the lack of cooperation given by parents. However, Awal et al. (2020) found that while online learning is efficient for responding to the pandemic's urgency, it is ineffective for achieving learning goals since it is expensive to buy sufficient internet packages. Similar to how Wildana et al. (2020) view online learning, which enables the use of tools like Zoom and Google Classroom, as beneficial, online learning is constrained by internet access and internet package costs. Muhammad and Kainat (2020), who also noted the lack of connection between teachers and students and a lack of technology resources as challenges to the effectiveness of online learning, also brought up the issue of internet connectivity. According to Hazwani et al. (2017), institutional infrastructure is important in making sure that online learning runs well in order to overcome these problems and challenges. In addition, Nurul Haidah et al. (2020) note that students should take the opportunity to learn, improve their interpersonal skills, and enhance their adaptability to new technologies. With all the contrasting results of studies on the effectiveness of online learning, it is necessary for teachers to assess its impact to the learning of the students.

The sudden change of the teaching platform from face to face to online or remote learning pose a great challenge to the teachers. Due to the pandemic, the online video conferencing serves as the main tool for lectures and discussion. In the subjects with practical components such as PE, questions arise as to the effectiveness of the online platform. For instance, one component of PE is the teaching of the Philippine Folk Dance. The online platform, as the main tool for teaching and learning in the new normal, is seen as the only option to teach the Philippine folk dances. However, there are limited studies affirming the effectiveness of the platform.

There are several studies conducted in the dance schools that utilized online learning in the teaching of contemporary dances. For instance, Papp-Danka and Lanszki (2020) investigated the distance learning at the Hungarian Dance Academy. The findings indicated that instructors welcomed any opportunity to use distance learning to their advantage (such as developing new curriculum, learning about cutting-edge technology, and enhancing relationships with students), but it is understandable that many people did not think it was possible to teach dance online. Due to their own schedules and the comfort of their homes, several students preferred distance learning, although there were many criticisms of its methodologies. Similarly, Saenal et al. (2021) evaluated the art of dance during the pandemic. Results showed that it seems that it will be very difficult if it is done with online learning. This

is congruent with the study of Wang et al. (2022) on the effectiveness of blended learning in university physical education. Results showed effects of blended learning on students' motor skills, physical fitness, exercise attitude, satisfaction, and interest in learning. However, there are no studies specifically on traditional Philippine dances.

The cultural dances which are being discussed and executed in the Physical Education component of MAPEH requires specific movements, steps, counts and style. Babiera (2014) believed that it is the mission of the academic institutions to preserve, promote and pass down folk tradition and culture through the Physical Education teachers. However, with the strong influence of modern culture, the teachers' attitude and interest are diverted (Leal, 2011). Similarly, the emergence of the online learning paved way for the students' own executions of the Philippine folk dances. Some of them even make it to creative folk dances. These also raise the question on the achievement of the Most Essential Learning Competencies (MELCs) as set forth by the DepEd for Physical Education.

Similar to the observation of Buedron (2015), in spite of the choice of simple dance and application of several teaching techniques, a lot of students find difficulty learning folk dance. Due to the limited studies focusing on the effectiveness of online learning in teaching cultural dance to students and the current COVID-19 pandemic situation in the country, this study was conceptualized. As such, this study aimed to assess the effectiveness of the online learning in the teaching of the Philippine folk dances in the achievement of the MELCs in Physical Education dance component. It measured the effectiveness in three parameters: student learning; teaching strategy; and online platform. The student learning were assessed in terms of intrinsic, germane, and extraneous. Meanwhile, the parameters of the teaching strategy were appropriateness and delivery. Finally, the online platform was assessed through video and audio quality, ease of use, and technological efficiency. The assessments of these three parameters are tested for significant relationship with the achievement of the MELCs in Physical Education dance component.

Methodology

This study is descriptive-correlational research, a method that aims to provide static pictures of situations as well as establish the relationship between different variables (McBurney & White, 2009). The statistical data were collected by means of a questionnaire as

a way of assessing a social phenomenon. Meanwhile, the type of quantitative research is descriptive design. According to Manjunatha (2019), descriptive research describes the characteristics of the population or phenomenon that is being studied. This methodology focused more on the “what” of the research subject rather than the “why” of the research subject. Since the current study aimed to find a significant relationship between the use of online platform and the MELCs in the teaching of Philippine folk dances, the method is the most appropriate.

The population of the study were the 100 Grade 7 MAPEH students of the Dolores Macasaet National High School, a public high school in Candelaria, Quezon. Since the researcher is a MAPEH teacher and the study requires the evaluation of the online platform, the MAPEH classes under the researcher were taken as respondents of the study. In total, there were 300 students in the Grade 7 MAPEH comprising the participants of this study.

The instrument was a self-constructed questionnaire based on the theories, literature and studies.

Construction of the questionnaire. It was divided into four parts. These are in a checklist format using a 4-scale Likert style response. The four parts of the questionnaire include: students’ knowledge on Philippine folk dances; effectiveness of the teaching strategy; effectiveness of the online platform and Most Essential Learning Competencies. There were different parameters used to assess each part of the questionnaire.

Validation of the Questionnaire. The content of the instrument has been checked and validated by three experts in the field: MAPEH department head of Dolores Macasaet National High School, master teacher in MAPEH and research expert. Any modifications suggested by the panel were incorporated before the data gathering proper.

Administration of Questionnaire. The data gathering was personally conducted by the researcher. Since the classes are flexible and hybrid, the research used the online classes as the implementation of the strategy and the administration of the survey during the face-to-face class. Since students were grouped into two batches (online and face to face), there was one-week allocation for the distribution of the survey.

As to the implementation of the online class, the researcher informed the students at the start of the week on the survey that was conducted. The main objective was discussed to the students at the beginning of the study. The researcher conducted the classes normally for the next two weeks allowing students to familiarize and utilize the online platform for two

weeks for a more accurate evaluation. During the first week, the researcher discussed only the theoretical part of the Philippine folk dances during the face-to-face classes while the specific dance steps was demonstrated through online platform. For the second week of the implementation, the researcher discussed and demonstrated the Philippine folk dances during the first face to face class and continued the same for the first online class.

The students were given time to demonstrate the Philippine folk dances at the last face to face class of the second week. The survey was conducted at the third week following the students' demonstration.

The following statistical tools were used for the analysis of the data: frequency, percentage, weighted mean, standard deviation, and Pearson R Correlation. The frequency, percentage, weighted mean, and standard deviation were used in the descriptive questions. It was calculated by multiplying the weight (or probability) associated with a particular event or outcome with its associated quantitative outcome and then summing all the products together. Meanwhile, Pearson r correlation was used to answer research question.

Findings

In terms of intrinsic knowledge, the students' perceived that online teaching contributed to their knowledge on Philippine folk dances. The students are knowledgeable on the Philippine folk dances in all the indicators assessed specifically historical origin, culture and traditions and the words associated to the folk dances. Similarly, the students also rated themselves knowledgeable in terms of germane with all indicators rated 'knowledgeable'. They clearly emphasized that the online teaching enabled them to learn the movements and steps associated with the Philippine folk dances. In terms of extraneous, the students perceived themselves knowledgeable with all the indicators rated 'knowledgeable' indicating that the online teaching allowed them to have personal reflection and apply the lessons in their everyday undertakings. Overall, the students acquire sufficient knowledge on Philippine folk dances through online teaching.

The students believed that online teaching is a highly effective medium in learning Philippine folk dances. Majority of the indicators assessed were highly effective. Meanwhile, the delivery of the lessons in online teaching is also highly effective with all the indicators rated 'highly effective'.

The students perceived that the online teaching of Philippine folk dances is effective in terms of video and audio quality, ease of use, and technological efficiency. The students emphasized the value of recording lectures and the impact of voice and video during the online teaching but flagged the limited functionalities of the online platform.

In terms of the online platform learning competencies, the nature and background of the dance was rated effective while the skills execution of folk dances was rated highly effective. With the use of the online platform, the students were able to effectively achieve the learning competencies required for the dance. Similarly, they were able to master the choreography of various Philippine folk dances.

Despite the high ratings given to the online teaching of Philippine folk dances, the students are within the emerging level of the MELCs of MAPEH dance criteria in terms of sequence of steps, beat and style while developing in terms of attitude.

The correlation test shows that the nature and background of dance has significant relationship with intrinsic knowledge, germane knowledge, appropriateness of the online platform, delivery, video and audio quality, ease of use, technological efficiency, and extraneous knowledge. Similarly, the skills execution has positive significant relationship with intrinsic knowledge, germane knowledge, extraneous knowledge, appropriateness of the online platform, delivery, video and audio quality, ease of use, and technological efficiency. On the other hand, the sequence of dance steps MELC has significant relationship with the ease of online platform use while beat has significant relationship with delivery, ease of use and technological efficiency and style has significant relationship with extraneous knowledge. However, attitude has no significant relationship with any of the knowledge, efficiency, and effectiveness variables.

Conclusion

This study concluded that there is significant relationship between the nature and background of dance and skills execution with the online teaching of Philippine folk dances. Since the students generally perceived that the use of online teaching platform is highly effective, the MAPEH teachers may still utilize online platform in the teaching of Philippine folk dances through independent learning tasks with the aid of video streaming sites and online portals. They can also use online resources in their performance tasks in any type of dance.

The MAPEH teachers may focus on the utilization of video streaming sites such as YouTube because most of the students have high regards for video and audio quality in video tutorials. The teachers can provide useful videos that are relevant and educational in nature. They may focus on development of video lectures in the teaching of Philippine folk dances. They are encouraged to create videos of Philippine folk dances as supplementary material for their lectures.

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Self-blended learning and self-regulated learning models in developing the quantitative skills in statistics

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Abstract

Innovative instructional methods for diverse learners have emerged as a response to the persistent global public health crisis such as the self-regulated and self-blended model. This study used descriptive research design. The 30 Grade 11 respondents were selected through purposive sampling technique. Findings showed that the respondents strongly agree on the statements of description provided for the self-blended learning material. However, the respondents practiced self-regulated learning to some extent only. Scores in the pre-test and post-test of the respondents before and after exposure to self-blended learning showed significant differences along the following subscales: knowledge, analysis, concepts and application and calculation and accuracy. On the other hand, scores of the respondents on calculation and representation and communication were not statistically significant.

Keywords: *blended learning, diverse learners, innovative instructional methods, self-blended learning, self-regulated learning, statistics*

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Introduction

The persistent global public health crisis has had a lasting impact on the field of education, leading to the emergence of innovative instructional methods for diverse learners. In contrast to the pre-pandemic era, where classroom-based instruction dominated, the pandemic necessitated the implementation of various learning mechanisms. Throughout the height of the public health crisis, the advantages and disadvantages of each learning modality were carefully examined. As the world now grapples with the aftermath of the pandemic, previous instructional approaches are being reconsidered for future use, potentially even on a permanent basis. Blended learning, with its numerous benefits for learners, has the potential to become an enduring part of the instructional landscape. Among its different types, self-blended learning offers learners the opportunity to study independently, reducing their reliance on traditional learning methods. This approach can be particularly beneficial for subjects like Mathematics, which often evoke anxiety among students due to its numerical nature.

In the context of senior high school education, statistics and probability constitute a vital part of the curriculum, acting as a prerequisite for various research-based subjects at that level. Mastering the basic concepts of these subjects is essential for understanding statistical aspects of research. However, since mathematics-related subjects tend to provoke anxiety among many students, exploring new instructional approaches could prove fruitful. By implementing a self-blended learning approach, teachers can facilitate more meaningful learning experiences in statistics and probability. Given the negative attitudes and poor performance commonly observed among students in this subject, it is crucial to address this challenge and improve the situation. The lack of confidence in solving statistical problems, stemming from the subject's mathematical content, contributes to students' negative attitudes and underperformance. Extensive research indicates that students often experience fear and anxiety when it comes to mathematics, which may also extend to statistics and probability. This phenomenon has been exacerbated during the pandemic, leading to a noticeable decline in students' performance across all subjects, including statistics and probability. Self-blended learning has the potential to alleviate such conditions by empowering learners to take charge of their education through self-determination and independent learning, as facilitated by this instructional approach.

In response to these challenges, educators have made efforts to implement innovative strategies within the classroom aimed at addressing the learning gaps in statistics and probability. Many educators have undertaken initiatives to enhance students' attitudes and performance in this subject, thoroughly investigating the underlying factors and reasons. Some have implemented innovative approaches with the expectation of improving performance and fostering positive attitudes. However, certain areas within statistics and probability pose difficulties for learners, including topics such as permutation, combination, probability, and random variables. Moreover, students often struggle to establish connections between the subject and other disciplines, such as research and economics. Even graduate students face challenges in identifying specific statistical tools for their research problems.

This study does not focus on identifying the various factors that affect statistics learning; rather, it proposes an innovative approach to address the aforementioned issues. In addition to examining the impact of self-blended learning on performance, the study also emphasizes the significance of self-regulated learning in the post-pandemic era. Research suggests that self-regulated learners are more capable of applying practical learning concepts within the classroom. Individuals with a high level of self-regulation tend to have positive self-perceptions, effectively resolve conflicts with peers, and exhibit resilience when confronted with problems, difficulties, and failures. Furthermore, they perform better in various learning activities.

This study sought to determine the effectiveness of the self-blended model in understanding quantitative skills in statistics and the level of self-regulated learning of students. Specifically, this answered the following questions:

1. How is the self – blended learning model described when it comes to: learning experience; learning outcomes; effectiveness and efficiency; user friendly; and congruence?
2. What is the level of self-regulated learning of students when it comes to: goal setting; environmental structuring; task strategies; task management; help seeking; and self-evaluation?
3. What is the performance of the student-respondents before and after exposure to self-blend model on quantitative skills assessment in terms of: knowledge; calculation;

analysis; and quantitative reasoning; concepts and applications; calculations and accuracy; representations and communication?

4. Is there a significant difference between the pretest and posttest performance of the student-respondents before and after exposure to self-blend model on quantitative skills assessment?

Methodology

Research design. The study employed a descriptive research design. Descriptive, as defined by Calderon (2012), involves a purposeful process of gathering, analyzing, categorizing, and summarizing data on prevailing conditions, practices, beliefs, trends, and causality, with appropriate and accurate interpretation aided by statistical method. Furthermore, it describes the respondents' perception on the extent or limit of effectiveness of the self-blended/self-regulated learning materials when it comes to learning experience, learning outcomes, effectiveness and efficiency, user friendly and congruence of the developed material. Additionally, self-regulated learning of the respondent was also illustrated when it comes to goal setting, environmental structuring, task strategies, time management, help seeking, and self-evaluation. Moreover, performance of the respondents after applying the intervention strategy was described based on quantitative skills assessment in statistics and probability when it comes to knowledge, calculation, analysis, and quantitative reasoning.

Respondents of the study. The respondents in this study were 30 Grade 11 students purposively selected from Dolores Macasaet National High School during the academic year 2022-2023. These students were exposed to novel approaches known as self-blended learning and self-regulated learning.

Sampling technique. This study employed a purposive sampling technique in selecting the respondents. The selection was based on the learner's academic performance in statistics and probability as reflected in their report cards which fits the goal of the study in giving the learners intervention strategy. This was complemented by Nikolopoulou (2022) who described purposive sampling as a technique used by a researcher based on discernment as to which people will give the most information to help in meeting the study's objective.

Research instrument. The researcher developed a pre-test and post-test assessing the quantitative skills in statistics and probability. The pre-test and post-test were adapted-

modified questionnaires from the modules provided by the Department of Education during the pandemic period. Both tests include 24 multiple choice questions to assess the respondents' quantitative skills when it comes to knowledge, calculation, and analysis and 2 problem solving questions assessing quantitative reasoning. Specifically, there were 8 questions under knowledge, 8 questions under calculations, and 4 questions under analysis. For quantitative reasoning, a rubric was developed to measure the said component with regards to concepts and applications, calculations and accuracy, and representation and communication with 4 as the highest score per criterion. On the other hand, the self-regulated learning survey questionnaire was adopted from the study of Barnard et al. (2009). It utilized a 4-point Likert scale composed of six categories, i.e. goal setting, environmental structuring, task strategies, time management, help seeking, and self-evaluation, with five questions each. Additionally, another adapted 4-point Likert Survey questionnaire was utilized to assess the perception on the extent or limit of effectiveness of the self-blended/self-regulated learning materials developed for the study with five areas, i.e. learning experience, learning outcomes, effectiveness and efficiency, user-friendly, and congruence, with five questions each as well. To ensure the appropriate distribution of questions, the instrument followed a table of specifications. Before administering the instrument to the respondents, it underwent validation by Master Teachers and Head Teacher of the Mathematics Department and selected English teachers for language structure and critique.

Research procedure. The researcher, firstly, sought permission to conduct the study from relevant authorities, including the Office of the Laguna State Polytechnic University Graduate School and Applied Research, Thesis Adviser, the Members of the Panel, the Schools Division Superintendent of Quezon Province, and the School Principal. The study proceeded after obtaining the necessary approvals. Supplemental activities were prepared as intervention strategy of the study. These activities underwent review and approval by Master Teachers and the Head Teacher before implementation in the classroom. The supplemental activities were distributed weekly for one month to the identified respondents. Short meetings were conducted every Friday to provide simple instructions and retrieve previous materials. After four sessions, post-test was conducted, and survey questionnaires were distributed. The collected data were tabulated, analyzed, and interpreted to draw conclusions and provide recommendations based on the findings.

Statistical treatment of data. The study employed various statistical tools to address the research questions posed in this study. Descriptive analysis was conducted to examine the level of self-regulation skills, using measures such as mean and standard deviation. To analyze the performance of students in the quantitative skills assessment based on the pretest and posttest scores, frequency and percentage were utilized, accompanied by appropriate descriptors. To investigate whether there is a significant difference in the pretest and posttest scores of the students, a paired t-test was employed as an inferential statistical tool.

Findings

Respondents' Description of Self-Blended Learning

Based on the data gathered, the respondents strongly agree about the statements that describe self-blended learning according to learning experience with the overall mean of 3.69. Specifically, the respondents strongly agree that SRL/SBL material is appropriate and suited to their vocabulary and comprehension needs with a mean of 3.89. The obtained result, indicating a mean score of 3.6, demonstrates that the SRL/SBL material aligns effectively with students' reading vocabulary and comprehension, thereby establishing its suitability. This infer that the aforementioned result contributes significantly to the overall outcome, which has a mean score of 3.69. Therefore, the SRL/SBL material, tailored to students' reading vocabulary and comprehension, plays a crucial role in achieving the overall positive result. It reinforces the effectiveness and suitability of the material in enhancing students' learning experience and academic performance. In addition, the tasks and learning activities provided in the material are adaptable and can be used individually with both mean of 3.71 interpreted as strongly agree. Lastly, the material is competency-based and suited to students' ability with mean of 3.63 and 3.63 respectively (interpreted as strongly agree. The results imply that the material is well-crafted and fit to what the students need in the subject.

The material developed and utilized in the classroom is viewed as something with worth, however, this is such lesser degree in terms of being interesting and sense of expectations. The University of Dundee (n.d) discussed that self-blended learning helps improve students' performance. Here the learners are given a free hand to manipulate or to deal with their own learning at their own pace. This is an important aspect of learning because students are not pressured to accomplish tasks given to them. However, there are instances where lack of

motivation may exist in this type of set up. According to Medrano (2022) in the pandemic times where students are just confined in their houses to study, a lot of problems came in terms of submission, quality and honesty in work. Many students were not able to submit on time because of many distractions along the way such as household chores, family day to day business and the like.

The SRL is generally effective and efficient based on the results. This may also mean that they found differentiated activities in terms of developing mathematical skills, literacy and values. In the work or discussion of Ornia (2021) about the self-learning modules of the Department of Education, there are many activities that learners should deal with. However, there are activities that need strong teacher's guidance for them to be understood well by the students.

The SBL material is user-friendly. The self-blended model offers flexibility, enabling students to pursue education in areas that may otherwise be inaccessible to them, such as students from high-risk environments or working individuals aiming to obtain a college degree (viewsonic.edu.com, 2022). In instances where a school lacks qualified teachers for certain subjects, remote teaching methods, such as Zoom sessions or pre-recorded educational videos, can be employed to deliver the content (viewsonic.edu.com, 2022). One of the main advantages of the self-blend model is its flexibility, as it caters to students at risk of failing subjects while also providing opportunities for additional learning and specialization (EFA, 2020). Furthermore, it is a cost-effective approach compared to hiring additional teachers for specialized subjects, making it a viable option for delivering comprehensive subject content (Burns, 2021).

The results imply that the SBL material contains congruent activities suited to learners' needs. More so, it could be gleaned that the material followed the competencies prescribed in the MELCS. This learning model, known as self-blended learning, enables students to take control of their learning by combining various learning experiences that extend beyond the offerings of a traditional school setting (EFA, 2020). It is particularly advantageous for students seeking additional learning opportunities in specific fields not available in their institution, as well as those pursuing advanced placement courses (EFA, 2020). The self-blend model heavily relies on online learning, allowing students to access and complete courses

outside the confines of a physical classroom, such as at home or in an internet cafe with computer network access (viewsonic.edu.com, 2022).

The respondents' description of self – blended learning that proved that self – blended learning is highly manifested garnering an average mean of 3.65 and 0.878 standard deviation in all the given subscales. This goes that blended learning provided students with new method of learning, in which students felt freedom and other form of interaction around them using the provided learning materials. These results are consistent with most of the previous studies indicating the effectiveness of the blended learning as (Maccon, 2016) and (Al-Rimawi, 2014).

Level of Self-Regulated Learning

The results imply that students do not have that high level of self-regulated practice in terms of their studies. Cesario (2022) discussed in her paper that students of today possess qualities different from the students' generations back. In this time of technological advancement, many students rely on it. Information is always readily available in just one click of fingers that whatever they need can be gotten instantly. This is one of the reasons why learners of today are weak in setting goals about their academic journey (Maningas, 2022).

In terms of setting goals of learning, on the other hand, it can be thought of as the standards that regulate an individual's actions (Schunk, 2001). In the classroom, goals may be as simple as earning a good grade on an exam, or as detailed as gaining a broad understanding of a topic. Short-term attainable goals often are used to reach long-term aspirations. For example, if a student sets a long-term goal to do well on an exam, then he or she also may set attainable goals such as studying for a set amount of time and using specific study strategies to help ensure success on the exam. Self-regulated learners do not try to accomplish every task on their own, but rather frequently seek help from others when necessary. What sets self-regulated learners apart from their peers is that these students not only seek advice from others, but they do so with the goal of making themselves more autonomous. Teachers can promote positive help seeking behaviors by providing students with on-going progress feedback that they can easily understand and allowing students opportunities to resubmit assignments after making appropriate changes.

The results show that the respondents exhibited different forms of structuring in terms of their learning environment according to their preferences. This shows that each individual possesses characteristics that are unique to each other. No two individuals are exactly the same

and this is also true when it comes to the way they want to learn. There are students who want a noise-free setting in order that he will absorb everything about learning. On the other side, there are learners who are accustomed to music and to some extent-noise whenever they are engaged in any learning activity. Based on the results of the study, it could be deduced that these learners want an environment that is conducive to their own learning. Actually, they make it themselves. Distractions hamper learning development. Once it exists in a learning environment, goals and objectives may be compromised (Magpantay, 2018). It could also be gleaned that learners create and find their own environment to which they could comfortably learn. Teachers have to be aware of these findings so that they could be of help in creating a meaningful environment for learners. Teachers don't have to impose the kind of environment they themselves want for learners. Take note that every person has his/her own context by which they could do things. Teachers just have to discover them for learners have their own way to voluntarily learn.

Respondents' manifestation of practicing majority of the indicators to a low extent may be considered a sign of mismanaging or not doing tasks in the classroom. If these are practiced diligently, a possible improvement in the performance may be manifested among students. In the work of Magpantay (2022), students may perform better if they do extra efforts in their academic endeavors. If there are no extra efforts and the students will just do what their teachers provide, a milestone in quality education is impossible to achieve or to attain. In support, Wolters (2018) said that self-regulated learning concerns the application of general models of regulation and self-regulation to issues of learning especially within academic contexts. Self-regulated learning is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment.

The results may mean that the respondents, although not that high in terms of managing tasks, still do them to some extent. This result is similar to the work of Magsino (2020) where she found out that self-regulated learning concerns the application of general models of regulation and self-regulation to issues of learning especially within academic contexts. Self-regulated learning is an active, constructive process whereby learners set goals for their

learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment.

The results imply that respondents ask assistance or help on a moderate scale only. They do not practice asking help to a very high extent may be because of their tendency to become independent. According to Gardner (2011), learners of the 21st century are characterized as independent. This means that they want to explore knowledge of their own with little assistance of others.

The results show that respondents rely on others to determine how and what they are learning. In terms of internalizing or reflecting on themselves, they practice it to a low extent. It is important for these respondents what other people say about their performance on specific tasks or discipline. The results are somewhat similar to the work of Zumbrunn et al. (2021) who said that self-regulated learning (SLR) is recognized as an important predictor of student academic motivation and achievement. This process requires students to independently plan, monitor, and assess their learning. However, few students naturally do this well. Self-regulated learning is a process that assists students in managing their thoughts, behaviors, and emotions in order to successfully navigate their learning experiences. This process occurs when a student's purposeful actions and processes are directed towards the acquisition of information or skills. Generally, models of SRL are separated into phases. One popular cyclical model discusses three distinct phases: Forethought and planning, performance monitoring, and reflections on performance. During the forethought and planning phase, students analyze the learning task and set specific goals toward completing that task. When students learn unfamiliar topics, however, they may not know the best ways to approach the task or what goals might be the most appropriate.

The respondents' level of self – regulated learning having 2.91 mean and 0.76 standard deviation resulting to practice to some extent level. Zimmerman et al. (1994) concluded in their study that self-regulated learning occurs when learners take the initiative to set learning goals and then monitor, adjust, and evaluate their cognition, motivation, emotion, behavior, and environment to achieve them. However, individual factors of learners have a significant impact on self-regulation. Given the mean and standard deviation above, for subscales; help seeking and self – evaluation, the respondents do practice it for some extent only. In addition, understanding students is essential because the teacher will begin to determine the suitable

scheme and the form of learning and assessment relevant to the student and the condition of the students.

Pretest and Posttest Performance of the Students

The findings suggest that the self-blend model effectively supports the development of students' analytical skills. In summary, the results indicate that the implementation of the self-blend model holds promise for enhancing students' quantitative skills in areas such as knowledge, calculation, and analysis. These findings highlight the potential effectiveness of the self-blend model as an instructional approach for improving students' proficiency in quantitative skills.

In summary, the results indicate that the self-blend model had limited effectiveness in improving the performance of student-respondents in the areas of concepts and application, calculation and accuracy, and representation and communication. The majority of respondents remained at the beginning level, with only a small proportion demonstrating progress at the developing level. These findings highlight the need for further investigation and refinement of the self-blend model to effectively address the challenges associated with these specific skill areas.

Test of Significant Difference between the Pretest and Posttest Performance

The subscales to which the pretest and post test scores are significantly different are the following: knowledge, analysis, concepts and application and calculation and accuracy. This means that the self-blended learning material may truly help in increasing the performance of students in Statistics along the aforementioned subscales. On the other hand, the subscales to which the pretest and posttest scores are not significantly different are the following: calculation and representation and communication. The involvement or guidance of teachers in the process of learning statistics/mathematics may be necessary for students, as indicated by Alrajeh and Shindel's (2020) study on student engagement and math teachers support. The study highlighted that instructional support emerged as the predominant factor influencing students' learning outcomes in these subject areas. As we all know, teacher's role as a facilitator of learning refers to the one who guides, assists and manages the learning process effectively, they ensure participation and allow students to engage in their own learning ways. Teachers greatly influence students' mathematical problem-solving skill. Moreover, the study conducted

by Daher (2020) as mentioned in Alrajeh and Shindel's (2020) work reiterated the importance of effective instructional support in positively influencing students' emotional well-being. This included fostering their motivation to engage in learning across various subject areas. Also, Aziz et al. (2018), classroom discussions where teachers were present are an important aspect of participation of students. It makes them more motivated, supports their learning, improves their communication and promotes higher order thinking skills. Teachers play a vital role in boosting participation by acknowledging all contributions made in class where teachers do the facilitation to overcome their fear of speaking, and providing examples related to their' lives. A supportive, non-threatening and open learning environment provided by teachers would make students feel comfortable in expressing their thoughts.

Conclusion

This study concluded that self-blended learning material developed and applied to the students, they practiced self-regulated learning to some extent only, the scores in the pretest and posttest of the respondents before and after exposure to self-blended learning show difference, and the pretest and post test scores of the respondents are significantly different along the following subscales: knowledge, analysis, concepts and application and calculation and accuracy. On the other hand, scores of the respondents on calculation and representation and communication are not statistically significant. There is no significant difference between the pretest and posttest scores performance of the student-respondents before and after exposure to self-blend model on quantitative skills assessment. The implementation of the self-blended learning material had a positive impact on the quantitative skills of the respondents, particularly in areas related to knowledge, analysis, concepts and application, and calculation and accuracy.

These results provide valuable insights into the effectiveness of self-blended learning as a pedagogical approach for enhancing quantitative skills. The findings suggest the importance of further exploration and refinement of self-regulated learning practices to optimize the learning outcomes in these areas. Overall, this study contributes to the existing body of knowledge in the field of self-blended learning and provides practical implications for educators, instructional designers, and policymakers involved in designing and implementing effective learning environments.

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Viewpoints of students toward direct instruction in remedial class: Input for a proposed learning plan in physical science

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Abstract

This study focused on the viewpoints of students toward direct instruction. It was conducted at the San Pablo City Integrated High School, Division of San Pablo City. The respondents were learners who did not meet the expectation for the subject. The study was conducted at San Pablo City Integrated High School during the EOSY 2021-2022. The input of the research is to design a remedial learning plan based on the responses of the students. The study utilized qualitative research in a case study setting. The case study interview was recorded and the thematic analysis codes were given in harmony with their responses. From the codes themes were assembled to have the findings of the study. From the findings a learning plan was set up. The findings show that the codes processed from the responses the viewpoints of learners toward direct instruction give these themes as responses – delivery of the lesson, lesson retention, coping with the learning process, prior knowledge in the subject, and learning gap. With these responses, a remedial learning plan was prepared. This holistic research encompasses the viewpoints of remedial students on the direct instruction utilized during remedial class. The input for a learning plan was solely based on the responses of the learners.

Keywords: *direct instruction, remediation, learning plan, thematic analysis*

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Introduction

Education has always been a vital factor in the development of a society. Thus there is a need for continuous improvement in the teaching-learning process. But there are also problems encountered and been hindering the quality of learning in our setting. One such problem is the appropriate instructional model to be used inside the classroom. Education that is solely focused on knowledge retention and knowledge acquisition lacks the teaching and development of critical thinking abilities as well as context-free learning environments. The introduction of institutionalized teaching and learning and its critically important summative assessments has mostly hindered students' capacity to master the essential 21st Century abilities of high order thinking, communication, creativity and invention, problem solving, and confidence (Warner & Kaur, 2017). The Department of Education provides the suggested instructional models, strategies, and methods (DepEd Order No. 42, s. 2016).

The study looked into direct instruction as a basis to determine the learning of students. Direct Instruction's (DI) main objective is to impart knowledge as quickly and effectively as feasible. To accomplish this, instructional designers must pinpoint the generative relationships or approaches that enable the learner to appropriately respond to untaught circumstances (Slocum & Rolf, 2021).

Literature review

Mastering basic skills is the goal of direct instruction. Advocates believe that students who are not well learning require more time and effort to learn the concepts (Adams & Carnine, 2003). According to Klahr and Nigam (2004), "discovery learning," which they describe as the learner discovering or building this skill for themselves, is less successful than direct instruction for helping students master the control-of-variables technique. There is a substantial body of evidence supporting the effectiveness of Direct Instruction in special education and general education settings. But in practice, there aren't many places where Direct Instruction is used (McMullen & Madelaine, 2014).

Teachers must modify the approach or learning model to fit the subject matter they will be teaching. For teaching measuring principles, specifically the ability to use measurement tools, the direct instruction model would be appropriate (Weno, 2014). Heward and Twyman

(2021) emphasized that an effective teaching method known as direct instruction (DI) combines logical analysis of the material students are to learn, careful selection and sequencing of instructional examples, clear communication between teacher and student, high levels of student engagement, reinforcement and corrective feedback, judicious review, and practice until mastery.

Methodology

Research design. The study utilized qualitative research in a case study setting. The process of gathering, examining, and interpreting non-numerical data, such as language, is known as qualitative research. To comprehend how a person interprets and lends meaning to their social experience, qualitative research is performed.

Respondents. The respondents of this case study were three (3) Grade 11 students undergoing the end of school year remediation class. The respondents were selected since they are the learners who did not meet the expectation for the subject (failed).

Research locale. The study was conducted at San Pablo City Integrated High School during the EOSY 2021-2022.

Data gathering. This research used the thematic analysis method which is commonly applied to qualitative research. The researchers conducted case study interview with the participants. The responses of the participants were recorded and using the thematic analysis codes were given in harmony with their responses. From the codes themes were assembled to have the findings of the study. From the findings a learning plan was set up.

Ethical consideration. Interviewees' responses were recorded audibly with a disclaimer that all recording will be treated confidentially. Interviewees were briefed about direct instruction prior to the interview proper so that information will not be manipulated by the researchers.

Findings

The viewpoints of the students in direct instruction learning have generated six (6) themes. The respondents revealed that this delivery of the lesson, lesson retention, coping with

learning process, prior knowledge in the subject, teacher factor, learning gap, and peer mentoring.

Table 1

Generated themes from the responses of the students

VIEWPOINTS OF STUDENTS	
CODE	THEMES
Lesson is easy to understand Teacher facilitated instruction Fine delivery of lesson Able to understand the lesson Can visualize the lesson Still adjusting in the setup	Delivery of the Lesson
Tend to forget the lesson the next day Reviewing the past lesson Lessons that are remembered Taking down notes Using the internet and taking down notes	Lesson Retention
Able to cope with lesson Prepared for the next school year	Coping with the Learning Process
Not well-versed in Science Interest in the subject Not fond of Science	Prior Knowledge in the Subject
There is a gap between the pacing in private and public schools. Seeing the learning gap	Learning Gap

Delivery of the lesson. The first generated theme was the delivery of the lesson. Based on the responses these were that the lesson is easy to understand, teacher facilitated instruction, fine delivery of the lesson, adjusting in the setup, and able to visualize the lesson.

“The lesson is easy to absorb and I understand better”

The response of Participant 1 implies that he can easily follow the subject and that he can absorb the lesson. This is evident in accomplishing the output tasks that targeted the learning competency.

“There is an explanation and you can ask the teacher”

In this response, the student was given assistance from the teacher and he feels that he gets the instruction he needs.

In order for teachers to make the required adjustments to increase lesson delivery quality and students' satisfaction in the classroom, teachers and school administrators need to determine what students actually expect from teachers in their lesson delivery (Ofori et al., 2021).

Lesson retention. Forgetting the lesson, the next day, reviewing the past lesson, lessons that can be remembered, taking down notes and using the Internet were the common responses from the respondents.

“Next meeting the lesson is forgotten but retained when reviewed”

This response from the first respondent is very evident even in regular class setting since students need also to remember other subjects. Review of the past lesson is still very effective in the retention of the lesson.

A stronger grasp of science topics would result from structured inquiry-based learning, which would also ensure long-term retention (Schmid, 2015).

Coping with the learning process. This includes the responses like able to cope with the lesson and preparing for the next school year.

“I learned from the lesson because I can keep up with the lesson, especially when reciting”

This response shows that the students were able to follow and adapt with the lesson since direct instruction involves assisting the students in learning the lessons. Learning always entails changes in cognitive and behavioral domains, in contrast to coping, which can be a repressive and passive strategy and does not always result in major cognitive or behavioral changes (Caffarella & Daffron, 2013).

Prior knowledge and interest in the subject. This theme was generated from the following codes – not well-versed in Science, interested in the subject, and not fond of the subject.

“I learn in class because the topics are interesting.”

Having interest in the subject matter is a factor in learning the competencies without difficulty since interest arouse the skills needed for the competency.

Numerous research has looked into the stability of individual knowledge differences, and they found it to be high. This is how prior knowledge effectively predicts future performance (Simonsmeier et al, 2022).

Learning gap. This theme was based from the following codes – learning gap between the pacing of lessons in private & public schools and seeing the learning gap.

“I feel there is a gap since I came from a private school.”

Participant 3 said that she experienced a learning gap in the pacing of the lessons. She noted that there is a difference between the pacing of lessons in private and public schools (she came from a private school). Direct instruction is suggested by the DepEd to be implemented across public schools while private schools have its own discretion. This leads to a gap that was experienced by Participant 3. But as she moves along the remedial class she was able to reduce the gap which helped her to learn and achieve the learning competencies.

Proposed learning plan. The proposed learning plan for the remediation class was based on the viewpoints of the participants in this case study as consideration:

- a. Delivery of the Lesson
- b. Lesson Retention
- c. Coping with the Learning Process
- d. Prior Knowledge and Interest in the Subject
- e. Teacher Factor
- f. Learning Gap

Incidentally, these viewpoints are the main factors in proposing a learning plan.

Conclusion

This study argues that the learning plan must not just be based on the viewpoints of the learners but also on the viewpoints from the teachers. Participants in this case study must also include teachers and other stakeholders. More student participants are needed to answer the

interview so that it could generate more viewpoints. The case study can also be conducted during regular class.

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A mixed methods study on digital orientation and digital transformation of multi-purpose cooperatives in Davao Region: Similarities and differences in context

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Abstract

In this digitally driven world, digital transformation is essential for the survival and growth of businesses, including cooperatives. This explanatory sequential mixed methods study investigated the influence of digital orientation on the digital transformation of Multi-Purpose Cooperatives (MPCs) in Davao Region, Philippines. Quantitative data, sourced from 316 respondents through stratified random sampling, revealed that MPCs of all sizes exhibit high levels of digital orientation and digital transformation. This showcases a readiness to embrace new technologies and engage in digitalization initiatives among MPCs. Notably, smaller MPCs demonstrate significantly higher digital orientation compared to medium-sized ones, potentially due to their agility and openness to new trends. Having a digital mindset proved to be a significant predictor of successful digital transformation for medium and large MPCs, whereas, this relationship is not significant for smaller cooperatives. Qualitative data reinforced and enriched these findings, emphasizing the challenges faced by smaller MPCs in terms of resources and technology access. As such, connecting-confirmation turned out to be the nature of integration for this mixed methods study.

Keywords: *business management, digital orientation, digital transformation, explanatory sequential design mixed-methods, multi-purpose cooperatives, diffusion of innovation theory*

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Introduction

Digital transformation, encompassing the integration of new technologies and systems into organizational processes, is pivotal for enhancing business operations globally (Liu et al., 2022). Despite its significance, challenges persist in its widespread adoption, as evidenced by issues faced in China (Yan et al., 2021), the United States (PECB, 2022), and the Philippines (Ibrahim, 2022). While larger cooperatives in Mindanao have initiated digital initiatives, smaller cooperatives, especially in rural areas, still grapple with limited access to digital transformation. Recognized as a key enabler for future success (Capgemini, 2023), digital transformation requires a well-defined strategy and readiness (Kane et al., 2015). Its strategic importance is underscored by its revolutionary impact on business operations (Feher et al., 2017), fostering innovation, reducing costs (Leao & Silva, 2021), and promoting sustainability (Ji et al., 2023). Beyond financial performance, digital transformation shapes society by fostering communication, collaboration, and social engagement (Sanchez-Arrieta et al., 2021).

Methodology

This study employed a mixed methods research design, specifically an explanatory sequential mixed methods approach utilizing descriptive correlational analysis and phenomenology. The overarching goal of this research design is to enrich and strengthen the study's findings by combining both quantitative and qualitative research components, thereby contributing significantly to the existing literature.

The explanatory sequential mixed methods design employed in this study seamlessly integrates quantitative and qualitative strands in a two-phase sequence. The initial phase involves the collection and analysis of quantitative data to provide a numerical depiction of the phenomenon under investigation. Subsequently, the second phase entails the gathering and analysis of qualitative data to offer a more nuanced and contextualized understanding.

The study, focusing on the influence of digital orientation on digital transformation of MPCs in the Davao Region, began with the quantitative phase. Employing descriptive correlational analysis, the researcher determined descriptive levels of digital orientation and digital transformation, utilizing questionnaires adapted from previous studies (Karina & Astuti, 2022; Putritamara et al., 2022). The quantitative phase also utilized a correlational design to examine the relationship between digital orientation and digital transformation.

Following the quantitative phase, the study transitioned to the qualitative strand using phenomenology. This approach aimed to explore the unique perspectives, challenges, and opportunities faced by employees of MPCs in the Davao Region. Data was collected through individual in-depth interviews and focus group discussions, ensuring a detailed exploration of the broader digital landscape.

The study focused on MPCs in the Davao Region, with a total of 340 respondents from 40 different cooperatives. The participants, employees of MPCs, provided valuable insights into the digital orientation and transformation initiatives within their organizations. The targeted sample size for the quantitative phase was determined to be 300 (Lyons & Hearne, 2015) respondents, selected through stratified random sampling based on cooperative size classifications.

Cooperative size classifications were defined by total capitalization, with small-sized cooperatives having 15 million and below, medium-sized with 100 million and below, and large-sized with above 100 million capitalizations. The study engaged participants from five provinces in the Davao Region, with 17 individuals participating in the qualitative phase through in-depth interviews and focus group discussions.

Data analysis for the quantitative phase involved the use of the Statistical Package for the Social Sciences (SPSS) software, calculating descriptive statistics, analysis of variance (ANOVA), Pearson correlation, and regression analysis. The qualitative data underwent thematic analysis, identifying emerging themes from the transcripts of interviews and focus group discussions.

Data triangulation was employed to integrate the quantitative and qualitative results, providing a more robust and nuanced understanding of digital orientation and transformation within MPCs in the Davao Region. The mixed methods approach allowed for a comprehensive exploration of the research problem, offering valuable insights for cooperative leaders, policymakers, and researchers involved in digital transformation initiatives.

Findings

The study reveals high levels of both digital orientation and digital transformation among MPCs in the Davao Region. The digital orientation, comprising indicators like digital curiosity, digital openness, digital alert, and digital innovative passion, is very high, indicating

an awareness and active embrace of digital technologies. Similarly, digital transformation, encompassing strategic alignment and IT readiness, is also very high, suggesting that MPCs in the region are well-positioned for digital advancements.

Digital Orientation Levels: The overall mean score for digital orientation is 4.41, signifying a very high level. This aligns with the understanding that a strong digital orientation enables organizations to successfully manage and improve their operations.

Digital Transformation Levels: The overall mean score for digital transformation is 4.47, indicating a very high level of adoption and practice among MPCs in Davao Region. This resonates with the idea that digital transformation is crucial for business adaptability, competitiveness, and growth (Alobidyeen et al., 2022; Curraj, 2020; Purba, 2021).

Difference Across Cooperative Sizes: Small-sized MPCs exhibit a significantly higher digital orientation than medium-sized MPCs. However, in terms of digital transformation, there is no statistically significant difference across different cooperative sizes. The collective progress and commitment among MPCs in embracing digital transformation are emphasized.

Digital Orientation as a Predictor of Digital Transformation: The study establishes that digital orientation acts as a predictor of digital transformation, particularly for medium and large-sized cooperatives. This reinforces the notion that a strong digital orientation contributes to the success of digital transformation initiatives, providing a competitive edge in the digital age.

Consensus and Disagreements: The majority of participants confirm the very high ratings of digital orientation and digital transformation. However, some participants' express disagreements, particularly in the case of small-sized MPCs, emphasizing challenges related to limited resources.

Integration of Quantitative and Qualitative Findings: The nature of integration between quantitative and qualitative data varies. For digital orientation and digital transformation levels, the integration is connecting-confirmation, where qualitative data aligns with and confirms quantitative results. However, for differences across cooperative sizes and the prediction role of digital orientation, there are instances of connecting-expansion, indicating some disagreements or expansion beyond the quantitative findings.

The study underscores the interconnectedness of digital orientation and digital transformation, emphasizing the importance of being digitally aware and educated for successful implementation and benefits from digital initiatives. The findings contribute to the understanding of the digital landscape in MPCs, with implications for sustainability, competitiveness, and value creation.

Conclusion

Based on the findings of the study, the following conclusions are drawn:

High Levels of Digital Orientation and Transformation: MPCs across all sizes in the Davao Region exhibit very high levels of both digital orientation (Tucmeanu et al., 2022) and digital transformation (Singh et al., 2021). This indicates a proactive stance towards embracing new technologies and actively participating in digital initiatives.

Role of Size in Digital Orientation: Smaller MPCs show a significantly higher level of digital orientation compared to medium-sized ones. This suggests that smaller cooperatives, known for their agility, are more open and adaptive to new digital trends (Kindermann et al., 2021).

Relationship Between Digital Orientation and Transformation: The relationship between digital orientation and digital transformation varies based on the size of the cooperative. For medium and large MPCs, a strong digital orientation is a significant predictor of successful digital transformation. However, for smaller cooperatives, this relationship is not as pronounced, hinting at the influence of other unique contextual factors.

Challenges Faced by Smaller MPCs: Qualitative data enriches the findings by acknowledging challenges faced by smaller MPCs, particularly related to limited resources and access to technology. Diverse perspectives emerge on the relationship between digital orientation and transformation for smaller cooperatives, indicating the need for further exploration of additional influencing factors.

Theory Confirmation - Diffusion of Innovation: The study strongly affirms the relevance of the Diffusion of Innovation Theory to MPCs in the Davao Region. The theory's emphasis on early adopters aligns with the observed high levels of digital orientation. The convergence towards widespread digital transformation supports the theory's prediction of

diffusion gaining momentum. Additionally, the positive impact of digital orientation on successful transformation, especially for larger cooperatives, is consistent with the theory's principles.

In essence, the study provides insights into how MPCs in the Davao Region navigate the digital landscape. It recognizes the joint effort of these cooperatives in embracing digital transformation while acknowledging the differences in approach based on size. The findings also underline the importance of understanding various factors influencing smaller cooperatives on their digital transformation journeys. The study concludes with a hopeful outlook, depicting MPCs in the Davao Region embracing the transformative power of digital technologies, guided by the principles of the Diffusion of Innovation Theory.

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The mediating effect of innovation capability on the relationship between dynamic capability and business resilience among tourism enterprises in Davao Region

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Abstract

Business resilience lies in its capacity to enable organizations to adapt, recover, and thrive in the face of adversity, uncertainty, and disruptive challenges. This study utilizes a descriptive-correlational research design to examine the business resilience of Micro, Small, and Medium Enterprises (MSMEs) in the tourism industry of Region XI. Through a comprehensive literature review, the study delves into the interplay between dynamic capability, innovation capability, and business resilience, aiming to discern the relationships and characteristics of these vital variables. The findings reveal remarkable levels of resilience, dynamic capability, and innovation among MSMEs in the region, indicating their readiness to adapt, withstand challenges, and drive innovation within their businesses. Furthermore, the study identifies a strong and positive interdependence between dynamic capability, innovation capability, and business resilience, creating a dynamic and adaptable ecosystem for MSMEs. The significant role of innovation capability as a mediator in enhancing business resilience underscores the importance of fostering innovative practices to fortify the overall resilience of MSMEs. These insights provide valuable implications for policymakers, industry stakeholders, and MSMEs in crafting strategies to bolster business resilience and drive sustainable growth in the tourism sector.

Keywords: *business management, agility, adaptive, innovate*

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Introduction

Business resilience among Micro, Small, and Medium-Sized Enterprises (MSMEs) in the tourism industry refers to adapting, thriving, and developing in the face of turbulent change (Dahles & Susilowati, 2015). However, tourism MSMEs are not adequately equipped to manage crises, disasters (Wang & Ritchie, 2012), and lack of awareness of business resilience (Musavengane, 2019). Logically, these enterprises are the most susceptible to crises because they lack the resources and know-how to measure or prepare for repercussions (Susanne & Kennet, 2013). Furthermore, studies in developing economies have found that MSMEs lack insurance, do not conduct risk assessments (ESCAP, 2013), have no business continuity plans (Flaminiano et al., 2021), and are non-compliant with the industry's requirements (Campos, 2016). This scenario limits their capacity to adapt and address risks brought about by disaster (Pelling et al., 2015). In addition, MSMEs have demonstrated financial constraints (Prayag et al., 2019). According to Flaminiano et al. (2021), limited access to market information, low investment in Research and Development, low technological adoption, and managerial and human capabilities, which were worsened by limited access to credit and insurance coverage, make it difficult for MSMEs to recover and faced business resiliency.

Business resilience is essential for comprehending how the tourism sector and its businesses might adjust successfully and positively to rising worldwide change and disruptions (Farrell & Twining-Ward, 2004; Tyrrell & Johnston, 2008). They are viewed as the primary source of national and regional economic efficiency (Asgary et al., 2020). Moreover, the looming crisis reinforces the need to study industry vulnerabilities and organizational resilience to better cope with current and future challenges (Balila et al., 2021). A study by Flaminiano (2021) demonstrates the significance of resilience for the survival and growth of small businesses during and after crises.

A comprehensive review of the literature indicates that several factors contribute to desirable business resilience among MSMEs, and the researcher found that dynamic capability and innovative capability should be extensively studied. Hence, the researcher has chosen these variables and their possible association with business resilience. Dynamic capability positively impacts business resilience, as it helps organizations cope with limited resources and unforeseen business changes (Ozanne et al., 2022). Kurtz and Varvakis (2016) cited an impact

on the dynamic capability to resilience that creates a competitive advantage, thereby encouraging MSMEs to adapt business survival strategies. Furthermore, the dynamic capability is an essential factor in building or developing the capacity of entrepreneurs to establish a resilient business that can respond to the challenges of a rapidly changing business environment (Hermawan & Thona, 2022). Parashar and Singh (2005) contend that dynamic capability is built upon innovation capability. Dynamic capability facilitates their capacity to adapt to change through innovation (Hill & Rothaermel, 2003). According to Teece (2007), it is evident that businesses with dynamic capabilities innovate effectively. On the other hand, Lv et al. (2018) emphasized that innovation capability can increase an organization's resilience. Furthermore, according to Anggadwita et al. (2021), through innovation, a business is resilient and consistently capable of maintaining high performance by rebuilding itself over time.

There are several MSMEs in the tourism industry. However, more studies are needed on the business resilience of various tourism organizations. There is a significant research gap on business resilience in the context of the tourism industry, which deals with dynamic and innovation capability, mainly using a mediating approach. Furthermore, there are also limited available journals concerning the business resilience assessment and analysis of the tourism sector in the Philippine context. The gap was even more noticeable at a time when MSMEs were one of the most severely impacted by social and economic disasters.

The findings of this study will be disseminated by presenting at conferences and forums on the business resilience of MSMEs concerning environmental and socio-economic drawbacks. The study results will be shared by publishing in national and international peer-reviewed journals. Also, a copy of the study will be shared with the graduate school library.

This study investigated the mediating effect of innovation capability on the relationship between dynamic capability and business resilience among tourism enterprises in the Davao Region. The following null hypotheses were tested at 0.05 level significance:

Ho 1. There is no significant relationship between dynamic capability and business resilience, innovation capability and business resilience, dynamic capability and innovation.

Ho 2. Innovation capability does not significantly mediate the relationship between dynamic capability and business resilience.

Methodology

The study employed a mediating approach and a descriptive-correlational design to investigate the resilience of the Davao region's tourism enterprises. Descriptive research describes the characteristics of a population being studied (Shields & Rangarajan, 2013). This study uses descriptive research design to describe the status of business resilience, dynamic capability, and innovation capability among MSMEs in the tourism industry of Region XI. On the other hand, Creswell (2014) stated that correlational study shows and measures the level of relationship between variables. This correlational design was utilized to measure the relationship between dynamic capability and business resilience, innovation capability and business resilience, and dynamic capability and innovation capability.

Furthermore, this study would measure the direct effects of dynamic capability on business resilience and the direct effects of innovation capability on business resilience while examining the indirect effects of dynamic capability on business resilience through the mediating role of innovation capability. This approach would provide a comprehensive understanding of how innovation capability mediates the relationship between dynamic capability and business resilience within MSMEs in the tourism industry of Region XI. According to Agler and De Boeck (2017), mediation is an approach to describing, discovering, and testing possible relationships. In addition, mediation is one way a researcher can explain the process or mechanism by which one variable affects another. Smith et al. (2019) demonstrate how the mediating approach can be utilized to analyze the complicated interactions between variables.

The study was conducted in Region XI, also known as Davao Region. The region comprises five provinces: Davao del Sur, Davao Oriental, Davao Occidental, Davao del Norte, and Davao de Oro (formerly Compostela Valley), with Davao City as its regional center.

According to the Philippine Statistics Authority (PSA) data from 2018, 99.2 percent of the business sector in the Davao region is made up of micro-enterprises. These firms are the most vulnerable during disasters that could disrupt the region's economic position. Furthermore, according to the Davao Region Department of Trade and Industry (DTI), around 10,000 micro, small, and medium-sized enterprises (MSMEs) closed between March and December 2020. This number accounts for about 10 percent of all MSMEs in the region.

More than 30 areas in the Davao Region are natural disaster-prone (Regional Disaster Coordinating Council). In addition, the Philippine Institute of Volcanology and Seismology (Phivolcs) stated that the Davao Region experienced frequent earthquakes because it is surrounded by several active fault lines, which generate earthquakes. With that, MSMEs in the region must ensure operational viability and anticipate their capacity to withstand natural disasters and catastrophes. MSMEs must consider and plan for these factors as critical components of the macroenvironment.

A survey was administered to 300 business owners, managers, and supervisors of tourism-related MSMEs in the Davao Region. A proportional stratified sampling was employed in this study. According to Thomas (2022), proportional stratified sampling is a type of probability sampling in which the population is divided into strata or subgroups. Implementing stratified sampling involves dividing the population of MSMEs into distinct strata based on relevant characteristics within the tourism industry. The next step is to determine the sample size for each stratum, ensuring proportional allocation based on the size of each stratum in the population. Subsequently, random sampling techniques are employed within each stratum to select MSMEs for the study, ensuring that every MSME within each stratum has an equal chance of being included. This approach allows for the capture of diversity within the industry. It enhances the validity and generalizability of the research findings, providing valuable insights for the targeted population of MSMEs in the tourism industry of Region XI.

The respondents were chosen based on the following criteria: they must be the owners or managers of a business; the business must be a specific size, such as micro, small, and medium-sized enterprises; they must be in the tourism sector, specifically in hotels and resorts; and they must have experience with business resilience, such as having survived a disaster or catastrophe to be able to provide information on the coping and survival strategies employed during and after the disaster.

The survey questionnaire consists of three sets adapted from different sources. The questionnaire used scored using a Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The researcher conducted pilot testing to ensure the reliability and validity of the questionnaires. Furthermore, the reliability of the adapted

questionnaire was assessed using Cronbach alpha. These alpha coefficients indicate that the questionnaire is reliable.

There are three sets of adapted questionnaires used in this study. Business Resilience adapted from the study of Campos (2015), Dimensions of business resilience in the context of post-disaster recovery in Davao City, Philippines. It has five indicators with a Cronbach alpha of .983. On the other hand, the dynamic capability was adapted from the study of Putritamara et al. (2023), Do Dynamic Capabilities and Digital Transformation Improve Business Resilience during the Covid-19 Pandemic? Insights from beekeeping MSMEs in Indonesia have three indicators with a Cronbach alpha of .758. The questionnaire contains 29 items. The innovation capability was adapted from the study of Balan and Lindsay (2010), Innovation capability, entrepreneurial orientation and performance in Australian hotels: An empirical study. Gold Coast, Australia: Cooperative Research Centre for Sustainable Tourism with a Cronbach alpha of .771.

Before the data collection, the researcher got the approval of the University of the Immaculate Conception Graduate School Dean to conduct the study. Then, the manuscript was submitted to the University of the Immaculate Conception (UIC) Research Ethics Committee (REC) for full board review and issuance of an ethics compliance certificate to ensure compliance with the policies and guidelines. After obtaining REC clearance and approval to survey the Dean of the Graduate School, the researcher identified the appropriate respondents for the study, ensuring that the respondents were included in the selection criteria and sampling technique. The data were collected through adapted questionnaires and tested for validity and reliability. The data gathering took approximately two months to obtain sufficient responses.

Before distributing the survey questionnaire, the researcher explained the study's purpose, procedures, potential risks, and benefits to the respondents. Then, the respondents were requested to sign the Informed Consent form to ensure conformance to the policies and standards of research. After this, the researcher and the enumerators distributed the survey questionnaires. The respondents answered the questionnaire for 10-15 minutes. Before retrieving the questionnaires, the researcher checked to ensure all the questions were answered. The data gathered were analyzed and interpreted using the appropriate statistical tools.

The data gathered was analyzed and interpreted using the following statistical tools. Descriptive Statistics (Mean and Standard Deviation) were used to measure the status of Dynamic Capability, Innovation Capability, and Business Resilience among MSMEs in the tourism industry of the Davao Region. Further, it provided important information about a dataset's central tendency and variability. Pearson Product Moment Correlation was utilized to determine the relationships between dynamic capability and business resilience, innovation capability and business resilience, and dynamic capability and innovation capability. Multiple Regression Analysis was used to measure the influence of dynamic capability and innovation capability on business resilience among MSMEs in the tourism industry of the Davao Region. Lastly, the Med graph used the Sobel z-test to determine the mediating effect of innovation capability on the relationship between dynamic capability and business resilience.

Findings

The status of business resilience, dynamic capability, and innovation capability among tourism enterprises in the Davao Region is very high, suggesting that Davao Region's tourism enterprises are well positioned to adapt to change, overcome challenges, and innovate. The standard deviation ranges from 0.55 to 0.79, indicating homogeneity of responses.

Business Resilience has an overall mean score of 4.23, exhibiting strong business resilience. This result indicates the tourism enterprises' ability to withstand disruptions, challenges, and unforeseen circumstances. The data includes several indicators that contribute to the overall score of business resilience. The indicators such as planning and preparedness, philosophy and integrity, and communication and media reflected a very high descriptive level with mean scores of 4.23, 4.35, and 4.23, respectively. The consistently very high mean scores across these indicators reflect the strength and consistency of their business resilience. Several authors, like Houston et al. (2015), Nowak (2021), and Tharshanth et al. (2020), have highlighted the importance of business resilience in the context of MSMEs, particularly in the tourism industry. Likewise, Tharshanth et al. (2020) emphasized the importance of emergency preparedness and planning in responding to operational disruptions and protecting people, which aligns with the very high mean score observed in the planning and preparedness indicator. These authors also emphasized the interconnectedness of communication systems, community relationships, and strategic communication processes in building community and

organizational resilience by interpreting the very high mean score of communication and media.

In addition, dynamic Capability demonstrates a very high level of dynamic capability, including its indicators: sensing, seizing, and reconfiguring capabilities. The mean scores across these indicators reflect the enterprises' agility and adaptability in the dynamic tourism industry. Johnson and Johnson (2018) emphasized the importance of sensing and seizing capabilities in enabling MSMEs to effectively respond to market dynamics and capitalize on emerging opportunities. This finding aligns with the high mean scores and low standard deviations observed in the sensing and seizing. Likewise, Garcia et al. (2020) highlighted the significance of reconfiguring capabilities in fostering organizational agility, which supports the interpretation of the high mean score and low standard deviation in the reconfiguring.

Furthermore, innovation capability has an overall mean score of 4.22, which is very high and indicates strong innovation capability. This result suggests that tourism enterprises can generate new ideas, develop innovative products and services, and successfully bring them to market. The indicators that got a very high descriptive level are alliances, customer intelligence, and strategy and planning, with a mean score of 4.35, 4.3kurtz4, and 4.27, respectively. Martinez (2019) emphasized the role of alliances and partnerships in fostering innovation within MSMEs, aligning with the high mean score observed in the indicator alliances. Additionally, Wang et al. (2020) highlighted the significance of customer intelligence in driving innovation and enhancing competitiveness, supporting the interpretation of the high mean score in Customer Intelligence.

All three variables are positively correlated, and the correlations are statistically significant. This finding indicates a strong relationship between dynamic capability, innovation capability, and business resilience. The strong positive correlation ($r=.844$, $p<0.05$) between dynamic capability and business resilience indicates that organizations with well-developed dynamic capabilities are significantly more resilient in the face of disruptions and challenges.

Also, the high correlation coefficient ($r=.832$, $p<0.05$) indicates a substantial overlap between dynamic and innovation capabilities. This result implies that organizations with dynamic, solid capabilities will likely possess well-developed innovation capabilities.

Furthermore, the strong correlation coefficient ($r=.797$, $p<0.05$) indicates a substantial interdependence between innovation capability and business resilience. This finding shows that organizations can only achieve one with the other. The statistically significant relationship further validates the critical role of innovation in building resilience. All the correlations are strong and statistically significant, indicating that these variables are closely related.

Recent research has underscored the critical relationships between key organizational capabilities and performance outcomes. Smith et al. (2021) found a strong positive correlation between dynamic capability and business resilience, highlighting the pivotal role of dynamic capabilities in fostering organizational resilience in dynamic market environments. The relationship between dynamic capability and business resilience in the tourism industry is complex and multi-faceted. Wided (2022) and Roy (2016) both highlighted the significant impact of dynamic capabilities on organizational resilience, with Wided (2022) explicitly identifying the effect of dynamic capabilities on resilience factors. Prayag (2020) further emphasized the role of psychological and employee resilience in contributing to organizational resilience, while Jiang et al. (2019) proposed that dynamic capabilities enable tourism organizations to respond to disruptive environmental changes, ultimately building resilience. Martinelli et al. (2018) emphasized that implementing a dynamic capability in the company coincides with the organizational resilience process, which includes capabilities that can adapt to changing conditions and discover new chances for survival and growth.

The relationship between dynamic capability and innovation capability in the tourism industry is complex and influenced by various factors. Krupskyi and Grynko (2018) highlighted the role of managers' cognitive styles and organizational culture in shaping dynamic capabilities, which can impact innovation capability. Furthermore, Garcia and Patel's (2019) cross-industry analysis provided insights into the robust positive correlation between dynamic capability and innovation capability, indicating the pivotal role of dynamic capabilities in driving innovation across diverse industry contexts.

Research consistently supported a strong correlation between innovation capability and business resilience. Sabahi and Parast (2020) and Gölgeci and Ponomarov (2013) both found that innovative firms are more resilient to supply chain disruptions, with innovation enhancing knowledge sharing, agility, and flexibility. Akgün and Keskin (2014) further demonstrated that

organizational resilience capacity positively influences firm product innovativeness and performance, with product innovativeness mediating this relationship. Bristow and Healy (2018) extended this to regional economic resilience, showing that regions with higher innovation capacity were more likely to resist or recover quickly from financial crises. Additionally, Chen and Lee's (2020) meta-analysis emphasized the significant relationship between innovation capability and organizational resilience, shedding light on the strategic importance of innovation in enhancing an organization's ability to adapt and thrive in turbulent business landscapes. These findings collectively support the interplay between dynamic capability, innovation capability, and business resilience, offering valuable implications for organizational performance.

The dynamic capability has a direct significant on innovation ($B = 0.945, p < 0.05$) and a significant positive effect on business resilience ($B = 0.914, p < 0.05$). In step 2 (Path B), innovation capability does not have a significant direct effect on business resilience after controlling for dynamic capability ($B = 0.034, p > 0.05$). In step 3 (Path A), dynamic capability has a significant direct effect on innovation ($B = 0.945, p < 0.05$). The Total R Square for the model is 0.741, which means that the model explains 74.1 percent of the variance in Business Resilience. The Beta coefficient for Innovation Capability ($B = 0.309, p < 0.05$) implies that Innovation significantly affects Business Resilience, even after controlling for Dynamic Capability. This finding suggests that fostering dynamic and Innovation capabilities within an organization can significantly enhance its business resilience.

The Sobel z-value is a measure of the strength of the mediation effect. A larger z-value indicates a more substantial mediation effect. The Sobel z-test reveals a statistically significant mediation effect, with a z-value of 5.6578 ($p < 0.05$), considered a strong effect. This result indicates that innovation capability plays a vital role in translating the influence of dynamic capability on business resilience. In addition, unstandardized effects further solidify this interpretation. The indirect effect, representing the influence of dynamic capability on business resilience through innovation capability, is 0.945, significantly more significant than the direct effect of 0.636.

Several studies have explored the mediating role of innovation capability in the relationship between dynamic capability and business resilience. Sabahi and Parast (2020)

found that innovation can enhance a firm's resilience to supply chain disruptions by fortifying capabilities such as knowledge sharing, agility, and flexibility. This finding is supported by Wu et al. (2016), who identified a mediating role of opportunity-recognizing and opportunity-capitalizing capabilities in the relationship between international diversification and innovation performance. Thanh Nhon et al. (2020) further demonstrated the mediating effect of learning, integration, and reconfiguration capabilities in the relationship between intellectual capital and firm performance. Bao-jie (2010) provided empirical evidence for the influence of dynamic capabilities on innovation performance. These studies suggest that innovation capability is crucial in the relationship between dynamic capability and business resilience.

Conclusion

With consideration of the findings of the study, conclusions are drawn. MSMEs in Region XI's tourism industry exhibit remarkable resilience, dynamic capability, and innovation, with all three variables at very high levels. This finding suggests a readiness to thrive in various challenges, respond to changing environments, and implement new ideas within their businesses.

There is a strong and positive correlation between Dynamic Capability, Innovation Capability, and Business Resilience in the tourism industry of Region XI. Its strong positive correlations suggest that developing adaptable organizational structures, processes, and cultures can lead to better weathering disruptions and a more significant generation of new ideas.

Innovation capability has a significant mediation effect on the relationship between dynamic capability and business resilience. The finding suggests that the presence of Innovation Capability plays a pivotal role in mediating the influence of Dynamic Capability on Business Resilience. MSMEs that exhibit strong Dynamic Capability may see an amplified effect on Business Resilience by facilitating Innovation Capability.

The results corroborate the Dynamic Capabilities Theory by Teece and Pisano (1994), which states that a company's overall performance depends on its ability to renew, restructure, and reposition itself. Sinha and Ola (2021) emphasized the importance of continuous learning and knowledge sharing in fostering disaster resilience. Rivera-Rodríguez (2019) further

supports this, highlighting the need for organizations to leverage dynamic capabilities, such as resilience, to overcome extreme adversity. Furthermore, Ahmed (2021) extends this by proposing a dynamic resource orchestration framework as a source of organizational resilience, emphasizing the role of resource accumulation, orchestration, and managerial capabilities. Also, the findings confirm the Resource-Based View by Barney (1991), which views businesses as a collection of unique resources and capabilities whose value must be maximized through optimal implementation by management. In addition, Do et al. (2022) emphasized that applying RBV alongside DCV can help MSMEs develop innovative management strategies and organizational learning to thrive in today's turbulent environments.

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The moderating effect of entrepreneurial ecosystem on the relationship between entrepreneurial skill and entrepreneurial success among microfinance enterprises in Region XI

Leslie Sherill R. Samson

Abstract

The study explored the interplay of entrepreneurial skills and entrepreneurial ecosystem, and their effect on microfinance enterprises within the Davao Region, Philippines. Using adapted survey questionnaires, a representative sample of 300 microfinance enterprise owners were randomly selected to participate in this research. The findings unveiled a robust perception among owners regarding the high levels of the three key constructs under investigation. Notably, the study established a substantial and favorable correlation between entrepreneurial skills and entrepreneurial success. Moreover, it highlighted a similarly positive and noteworthy relationship between the entrepreneurial ecosystem and entrepreneurial success. Furthermore, employing hierarchical logistic regression allowed for an in-depth exploration of the moderating effect of the entrepreneurial ecosystem. The study unearthed a profoundly significant moderation on the relationship between entrepreneurial skills and success, with more conducive ecosystems indicating a stronger correlation between entrepreneurial skills and success. In essence, the study underscores the vital importance of both entrepreneurial skills and the broader ecosystem within which microfinance enterprises operate. It emphasizes that while entrepreneurial skills are crucial, the supportive entrepreneurial ecosystem significantly amplifies their contribution on achieving entrepreneurial success in the context of microfinance firms in Davao Region.

Keywords: *entrepreneurial ecosystem, entrepreneurial skills, entrepreneurial success, micro enterprises*

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Introduction

Entrepreneurial success can be categorized as the achievement of a person's entrepreneurial goals, whether they are related to financial gains, innovation, social impact, or personal fulfillment (Dalal, 2017). As various authors have emphasized, the pursuit of entrepreneurial success is a complex endeavor. Hasan (2022) highlighted the formidable challenges of launching a thriving company, citing high failure rates, unpredictable financial landscapes, uncertainties, and intense competition. Miller (2022) studied the specific reasons behind microbusiness failures, pointing to deficiencies in entrepreneurial skills such as cash flow management, delegation capabilities, and sales and marketing strategies. According to Lee et al. (2023), these failures have a significant negative impact on entrepreneurs' ability to explore future opportunities financially, socially, and emotionally. Despite diverse perspectives and analyses, the prevalent issue remains the formidable barriers and detrimental consequences that hinder entrepreneurial success.

COVID-19 led to increased business opportunities and economic recovery, but delays in customer payments and product shortages in 18 out of 47 economies made it difficult for business owners to launch a company in 2021. In the Philippines, 259,707 businesses were permanently closed due to price increases and product shortages, impacting the success of micro, small, and medium-sized enterprises. In a similar manner, Abrugar (2014) stressed that businesses, particularly micro, small, and medium-sized ones, fail to last for a long time since some entrepreneurs are not genuinely committed to their businesses and deal with problems without government support, which may affect the success of an enterprise.

By examining the moderating influence of the entrepreneurial ecosystem, it accentuated the crucial function of external elements such as governmental policies, infrastructures, and resources availability in shaping entrepreneurial prowess and achievement. Aly et al. (2021) emphasized the significance of this understanding, as it empowers policymakers and practitioners to foster environments that are conducive to entrepreneurial endeavors. Recognizing how these factors impact entrepreneurial success not only aids in cultivating a more supportive landscape for entrepreneurship but also serves as a guiding compass for entrepreneurs to enhance their skill sets, thereby significantly bolstering their prospects for success.

This study highlighted the critical relationship between entrepreneurial skills (ESk), the entrepreneurial ecosystem (EEc), and entrepreneurial success (ESc). Building upon prior research by Audretsch (2021), Spigel (2019), and Cardon (2017), it uniquely emphasized EEc as a moderating factor, amplifying the impact of ESk on ESc. Moreover, by exploring how EEc enhanced the connection between ESk and ESc, this study fills a vital gap in understanding the interplay of these elements in fostering entrepreneurial success. The researcher has not yet encountered a study on the moderating interaction between the three variables, thereby filling the gap in this concern. The findings will be disseminated through entrepreneurship-focused networks, conferences or seminars, to reach a targeted audience comprising policymakers, practitioners, schools, and entrepreneurs.

This study aimed to determine the relationship between entrepreneurial success and entrepreneurial skills as moderated by the entrepreneurial ecosystem. The study addressed the following hypotheses:

Ho1. There is no significant relationship between entrepreneurial skills and entrepreneurial success; entrepreneurial ecosystem and entrepreneurial success.

Ho2. Entrepreneurial Ecosystem does not significantly moderate the relationship between entrepreneurial skill and entrepreneurial success of microfinance enterprises in Region XI.

Methodology

This study used a descriptive-correlational design, employing moderation analysis. According to McCombes (2022), the goal of descriptive research is to precisely and methodically describe a population, circumstance, or phenomenon. In this study descriptive research design was used to describe the status of entrepreneurial success, entrepreneurial skills, and entrepreneurial ecosystem and entrepreneurial ecosystem and entrepreneurial success of microfinance enterprises in Region XI. Meanwhile, moderation analysis as describes the strength of relationship between two constructs, the changes as the levels of the moderator constructs change (King, 2013). By including moderators in the research, a more complete view of the real world can be constructed by looking beyond the straightforward link between two variables. These variables must be considered when looking at complicated correlations or causes between variables.

This study focused on the selected micro-finance enterprises in Region XI, also known as Davao Region, Philippines. It is situated at the southeastern portion of Mindanao and comprises of five provinces, namely: Davao de Oro, Davao del Norte, Davao del Sur, Davao Oriental, and Davao Occidental. The researcher has chosen the area where the support of the government agency for micro enterprises to succeed is likely to be present. In fact, the recent report of Ambi (2023) of the Department of Trade and Industry in Davao Region showed that the agency has assisted 26,108 micro, small, and medium enterprises (MSMEs) for 2022, which is about 104 percent of the agency's target of 25,200 MSMEs for the same year. Based on the report posted by the Philippine Statistics Authority (2020), the registered number of SMEs in Region XI is as follows: Micro: 48,746; Small: 5,259; Medium: -236, for a total of 54,251, which is quite interesting to pursue the study due to the sufficient number of MSMEs. Furthermore, the study of Clavaro (2013) found that across five cities, wholesale/retail, auto repair, and motorcycle industries were primary. Lodging/food services ranked second. Real estate ranked third in four cities but fourth in one. Manufacturing was fifth in two cities, fourth in three. Administrative support was fifth in Davao. Financial/insurance ranked fifth in two cities, fourth in one, and third in another. Overall, micro and small businesses prevailed in these diverse industries. On the other hand, Department of Trade and Industry-Davao registered 6,650 new MSMEs in first quarter of 2020, primarily from regions like Davao de Oro, Davao del Sur, Davao Oriental, Davao City, Davao del Norte, and Davao Occidental. Director Maria Belenda Ambi (2020) noted that despite Covid-19 measures causing a decline, agribusinesses, accounting for 34.22%, remained prevalent due to Davao's agricultural focused.

The study chose 300 owners in the retail industry as respondents from micro firms in Region XI. Simple random sampling was utilized to select the respondents. As Hair et al. (2013) pronounced, the sample size is only 200 to 300 individuals in business studies. This is congruent with the declaration of Lyons (2015), who pointed out that, as a general rule, sample sizes of 200 to 300 respondents provide an acceptable margin of error and fall before the point of diminishing returns. In light of this, the researcher decided that 300 entrepreneurs would be a reasonable sample size, as Comrey and Lee (1992) also expounded that it is a good sample size in quantitative research.

The selection of 300 samples in this study was conducted using the method of simple random sampling, a widely acknowledged approach known for its fairness in representing a

larger group. According to Simkus (2023), this method aims to create a subset that mirrors the characteristics of the entire population, making it a valuable tool in research. In the case of this study, respondents were chosen from DTI-registered micro-retailing and wholesaling businesses across the five provinces of the Davao Region, which is reported to have 61,000 active businesses as of 2021, ranking seventh in enterprise activity within the Philippines.

To employ the random sampling method, the researcher obtained a list from the business bureau, which served as the sampling frame—a comprehensive roster of registered businesses in the specified region and sector. Each business on this list was sequentially numbered to establish a fair selection process. Subsequently, using the principles of simple random sampling, 300 businesses were randomly chosen from this frame. The researcher then visited the selected businesses in person, seeking their participation through a survey questionnaire. The respondents willingly completed the survey, providing valuable insights into their operations and perspectives within the micro-retailing and wholesaling sector in the Davao Region.

To ensure the tool accurately measured its intended aspects consistently, the instruments were subjected for validity test by the experts and were piloted to get its reliability test. A 5-point Likert design scale was used to rate and interpret the data wherein 5- very high to 1-very low.

Entrepreneurial Success. The tool was adapted from Razmus and Laguna (2018). This 18-item tool has six indicators: entrepreneur satisfaction, entrepreneur work-life balance, social responsibility, firm reputation, employee's satisfaction, and client's satisfaction, with a Cronbach alpha of 0.70 result.

Entrepreneurial Skills. The researcher used the questionnaire made by Geri (2013), which has three indicators: self-competency, control focus, and tendency to take risk which contains 16-item and with Cronbach alpha of 0.73 result.

Entrepreneurial Ecosystem. The tool was adapted from Liu (2020). This instrument has eighteen-item with Cronbach alpha of 0.952 result.

After securing necessary permissions to conduct the data gathering, the researcher personally visited the chosen businesses during business hours to ensure that the owners of the listed micro-companies taken from the business bureau would receive the questionnaire. Each

respondent was asked to sign the informed consent section of the questionnaire before the researcher started administering it to them, indicating their desire to participate. During the administration of the questionnaire, the researcher obtained consent from respondents by having them sign a consent form, indicating their agreement to participate. Additionally, the researcher remained accessible throughout the process to address any queries or provide further clarification to the respondents as needed. The respondents were given the assurance that the researcher would keep their responses confidential because their identities would not appear anywhere in the study that they completed. The Data Privacy Act of 2012, also known as Republic Act 10173, which requires transparency, a legal basis, and proportionality in the acquisition, retention, and processing of personal information, ensures the confidentiality of the information obtained.

Pearson Product Moment Correlation was used to determine the significant relationships among the dependent variable: entrepreneurial success; the independent variable: entrepreneurial skills; and moderating variable: entrepreneurial ecosystem. Hierarchical Logistic Regression Analysis and Mod Graph was used to ascertain the moderating effect of the entrepreneurial ecosystem on the relationship between entrepreneurial skill and entrepreneurial success among microfinance enterprises in Region XI while the Mod graph was used for the graphical display of moderation analysis,

Findings

The overall mean of the entrepreneurial skills is 4.03, indicating a high descriptive level. Correspondingly, entrepreneurial success achieved an overall mean of 4.00, also signifying a high descriptive level. Moreover, the entrepreneurial ecosystem, with its overall mean of 3.72, denoted a high descriptive level as well. This high level suggests that entrepreneurial success and the entrepreneurial ecosystem are oftentimes evident, while entrepreneurial skills are often manifested as perceived by the respondents. Overall, these implications point to a thriving entrepreneurial landscape where skills are recognized, success is attainable, and ecosystems are supportive, fostering an environment ripe for entrepreneurial endeavors.

The survey conducted showed a very high descriptive level mean of 4.41 in the self-competency indicator that an entrepreneur should possess in order to succeed in business. The

majority of the entrepreneurs in Region XI are self-motivated. They are more likely to persevere through tough times and maintain the drive needed to overcome obstacles. As revealed by Nurulasiah et al. (2020), self-competency has a large positive effect on skills of the entrepreneur.

In this study, firms' social responsibility indicator got the lowest mean of 3.13 with a descriptive level of moderate, which indicates that microfinance firms are only sometimes engaged in any community initiatives. Entrepreneurial success necessitates substantial investment in people, materials, and financial resources, which is advantageous for SMEs. However, Bielawska (2022) asserted, due to a lack of understanding of the purpose and objectives of CSR, SMEs are frequently not obligated to engage in socially responsible activities. As a result, CSR programs are executed haphazardly rather than methodically, resulting in many existing opportunities not being identified or utilized by entrepreneurs. Entrepreneurial work-life balance also had the lowest mean of 3.85, although it was rated as high at the descriptive level. Though it got the lowest mean, this could explain why entrepreneurs believe they can successfully balance their professional and personal lives. This could indicate a constructive attitude toward keeping a healthy balance between work and personal activities. According to Tahir (2022), most people with a work-life balance may contribute positively to their entrepreneurial lives.

The correlations between entrepreneurial skills and entrepreneurial success as well as entrepreneurial ecosystem and entrepreneurial success among micro finance enterprises. This led to the rejection of the null hypothesis. Thus, entrepreneurial skills and entrepreneurial success are significantly related to each other. This suggests that improving entrepreneurial skills may contribute to higher levels of entrepreneurial success. Moreover, the overall r-value of 0.468 indicates a significant relationship ($p < 0.05$) between entrepreneurial ecosystem and entrepreneurial success. Thus, this result led to the rejection of the null hypothesis.

The findings showcase a strong positive correlation between entrepreneurial skills and entrepreneurial success, suggesting a noteworthy relationship between these variables. Apriyana (2023) study indicated a positive correlation between entrepreneurial skills and entrepreneurial ecosystem in enhancing business success, enabling MSME actors to effectively manage potential and develop future opportunities. Similarly, the correlation between the entrepreneurial ecosystem and entrepreneurial success also demonstrate a positive association,

implying that as the ecosystem becomes more supportive, entrepreneurial success tends to rise. Mai, et.al. (2022) revealed that the entrepreneurial ecosystem characteristics positively influencing business success. The low p-values (< 0.05) for both correlations indicate statistical significance, providing substantial evidence to reject the null hypothesis and affirming the existence of a meaningful relationship between these factors. These findings implicate the crucial role of both individual skills and the broader ecosystem in shaping entrepreneurial success, suggesting that fostering a strong ecosystem and nurturing entrepreneurial skills can profoundly impact business achievements, particularly within the context of MSMEs, paving the way for more effective strategies in entrepreneurship development and support.

To determine the significance of the moderating effect of entrepreneurial ecosystem on the relationship between entrepreneurial skills and entrepreneurial success, a hierarchical regression analysis was presented to fit its purpose. The moderating effect was shown on the premise that the higher is the level of entrepreneurial ecosystem of microfinance enterprises, the higher is the effect of entrepreneurial skills towards their entrepreneurial success when compared to those with lower entrepreneurial ecosystem. Entrepreneurial Ecosystem served as the moderating variable, entrepreneurial skills as the independent variable, and entrepreneurial success as the dependent variable. The entrepreneurial skills variable was multiplied with the entrepreneurial ecosystem variable to yield an interaction term. The two main effects and the interaction term (entrepreneurial skills x entrepreneurial ecosystem) were utilized in a hierarchical regression to predict entrepreneurial skills. Rehman et al. (2022) emphasized the profound influence of various ecosystem elements on entrepreneurial skills and their subsequent impact on entrepreneurial success. This assertion is corroborated by Mai and Nguyen (2022), who similarly concluded that the environmental ecosystem significantly contributes to determining entrepreneurial success. By connecting these insights, it becomes evident that the ecosystem's diverse elements play a pivotal role in shaping entrepreneurial abilities and eventual success.

When regressing entrepreneurial skills and entrepreneurial success, the model manifested to be significant ($p < .05$) and demonstrated a change in r-square of .058. The r-square change described how much variance in the dependent variable (entrepreneurial success) these predictors explained in each step. The r-square change of .058 signified an additional variance of 5.8% to the variance of 30% in the step 1 regression showing that 30%

of the variance in entrepreneurial success of microfinance enterprises was due to entrepreneurial skills itself. The interaction term explained about 4.4% new variance above and beyond the two main effects. This was marked less than the change in R-square in step 1 and step 2. Interestingly, the ANOVA was significant ($p < .05$) suggesting that the interaction effect was a contributor to the model variance. The significant interaction effect manifested that those microfinance enterprises with higher entrepreneurial ecosystem have higher level of entrepreneurial success. To have the mod graph, the unstandardized coefficient of the interaction, supported with the descriptive statistics of each variable and the computed values of the main effects of entrepreneurial skills and entrepreneurial ecosystem on entrepreneurial success. The figure demonstrated that those with high entrepreneurial ecosystem signified a steeper slope between entrepreneurial skills and entrepreneurial success than those with low entrepreneurial ecosystem, rejecting the null hypothesis. Thus, it can be stipulated that entrepreneurial ecosystem significantly moderates ($p < 0.05$) the relationship between entrepreneurial skills and entrepreneurial success of microfinance enterprises in the said region. Szerb (2018) stressed that a healthy entrepreneurial ecosystem have a greater capacity to materialize the effects of high business-formation success.

The findings from the hierarchical regression analysis shed light on the intricate interplay between entrepreneurial skills, the entrepreneurial ecosystem, and their combined impact on entrepreneurial success. Initially, the analysis demonstrated a substantial positive association between entrepreneurial skills and the dependent variable, signifying the crucial role these skills play in fostering entrepreneurial success. Upon introducing the entrepreneurial ecosystem as a moderator, the results unveiled a multi-dimensional relationship. Both entrepreneurial skills and the entrepreneurial ecosystem individually exhibited significant positive effects on the dependent variable. This is congruent with the declaration of Zaida (2023) that entrepreneurial ecosystem and entrepreneurial skills positively impacts the success of the business.

Conclusion

The findings of this study strongly affirm key theories in entrepreneurship. Anchored in Penrose's Resource-Based theory (1959), the results illuminate the significant impact of entrepreneurial skills and the entrepreneurial ecosystem on the success of microfinance

enterprises. They validate the theory's premise that heterogeneous resources, represented here by internal skills and external ecosystem factors, are pivotal for firm growth. Geri's proposition (2013) emphasizing the critical role of entrepreneurial skills finds substantial support in the study's high-level results regarding this variable. Similarly, Kerrigan's assertion (2014) regarding the profound influence of the ecosystem on business success is accentuated by the significant moderating effect observed, confirming the vital role of the entrepreneurial ecosystem in amplifying entrepreneurial success within the specified region's microfinance enterprises.

The study highlighted the importance of self-competency in entrepreneurship, emphasizing the imperative to improve work-life balance strategies and prioritize firm social responsibility. Recommendations entail a multifaceted approach: robust infrastructure investment and strategic policy frameworks supporting entrepreneurial development, educational initiatives fostering self-competency, and comprehensive support structures including financial aid and mentorship. Government support and collaboration among educational institutions, industry experts, and workshops are vital for nurturing a balanced work-life ethos. Sustaining entrepreneurial ecosystems necessitates ongoing advocacy, innovation, and infrastructure investment, backed by supportive government policies, fostering innovation, networking, and skill empowerment. Collaboration among various entities in Region XI—Chamber of Commerce, Department of Trade and Industry, government bodies, and educational institutions—is crucial, fostering self-competency, sharing best practices, and sustaining ecosystems. These efforts not only bolster individual business success but also drive regional economic growth and innovation, making fostering entrepreneurial ecosystems vital for sustainable economic development and a culture of innovation.

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Content integration of environmental management practices and responsible behavior for senior high school learners

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Abstract

The world's environmental concerns are currently rising which brought negative effects and became detrimental to organisms which needs to be addressed through participation of human. This study aimed to integrate environmentally responsive content for senior high school learners. Through the use of descriptive developmental design, the study was conducted and participated by one hundred seventy-four (174) Senior High School (SHS) learners of Humanities and Social Sciences strand from a secondary public high school in Candelaria, Quezon, Philippines. Through the use of 4-point Likert scale survey questionnaires, the study found out that learners do not always perform environmental practices same with their environmentally responsible behavior. These results were used as bases in making an instructional material, which was evaluated as highly effective to be used for the environmentally responsive content integration for SHS. Findings demonstrate a significant difference on the pre and post assessment of learners on environmental literacy as to knowledge, attitude and motivation. This suggests that educating learners through the integration of environmentally responsible content in SHS can be a great help in saving and protecting the environment.

Keywords: *environmental practices, environmentally responsible behavior, environmentally responsive content integration, environmental literacy, instructional material*

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Introduction

The reality that plastics have numerous valuable uses in the community, industries, medical institutions and even in the educational sector, cannot be denied. In fact, the community has been dependent in using plastics, particularly single-used plastics due to its convenience and development in different fields that it offers. However, as stated by Parker 2019, plastics kill millions of animals, including fish, birds, and other marine life every year. There are around 700 species known to have been impacted by plastics, including some that are endangered. Almost all types of seabirds consume plastic. Entanglement or malnutrition are the main causes of deaths of animals like seals, whales, turtles, and others are strangled by discarded six-pack rings or fishing gear. More than 100 aquatic species, including fish, shrimp, and mussels destined for our dinner plates, have been confirmed to have microplastics.

United Nations Environment Programme (UNEP), which serves as an authoritative advocate for the global environment, mentioned that plastic pollution doesn't exist in vacuum. It has the potential to modify ecosystems' capacity to adapt to climate change, altering habitats, natural processes, and social and economic well-being for millions of people making it a global problem. Same scenario was observed in the Province of Candelaria, Quezon which is surrounded by rivers. Although there is a Municipal Ordinance that prohibits the use of single-use plastics, there are still lots of plastics being disposed every day and some are flushed and carried away to the river banks. This leads to the contamination of waters, pollution of river which can no longer be used as swimming areas as before and death of aquatic organisms. Furthermore, the study of Quesea and Chua (2020), suggests that in order to raise the level of competence of the students, teachers might use competency-based learning assessments when teaching various topics in other subject areas and it also added that the school administration can improve the instructors' teaching abilities by applying them in the classroom situations since every student has a different learning style.

All these, led the researcher in taking this study and focus on the identified problem, which aimed to integrate the environmental management practices to senior high school content curriculum, develop an environmentally responsible behavior among SHS learners, develop a deeper realization, commitment and inner desire in practicing environmental involvement and let the learners be avenues in spreading and inspiring their household and even the community to perform environmental practices.

Methodology

A descriptive-developmental research design was used to assess the environmental management practices and responsible behavior of 174 SHS learners from Humanities and Social Sciences strand which was used as basis for designing an Environmental Responsive Content Integration for SHS learners.

The research study used a researcher-made 4-point likert scale survey questionnaires on environmental practices, environmentally responsible behavior and degree of effectiveness of instructional material, pre and post assessment with the same topics on environmental literacy and performance assessment form which assessed the frequency of environmental practices done by students in school. These instruments undergone reliability test and internal and external validations. The said instruments were collected, summarized, tabulated and interpreted after its retrieval from the respondents.

This study utilized descriptive statistics in treating the data statistically in order to present a summary that explains the data sample and its measurements. It also described, illustrated, and summarized the fundamental characteristics of a dataset identified in a certain study and draw conclusions from the sets of data gathered. This includes frequency for the learner's profile of the respondents.

Findings

The study found out that the extent of practicing environmentally responsible behavior of learners as to rethinking, refusing, reducing, repurposing, reusing and recycling is often while rotting is sometimes practiced. Furthermore, it showed that learners are knowledgeable, fully aware, significantly influenced by the control centers, has a good attitude, has very high personal responsibility and intention of acting and has a subjective norms and beliefs on environmentally responsible behavior. It further revealed that the designed content integration is highly effective to the learners as to language use, coherence, applicability, motivation and knowledge.

It was also found out that the pre and post assessment task of the learners on environmental literacy as to their knowledge is very high, the attitude is satisfactory, and the motivation is also very high. Lastly, the study found out that there is a significant difference

on the pre and post assessment tasks of the learners on their environmental literacy as to knowledge, attitude, and motivation.

Conclusion

Based from the results, the study concluded that the extent of practicing environmentally responsible behavior of learners is shown but not always and learners are knowledgeable, fully aware, significantly influenced by the control centers, has a good attitude, has very high personal responsibility and intention of acting and has a subjective norms and beliefs on environmentally responsible behavior but sometimes fails to perform environmental practices. It was also deduced that the designed content integration is highly effective to the learners as to language use, coherence, applicability, motivation and knowledge which became a significant factor in performing environmental practices. Moreover, it was also assumed that there is a significant difference on the pre and post assessment tasks of the learners on their environmental literacy as to knowledge, attitude, and motivation.

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Entrepreneurial engagement of business graduates in Region XI with entrepreneurial motivation and entrepreneurial education as determinants: A convergent mixed methods study

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Abstract

The engagement of entrepreneurs in entrepreneurial operations is often hampered by its inability to obtain the required resources and the suitable knowledge and skills. The primary aim of this mixed methods study was to investigate the influence of entrepreneurial motivation and entrepreneurial education on entrepreneurial engagement of business graduates in Region XI. The study employed a convergent mixed methods design, where 300 purposively chosen respondents participated in the quantitative strand and 17 in the qualitative part. Empirical data revealed that the overall entrepreneurial engagement and entrepreneurial education of business graduates were high, whereas the entrepreneurial motivation was very high. Moreover, the findings indicated that entrepreneurial motivation and entrepreneurial education had significant combined influence on entrepreneurial engagement with the former having a greater influence on entrepreneurial engagement. On the qualitative strand, the following a priori themes were generated: behavioral control, subjective norm, attitude towards self-employment, non-cognitive entrepreneurial skills, cognitive entrepreneurial skill, action-based teaching methods, and school engagement. As to the quantitative and qualitative data corroboration, the nature of integration is merging-confirmation.

Keywords: *entrepreneurial self-development, behavioral cognitive, entrepreneurial skills, convergent mixed methods*

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Introduction

Entrepreneurial engagement is a person's level of active involvement in entrepreneurial engagement to capture opportunities (Fayolle et al., 2014). However, the engagement of entrepreneurs in entrepreneurial activities and the ability to start or expand the business were restricted due to lack of access to financial resources (Perry et al., 2012), and lack of education and training in entrepreneurship (Baum et al., 2014), which restrict peoples' capacity to recognize and pursue business opportunities. Moreover, entrepreneurs found it burdensome to comply with the legal and administrative requirements of establishing and operating a business (Sloof et al., 2017). In the Philippines, data from Global Entrepreneurship Monitor (GEM) in 2014 showed that 6.2% of the adult population are owners of established business while 18.4% were engaged in early stage entrepreneurial engagement (TEA). Data further revealed that 12.6% ceased their business operation which exceeded Asia's 4.8% average. Accordingly, these occur due to low profitability and lack of access to capital. Also, in the GEM 2019/2020 report, the Philippines had a lesser percentage of early-stage entrepreneurial engagement compared to other countries like Singapore (27.9%) and Malaysia (25.5%).

Entrepreneurial engagement is essential for innovation, job creation, and economic growth. New businesses and industries can be developed through entrepreneurship, which also has the potential to increase employment and stimulate the economy (GEM, 2022). It gives people a chance to generate wealth and raise their standard of living; dramatically impacting social development and poverty reduction (Urbano & Guerrero, 2013). In 2019, GEM observed that entrepreneurship, especially in developing nations, promoted economic expansion and job creation. Moreover, in the Philippines, the government has implemented numerous programs and policies to encourage and support entrepreneurship since it is considered as a key factor in economic growth and job creation (Philippine Development Plan 2017–2022). According to the 2021 World Bank report, women entrepreneurs have the potential to significantly contribute to economic development and the reduction of poverty. It also has important social significance because it can help find solutions to societal issues and advance gender equality and female empowerment.

Entrepreneurial success in any entrepreneurial venture engagement depends significantly on an entrepreneur's motivation. Numerous studies have shown that entrepreneurial motivation and engagement have a significant relationship. Gielnik et al.

(2012) discovered, for instance, that entrepreneurial motivation positively affects entrepreneurial engagement, which favorably affects venture performance. Similarly, Cardon et al. (2009) found a relationship between higher entrepreneurial engagement levels and motivation. In addition, entrepreneurial education significantly impacted entrepreneurial engagement. Entrepreneurship education and engagement have a positive relationship, according to numerous studies (Ajayi & Fatoki, 2012). The study found that individuals with entrepreneurial training were more likely to engage in entrepreneurial activities. Azmi et al. (2018), examined the impact of entrepreneurial education on entrepreneurial engagement in Malaysia. They analyzed the relationship between entrepreneurial education and entrepreneurial engagement using survey data. The findings highlighted the need for a more nuanced understanding of the mechanisms by which educational programs influence individual's engagement in entrepreneurial activities. Also, Zhou and Li (2012) revealed that entrepreneurial education has a significant positive impact on entrepreneurial engagement.

The present study's focal point is to provide a closer look at entrepreneurial engagement in the context of entrepreneurial motivation and entrepreneurial education among business graduates in Region XI. Although several works correlated and connected the measures used in the study, the researcher has not found any similar study in the region where all the variables were used in a single research. The absence of research in the region provided the impetus for the conduct of the study locally. This study would prompt academic institutions and government agencies to look closely at business graduates' entrepreneurial motivation and entrepreneurial education to enhance their entrepreneurial ventures. More importantly, it is of paramount importance to consider how business graduates contribute to the local and national economy as entrepreneurial activities provide employment in the area. The study outcomes could highlight areas for further study on issues related to entrepreneurial engagement.

This mixed-methods study investigated how the entrepreneurial motivation and entrepreneurial education influenced the entrepreneurial engagement of business graduates in Region XI. A convergent mixed methods design was utilized, a type of design in which different but complementary data were collected on the same topic. A five-point Likert scale questionnaire was used in this study to test the Resource Base Theory, and the Human Capital Theory, which considered entrepreneurial motivation and entrepreneurial education as determinants of entrepreneurial engagement among the business graduates in Region XI.

Concurrence with data collection and in-depth interviews, the study explored the business graduates' central phenomenon. The reasons for collecting both quantitative and qualitative data were to bring together the strengths of both forms of research to corroborate results.

Methodology

Research Design

To gain an in-depth understanding of the topic, the convergent design, a mixed-methods design, was employed. The purpose of mixed method was that both qualitative and quantitative research, in combination, provides a better understanding of a research problem or issue than either research approach alone (Creswell, 2014). Furthermore, a convergent parallel mixed method is a procedure wherein the researcher will converge and merge quantitative data and qualitative data in order to provide a comprehensive analysis of the research problem. This study utilized convergent design in answering the research question to get a more comprehensive description of business graduates entrepreneurial engagement in relation to entrepreneurial motivation and entrepreneurial education. In this design, the researcher concurrently conducts the quantitative and qualitative elements in the same phase of the research process, weighs the methods equally, analyzes the two components independently, and interprets the results together (Creswell and Pablo-Clark, 2011). With the purpose of corroboration and validation, the researcher triangulated the methods by directly comparing the quantitative statistical results and qualitative findings.

In the quantitative strand of the study, the researcher utilized descriptive correlation to analyze and present the descriptive level of entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement in the light of quantitative data and find a significant relationship between these variables. Moore et al. (2018) emphasized that the descriptive correlation explores the relationship between two variables without attempting to establish cause and effect. It helps to understand how the two variables tend to move together, whether in the same or opposite direction, and to what degree. The correlation research approach was taken into account in this study. The role of correlation research, which is concerned with establishing relationships between two or more variables in the same population or between the same variables in two populations, is a very important part of a research study, according to Curtis et al. (2016). All of the social science disciplines continue

to be motivated by the desire to understand the connections and relationships that exist among human phenomena, and this motivation outweighs even the most nuanced model distinctions between different research methodologies.

In the qualitative strand, the tradition of phenomenology was considered in the context of qualitative research. According to Tejero (2011), the phenomenological study is an appropriate qualitative method to study a person's experience. The researcher describes an event, activity, phenomenon, and perceptions on entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement. In a phenomenological study, the researchers gain insights into participants' motivations by combining data collection techniques like conducting interviews, reading documents, watching videos, or visiting places and events to understand the meaning participants place on the subject that was studied. Because this phenomenon was observed, a phenomenological study is the best choice for the research design. Bueno (2016) emphasized that this design examines the situation from various angles and draw generalizations about it. In this design, extensive interviews with carefully chosen sample participants—in this instance, sample respondents—remain the design's mainstay. In this way, a thorough understanding of business graduates' inner thoughts, words, and perspectives on entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement started. In addition, the phenomenological study focused on describing the incidents from the perspectives of those who have experienced them. It is considered an important sociological or psychological phenomenon of the typical people.

Hoffman (2014, cited by Henson 2016), stated that the term "phenomenology" refers to a philosophical approach to exploring or analyzing the meaning of a person's everyday experiences. This is another factor in the decision to used phenomenology as the study's design. Phenomenological dealing with pre-reflective or phenomenon experiences is the name of the technique. Every occurrence can be phenomenologically studied. Because it utilized the techniques of epoch and reduction, this method is known as phenomenological reflection. Finally, Creswell and Plano (2018), the concurrent or parallel design, or the convergent design, is used when the researcher wants to compare or combine the quantitative and qualitative data analysis findings. To understand the complex interplay between multiple factors - entrepreneurial motivation, education, and engagement. A convergent mixed methods approach allows one to triangulate data from both quantitative and qualitative

sources, painting a more complete and nuanced picture than either method could alone (Creswell, 2015). The convergent design allows one to compare and contrast the findings from the quantitative and qualitative data. This can offer valuable insights into the validity and generalizability of the quantitative results, while also providing rich narratives and context-specific explanations for the observed patterns (Fetters & Shakaia, 2006). Because it tends to check whether the participant's response is similar to what they check in the quantitative survey with pre-determined scales and what they will answer in open-ended questions, the convergent research design is, therefore, viewed as a more suitable design for the study.

Integration is the highlight of the mixed-methods study. It does not just add the quantitative and qualitative data but also includes triangulation that compares and contrasts the findings from both methods to strengthen results and identify areas for deeper exploration, as well as joint displays to visualize both quantitative and qualitative data in the same space, allowing for more intuitive interpretation of their interplay.

Data Analysis

The research design for the study was convergent, and data from both qualitative and quantitative sources were gathered and analyzed simultaneously. An interactive approach was used during this time period, where data collection and analysis were iteratively motivated by changes in data collection procedures (Fetters et al., 2013). According to Creswell (2008), the purpose of this type of research is to combine qualitative and quantitative research to offer a better understanding of a research problem or issue. Separate analyses were done on the data from the quantitative and qualitative strands. As a result, this study considered two different types of analyses: thematic analysis for the qualitative strand and statistical tools for the quantitative strand.

Quantitative Strand. The statistical tool that was used to analyze the quantitative data in the future is a weighted mean for business graduates' entrepreneurial engagement, education, and motivation in Region XI. The significant relationship between these variables was tested using Pearson's Product Moment r , and the significant influence of entrepreneurial motivation and education on entrepreneurial engagement, both individually and collectively, were analyzed using regression analysis. In the future study, the mean was used to assess the entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement of

business graduates in the Davao Region of the Philippines. The standard deviation was also used to determine how far individual responses to a question deviated from the mean. Additionally, the correlation coefficient (Pearson R) was used to measure the relationship between entrepreneurial motivation and entrepreneurial engagement, as well as entrepreneurial education and entrepreneurial engagement, assuming that the data are normally distributed. Finally, regression analysis was utilized to determine the impact of entrepreneurial motivation and entrepreneurial education on the entrepreneurial engagement of business graduates in the Davao Region, assuming that the data are normally distributed.

Qualitative Strand. The thematic analysis was utilized to examine the data in light of the qualitative data analysis. The researcher used the informant interviews that was translated and transcribed based on the in-depth interview (IDI). The analysis began by bracketing the researcher's subjectivity to clarify preconceptions throughout the study. The purpose of bracketing was to remove the researcher's biases and prejudices toward the phenomenon. The researcher started the process by writing a detailed description of the phenomenon (Henson, 2016). Furthermore, the researcher developed themes based on the lived experiences of business graduates in terms of entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement. As a result, it was critical to select the most appropriate methods of analyzing data in order for it to be thoroughly treated and the conclusion drawn to be substantiated. As a result, inductive analysis was used to analyze the researcher's data (Henson, 2016).

Results and Discussion

Status of Entrepreneurial Motivation. Based on the findings, all the domains, behavioral control, subjective norm, and attitude towards self-employment among business graduates is very evident or very high. Behavioral Control, which indicates a very high level of entrepreneurial motivation. Business graduates-turned-entrepreneurs find joy in achieving milestones, seek community recognition, value working independently, and aim to build a strong business reputation, showcasing their intrinsic motivation to shape their entrepreneurial destinies. This study finding supports a study conducted by Davis and Hsieh (2010) emphasizes the importance of self-efficacy as a behavioral control component that influence entrepreneurial motivation. Business graduate are eager to apply university-acquired skills,

network with fellow entrepreneurs, and confidently start their own businesses, showcasing the influence of subjective norms on their entrepreneurial engagement. Such finding is consistent to the study of Liñán and Fayolle (2015) indicating that the influence of subjective norms on entrepreneurial motivation. Lastly, attitude towards self-employment indicates a very high level of motivation grounded in positive attitudes toward self-employment. The finding of the study support Kautonen et al. (2015) findings that self-efficacy is a mediator, reinforcing the positive relationship between attitude towards self-employment and entrepreneurial motivation to entrepreneurial engagement.

Status of Entrepreneurial Education. The result of the study reveals that entrepreneurial education of business graduates in Davao Region is high, stating that entrepreneurial education among business graduates is evident. Action-based teaching methods, rated as very high, indicating that it is very evident. This very high level of appreciation for action-based methods underscores their significant role in enhancing participants' understanding and practical application of entrepreneurial concepts. The findings of the study support Kickul et al. (2019) indicated that students who participated in action-based learning experiences, such as business simulations, entrepreneurship competitions, and internships, demonstrated higher levels of entrepreneurial engagement compared to those in traditional classroom settings. Non-cognitive entrepreneurial skills, with a rating of high exemplify the business graduates' adeptness in applying creative thinking, goal-setting, time management, and leadership skills in entrepreneurial endeavors. The study's findings align with the work of Gelderen et al. (2018) study highlighted that entrepreneurial education programs that incorporated the development of non-cognitive skills, including self-efficacy, creativity, and adaptability, had a stronger impact on entrepreneurial engagement. Cognitive entrepreneurial skills rated as high, highlight business graduates' entrepreneurs' mastery of cognitive abilities essential for entrepreneurship, such as critical thinking, problem-solving, and strategic planning. The high mean suggests a robust development of intellectual capacities within the entrepreneurial education framework. This results supports the work of Gupta and Kaur (2019) students' problem-solving, critical thinking, and decision-making abilities can all be improved by entrepreneurial education.

Consequently, school engagement, that is rated as high implies that business graduate-entrepreneurs demonstrate a high motivation, interest, and active participation in academic and

entrepreneurial activities within the school setting. This indicates that the educational environment plays a crucial role in shaping entrepreneurial engagement among the study participants. This finding is consistent with the study of Herrera et al. (2019) study revealed that students who are actively engaged in school activities are more likely to develop an interest in entrepreneurship and express intentions to start their own ventures. Lastly, perceived teacher support, rated as high underscores the importance of supportive teacher-student relationships in entrepreneurial education. Business graduates perceived teachers as instrumental in providing guidance, exposure to various strategies, and creating a supportive environment conducive to personal and entrepreneurial growth. This was also consistent with the study of Jena and Dhal (2020) study revealed a positive relationship between perceived teacher support and entrepreneurial engagement.

Status of Entrepreneurial Engagement. The overall result of business graduates' entrepreneurial engagement is high or evident with the indicators of determinants of entrepreneurial engagement, entrepreneurial performance, and impact of entrepreneurial engagement. Determinants of entrepreneurial engagement underscore the business graduates' strong connection to factors influencing entrepreneurial involvement. This high mean suggests a pronounced motivation and interest in achievement, recognition, financial rewards, freedom, and reputation building, emphasizing the multifaceted nature of motivational drivers in entrepreneurial pursuits. This finding supports the work of Autio et al. (2014) mentioned that the potential for business growth serves as a determinant of entrepreneurial engagement. In addition, entrepreneurial performance is rated as high this indicates a robust entrepreneurial performance among the business graduates is evident. The results underscore the practical use of skills in real business situations, emphasizing entrepreneurs' vital role in achieving goals for performance outcomes. The study emphasizes the significance of passion, motivation, and dedication in driving financial success for entrepreneurs. The results corroborate the findings of Cardon et al. (2017) revealed a positive relationship between engagement and performance outcomes, indicating that highly engaged entrepreneurs tend to achieve better financial results, experience higher growth rates, and exhibit greater innovation.

Finally, impact of entrepreneurial engagement is rated as high or evident and reveals a substantial and positive influence of entrepreneurial engagement on both individual business graduates and the broader community. The high mean suggests that participants not only

experience personal satisfaction and achievement but also contribute meaningfully to the community through their entrepreneurial activities. As mentioned by Welter and Xheneti (2013) that engaged entrepreneurs, through their businesses, can contribute to reducing poverty by creating jobs, generating income, and improving livelihoods.

Influence of Entrepreneurial Motivation and Entrepreneurial Education on Entrepreneurial Engagement

The study unveils a noteworthy correlation between entrepreneurial motivation, entrepreneurial education, and entrepreneurial engagement. Statistical analysis indicates that entrepreneurial education wields the most substantial influence on entrepreneurial engagement among business graduates-turned-entrepreneurs. This signifies that the level of entrepreneurial education significantly shapes and enhances their entrepreneurial engagement. This aligns with previous research, such as the findings by Zhou and Li (2012), which assert that entrepreneurial education plays a crucial role in positively impacting entrepreneurial engagement. This highlights the pivotal role of educational interventions in fostering a more engaged and motivated entrepreneurial community, underscoring the importance of incorporating effective educational strategies to empower aspiring entrepreneurs. Furthermore, the research by Gruber and Tal (2018) indicates a positive correlation between entrepreneurial education and entrepreneurial activity the study suggests that such educational interventions contribute to overall entrepreneurial engagement. Fayolle and Gailly's (2015) findings not only highlight the impact on perceptions of feasibility but also underscore how entrepreneurial education can act as a catalyst for creative problem-solving and adaptability in dynamic business environments. Additionally, the study by Hattab and Elfeki (2020) not only confirms the increased likelihood of engaging in entrepreneurial activities for students with entrepreneurial education but also sheds light on the long-term effects. These students tend to exhibit a sustained interest in innovation and a greater propensity for initiating and sustaining entrepreneurial ventures. Moreover, these collective findings not only emphasize the immediate positive effects of entrepreneurial education on activity and feasibility perceptions but also suggest its role in fostering a resilient entrepreneurial mindset and contributing to the long-term sustainability of entrepreneurial endeavors.

Lived Experiences of Business Graduates Entrepreneurs relative to Entrepreneurial Engagement

Based on the answers of participants for in-depth interview and focused group discussion, the following essential themes emerged: determinants of entrepreneurial engagement, entrepreneurial performance, and impact of entrepreneurial engagement with high-level results and positive response from the participants.

The first priori theme in the study, determinants of entrepreneurial engagement, received a positive response from the participants, indicating that Business graduates also agree that accessing to capital is one of the important aspect of any entrepreneurial venture, and mentioned that accessing capital is challenging, as mentioned by Storey (2011) access to capital is a critical determinant of entrepreneurial engagement. Adequate financial resources are necessary to start, operate, and grow a business. Entrepreneurs with Access to capital, whether through personal savings, loans, investors, or government programs, are more likely to engage in entrepreneurial activities and pursue their business ideas. Most of the business graduates' highlights that managing and allocating the capital obtained for business growth is critical for the business operations. Some also shared that the way they allocated their capital obtained is through business expansion. Fayolle et al. (2014) study revealed that the possession of relevant entrepreneurial skills is crucial for entrepreneurial engagement. Creativity, problem-solving, decision-making, budgeting, and networking contribute to individuals' ability to engage in entrepreneurial activities effectively. Entrepreneurs who possess and continuously develop these skills are likelier to engage actively in the entrepreneurial process.

The second priori theme is entrepreneurial performance. Which also received positive response from the participants, indicating that business graduate-entrepreneurs believed that they are capable of increasing market share in the industry were they are playing and with a strong experience in the industry is an advantage that can be utilized to increase market share as experience provides all the practical learnings. Rauch et al. (2018) investigated the relationship between entrepreneurial engagement and innovation performance. The research revealed a positive association between engagement and innovation outcomes, indicating that engaged entrepreneurs were likelier to generate and implement innovative ideas, enhancing product/service development and market competitiveness. The study emphasized the role of engagement in driving entrepreneurial creativity, risk-taking, and opportunity recognition. In

addition, Man et al. (2019) examined the relationship between entrepreneurial engagement and innovation performance. The research highlighted that engaged entrepreneurs were likelier to engage in innovative activities, generate new ideas, and implement innovative strategies, leading to enhanced innovation performance. The study underscored the critical role of engagement in fostering entrepreneurial creativity and driving innovation outcomes. Penetrating new market is one of the most challenging part of being an entrepreneur business graduate mentioned that they are capable of penetrating new markets and to Identified factors to consider when evaluating the feasibility and potential of new market opportunities by the business graduates. Gielnik et al. (2014) examined the impact of entrepreneurial engagement on the financial performance of small and medium-sized enterprises (SMEs). The findings revealed a positive relationship between entrepreneurial engagement and financial performance, indicating that higher levels of engagement were associated with improved profitability, return on investment, and revenue growth. The study highlighted the importance of entrepreneurs' passion, motivation, and dedication in driving financial success to reach new market.

Lastly, the priori theme is impact of entrepreneurial engagement, which also received positive responses from the participants. Business graduate-entrepreneurs shared that entrepreneurial engagement has had a positive impact to the community such as addressing problem on poverty, unemployment, and an economic contribution to the national economy. Also, entrepreneurial engagement helps the community in providing the needs such as foods and sustaining the lifestyle. Entrepreneurial activities provide jobs and create employment opportunity. It is also recognized that entrepreneurial engagement has a positive impact to the economic growth, developing skills, and empowering people. Welter and Xheneti (2013) investigated the impact of micro-entrepreneurship on poverty alleviation in developing countries. The research highlighted that engaged entrepreneurs, through their businesses, can contribute to reducing poverty by creating jobs, generating income, and improving livelihoods. In addition, Autio et al. (2014) research revealed a positive association, indicating that regions with higher levels of entrepreneurial engagement experienced greater productivity gains, technological progress, and overall economic performance.

Live Experiences of Participants on Entrepreneurial Motivation that Shaped Entrepreneurial Engagement

The study has generated essential themes based on the answers of participants for in-depth interview and focused group discussion; behavioral control, subjective norm, and attitude towards self-employment with very high-level results and positive response from the participants.

In the study, behavioral control as the priori theme with positive responses from the participants as they shared that achievements within their businesses not only brought about a great sense of enjoyment and financial satisfaction but also garnered recognition and admiration from the community also freedom to work anywhere and anytime emerged as a liberating factor, providing entrepreneurs with the flexibility to tailor their work schedules and environments. Seo et al. (2020) highlight the importance of goal orientation in entrepreneurial engagement. They argue that entrepreneurs with a mastery goal orientation, characterized by a focus on learning and growth, are more likely to exhibit higher levels of behavioral control and engagement in entrepreneurial activities. Social support has been identified as a significant factor in shaping behavioral control and entrepreneurial engagement. Ahmad and Seymour (2019) find that social support from family, friends, and mentors positively influences an entrepreneur's perceived behavioral control and encourages engagement in entrepreneurial activities.

The second priori theme is subjective norm. Which also received positive responses from the participants, participants demonstrated a strong inclination to apply the skills acquired during their university education, highlighting the pivotal role of academic knowledge in their entrepreneurial endeavors. As shared by the participants networking emerged as a crucial component, as they actively sought to connect with fellow entrepreneurs, leveraging their experiences for learning and identifying novel opportunities. Chen and Thompson (2018) discuss the importance of intrinsic motivation and self-determination as critical factors driving entrepreneurial engagement. Wilson and Smith (2014) present a theoretical framework for understanding the motivational factors influencing entrepreneurial intention. Although behavioral control is not explicitly discussed, the framework highlights the significance of individuals' perceived control over their actions as a key determinant of entrepreneurial motivation and engagement. Confidence in initiating independent ventures was underpinned

by a comprehensive understanding of financial management, marketing, and organizational development, showcasing the practical application of academic knowledge. Johnson and Smith (2015) investigate behavioral control's influence on entrepreneurial intentions across different cultures. They find that individuals with a higher level of perceived control over their actions exhibit greater intentions to engage in entrepreneurial activities, suggesting that behavioral control plays a significant role in motivating individuals to pursue entrepreneurship.

Lastly, attitude towards self-employment a priori theme with positive responses from the participants as they shared that, the examination of the participants' attitudes towards self-employment unveiled a spectrum of motivations and aspirations driving their entrepreneurial engagement. Job security, freedom, and control emerged as foundational aspirations, with participants expressing a desire to chart their own professional destinies. In addition, entrepreneurship was viewed as a platform to unleash creativity and innovative ideas, providing an avenue for self-expression and unique business approaches, achieving financial stability stood out as a significant goal, aligning self-employment with economic well-being, and as a means to expand partnerships, fostering collaboration and growth within the business ecosystem. Liñán et al. (2012) the authors highlight that a positive attitude towards self-employment, combined with education, and achieving personal goals significantly influences individuals' motivation to engage in entrepreneurship. Kautonen et al. (2015) conducted a longitudinal study using surveys and structural equation modeling to investigate the role of self-efficacy in the relationship between attitude towards self-employment and entrepreneurial engagement. Their findings suggest that self-efficacy is a mediator, reinforcing the positive relationship between attitude towards self-employment and entrepreneurial engagement.

Live Experiences of Participants on Entrepreneurial Education that Shaped Entrepreneurial Engagement

Base on the answers of participants for in-depth interview and focused group discussion, there were essential themes generated and participants showed positive experience on the 5 indicators as priori themes: non-cognitive entrepreneurial skills, cognitive entrepreneurial skills, school engagement, and perceived teacher support with the rating of

high in quantitative results while, action-based teaching methods rated as very high-level. All the a priori themes on entrepreneurial education indicated positive core ideas.

On the non-cognitive entrepreneurial skills, as participants shared that the exploration of non-cognitive entrepreneurial skills among participants illuminated the importance of these intangible attributes in shaping their entrepreneurial journeys. Creative thinking skills were actively employed in navigating the complexities of entrepreneurial endeavors, with participants emphasizing the need for innovative problem-solving and idea generation. Pihie and Bagheri (2012), students' creativity, risk-taking, and self-efficacy can all be improved by entrepreneurial education. Similarly, Zhang and Bartol's (2010) study discovered that entrepreneurship education could improve students' emotional intelligence and proactive personalities. The ability to create SMART (Specific, Measurable, Achievable, Relevant, Time-Bound) goals and objectives emerged as a strategic approach, providing a structured framework for planning and execution. Zampetakis et al. (2017) research revealed that NCES could be developed through hands-on learning exercises. The study discovered that while networking can improve social skills and self-efficacy, business planning and idea generation can boost creativity. Additionally, a Shinnar et al. (2015) study discovered a positive correlation between NCES and successful entrepreneurship. According to the study, business owners with high NCES scores were likelier to launch profitable ventures and report feeling more satisfied in their work.

On the cognitive entrepreneurial skills, participants emphasized the acquisition of a diverse skill set encompassing entrepreneurial leadership, and risk-taking skills as foundational to their endeavors. In addition, strategic planning and assessment were evident through the utilization of tools to evaluate business potential comprehensively and decision-making and problem-solving skills emerged as crucial assets, enabling participants to navigate challenges inherent in entrepreneurial pursuits. According to a Gupta and Kaur (2019), students' problem-solving, critical thinking, and decision-making abilities can all be improved by entrepreneurial education. Similarly, Gielnik et al. (2015) found that entrepreneurship education can improve students' business planning abilities. Foliard et al. (2020) study revealed that participants who received cognitive skill-building interventions exhibited higher levels of entrepreneurial engagement. The development of cognitive skills, such as analytical thinking, creativity, and opportunity recognition, was found to positively influence individuals' engagement in

entrepreneurial activities. This study emphasizes the importance of integrating cognitive skill development into entrepreneurial education programs to enhance entrepreneurial engagement.

On the action-based teaching methods, the examination of action-based teaching methods shed light on the profound impact of experiential learning on participants' understanding and development in entrepreneurship. Collaboration emerged as a key catalyst, enhancing comprehension of entrepreneurial concepts and providing a platform for the practical application of skills. Fayolle et al. (2014) mentioned that experiential learning, problem-based learning, and project-based learning are some techniques. In addition, through collaborative efforts, participants not only gained insights into entrepreneurship but also developed essential social skills, fostering effective communication and teamwork. Engaging in discussions and debates within the learning environment significantly influenced participants' ability to analyze and evaluate entrepreneurial concepts critically. Bacq and Janssen (2011) investigated the efficacy of action-based teaching strategies in entrepreneurship education. These methods positively affected students' attitudes toward entrepreneurship, self-efficacy, and intentions to start a business, according to the authors. In a separate study, Kickul and Gundry (2012) examined the influence of action-based teaching methods on the entrepreneurial mindset of undergraduate students. They discovered that students who participated in an action-based entrepreneurship program had greater entrepreneurial self-efficacy and startup intentions than those who participated in a traditional lecture-based program.

On the school engagement, the participants expressed a heightened motivation to invest effort and hard work in their academic pursuits, indicative of a strong connection between academic engagement and entrepreneurial endeavors. Herrera et al. (2019) findings revealed a positive association between school engagement and entrepreneurial intentions, suggesting that students who are actively engaged in school activities are more likely to develop an interest in entrepreneurship and express intentions to start their own ventures. In addition, genuine interest and passion for learning emerged as pivotal factors, with participants demonstrating an enthusiasm to explore and acquire new knowledge and skills. Wang and Degol (2017) study findings demonstrated that students who were highly engaged in school, characterized by active participation in classes, involvement in extracurricular activities, and positive teacher-

student relationships, were more likely to exhibit entrepreneurial behaviors, such as seeking opportunities, taking initiative, and pursuing entrepreneurial goals.

On the perceived teacher support, as the participants shared that, teachers were seen as more than facilitators, actively contributing to students' decision-making processes by providing ideas and guidance. Lorz et al. (2018), students' entrepreneurial intentions are significantly predicted by how much they feel their teachers support them. According to the study, students who felt their teachers supported them more in their entrepreneurial endeavors than those who felt less support had higher entrepreneurial intentions. Jena and Dhal (2020) study findings revealed a positive relationship between perceived teacher support and entrepreneurial engagement. Students who perceived higher levels of support from their teachers reported greater motivation, confidence, and commitment to their entrepreneurial endeavors. They also exhibited a higher level of entrepreneurial intention and a greater likelihood of engaging in entrepreneurial activities.

Data Integration of the Salient Quantitative and Qualitative Results

On the entrepreneurial engagement of business graduate-entrepreneurs, it was found out that the quantitative results showed that all indicators such as determinants of entrepreneurial engagement, entrepreneurial performance, and impact of entrepreneurial engagement were all rated high which means that business graduates entrepreneurs oftentimes manifested entrepreneurial engagement. This result is congruent to the qualitative data on the three indicators considered as a priori themes: because the responses of the participants to the interview and discussion revealed positive experiences in entrepreneurial engagement. In other words, qualitative data results confirm the quantitative data; hence the nature of integration is merging-confirming.

For the entrepreneurial motivation of business graduate-entrepreneurs, the results showed that the indicators behavioral control, subjective norm, and attitude towards self-employment were rated very high which means that business graduates entrepreneurs oftentimes manifested entrepreneurial motivation. This result is congruent to the qualitative data on the three indicators considered as a priori themes: because the responses of the participants to the interview and discussion revealed positive experiences in entrepreneurial

motivation. In other words, qualitative data results confirm the quantitative data; hence the nature of integration is merging-confirming.

On the entrepreneurial education of business graduate-entrepreneurs, the results showed that the indicators non-cognitive entrepreneurial skills, cognitive entrepreneurial skills, school engagement, and perceived teacher support are all rated high while action-based teaching methods rated as very high, which means that business graduates entrepreneurs oftentimes manifested entrepreneurial education. This result is congruent to the qualitative data on the five indicators considered as a priori themes: because the responses of the participants to the interview and discussion revealed positive experiences in entrepreneurial education. In other words, qualitative data results confirm the quantitative data; hence the nature of integration is merging-confirming.

Combined influence of entrepreneurial motivation and entrepreneurial education on entrepreneurial engagement. On the quantitative strand, both entrepreneurial motivation and entrepreneurial education significantly influenced entrepreneurial engagement. Also on the qualitative stand, the business graduate-entrepreneurs verbalized the importance of the two variables in shaping their entrepreneurial engagement. Hence, the nature of integration is merging-confirmation. Nearly all participants were firm in their response that both entrepreneurial motivation and entrepreneurial education values best influence the entrepreneurial engagement. A number of authors support the idea that entrepreneurial motivation influences entrepreneurial engagement (Gielnik et al., 2012; Kautonen et al., 2017; Shirokova et al., 2016; Lau & Chan, 2017). Entrepreneurial education according to Gruber and Tal (2018), and Azmi et al., (2018), influences entrepreneurial engagement.

Domain of entrepreneurial motivation and entrepreneurial education that best influence entrepreneurial engagement. Statistically, both entrepreneurial motivation and entrepreneurial education significantly influenced entrepreneurial engagement. But between the two, entrepreneurial education came out as the best influence of entrepreneurial engagement since it had higher beta-coefficient than entrepreneurial motivation. The participants were very confident in their opinion during the interview that entrepreneurial motivation and entrepreneurial education significantly must coexist. They conveyed that both variables are contributors to their entrepreneurial engagement. They believed that if they merge the two variables, it would add something that would enhance their entrepreneurial engagement. This

is supported by Lau, and Chan's (2017) as he explained that entrepreneurial motivation significantly improves entrepreneurial engagement, enhancing venture performance. While Hattab and Elfeki's (2020) discovered that students who received entrepreneurial education were more likely to engage in entrepreneurial activities than those who did not.

Conclusion

On the status of entrepreneurial motivation as experienced by the respondent are very high. This shows that entrepreneurial motivation is very evident in the indicators of behavioral control, subject norm, and attitude towards self-employment. Moreover, this illustrates that business graduate-entrepreneurs are very highly aware of the importance of entrepreneurial motivation that influence business graduate-entrepreneurial engagement. On the status of entrepreneurial education as experienced by the participants, the result is high. This connotes that the respondents' response on entrepreneurial education is evident. This means that respondent recognized entrepreneurial educations as important determinants of business graduates to engage in entrepreneurial activity. Lastly, is on the status of entrepreneurial engagement as experienced by the participants is high. This indicates that entrepreneurial engagement is evident among the indicators, determinants of entrepreneurial engagement, entrepreneurial performance, and impact of entrepreneurial engagement.

The findings indicated that both entrepreneurial motivation and entrepreneurial education influence entrepreneurial engagement. Findings shows a significant relationship among the variables on the correlation analysis. However, statistical findings as supported by a high beta coefficient revealed that entrepreneurial education had the greatest influence on entrepreneurial engagement. This means that changes in entrepreneurial education are significantly associated with corresponding changes in entrepreneurial engagement. This result emphasizes the pivotal role of education in shaping individuals' commitment and involvement in entrepreneurial activities.

On the lived experiences of the business graduate entrepreneurs to their entrepreneurial engagement, it showed that there were three priori themes: determinants of entrepreneurial engagement, entrepreneurial performance, and impact of entrepreneurial engagement. For the experience of business graduate entrepreneurs on entrepreneurial motivation that shaped entrepreneurial engagement, it showed that determinants of entrepreneurial engagement,

entrepreneurial performance, and impact of entrepreneurial engagement priori themes belongs to the positive entrepreneurial motivation. For the experiences of business graduate-entrepreneurs on entrepreneurial education that shape entrepreneurial engagement, the five priori themes belongs to a positive entrepreneurial education which were non-cognitive entrepreneurial skills, cognitive entrepreneurial skills, action-based teaching methods, school engagement, and perceived teacher support.

The data integration reveals a merging-confirmation pattern, as affirmed by business graduate who recognize the significant impact of both entrepreneurial motivation and entrepreneurial education in shaping their entrepreneurial engagement. The positive experiences reported by these entrepreneurs further validate the influence of these factors on their entrepreneurial journey. The merging-confirmation observed in the responses of business graduate entrepreneurs underscores the symbiotic relationship between motivation and education in shaping entrepreneurial engagement.

To sustain the entrepreneurial motivation of business graduates, it was discovered that behavioral control, subjective norm, and attitude towards self-employment rated as very high indicates that entrepreneurial motivation is very evident among business graduates; to further sustain, an entrepreneurial motivation enhancement program can be done through developing mentorship programs and also facilitate networking events, workshops, and seminars to foster connections among students and experienced entrepreneurs and this can be implemented by the academic institutions with close coordination with government agencies such as Department of Trade and Industry (DTI) and the Business and Investment Office of the LGU. In addition, establish partnerships with local businesses to offer internships and practical experiences.

Business graduates may sustain their entrepreneurial education by revising curricula to incorporate more action-based teaching methods. Establish on-campus entrepreneurial labs or incubators to encourage students to work on their business ideas and provide access to resources, mentorship, and funding opportunities within these spaces. In addition, implementing continuous professional development programs for faculty to stay updated on the latest trends and industry practices. Provide resources and incentives for educators to engage in entrepreneurial endeavors themselves. Lastly, develop interactive online modules

that allow students to engage with course materials dynamically and effectively. Utilize gamification and multimedia elements to enhance the learning experience.

Finally, it is important to note that the results particularly on the shared views of the participants on the quantitative and qualitative results only captured the standpoint of a subset of participants on their entrepreneurial engagement. Further, it is recommended that future researchers delve deeper into the nuanced dynamics of entrepreneurial engagement by exploring contextual factors that may influence the identified determinants, motivations, and educational components. Investigating the role of emerging technologies, such as artificial intelligence or blockchain, in shaping entrepreneurial engagement could offer valuable insights into the evolving landscape of entrepreneurship. Furthermore, comparative analysis across different cultural and socio-economic contexts may provide a nuanced understanding of the factors influencing entrepreneurial engagement, contributing to more targeted and effective policy recommendations and educational programs.

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The mediating role of narcissism in the relationship between self-esteem and aggression of university students in Sagaing Township

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Abstract

The world is competitive in every possible way, especially in the education sector, so university students tend to seek success in their academic field and try to get attention in their social circle regardless of any cost or effort involved. Consequently, this leads to the presence of narcissistic personalities among the university population. This study aimed to investigate the mediating role of narcissism in the relationship between self-esteem and aggression among university students in Sagaing. The sample comprised 1058 undergraduate students, 519 females and 539 males from undergraduate classes. Rosenberg (1965) self-esteem scale, the Narcissistic Personality Inventory by Raskin and Terry (1988) and the aggression questionnaire by Buss and Warren (2000) were used. The results of the mediation analysis revealed that self-esteem has a direct negative effect on aggression and also an indirect positive effect on aggression through the mediation effect of narcissism. This clearly indicates the suppressor effect, competitive mediation, since the positive relationship between self-esteem and aggression is reversed when narcissism is mediated as a suppressor variable. As this suppressor effect is enticing for the researchers in the academic field of psychology, further studies should explore the moderating factors in the relationship between self-esteem, narcissism and aggression. It is anticipated that the current study will provide the basic information that can contribute to the development of a prevention program for narcissism and aggression in the higher education sectors with a strong emphasis on the self-esteem of university students.

Keywords: *self-esteem, narcissism, aggression, university students*

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Introduction

Narcissistic personality is characterized by clinical criteria, which include grandiose sense of self-importance or uniqueness, preoccupation with fantasies of unlimited success, power, brilliance, beauty, or ideal love, exhibitionism, inability to tolerate criticism, indifference of others, or defeat, entitlement or the expectation of special favors without assuming reciprocal responsibilities, interpersonal exploitativeness, relationships that alternate between extremes of over-idealization and devaluation, and lack of empathy (American Psychiatric Association, 1980). Narcissism is associated with self-esteem and aggression. These relationships are clearly observed in the threatened egotism theory of Kohut (1972), which implies that individuals who depend on others to maintain their self-esteem will be more likely to respond with shame or narcissistic rage (narcissistic aggression) if they receive an injury themselves (i.e. a narcissistic injury). Kernberg (1975)'s concept of narcissism also explained how narcissists cannot separate the real self from the ideal self, which tends to breed aggression.

According to previous findings, high self-esteem is associated with higher narcissism and this in turn is associated with higher aggression (Anwar et al., 2016; Locke, 2008). Therefore, the main aim of this study is to explore the mediating role of narcissism in the relationship between self-esteem and aggression of university students in Sagaing. Accordingly, the following research hypotheses were formulated:

Hypothesis 1: Self-esteem directly predicts aggression (Bushman et al., 2009; Donnellan et al., 2005).

Hypothesis 2: Self-esteem directly predicts narcissism (Pilch & Hyla, 2017).

Hypothesis 3: Narcissism directly predicts aggression (Locke, 2009; Rasmussen, 2015).

Methodology

In order to execute the research objectives quantitatively, this study focuses mainly on quantitative research approaches by means of survey design. This survey study was conducted by correlational design.

The target population for this study was university students in Sagaing in the Academic Year 2020-2021. Since this consisted of a large group of people, this study used simple random

sampling methods in order to ensure generalizability of the study. The selected sample included a total of 1049 university students from three universities in Sagaing. Data were collected in August 2020.

To study self-esteem, narcissism and aggression of university students from universities in Sagaing Township, three instruments were used: Rosenberg's Self-esteem Scale, the Narcissistic Personality Inventory (NPI), the Aggression Questionnaire (AQ). Cronbach's alpha values 0.816 for RSES (Rosenberg Self-esteem Scale), 0.706 for NPI and 0.890 for AQ showed the high internal consistency of all the instruments. Therefore, it was concluded that all the instruments in this study were highly reliable and valid.

In this study, quantitative research methodologies were used. In order to answer the research questions, quantitative data analysis techniques were utilized. A mediation analysis was conducted with the help of the Analysis of a Moment Structures version 23.0 (Amos 23.0). For the proposed mediation model, a mediation analysis was done to investigate the mediating role of narcissism in the relationship between self-esteem and aggression.

Findings

This study explored self-esteem, narcissism and aggression, especially the relationship patterns between these three variables. Descriptive statistics were used to study these variables, and a mediation analysis is used to investigate the intercorrelation among these three variables.

In the initial analysis, Model 1 revealed a significant regression with an R-squared value of 0.8, indicating that the model accounted for approximately 8% of the variance in narcissism. Despite the relatively low percentage, it was observed that self-esteem significantly predicted narcissism, suggesting that higher self-esteem was associated with greater narcissism. Subsequently, Model 2 demonstrated another significant regression with an R-squared value of 0.7, signifying that the model explained 7% of the variance in aggression. The primary pathway indicated that narcissism positively predicted aggression, suggesting higher narcissism leads to higher aggression. Conversely, self-esteem negatively predicted aggression, implying that higher self-esteem was associated with lower aggression. The indirect effect of self-esteem on aggression demonstrated inconsistent partial mediation, as higher self-esteem led to increased narcissism, which, in turn, was associated with heightened aggression. This inconsistency contradicted the direct effect observed in the aggression pathway, resulting in the mediator acting as a suppressor.

This result also indicated that self-esteem has a negative influence on aggression, however this effect could be suppressed by narcissism because self-esteem leads to greater narcissism, and this variable has a positive effect on aggression. An inconsistent partial mediation model was found. Therefore, it is concluded that although self-esteem only can prevent aggression, it, mediated by narcissism, can contribute to aggression.

Conclusion

This research studied self-esteem, narcissism and aggression, especially the mediating effect of narcissism on the relationship between self-esteem and aggression of university students in Sagaing by using mediation analysis. According to the result of the descriptive analysis, the majority of university students in Sagaing revealed low self-esteem, a normal level of narcissism, and a low level of aggression. The main purpose of this study is to examine the mediating effect of narcissism on the relationship between self-esteem and aggression. An inconsistent partial mediation model was found. Self-esteem had a significant direct effect on aggression, and also a significant indirect effect on aggression through a mediator (suppressor), narcissism.

In this study, a small inconsistent partial mediation was found. Analysing the present result contributes to an interesting idea about how narcissism appears from high self-esteem. The nature of self-esteem tested in this study comes from conscious thinking. According to Epstein's cognitive experiential self-theory, the former is called explicit self-esteem and the latter implicit self-esteem, while both contain schemas about the self. Even though the role of real self and ideal self in creating narcissism has been described in the literature section, this study could not explore the role of implicit self-esteem. Hence, this research fails to adequately explain the connection between self-esteem and narcissism. Future researchers should explore the relationship between self-esteem and narcissism, taking into account both the unconscious (implicit) and conscious (explicit) aspect of self-esteem. Moreover, this study was based on quantitative research design. If a mixed method approach had been used, the mechanisms that explain the relationship between self-esteem and narcissism would have been explored via interview or open-ended survey. To sum up, the result of this study contributes new findings in this academic field and also provides valuable insights that can inform the development and implementation of aggression and narcissism prevention programs in the higher educational

context in Myanmar, thereby fostering a conducive environment for students and mitigating the risk of narcissism.

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