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Editorial Note

The Interdisciplinary Research Review (IRR) was established with academic cooperation by the Nakhon Pathom Rajabhat University, The Royal Society of Thailand Committee of Interdisciplinary Research and Development, Rajabhat University (Western Group), and Rajamangala University of Technology Rattanakosin. This Issue, Volume 17 Number 6 (November – December 2022). This issue contains of four interesting articles in multidisciplinary fields: (1) Assessing street greenery using imagery of Google Street View, (2) The process of teaching and learning to create students' identity, (3) Local government involvement in post-pandemic development initiatives for the Lao Khrang Ethnic Group of Nakhon Pathom Province, and (4) Bachelor of Technical Teacher Education versus Bachelor of Technical-Vocational Teacher Education: A comparative analysis of technical teacher education curricula.

The Editorial Board of the IRR encourages anyone to submit articles for evaluation and review. The processes of submission, review and publication of articles are described on the journal's website, https://www.tci-thaijo.org/index.php/jtir. The Editorial Board and Committees of the IRR sincerely thank all peer reviewers who have sacrificed their time to help us produce a better journal, and also wish to thank all teachers, researchers and other academicians for submitting their valuable research to this journal. Finally, we thank readers of our journal who help to spread the knowledge and benefits gained to others. With your feedback and suggestions, we will strive to improve the quality and relevance of the IRR.

Yongyudh Vajaradul
Editor
Interdisciplinary Research Review

The process for enhancing the voluntary identities of vocational students under the Vocational Education Commission

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Abstract

The purposes of this research were to 1) synthesize the related documents and confirm the elements of the voluntary spirit of the vocational students, 2) survey the current states, problems, and guidelines to enhance the voluntary identities of the vocational students, and 3) develop and verify the process and a manual for enhancing the voluntary identities of the vocational students under the Office of Vocational Education Commission. The instruments used were a synthesis table, a confirmation form, a questionnaire, an in-depth interview form, and a verification form. The statistics used for analysis were frequency, percentage, mean, standard deviation, and content analysis. The results of the research were as follows: 1. The voluntary spirit of the vocational students after confirmation comprised of 7 elements as follows: 1.1) decision-making, 1.2) planning, 1.3) operating or doing, 1.4) evaluating, 1.5) reporting, 1.6) acting, and 1.7) showing and sharing. 2. The current states and the current problems of the voluntary spirit of the vocational students were overall at a high level and the guidelines for enhancing the voluntary identities of the vocational students comprised of attitudes, additional support teachers' attitude, vocational service activities, desirable characteristics, awareness of social service activities, participation in vocational volunteer activities, and supervision and follow-up. 3. The process for enhancing the voluntary identities of the vocational students comprised of 8 elements and the manual for implementing the process for enhancing the voluntary identities of the vocational students comprised 7 elements. The correctness and appropriateness of the process were overall at a high level. The correctness and appropriateness of the manual for implementing the process were overall at the highest level.

Keywords: Voluntary identities, the vocational students, Vocational Education Commission

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1. Introduction

According to SEAMEO VOCTECH Regional Centre Brunei Darusalam [7], the Thai Office of the Vocational Education Commission (OVEC) stipulated the goals to instill in students the principles of being good citizens and to increase their stability against non-traditional threats; prepare the Technical and Vocational Education and Training (TVET) students with the competences demanded by the industries, and enhance qualifications, research, and innovation; encourage students to aware of environments as a component of TVET education, expand the network and system for vocational management, and create a system for quality assurance.

As the analysis of findings, Ferm [4] revealed identity creation was seen as a social learning process that involved the participation of communities of practice. To provide a fuller understanding of concerns relating to status, power, and keeping the relation to the building of vocational identity, the ideas of familiarity, gender, and society were also used as analytical instruments.

In accordance with the previous identity development theory, Erikson [3] defined identity as essential to self-understanding and participation in social systems, comprising of purposes, values, and beliefs to which a person was engaged, and believed that the development of identity was the main psychosocial task of adolescence. Identity development was a process that affected both individuals and society.

Similarly, Tipyan, C. [8] defined volunteerism as helping others and society voluntarily, voluntarily, thinking of the common good over the personal benefit. Without expecting anything in return there was a volunteer work process that comprised of planning, doing, monitoring and evaluation. Characteristics of volunteers who had a self-sacrificing heart, generous, and did not think that it was a task, but out of satisfaction and volunteer.

One definition of a volunteer is the idea of giving time to charity, educational, or other beneficial endeavors and efforts to others in society as a social responsibility. Volunteering is a fantastic way to make new friends, develop your community, and get exposed to others who share your interests. You may improve your social skills while volunteering as well.

However, the author as a vocational administrator in charge as a deputy administrator under OVEC realized the significance of enhancing the voluntary identities of the vocational students to create a volunteer mind for the public benefit and greater social responsibility. It is also the development and refinement for giving people the experience of learning to change themselves to enhance the value of life positively. The process for enhancing the voluntary identities of the vocational students will encourage their development of the vocational students.

2. Research Questions

2.1 What are the elements of the voluntary spirit of the vocational students under OVEC?

2.2 What are the current states, problems, and guidelines to drive for enhancing the voluntary identities of vocational students under the OVEC?

2.3 What are the development and verification results of the process and a manual for implementing the process for enhancing the voluntary identities of the vocational students under the OVEC?

3. Research Objectives

3.1 To synthesize the elements of the voluntary spirit of the vocational students under OVEC.

3.2 To survey the current states, problems, and guidelines to drive for enhancing the voluntary identities of the vocational students under OVEC.

3.3 To develop and verify the process and a manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC.

4. Materials and Methods

The research process was divided into three phases as follows:

Phase 1: To synthesize and confirm the elements of the voluntary spirit for the vocational students under OVEC. There were two steps as follows:

Step 1.1: The researchers synthesized elements of the voluntary spirit of the vocational students under OVEC from the relevant documentary research. A synthesized record form has been used as an instrument. The statistics used were classified by issues.

Step 1.2: The derived elements confirmed the voluntary spirit of the vocational students under OVEC, an instrument used was a focus group discussion of nine experts. The statistics used for analysis were frequency.

Phase 2: To survey the current states, problems, and guidelines to drive for enhancing the voluntary identities of the vocational students under OVEC. There were two steps as follows:

Step 2.1: The survey of the current states and problems of the voluntary spirit of the vocational students

under OVEC, key informants were 1,186 administrators, teachers, staff, educational personnel, and students. An instrument used was a five-rating scale questionnaire. The statistics used for analysis were mean and standard deviation.

Step 2.2: The survey of the driving guidelines for enhancing the voluntary identities of the vocational students under OVEC, key informants comprised of nine experts involved with policy and voluntary spirit. An instrument used was an in-depth interview form. The statistics used for analysis were frequency.

Phase 3: To develop and verify the process and a manual for enhancing the voluntary identities of the vocational students under OVEC. There were two steps as follows:

Step 3.1: The development of the process and a manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC, an instrument used was a workshop of nineteen experts. Data were analyzed by using content analysis and classified into issues.

Step 3.2: The verification of the correctness and appropriateness of the process and a manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC, key informants comprised of nineteen experts. (The same experts as Step 3.1). An instrument used was a verification form. The statistics used for analysis were frequency and percentage.

5. Results and Discussion

The research procedures were divided into four phases as follows:

Phase 1: Results of synthesizing the elements of the voluntary spirit of the vocational students under the OVEC. This phase was divided into two steps as follows:

Step 1.1: Results of synthesizing elements of the voluntary spirit of the vocational students under OVEC from the relevant documentary research comprising of 7 elements as follows: 1) decision-making, 2) planning, 3. operating or doing, 1.4) evaluating, 1.5) reporting, 1.6) acting, and 1.7) showing and sharing

Step 1.2: Results of confirming the derived elements of the voluntary spirit of the vocational students under OVEC, nine experts had a consensus of 100.00 percent. (as cited in Yaaoop, Poungkaew, Puthaprasert Tammachai) [9]

Phase 2: Results of surveying current states, problems, and guidelines to drive for enhancing the voluntary identities of the vocational students under OVEC were divided as follows:

Step 2.1: Results of surveying the current states and problems of the voluntary spirit of the vocational students under OVEC were as follows:

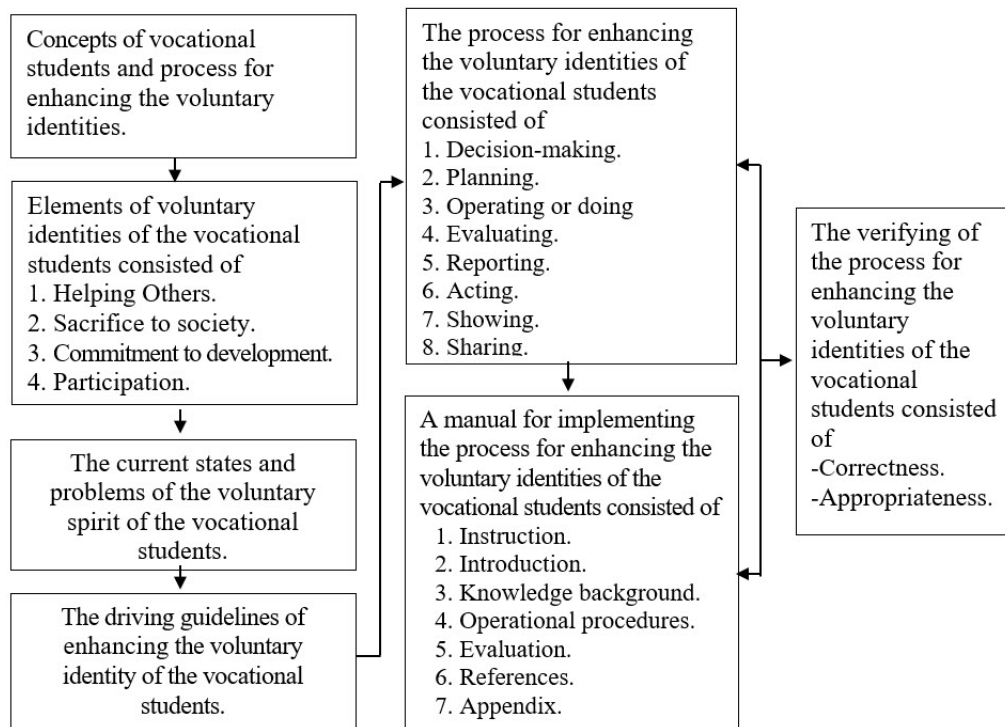The research framework was as shown in Figure 1.

Concepts of vocational students and process for enhancing the voluntary identities.	The process for enhancing the voluntary identities of the vocational students consisted of 1. Decision-making. 2. Planning. 3. Operating or doing 4. Evaluating. 5. Reporting. 6. Acting. 7. Showing. 8. Sharing.	The verifying of the process for enhancing the voluntary identities of the vocational students consisted of -Correctness. -Appropriateness.
Elements of voluntary identities of the vocational students consisted of 1. Helping Others. 2. Sacrifice to society. 3. Commitment to development. 4. Participation.	A manual for implementing the process for enhancing the voluntary identities of the vocational students consisted of 1. Instruction. 2. Introduction. 3. Knowledge background. 4. Operational procedures. 5. Evaluation. 6. References. 7. Appendix.	
The current states and problems of the voluntary spirit of the vocational students.		
The driving guidelines of enhancing the voluntary identity of the vocational students.		

Figure 1: Research framework.

The current states of the voluntary spirit of the vocational students were overall at a high level (x = 4.07, S.D. = 0.66) and the current problems of the voluntary spirit of the vocational students were overall at a high level (x = 3.71, S.D. = 0.88). It was like Ferm, Persson-Thunqvist, Svensson, Gustavsson [5], the vocational students' identity, findings revealed that the development of the vocational students' identities was not only a particular linear process. On the opposite, three learning paths occurred that correspond to three relevant various student groups. In summary, the recommendations of this article were to build a better understanding of the types of vocational identities, it was important to study and comprehend the ideas of social categorization and learning paths in connection to the environment of upper secondary schools.

Step 2.2: Results of the survey of the driving guidelines for enhancing the voluntary identities of the vocational students under OVEC of nine experts through the meeting of relevant teachers, staff, and students comprising of 1) build good attitudes towards vocational volunteer activities by organizing extracurricular activities to promote students' voluntary spirit, 2) administrators provide the additional support, 3) the adjustment of teachers' attitude in organizing volunteer activities, 4) build vocational service activities by integrating teaching and learning management in all courses, 5) define the desirable characteristics of the learners in the field of voluntary identities as a part of the attitude scores, 6) create awareness of social service activities and vocational volunteers through var-

ious media channels, 7) create motivation to participate vocational volunteer activities by recording in the official honored report, 8) there was supervision and follow-up from the affiliate agencies at every stage regularly in accordance with Chairattanawan [2] who presented the guidelines for driving and developing Thai vocational education that there should be a guideline for driving and developing Thai vocational education through the collaboration among the government agencies, educational institutions that provided vocational education, teachers, students, and the private sectors with the establishment and workplace.

Phase 3: Results of developing and verifying the process and a manual for enhancing the voluntary identities of the vocational students under OVEC as follows:

Step 3.1: Results of the development of the process for enhancing the voluntary identities of the vocational students under OVEC, the experts separated the elements of the show and share to be 2 elements as follows: 1) decision-making, 2) planning, 3) operating or doing, 1.4) evaluating, 1.5) reporting, 1.6) acting, and 1.7) showing and sharing. In terms of the manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC comprised 7 elements as follows: 1) instruction, 2) introduction to the principles of voluntary identities, 3) the basic knowledge background, 4) operational procedures, 5) evaluation of the process of the promotion of voluntary identities, 6) references, and 7) appendix.

Step 3.2: Results of the verification of the correct-

ness and appropriateness of the process and a manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC were as follows: The correctness of the process for enhancing the voluntary identities of the vocational students under OVEC was overall at the highest level (96.48 percent) and the appropriateness of the process for enhancing the voluntary identities of the vocational students under OVEC was overall at the highest level (97.45 percent). The correctness of the manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC was overall at the highest level (96.48 percent) and the appropriateness of the manual for implementing the process for enhancing the voluntary identities of the vocational students under OVEC was overall at the highest level (97.45 percent). The process for enhancing the voluntary identities of the vocational students under OVEC after verifying was as follows:

1. Decision-making (D)

1.1 There is an activity for investigating the community needs and coordinating with the community to conduct the vocational volunteer project by the responsible teachers.

1.2 The analysis of obtained data for investigating the community needs and coordinating with the community are used to prioritize the problems and urgent necessities from descending.

1.3 Publicize information on the vocational volunteer project to students to apply for the project by identifying how to conduct activities according to students' aptitudes, such as students of the automotive mechanic course to fix motorcycles, etc.

2. Planning (P)

2.1 Determine the roles and duties of everyone involved in the vocational volunteer project by taking into account the students' aptitude and appointed to work as duties.

2.2 Organize a brainstorming meeting for everyone involved with the vocational volunteer project, and define plans, activities, dates, and hours of working.

2.3 Determine the procedures for operational activities, the preparation before conducting the activities, during performing the activities, and after completing the activities.

3. Operating or Do (O) Before conducting the activities.

3.1 Dress modestly and appropriately for the activities.

3.2 Plan to go to the establishment and arrive there at the appointment time.

3.3 Choose the activities that be suitable for students and their aptitude.

3.4 There is an orientation before conducting the activities with the vocational volunteer project.

3.5 Have a meeting to prepare the activities, and assignments as well as share operational duties.

3.6 Set up 'Fix it Center' for communities, voca-

tional service points, and volunteerism. -Repair and maintenance activities for electrical cooperation, engines, agricultural machinery, etc. -Prepare the services according to the context of the educational institutions and various disaster situations. -Foster to work by career starter activities. -Share knowledge through creative activities.

3.7 Doing public relations with the community concerning the vocational volunteer project.

3.8 Prepare the place and equipment.

During performing activities.

3.9 Organize to work at various points according to the assigned duties.

3.10 Cooperate in working as a unity, be kind to one another, and take into account the safety in working.

3.11 If working and encountering problems and obstacles, notify the responsible teachers.

3.12 Do not force yourself to work beyond your capacity. If you cannot do the work, notify the responsible teachers.

3.13 Conduct activities according to the action plan.

3.14 Noting volunteer activities in a record form of good people of vocational institutions. After completing activities.

3.15 Keep relevant materials, tools, and equipment in order.

3.16 Maintain and keep clean the workplace and mechanical equipment.

3.17 Review what you have done, your impression, and your happiness.

4. Evaluating

4.1 Determine assessment criteria by project stakeholders.

4.2 Prepare the volunteer behavioral assessment form for the vocational students.

4.3 Observation form of students' behavior while doing activities.

4.4 Volunteer activity in the logbook for good people of vocational institutions.

5. Reporting

5.1 Apply the recommendations from the project satisfaction assessment form.

5.2 Prepare the post-service satisfaction assessment form.

5.3 There is an interview with service users on the vocational volunteer project and bring proposals for improvement.

5.4 Summary of opinions from stakeholders for the lessons learned from the vocational volunteer project.

6. Acting

6.1 Bring the summary of opinion issues, and suggestions to propose in the meeting of the Board of Directors to find a way for further improvement.

6.2 There is a follow-up to solve problems, including sharing feedback after receiving services.

6.3 There is service after the completion of the project according to the request from the commu-

nity by providing a mobile car for service or tracked through the information system (online application)

7. Showing

7.1 Propose a summary of project performance reports.

7.2 Report the project performance notifying the project committee.

7.3 Present the project results to be easy to understand in terms of images, infographics, or video clips.

8. Sharing

8.1 Presenting project results through various media channels such as Facebook, websites, etc. for the community and society to be informed the of operational results.

8.2 Share the academic papers and present the project implementation through academic conferences.

8.3 Report the project implementation through meetings with the heads of the local government agencies, etc.

It was quite different from the findings of Gill [6], these exemplars attempted five types of social influence, frequently unintentionally: encouraging, invoking, edifying, enacting, and exemplifying. Coworkers' micro-processes of working with ethical identity, through which they asserted voluntary identities. Similarly, Alinea [1] stated that the identification of personality qualities that may be associated with a particular professional setting is a need of the Holland theory. He assumed that people have different personalities and tend to gravitate toward occupations that fit their lifestyles. Therefore, it was essential for TVET schools to provide internship and career programs that were in line with the personality traits of the individual.

6. Conclusion

Not only the development of the quality of Thai vocational education focuses on vocational manpower but also promoting the voluntary identities of the vocational students has to drive enhancing the voluntary identities of the vocational students in active and obvious results. The important point that the government by OVEC must take action on is adjusting the values and attitudes of people in Thai society in order to turn to more vocational students' characteristics in terms of good manners with excellent skills and knowledge for working and to be the mechanism of the developing country in the future.

7. Recommendations

7.1 The process for enhancing the voluntary identities of vocational students can be applied to educational management with a quality process.

7.2 Educational institutions can adopt guidelines to drive the promotion of the voluntary identities of the

vocational students, enhancing morality and ethics for students in active and obvious results.

8. Recommendation for Further Research

8.1 There should be a studying the development of a strategy for enhancing the voluntary identities of vocational students all over the region.

8.2 There should be a studying of an integrated model of vocational education management for enhancing voluntary identities of vocational students all over Thailand.

9. Acknowledgment

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Modified Mangosteen Pericarp Powder as a Biosorbent for Removal of Methyl Violet 2B from Aqueous Solutions

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Abstract

This paper proposes the removal of methyl violet 2B from aqueous medium using modified mangosteen pericarp (MMPB) as a biosorbent. The characteristic of surface biosorbent was examined by SEM and FTIR. It was found that surface morphology was porous structure and demonstrated various functional groups which were advantageous for the adsorption of cationic dye. The effect of pH solution, amount of biosorbent, and contact time on the dye removal efficiency were tested by batch experiments. The results indicated that the percentage of dye removal increased with an increase in pH solution, amount of biosorbent, and contact time. The experimental data showed that the removal efficiency of the dye was higher than 95% from 10mg/L of initial MV2B concentration with the pH solution range from 6 to 10 using amounts of biosorbent as 0.05 g in 25 mL of dye solution and contact time of 90 min. The adsorption isotherm was well fitted to the Langmuir model (R^2 = 0.982) with a maximum adsorption capacity (q_m) of 49.75mg/g, suggesting the monolayer onto a homogenous surface. This study implied that modified mangosteen pericarp can be employed in the act of an inexpensive biosorbent for methyl violet 2B removal from aqueous solutions.

Keywords: mangosteen pericarp, biosorption, methyl violet, aqueous solutions

1. Introduction

Synthetic dyes are essential raw materials in many industries such as textiles, ink, plastics, food and beverage, cosmetics, leather, etc. A large demand for synthetic dyes was reported, as seen from the global market data in the year 2020 showing the synthetic dyes market gained a cost of nearly 18,037.1 million USD and the production volume amounted to 35,294.7 tons. The demand is expected to grow owing to the increasing usage of synthetic dyes for various industries [1]. However, the environmental problem regarding dyestuff has been mentioned [2-4]. since synthetic dyes compose of complex organic chemical compounds. Not only are they toxic, but also have difficult biodegradable properties [4,5]. If they pollute the environment, they may persist for a long time and make adverse impacts on the environment, especially aquatic ecology. When untreated wastewater containing synthetic dye is released into water body, it can produce undesirable aesthetics [5,6] as well as impair water quality to unsafe water for daily activity purposes. Furthermore, the dye may prevent sunlight penetration, causing diminished photosynthetic

activity and then begetting low dissolved oxygen concentration. These may affect aquatic lives in receiving waters [5-7]. The dye contaminants can be bioaccumulated and biomagnified in food webs, linking to harmful aquatic organisms and human health impacts [2,8,9]. Previous literature reviews that synthetic dyes pose as a source of allergic, toxic, carcinogenic, and mutagenic agents [6-11], depending on their chemical compositions. They thus are blamed for the hazard which threatens human body such as skin and eye irritation, respiratory system, kidney dysfunction, reproductive system, enzymatic system, brain, and central nervous system [2,8-10].

Methyl violet 2B, or Basic Violet 1, is one of the dangerous cationic dyes. It composes of a triphenylmethane group and, pentamethyl pararosanilins [11]. It is known that triphenylmethane can form to carcinogenic agent. If it is degraded under anaerobic conditions, it produces aromatic amine, causing of mutation and cancer [8]. Moreover, it can be responsible for both acute and chronic harmful effects on aquatic organisms [10]. Thus, the elimination of this dye from wastewater is needed before discharging into receiving waters. Nowadays, biosorption is an interesting technique to uptake dye from aqueous phase. Previ-

ous studies suggest that it is an effective, simple, and budgetary method [12,13]. The term of biosorption is classified in a subcategory of adsorption. It can be described as any system in which a solid surface of a biological material that binds with an adsorbate molecule resulting in the lower remaining adsorbate concentration in the aqueous solution [12,14]. The adsorbent employed in the biosorption process is derived from biological materials [12] and is also called a biosorbent. Various biomass materials are adopted as a precursor to prepare adsorbents such as palm kernel fiber [11], water hyacinth [13], almond shells [15,16], olive stones [17], and tarap fruits [18]. Mangosteen (*Garcinia mangostana* L.) is a popular tropical fruit that has an attractive taste, as well as containing a variety of essential nutrients, fiber, and antioxidants [19,20]. It can be consumed as a fresh fruit, in addition, it can be processed for many products in the food industry. The non-edible pericarp is found around 60 % of its total fruit weight [21], producing abundance of biowaste after consumption. These pericarps should be utilized for beneficial purposes, in spite of being discarded as solid wastes. Several articles elucidate that mangosteen pericarp presents various functional groups, e.g., phenolic compounds [19,20], hydroxyl, and carboxyl groups [19,22]. These functional groups have the ability to bind with cationic dye molecules [23]. Hence, it is a beneficial material to produce a biosorbent.

In this work, mangosteen pericarp was provided as a precursor to simply prepare the biosorbent which aimed for the removal of methyl violet (MV2B) from the aqueous sample. The pericarp after chemical modification for expelling its water-soluble dyes was applied as a biosorbent. Studies on surface morphology and functional groups of the biosorbent were carried out. Batch experiments were performed to study the efficiency of MV2B removal and the effect of relevant parameters like the amount of biosorbent, contact time, and initial pH's solution. The result obtained from this study was useful to evaluate the ability of modified mangosteen pericarp biosorbent for cationic dye.

2. Materials and Methods

2.1 Adsorbate

Methyl violet 2 B (CI classification number: 42535, $C_{24}H_{27}N_3HCl$, Mr 393.96 g/mol) used in this work was purchased from LOBA Chemie Pvt.Ltd., India. A stock solution of 100 mg/L was prepared by dissolving methyl violet 0.1 g in 1000 mL of distilled water. The serial dye concentrations were prepared by further dilution of the stock solution with distilled water. The initial dye concentration and after adsorption were quantitatively analyzed with a visible spectrophotometer (Hach model DR2700, USA) at a maximum wavelength of 548 nm.

2.2 Biosorbent material

In this work, the biosorbent was derived from the waste of mangosteen pericarp (*Garcinia mangostana* L.) which was obtained from a local market in the eastern region of Thailand. The waste pericarps were cleaned with tap water and distilled water to draw out dust and impurities. Next, they were sliced into small pieces and dehydrated in sunlight until an unchanging weight was achieved. The dried pericarps were ground into powdery particles and stored in a container with a tight-fitting lid for serving as the raw material for adsorbent preparation. Dried biomass powder was reacted with analytical grade of concentrated sulfuric acid (98%) at the ratio of 1:1 (w/v), then left at room temperature for 24 h to complete a carbonized reaction. Afterward, the black carbonaceous residual was leached with distilled water to eliminate the acid and neutralized by sodium hydroxide solution. The suspension was filtered to collect the residue which was reconditioned by stirring in 1 M sulfuric acid solution for 30 min. The wet black cake was separated using Whatman no.1 filter paper and rinsed thoroughly with hot distilled water till the filtrate pH became neutral pH. It was then dehydrated in a hot air oven at 103 °C for 2 h. Finally, the modified mangosteen pericarp powder biosorbent (MMPB) was sieved to less than 75 μm particle sizes and put in an air-seal plastic box for use throughout further experiments. The preparation process is illustrated in Figure 1. The MMPB was obtained by approximately 68 % yield which started from the dried brown pericarp powder. Surface morphology was obtained by scanning electron microscope (LEO1450 VP) and surface functional groups were examined by Fourier transform infrared spectrometer (Perkins Elmer, model Spectrum One). The pH at the point of zero charge (pH$_{pzc}$) of MMPB was tested with the powder addition method [16]. The solution of 0.01M NaCl was adjusted in the desired pH range from 2 to 12 by using HCl (0.1N) and NaOH (0.1N) solutions. The 0.2 g of MMPB was placed into 50 mL of each solution. The suspensions were shaken for 24 h, then the final pH solutions were determined by using pH-meter. A plot of the initial pH versus the final pH was illustrated and the point where the final pH = the initial pH suggesting as the point of zero charge.

2.3 Batch adsorption studies

Methyl violet adsorption experiments were performed to study the effect of various factors on the dye adsorption namely biosorbent dosage (0.025 − 2 g), contact time (0-240 min), and initial pH (2-10). The methyl violet 2B solution of 10 mg/L was used. The initial dye solution of 25 ml was filled in 125 mL Erlenmeyer flask with the desired amount of biosorbent. The batch experimental sets were agitated on the orbital shaker with the speed of 120 rpm at room tem-
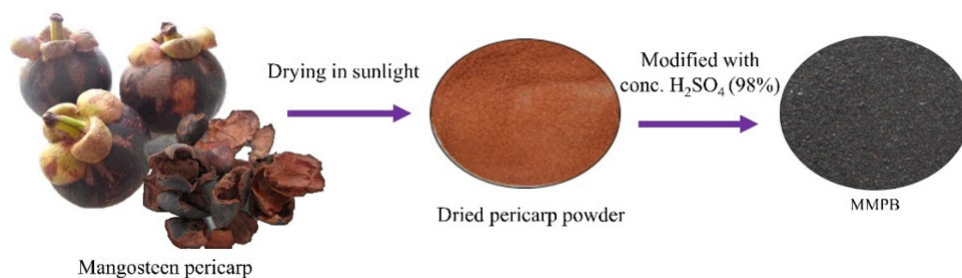
Figure 1: Preparation of modified mangosteen pericarp biosorbent (MMPB)

perature. The percentage of dye removal (R%) was calculated according to the following equations:

$$R = \frac{(C_i - C_e)}{C_i} \times 100\% \qquad (1)$$

where C_i and C_e (mg/L) are the initial and equilibrium concentrations of methyl violet in the solution.

3. Results and Discussion

3.1 Characterization of MMPB

The morphology of MMPB (SEM image in Figure 2) confirmed that the MMPB was an irregularly shaped particle. Its surface was obviously rough structure with various pores, which is advantageous application as active site for dye molecule adsorption [23]. FTIR analysis was used to characterize functional groups of MMPB. The FTIR spectrum is shown in Figure 3. The broad band around 3383 cm^{-1} was assigned to -OH stretching vibration indicating the existence of hydrogen-bonded OH groups [16-17,24]. The absorption peak located at 2971 and 2929 were attributed to the -CH stretching vibration [16,24]. The peak at around 1701 cm^{-1} was caused by C=O stretching of the carbonyl functional group from carboxylic acid [23]. The sharp peak occurring near 1594 cm^{-1} corresponded to C=C stretching vibration of aromatic groups [17]. The results informed the presence of various functional groups in MMPB which participated in the adsorption of cationic dye pollutants such as hydroxyl and carbonyl groups [16,23,25]. The pH at the point of zero charge (pH$_{pzc}$) is used to explain variable charge surfaces of biosorbent. The pH$_{pzc}$ of MMPB was tested to be around 2.1. In the case that the pH of aqueous solution is lower than the pH$_{pzc}$ value, the adsorbent has a positive charge on the surface. While the pH of solution is higher than the pH$_{pzc}$ value, the surface of the adsorbent has a negative charge [26].

3.2 Effect of biosorbent dosage

The effect of MMPB amount in the range of 0.025 to 0.5 g on methyl violet adsorption was depicted in Figure 4. The removal percentage of dye raised from 60.46 % to 96.85 % with those increasing MMPB
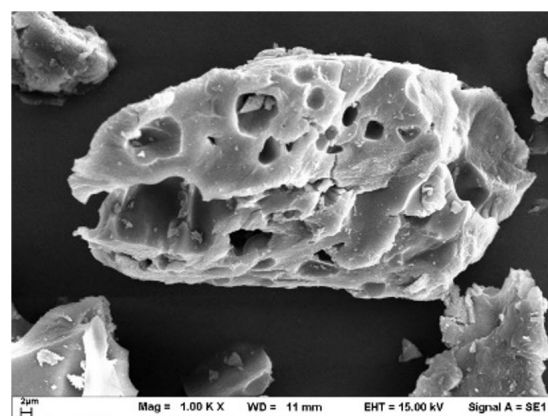
Figure 2: Scanning electron microscopy of MMPB x 1000 magnitude
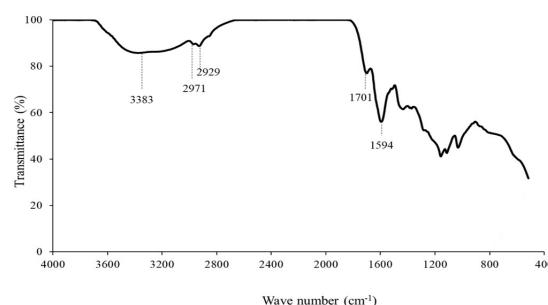
Figure 3: FTIR spectrum of MMPB before adsorption of MV 2B dye

amount. It can be described by increasing in the surface area which leads to more active sites for the dye molecule adsorption [4,13]. In the event that the amount of MMPB was varied from 1 to 2 g, the removal percentage dropped slightly from 95.70% to 94.75%. This may be accredited to the agglomeration of biosorbent particles which obstruct the interaction between dye molecules and active sites on the biosorbent surface [13,16]. As a result, the amount of MMPB at 0.05 g exhibited high adsorption performance attaining 95.42% of dye removal. Consideration from an economic perspective this amount was appropriated for further batch experiments.

Figure 4: Effect of adsorbent amount on the adsorption of MV 2B dye using MMPB

3.3 Effect of contact time

The effect of contact time in the methyl violet 2B adsorption was conducted by varying contact time from 15 to 240 min. The result was illustrated in Figure 5. It indicated that the percentage of dye removal increased with increasing time.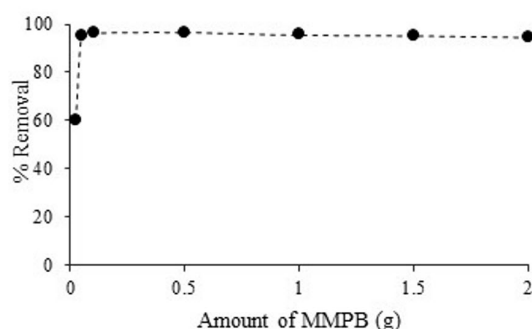 Rapid adsorption process was noticed within the first 60 minutes showing high removal efficiency of around 97 % since the availability of active sites for dye adsorption [13,15,18]. After that the dye removal percentage was nearly constant with the approximate value of 98 %. As shown in the curve suggesting the equilibrium time was achieved at around 90 minutes.

3.4 Effect of initial pH

The pH is regarded as a significant factor to the adsorption behavior. It has influence over the surface charge of adsorbent and the property of dye [9,18]. The effect of pH on the adsorption of MV 2B dye onto the MMPB surface was studied within the initial pH range from 1.8 to 10. As can be seen from Figure 6, the pH increased from 1.8 to 4.1, percentage of dye elimination increased sharply from 88.22 % to 94.54%. This phenomenon can be explained that, in the case of acidic conditions, the excess H^+ ions compete with dye cations for adsorption on the active sites causing unfavorable dye adsorption [4]. Moreover, when the initial pH was less than pH_{pzc} (at pH 2.1), bringing the surface of the MMPB had more positive charges. This is suppressed condition for the binding between MV2B dye molecule and the positively charged adsorbent surface, resulting in lowering adsorption efficiency. When the initial pH was higher than pH_{pzc}, the surface had more negatively charged sites, favoring the adsorption of biosorbent to the MV2B cations [15]. However, the efficiency of dye removal was almost constant from pH 6 to 10 with the percentage of dye removal at approximate 96 %. It can assume that at these pH values, they effect insignificantly to the adsorption process without a loss of color of positively charged MV 2B molecules. A neutral pH is an optimal condition to apply the further batch adsorption studies because this pH value is

higher than pH_{pzc} of the MMPB affected to the favorable adsorption process by electrostatic interaction. In the pH range between 11.0 and 13.0, a chemical reaction between the MV2B and OH- ions occurs to produce a colorless base carbinol form resulted the shift to the UV region and then it is not possible to investigate the adsorption process using the maximum wavelength of 548 nm.
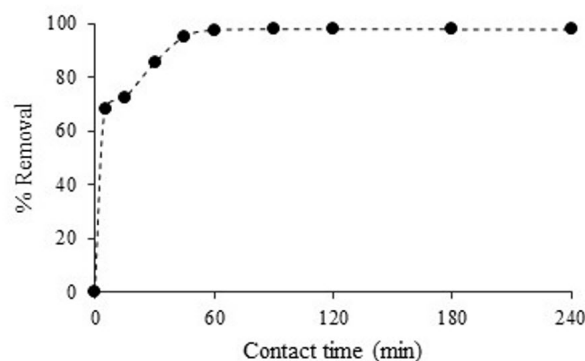
Figure 5: Effect of contact time on the adsorption of MV 2B dye using MMPB
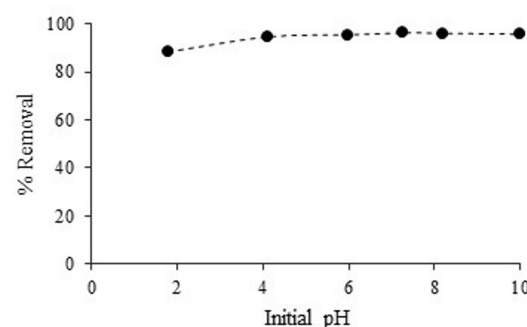
Figure 6: Effect of pH on the adsorption of MV 2B dye using MMPB

3.5 Adsorption isotherm

Adsorption isotherm are the main issue for describing adsorbate-adsorbent interactions at equilibrium. The most well-known Langmuir and Freundlich adsorption isotherm models were applied to examine the validity of the experimental data for MV2B adsorption onto biosorbent. The Langmuir theory is based on the process type of monolayer adsorption. Moreover, it assumes a structurally homogeneous surface, in which all adsorption sites are identical and energetically equivalent [16]. The Langmuir model is presented by the following linear transform:

$$\frac{C_e}{q_e} = \frac{1}{K_L q_m} + \frac{C_e}{q_m} \qquad (2)$$

where C_e(mg/L) is the equilibrium MV concentration in the solution; q_e (mg/g) is the equilibrium

amount of MV adsorbed per unit mass of the solid biosorbent; q_m (mg/g) is the maximum adsorption capacity at saturation of the biosorbent surface by a monolayer and K_L (L/mg)is the Langmuir constant related to the free energy of biosorption.

The Freundlich model is defined as the process type of multilayer adsorption, and it describes a structurally heterogeneous surface [18]. The Freundlich model is expressed in linear form as below:

$$\log q_e = \log K_F + \frac{1}{n} \log C_e \qquad (3)$$

where K_F is the Freundlich constant related to the adsorption capacity (L/mg), and $\frac{1}{n}$ is the parameter related to heterogeneity factor. The heterogeneity factor points out that adsorbate adequately adsorbs on the adsorbent ($\frac{1}{n} < 1$) or the adsorption is unfavorable ($\frac{1}{n} > 1$) [17].

Langmuir and Freundlich models in linear plots of the MV2B adsorption system on biosorbent are displayed in Figure 7. The Langmuir and Freundlich parameters were computed by the slope and the y-intercept of each corresponding linear plot and their parameters are summarized in Table 1. The results demonstrated that the Langmuir model with the highest R^2 values (0.982) is a well-behaved fit linearly for describing the MV adsorption onto biosorbent than the Freundlich model. Another useful characteristic of the Langmuir isotherm model can be determined in terms of the dimensionless factor R_L as called the Hall equilibrium separation factor, which is obtained by the following equation:

$$R_L = \frac{1}{1 + K_L C_0} \qquad (4)$$

where C_i (mg/L) is the initial concentration of MV 2B in the liquid phase and K_L (L/mg) is the Langmuir constant related to the energy adsorption. The R_L factor indicates the shape of isotherm and predicts the type of adsorption process to be unfavorable ($R_L > 1$), linear ($R_L = 1$), favorable which occurs spontaneously ($0 < R_L < 1$), or irreversible ($R_L = 0$) [27]. In this work, the calculated R_L value was found to be in a range of 0.03 to 0.75, which is well corresponding to $0 < R_L < 1$. This condition indicates the adsorption of MV 2B on biosorbent occurs spontaneously.

Table 1. Langmuir and Freundlich parameters calculated for MV 2B adsorption onto MMPB

Model	MMPB
Langmuir	
q_m (mg/g)	49.75
K_L (L/mg)	0.34
R_L	0.03 - 0.75
R^2	0.982
Freundlich	
K_F (L/mg)	9.08
$1/n$	0.71
R^2	0.957

3.6 Adsorption mechanism of MV2B with the MMPB

Based on the result of FTIR analysis, there were hydroxyl (-OH) and carbonyl (-C=O) functional groups on MMPB outer surface, which have potentiality for binding to MV 2B dye. The nitrogen atoms in dimethylaniline groups of dye interact with hydroxyl groups of MMPB via hydrogen bonding [15], play a central role in adsorption mechanism. Moreover, the ion-dipole interaction between the positive charges of MV 2B dye and the partially negative charges on oxygen atoms in carbonyl could be involved during on adsorption mechanism. The schematic of dye adsorption mechanism is proposed in Figure 8.

The removal efficiency of MV 2B dye obtained in this present work was similar to those of previous studies of hair dye and toxic metal ions [28,29]. The MMPB will be a promising biosorbent produced from the biowaste for the removal of chemical species such as cationic dyes, hair dye, and metal ions in an aqueous solution.

4. Conclusions

Modified mangosteen pericarp (MMPB) was used as a biosorbent for methyl violet 2B elimination from an aqueous solution. The study found that its surface exhibited plenty of porous structure which is appreciable for adsorbing dye molecules. In addition, various functional groups were detected on the surface of MMPB, which enhanced interaction with cationic dye molecules. The value of pH_{pzc} of MMPB was at 2.1, if the initial pH was above this value, it could be readily used without any pH adjustment. Langmuir isotherm better described the adsorption of methyl violet 2B on the MMPB, showing the maximum monolayer adsorption capacity of 49.75 mg/g. The results obtained from the batch experiments showed good effectiveness on MV 2B removal. A removal efficiency of MV2B was higher than 95% after 90 min of contact time at the amount of MMPB of 0.05 g. Based on the resulting data, it was concluded that the MMPB could satisfy the application as an inexpensive biosorbent for the removal of methyl violet dye.

(a)   (b)
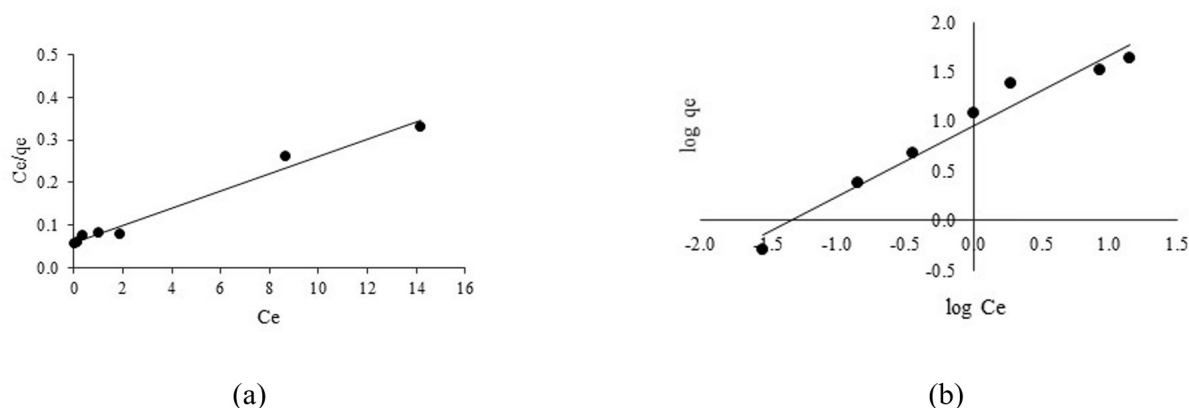
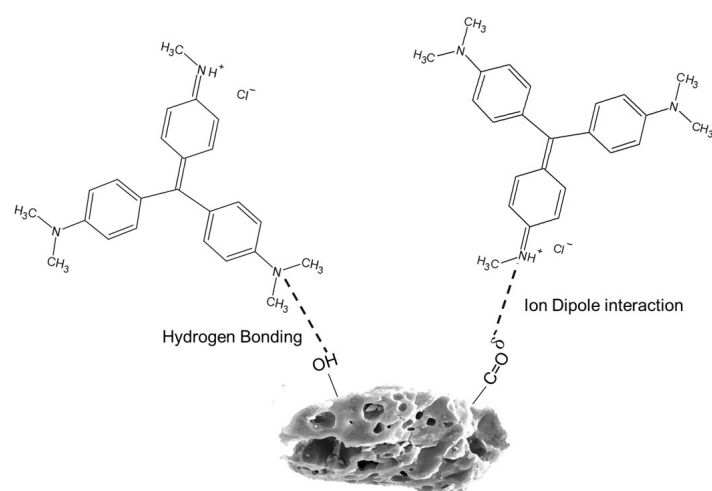**Figure 7**: Adsorption isotherm of MV 2B dye onto MMPB (a) Langmuir (b) Freundlich

Figure 8: Schematic interaction between MV 2B dye and MMPB functional groups

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Post-Pandemic Aspirations of Filipino Elementary School Teachers

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Abstract

The study aims to capture the post-pandemic aspirations of Filipino elementary school teachers. Since 2020 the participants have experienced handling modular, online, and blended distance teaching for two years. The participants responded to a validated set of open-ended questions to provide answers to established research questions. When asked to describe their pandemic teaching experiences, the participants generally described it to be challenging owing to various concerns such as modalities and strategies. With the continuous technological advancements and drastic changes brought about by COVID-19 pandemic, all teacher respondents expressed their desire to be at pace with the challenges and changes in the educational landscapes. For their aspirations, the following themes emerged: technological skills, professional growth and development, and maintaining a positive outlook.

1. Introduction

As Philippine schools gradually open doors to learners for the academic year, various modalities are being explored to address the problems of the learning set up. With teaching functions mostly emphasized face-to-face setting [1], it is undeniable that teachers face difficulties when it comes to strategies, assessment, and preparation. Filipino teachers have been at the frontline of the country's education system since the onset of the pandemic in early-2020, and even after two years of combatting numerous concerns, many issues and roadblocks are still faced by them. While personal and professional matters need to be attended, health and wellness are also pressing controversies that require attention and action.

Creating a post-pandemic scenario is anchored on previous and contemporary experiences. The success of past undertakings and current experience provide directions in identifying clear path for the future, especially in a post-pandemic setting. The environment also plays crucial role on education efficiency and outcomes [1].

As Filipino teachers pushed for uninterrupted learning, the decision to open the school year in 2020 was indeed a big leap among educators. Since face-to-face classes were not permitted due to restrictions, students learned via online or modular systems. Technology was a great hurdle for students and teachers alike, especially in the Philippines where internet services are slow [2]. This breeds many other problems and challenges, thus the call for a more equitable approach. These experiences could probably summarize how Filipino teachers fared during the height of the pandemic. It is indeed interesting to note that despite the fact that teaching is being labelled as a career path that takes toll on well-being [3], individuals who are in the profession still continue to advance their own growth and development in any way possible.

What realizations have you had during your modular/online experience as a teacher? What would you like to achieve in the next 10 years? What support will you need to achieve these? What do you think will hinder/challenge you to achieve these? These inquiries provide directions to the present study. The proponents of the study argue that teachers' aspirations are linked to previous undertakings, and these create an impact as to how the future will be aspired, including soliciting possible support and potential challenges and barriers.

2. METHODS

The study used interpretative phenomenological research design for teachers to respond to a validated set of open-ended questions intending to investigate post pandemic aspirations amongst teachers. Researchers used the convenience sampling technique to select the

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27 participants who are teachers in the public elementary schools and had experienced handling modular, online, and blended distance learning for two years regardless of age and years in service. Their responses were arranged and analyzed according to emerging themes and overarching categories. According to Holstein et al. [4], qualitative research design centralizes the distinct human experiences and perceptions that describe social frames, recent situations, and participants can freely express and share their thoughts and pandemic experiences and future aspirations.

The participants of the study were 4 male and 23 female teachers, mostly aged 36 – 45 years old. There were 7 who have been teaching for at most 5 years, 9 teachers in service for 6 – 10 years, 8 for 11 - 15 years, while three have been serving for almost 16 - 30 years. All participants are elementary school teachers: 4 in the kindergarten, 5 in Grade 1, 3 in Grade 2, 5 in Grade 3, 3 in Grade 4, 1 in Grade 5, and 6 in Grade 6.

3. RESULTS AND DISCUSSION

3.1 TEACHERS' NARRATIVE DURING THE PANDEMIC

Generally, the teacher respondents unanimously described their current working experience during the pandemic as challenging. They claimed that the inevitable and abrupt transition from the traditional in-person teaching to the different distance learning modality offered by the Department of Education (DepEd) prescribed and stated in the Department Order No. 12 series of 2020 or the Adoption of The Basic Education Learning Continuity Plan for School Year 2020-2021 In Light of The Covid-19 Public Health Emergency that the schools will adopt the printed or digitized modular, online learning, radio/tv-based instruction and / or a combination of these but in Quezon City, most students were under modular, online and or blended as they used TV as a supplementary learning resource. However, respondents complained that they were not trained to deliver their lessons in any of these distance learning modalities especially with teachers who are assigned to teach in kindergarten to the primary grades 1 to 3.

3.1.1 TEACHERS' NARRATIVE DURING THE PANDEMIC

The teachers mostly complained about their students' attendance in their online classes and the responsiveness of the parents of students under the modular modality to their notices and messages in their chat group.According to the teacher respondents assigned in the primary grade levels, most of their students were under the printed modular delivery mode and they claimed that they do not know much about how their students are doing and learning from their parents and guardiansat home since they could not properly monitor them especially when their parents

would not actively respond to their messages nor return the answered modules on timehence, they claim that their students did not learn much at home. Teacher 4 and Teacher 9 claimed that their students' parentsdo not replynor even see their message in their group chats and so they had to wait until they get a response or action from the parents' ends which they said would usually be after a few days or sometimes, weeks. This, they said, frustrated them because they had to adjust the schedules stated in their Weekly Home Learning Plan.

As for the students under the online and blended modality, the teachers said that only a few attend their classes due to varied reasons like connectivity issues (available data allowances and internet network stability) and sharing of devices with their siblings from other grade levels (Simbre, 2021). The teacher respondents claimed that these are beyond their controls but need to be addressed promptly to bridge the learning gaps.

3.1.2 Teachers' Workload and Well-being

Even during the pandemic, the teachers complained about their workload. Even with their work from home setup, they claimed that their administrative tasks are up high not to mention their usual preparation of their lessons for their online classes, printing of worksheets for their students under modular modality, attending webinars and meetings, communicating with their students and parents, and doing household chores. These, they said add up to their daily stress levels which could lead to their burnout as claimed by teachers 20, 21 and 25 who stated that their anxiety towards overcoming these challenges rose as the pandemic restrictions and lockdowns drags on.

A respondent mentioned that the coalescence of their work and household tasks and responsibilities make it stressful hence, Teacher 1 and 21 claimed that these affected their mental health as they live with these two and didn't have a time out for both. In addition, Teacher 24 emphasized that her workload before the pandemic is the same as her workload during pandemic but with more limitations of movement, barriers on communication, not only with students but with her fellow co-workers. These hindered their collaboration and decision-making on planning and implementation of their tasks and programs.

3.1.3 Teaching Strategies

In addition to these, teachers mentioned about their desire to deliver lessons properly to students despite the challenges. However, the distance from their students made it hard to use different teaching strategies that require smart gadgets and good internet connectivity on their end and students'.

Teacher 24, a primary grade level teacher, worries about her students who still cannot or could hardly read. This is also a concern of the kindergarten teachers and as stated by Teacher 7, it is not easy to teach

her students online, because as beginners, her students need her constant monitoring and assessment to ensure that her students can independently read well. Teacher 11 added that monitoring her students' progress in both literacy and numeracy is hard as most of the time their parents respond late to her messages or would always say that their children can already read and count to which Teacher 17 said that she needs to personally assess them if they really can do as what their parents claim.

3.1.4 Technological Issues

Furthermore, some teacher respondents also mentioned about not having the gadgets that are more capable of handling different application for their online classes not to mention the slow and intermittent internet connect that consistently bothered them until now. Teacher 3 stated. "...I struggled so much because of the internet connection. This affected my teaching ang students' engagement to my lessons."

Teacher 15 agreed to this and mentioned that these technological issues hindered her from delivering the lessons well and as planned. She said that with these and her limited time to conduct online classes per section (30 minutes per class), she could not elicit her desired responses from her students and could hardly assess them.

Although Teacher 23 said that she was able to manage these issues, she confessed that she knew that class participation and assessment were compromised. Teacher 25 also squealed that her teaching and learning transition from traditional classrooms to digital classrooms made her less confident because she is not well-versed in using them. "I am still learning it", she said. Despite these, Teacher 20 is confident that teachers can do it because they are usually flexible and that they can soon comfortably deliver their lessons through different digital platforms.

3.2 GET REAL : TEACHERS' REALIZATION DURING THE PANDEMIC

With the continuous technological advancements and drastic changes brought about by the COVID pandemic, all teacher respondents expressed their desire to be at pace with the challenges and changes in the educational landscapes. Technological advancements were sped up too as everything shifted to online learning modality. Aside from upskilling and reskilling their technological knowledge, they confessed that upgrading their computer hardware, smart devices, and internet connection are a prime necessity during these two years of using distance learning modality.

Teachers 1 and 3, however, complained that upgrading both their technological skills and gadgets would require much effort, time, and money. Teacher 9 agreed that coping and thriving amid pandemic required her to consider financial, mental, and emotional capacities to be able to do both. They claimed that

these entail additional financial burden as they needed to take out some loan in order to join their virtual meetings, webinars and online classes and not be left behind. The Department of Education (DepEd) and the local government unit (LGU) though they provide some laptops, do not provide the necessary devices to all teachers.

In addition, they aspire to be able to innovate their ways of teaching to be on par with the interests of their students and the demands of the times and urgency. Hence, Teacher 10 mentioned about being able to learn how to use new technologies in education as she continues to upskill her technological know-how. This way, she said, she can better utilize the different programs as well as innovate her teaching strategies for her students to improve learning. Teacher 12 and Teacher 15 agreed that they had to make huge adjustments in their teaching strategies and approach to better cater to their learners. In addition, Teacher 22 admitted that new normal teaching requires the proper use of technology so teachers should continuously upgrade their computer skills to which Teacher 26 added that she needs to be more creative and adept with learning apps and programs for her to better deliver her lessons online. Most of them agreed that computer literacy is a must in the new normal.

3.2.1 Importance of Technology and Parental Involvement

Furthermore, they have proven the importance of active parental involvement as there should be a strong partnership between teachers and parents to care for students. Teacher 4 complained that she had to extend her module retrieval because parents are usually passive with her deadlines. Teacher 5 claimed that distance learning can only be effective if the learners have a responsible guardian to facilitate learner participation in online classes and asynchronous learning and a dependable internet connection and appropriate devices. Parents and/or guardians have a great role in developing the minds of their children especially during the pandemic times when teachers cannot have a direct contact with their learners. This was also stated in Simbre's (2021) study that parents' economic and household activities greatly affect their time and effort in guiding and monitoring their children's lessons.

3.2.2 Open and Consistent Communication Line

Moreover, Teacher 9 mentioned that she had to stretch her patience and understanding with some parents' difficult attitudes as there are times when it is hard to communicate with unwilling parents. Teacher 13 strengthened this claim that students succeed more with parents willing to teach and guide their children in asynchronous activities. She emphasized that parents, students, and teacher must adjust and move towards the same direction, and these can be done through open and consistent communication. All of

them must be welcoming of the idea to voice out their concerns to attain favorable results. Social media have also been used to foster relay of messages, along with observation of ethics and reliance. [7]

In addition, the lack of gadgets and poor or no internet access, meant students could hardly participate in online classes or watch recorded classes and other related and supplementary videos to their lessons. Teacher 25 stated that her responsible learners with internet access can independently access their lessons, work on and submit their assignments correctly on time.

3.2.3 Face-to-face and Traditional Classes VS. Distance Learning

In their responses, most realized that it is much easier to teach in face-to-face classes than conduct online, modular, or even blended learning due to differences in students' family structures and economic status. They claimed that reaching their students from low-income family is hard especially when the parents are busy in their jobs. Teacher 21 stated that she is aware of the importance of learning continuity, but still prefers the physical setting of a classroom than the virtual. Teacher 22 agreed that assessment of learners is very challenging because she is unsure whether the modules were answered by her learners or by their parents/guardians.

3.2.4 Teachers' Positive Attitude

Teacher 24 commended teachers' resilience in facing the different challenges brought by the pandemic. She admires teachers' flexibility and emotional strength to handle hurdles during the pandemic and found ways to attain teaching objectives. Teacher 17 emphasized that knowing their students' conditions can help them to better decide. However, Teachers 9 and 21 said that it is hard to maintain positive outlook towards their job and life as they, too, had to face their personal challenges at home which usually includes financial concerns but had to triumph over these as they constantly face their students' parents who also need their assistance. A study revealed that teachers' anxiety has actually surpassed their ability to manage, all because of the pandemic. [8]

3.3 TEACHERS' ASPIRATIONS IN THE NEXT 10 YEARS

When teachers were asked about the things that they would want to achieve in the next ten years the following themes emerged.

3.3.1 Technological Skills

For two years of implementing blending distance learning modality, the teacher respondents acknowledged the importance of continued improvement in their technological skills as traditional teaching will no longer be used in the future. They foresee that it

will be inevitable to not use technology in their teaching just like what teacher 23 mentioned that teachers should continuously upskill and upgrade their ICT skills. Hence, the government should help teachers with the acquisition of proper gadgets. Rapanta et al. [9] have concluded the need to recognized technologies being significant part of teaching and learning breakthroughs. Proper use of educational technology could help teachers cope with the many changes that are posed in the future.

3.3.2 Professional Growth and Development

Moreover, they consistently mentioned about getting their current ranks promoted for better financial situations. All of them are eyeing for the completion of their master's degrees for them to qualify for promotion in the department. On the other hand, they also look at improving their teaching practice by attending to in-service courses provided by their department and its linkages. A study by Al Jarf [10] recognized how social media serves as a platform to advance professional development of teachers. Other respondents mentioned about conducting research and innovations so they can use these as a credential for promotion while others want to get additional skills certifications from recognized and credible institutions. They mentioned about continuing professional development to help them go through the challenges that lie ahead. They are aware that the use of technology will bring more convenience and comfort after the pandemic.

3.3.3 Maintaining a Positive Outlook

With all the challenges they have gone through, they emphasized that teachers must maintain dedication and sincerity to teaching and work towards students' interests. Most mentioned about their students' academic achievement, maintaining a strong community partnership, mentor other teachers to help them get through the same challenges easier, engage with professional organizations to broaden their professional networks and be able to help their learning communities by sharing expertise and knowledge. Also, they brace themselves of the possible changes in the education system after the pandemic.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

In the attempt to capture the narratives of Filipino teachers during the pandemic up to the present scenario with the hope of providing research-based analysis, the study was able to identify (a) teachers' realizations on modular and online learning, (b) their aspirations for achievements in the next ten years, (c) their identified needs to achieve those, and (d) foreseen obstacles blocking achievements. The emerging themes provide insights in 'developing a relevant program' or

even re-designing the existing program to address the highlighted concerns, leading to appropriate decision making, planning and better allocation of resources for equitable education.

Moreover, proponents of the study hope to highlight teachers' role towards the success of the teaching-learning process by providing avenues for discourse, particularly in terms of school leadership and management. As most identified aspirations are linked to presently experienced challenges, it is high time to revisit teacher professional development efforts and provide clear-cut programs that directly impact teacher welfare and well-being. Assigning competent and satisfied teachers to lead our classrooms breed learners who positively take academic challenges and ready to embark on acquiring skills that correspond to their own aspirations, the way teachers create their own.

Furthermore, the results share episodes of pandemic-driven education experiences similar with that of other countries confirming the universality of the pandemic's effects on the international educational landscape, especially on developing countries. Nonetheless, the investigation highlights the universality of the Filipino teacher participants' personal experiences. They along with their pupils have faced the lack of resources, information and information technology skills, poor communication and constraints on parental involvement.

4.2 Recommendations

The analysis in this study is limited within the participants' aspirations on technological growth, professional growth and development, and maintaining positive outlook. The future researches may also explore teachers' aspirations on their own health and well-being, and stakeholders' preparation for a probable pandemic permeation to proactively uphold quality education even in the existence of a fatal disease.

Since the research design is qualitative in nature relying on the unique experiences of teacher participants, and no generalization is claimed. Nevertheless, the universality and diversity of the qualitative data - the teacher participants' experiences, can be confirmed through further empirical exploration on another group of respondents with higher number, and the same inclusive criteria with respect to their age, gender, and grade level in which they teach.

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The Brand Values Development from The Customer Perspective in Sports Apparel Business in Thailand.

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Abstract

This study aimed to develop a framework for brand value development in the sports apparel industry in Thailand, specifically from the perspective of customers. A mixed-methods approach, utilizing both quantitative and qualitative research methods, was employed. The quantitative research was conducted to investigate the causal and outcome relationships among market-orientation factors, corporate transparency, and customer-perspective brand equity. A questionnaire survey was administered to 376 registered sports apparel businesses in Thailand. Additionally, qualitative research was conducted through phenomenological methods, using in-depth interviews with industry experts. The validation and confirmation of the in-depth interview results were performed through a group discussion with the committee on the sports industry within the Federation of Thai Industries, comprising three industry professionals and two academic experts in sports business management. The collected data were analyzed using confirmatory factor analysis and structural equation modeling techniques.

The study examined the relationship between market orientation, corporate transparency, and brand value in the context of the sports apparel business in Thailand. The results revealed that market orientation exerted a direct influence on brand value from the customer perspective, while exerting an indirect influence through corporate transparency as perceived by customers. Moreover, market orientation was found to have a direct influence on corporate transparency from the customer perspective. Additionally, corporate transparency from the customer's point of view was identified as a crucial factor in determining brand value from the customer's point of view. The statistical analysis confirmed that the hypothetical model was consistent with the empirical data. Specifically, the χ^2 value was 53.65, the p-value was 0.08, the χ^2/df was 0.84, the GFI was 0.96, the AGFI was 0.97, and the RMSEA was 0.01. These results underscore the significance of corporate transparency and market orientation for enhancing brand value in the sports apparel industry of Thailand. The findings have practical implications for business managers in this sector and suggest that they should prioritize market orientation and corporate transparency to boost brand value and enhance customer satisfaction.

Keywords: market orientation, corporate transparency, brand value

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1. Introduction

According to [1], the sportswear industry in Thailand has demonstrated a steady growth trend between 2017 and 2022, with sports apparel sales exhibiting an average growth rate of 4% per annum. Additionally, the market size of this sector has shown an upward trend, expanding by up to 6.8% per annum. Such growth trends suggest that consumer behavior in the sportswear industry has undergone significant changes. A study conducted by [2] revealed that customers' consumption behavior in the sports apparel business in Thailand has been influenced by several factors. First, sports apparel is increasingly becoming a part of everyday life. Secondly, the importance of sustainability has increased, with consumers expecting brands to prioritize environmental sustainability in their production processes. Thirdly, online shopping

has become a pervasive aspect of daily life, prompting sports apparel businesses to on increasing online sales by selling directly to customers. Lastly, online social group influencers have become more influential in consumers' purchasing decisions by creating trust and confidence in their followers.

The sports apparel industry is currently facing various competitive challenges such as the influx of new market players, trade relief, and the integration of new technologies. In light of these challenges, businesses need to prioritize the development of brand value to ensure long-term sustainability. Several factors can impact the overall development of brand equity, including structural aspects, product and service quality, competitive positioning, technological planning, consumer demand, market orientation, and business performance [3]. To achieve sustainable brand value, it is crucial for businesses to study consumer behavior and continually enhance their performance. The concept of business performance development aims to promote continuous data monitoring and utilize data to improve

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business performance in response to changing market dynamics [4]. Moreover, businesses need to focus on competency development to sustainably compete and elevate their brand value.

According to [5], the sports apparel industry has undergone significant expansion, resulting in increased competition. As a result, companies need to prioritize building brand credibility by creating and enhancing brand values that resonate with customers. These brand values can be measured through various factors, including the quality of products and services, brand awareness, and customer perceptions of brand loyalty and quality. These factors ultimately shape customer confidence and value in a particular brand. [6] suggested that businesses can develop brand value by focusing on the market and studying changes in customer behavior over time. The commercial use of this information is critical in adapting to changing consumer needs. From the customer's perspective, corporate transparency is also an essential element in building and developing brand value.

Therefore, the current study aims to investigate strategies for enhancing brand value from the perspective of customers in the sports apparel industry in Thailand. The findings of this research can serve as a valuable guide and provide practical implications for sports apparel businesses as well as other industries within the sports sector.

2. Objectives

1. To study the influence of market orientation, which has both direct and indirect effects on brand value from the perspective of customers in the sports apparel business in Thailand.

2. To investigate the direct influence of market orientation on organizational transparency from the customer perspective within the sportswear business in Thailand.

3. To examine the direct influence of corporate transparency from the customer perspective on brand value in the customer perspective within the sportswear business in Thailand.

4. To develop a relationship model between market orientation and organizational transparency from the customer perspective and brand value from the customer perspective within the sportswear business in Thailand.

3. Relevant Documents and Research Studies

Concepts related to market orientation

Customer orientation is the process of gathering information about customers in order to meet their needs. To effectively plan marketing strategies, organizations require customer information about their needs and preferences. A customer-centric approach necessitates an understanding of the entire customer

value chain, as well as its future trajectory [7]. In the sports apparel business, competitor orientation is essential to cultivate awareness of market information about competitors. It is imperative for organizations to comprehend both the short-term strengths and weaknesses as well as the long-term capabilities and strategies of current and future competitors, while also analyzing competitive factors that may influence future customer preferences and needs [8], [9].

Inter-functional coordination is an essential aspect of creating superior added value for customer needs beyond general marketing efforts. This approach involves every part of the organization in the production and delivery of products or services to customers, and emphasizes inclusivity and efficiency while adapting to human and other capital resources. Through this approach, businesses can create sustainable customer value [10]. Market orientation also involves the management of data collection to generate intelligence from various sources, not just limited to customer data. This broad perspective enables organizations to understand future customer needs and produce products or services accordingly [11], [12]. Effective intelligence dissemination and response to market needs requires genuine involvement with various departments in the organization. To adapt to market demands, organizations must communicate, distribute, and pass on market knowledge to relevant departments and individuals [7], [12]).

The sportswear business also exhibits market orientation indicators characterized by market responsiveness, which pertains to the ability of organizations to respond to market information. This includes selecting target markets and designing and offering products or services that meet the current and future needs of customers [7], [11].

Concepts and theories related to corporate transparency

Corporate transparency is a fundamental principle in management that is accountable to both internal and external stakeholders. It encompasses the principles of legal and ethical business practices, including the disclosure and dissemination of accurate information. [13] posited that corporate transparency is a public relations strategy aimed at creating a competitive advantage, building relationships, generating customer and employee interest, and ultimately increasing profits for the organization. It also involves demonstrating a system of corporate governance that operates within the framework of legal requirements and accuracy, including the provision of publicly available information on business operations [14]. Additionally, corporate transparency aims to demonstrate fairness, efficiency, and accountability in corporate governance [7]. The decision-making processes of multinational NGOs are influenced by various factors such as political stability, related laws, and regulations [16].

According to [15], the implementation of business

transparency must consider the social and ethical aspects of corporate practices for the sake of stakeholders. This reflects a commitment to social responsibility and ethical business practices, as noted by [7]. Products and services in the business context are intangible assets that generate long-term value, and as observed by [14], an organization's reputation is built on its credibility in managing disclosure processes. Effective corporate governance standards are also essential in this regard, as highlighted by [16] who emphasized the importance of a clear regulatory framework.

In conclusion, the notion of corporate transparency entails the establishment of a robust and regulated system that encompasses information disclosure. This mechanism is put in place to manifest transparency, equity, and effectiveness in corporate governance and business operations, which allows for the participation of stakeholders in accessing information and being able to audit it in adherence to set standards.

Concepts related to brand value from the perspective of customers

According to [17], brand value represents a valuable asset from the customer perspective, which is linked to the brand name and symbol, adding value to both products and services for organizations and customers. This is consistent with [18] who claimed that brand value from the customer's point of view is derived from establishing a strong relationship with customers, leading to long-term market success for businesses. [19] contended that brand value from the customer perspective is established through brand awareness and significantly influences market activity of the product. Therefore, focusing on the customer perspective of brand value can provide a competitive advantage for the sports apparel business, generate cash flow for the organization, and create wealth for shareholders.

According to [20], brand value from the customer perspective is a crucial factor in creating organizational profitability in today's market environment. This concept relates to the perception of the brand image among customers, with the aim of creating a competitive advantage that generates wealth for shareholders. Brand value from the customer perspective consists of four key aspects, namely brand awareness, quality perception, brand connectivity, and advertising awareness. Empirical evidence has shown that these components of brand equity have a positive direct effect on both purchase intent and customer performance. In the context of the sportswear business in Thailand, [21] emphasized the importance of considering how the brand can add value to both products and services, as this can foster customer acceptance and long-term loyalty.

Thus, it can be inferred that the notion of brand value from the customer perspective centers on generating value for customers with regard to the quality of products and services, such that the brand becomes the customer's preferred choice for purchase or utilization of services, notwithstanding the similarity in attributes with its competitors. This can be assessed by examining the elements of brand awareness, brand association, brand perception, and brand loyalty.

4. Development of Research Hypotheses

The relationship between market orientation and corporate transparency from a customer perspective and brand value from a customer perspective

[22] asserted that creating and cultivating brand equity from the customer perspective necessitates an understanding of the market and the establishment of customer trust through corporate transparency. To comprehend the market, it is necessary to comprehend customer behavior and needs in terms of information about competitors in the industry and the advent of new competitors. This information should be transformed into business knowledge to comprehend and acknowledge market changes, in order to respond to the market efficiently [21]. Furthermore, [23] demonstrated a correlation between market orientation and brand equity from the customer's viewpoint, emphasizing the importance of businesses having the ability to access and disseminate information effectively for use in long-term marketing planning. This aspect increases the brand value that the business aims to communicate to its customers, ultimately leading to greater visibility due to businesses possessing readily available and accurate information.

[24] argued that brand value creation and development are contingent on factors that promote customer trust, particularly with regards to the transparency of business operations. This is particularly relevant for sports industry businesses, as the level of organizational transparency can influence customer perceptions of the popularity of the sport. [25] similarly emphasized the importance of market orientation, which involves understanding competitors and effectively managing marketing information to increase credibility in the quality of products or services. By promoting corporate transparency, businesses can establish trust and acceptance among customers, which can increase the credibility of their brand in terms of quality and responsibility towards stakeholders [9]. Given these factors, the researcher has established the following hypothesis.

Hypothesis 1 (H1): Market orientation has a direct influence on the development of brand value from the customer perspective. Moreover, it also has an indirect effect on customers' brand value through the means of corporate transparency from the customer perspective.

The relationship between market orientation and organizational transparency from the customer perspective

[26] described the market-orientation process as one in which businesses prioritize both internal and external stakeholders to establish customer trust and acceptance, ultimately resulting in greater transparency in business operations. Similarly, [15] viewed a market-oriented approach as the process of obtaining and disseminating information for marketing planning, which impacts the ethics of business operations, including information disclosure and the establishment of reliable systems for data protection. In relation to corporate transparency, [7] emphasized the importance of focusing on customers and competitors and demonstrating transparency in business operations to maintain standardized key information, while [9] highlighted how corporate transparency in the sports apparel industry reflects ethical and social responsibility in business operations, and how businesses can operate under good governance while responding to the market.

A thorough examination of the literature revealed that the connection between market-oriented, customer data acquisition, and competitors necessitate a cohesive effort within the organization for effective data management, while considering the transparency of business operations [27], [28]. Given these factors, the researcher has established the following hypothesis.

Hypothesis 2 (H2): The market orientation directly influences the transparency of the organization from the point of view of the customer.

The relationship between corporate transparency from a customer's perspective and brand value from a customer's perspective

[29] have elucidated that organizations can establish a supervisory system for their operations based on governance principles, which can build customer trust and create a positive image of the organization, reflecting confidence in their products and services. Implementing control systems in business operations has been noted by [14] and [25] as a means of reducing operational bias and improving stakeholder fidelity compared to human control. However, such systems must adhere to clear operating standards and be subject to continuous supervision to ensure compliance. Furthermore, corporate governance standards should be developed in accordance with the principles of good governance in business operations and updated in a timely manner. This is in line with [7] who demonstrated the business's sincerity towards stakeholders. Developing and implementing robust systems and standards in business operations can create credibility for the business and its products, ultimately adding value [30]. This can enhance customers' perception of the quality of products and services, leading to loyalty towards both the business and its brand. [31] explained the importance of credibility in the sports industry as directly and indirectly creating value for the industry. [32] Credibility is a key factor reflecting the transparency

of activities in the sports industry.

[33] discussed how brand value in the sportswear industry is perceived by customers as a reflection of good governance and product quality that meets their needs. To establish brand awareness, building a favorable image of the organization is a prerequisite. [21] highlighted the importance of transparency in the sports industry that communicates product and service quality to customers, thereby fostering long-term loyalty. According to [9], trust is generated from the customer's perspective by the business's representation and communication, which includes accurate disclosures. A concrete system that manages and controls business operations while maintaining standardized practices that adjust to changing business environments further strengthens the client's trust in the business. Given these factors, the researcher has established the following hypothesis.

Hypothesis 3 (H3): Corporate transparency from the customer perspective has a direct influence on the brand value from the customer's perspective.

5. Method to Conduct the Study

This study employed a mixed-methods approach, incorporating both quantitative and qualitative research methods. The primary research method was quantitative, focusing on establishing causal relationships between variables. In addition, qualitative methods such as in-depth interviews and focus groups were utilized to gain a deeper understanding of human experiences and phenomena. These methods were used to supplement and clarify the findings of the quantitative research [34], [35]. The study focused on a sports apparel business organization in Thailand as the unit of analysis.

Population and sample selection

In the quantitative research, the sample group consisted of sports apparel businesses in Thailand that were registered with the DBD [36], amounting to 376 places with business owners, executives, or managers as units of analysis. The sample size was determined using the criterion of samples per observable variable, which should not be less than 15:1 [37]. As there were 12 variables observed in this study, the sample size was determined to be no less than 180 samples.

The key informants for the qualitative research were selected through purposive sampling method, using in-depth interviews, non-participant observation, and focus group discussions. The key informants were chosen based on their experience and ability to provide insightful interpretations [35]. The sample group included the Federation of Thai Industries garment industry group, which oversees members in the sports apparel industry in Thailand. The group consisted of 5 members, including 3 members of the Council of Sports Apparel Business Council, selected based on

their experience in the sports apparel business and academic performance in sports management, and 2 academics in sports business management, chosen based on their experience in sports business and academic performance in sports management. The purpose of the sampling was to obtain accurate and diverse information for further research conclusions [38].

6. Research Results

Analysis variables multicollinearity

Upon analyzing the correlation coefficient between the observed variables, it was observed that all pairs of observed variables showed a positive relationship with statistical significance at the 0.01 level. Additionally, none of the observable variables had a high correlation ($0.6 < r < 0.8$), and only a moderate correlation was observed ($0.4 < r < 0.6$) between 24 pairs of observed variables. Meanwhile, 42 pairs of observed variables showed low correlation ($r < 0.4$). The highest correlation was observed between organizational coordination (MKTOR3) and information distribution (MKTOR5) with a correlation coefficient of 0.590, while the lowest correlation was observed between competitive orientation (MKTOR2) and diffusion (MKTOR5) with a correlation coefficient of 0.215. Overall, the correlation coefficient between all pairs of observed variables did not exceed 0.80, indicating that the observed variables were not highly correlated, and multicollinearity was not an issue. Thus, it is appropriate to analyze the correlation model as all observed variables belong to a common constituent.

Analysis results of the quantitative data

The present study aimed to investigate the causal relationship model of brand equity development from the perspective of customers in the sports apparel industry in Thailand. To evaluate the fit between the proposed model and empirical data, the researcher employed several statistical indices, including Chi-squared ($X2$), Relative Chi-squared ($X2/df$), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA). The findings revealed that the proposed model demonstrated an acceptable level of fit with the empirical data. However, to ensure a better fit, the researcher performed model modification by referring to the Model Modification Indices (MI) and adjusting the model parameters accordingly. This process involved relaxing the initial constraints to permit a more significant movement among the parameters until the concordance index aligned with the empirical data. The results of the model modification demonstrated a better fit between the model and the data, providing support for the revised conceptualization.

The results indicated a high level of consistency between the proposed model and the empirical data, as evidenced by a non-significant chi-square value of 53.65 with a p-value of 0.08, a relative chi-square value of 0.84, a perfect CFI score of 1.00, a high GFI score of 0.96, a good AGFI score of 0.97, and a low RMSEA value of 0.01. These findings support the validity of the proposed model for developing brand value in the sports apparel industry from the perspective of customers. Moreover, the study provides insights into the causal relationships among various factors, including sports resources, guidelines for organizing national sports events, and the added value of the sports industry in Thailand. These details are presented in Figure 1.

The results can be summarized according to the research hypotheses as follows:

Hypothesis 1: This study investigated the direct and indirect effects of six market-focused elements, including customer orientation (MKTOR1), competitor orientation (MKTOR2), organizational coordination (MKTOR3), data management (MKTOR4), information distribution (MKTOR5), and market response (MKTOR6), on brand value from the perspective of customers in the sports apparel business in Thailand. Specifically, the study examined the mediating role of organizational transparency in this relationship, which was operationalized through the constituents of disclosure (TRANS1), having a clear regulatory system (TRANS2), and having standards in corporate governance (TRANS3). The findings revealed that market orientation (MKTOR) had a significant positive direct effect on brand equity from the customer perspective (VALUE), with a direct effect value of 0.23. Furthermore, market orientation indirectly influenced brand value through organizational transparency, with an indirect effect value of 0.61. The total effect of market orientation on brand value was 0.84, with a statistically significant level of 0.05, which supported Research Hypothesis 1.

Hypothesis 2 : The present study investigated the direct effect of market orientation on organizational transparency from the customer perspective in the context of the sports apparel industry in Thailand. The results indicated that market orientation (MKTOR) had a significant positive direct effect on organizational transparency from the customer perspective (TRANS), with a direct effect value of 0.67. The total effect of market orientation on organizational transparency was also 0.67, with a statistically significant level of 0.05, which supported Research Hypothesis 2.

Hypothesis 3: The current study examined the direct effect of organizational transparency from the customer perspective on brand equity in the context of the sports apparel industry in Thailand. The findings revealed that organizational transparency in the customer perspective (TRANS) had a significant positive direct effect on brand equity in the customer perspective (VALUE), with a direct effect value of 0.61. The total effect of organizational transparency on brand eq-
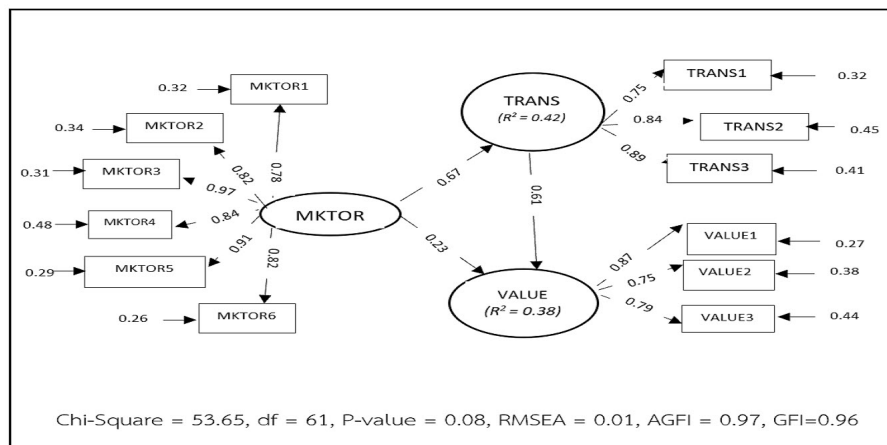
Chi-Square = 53.65, df = 61, P-value = 0.08, RMSEA = 0.01, AGFI = 0.97, GFI=0.96

Figure 1: Analysis of the goodness of fit index of the model

uity was also 0.61, with a statistically significant level of 0.05, which supported Research Hypothesis 3.

7. Qualitative Analysis Results

Interview results revealed that the research employed a phenomenological methodology for the qualitative data analysis. The sample was purposively selected. There three experts from sports industry council committees and two experts with relevant experience and expertise in sports business management. These five key informants met the criteria of having relevant experience and expertise in sports business management. The purposive sampling technique was used to ensure the credibility of the data sources [35]. The data was collected through in-depth interviews, which were conducted face-to-face, allowing for follow-up questioning to obtain more precise and detailed answers. In addition, non-participant observation was used to gather comprehensive information. The researcher also requested additional information from the key informants to ensure the accuracy of the data. The semi-structured questions covered various aspects of the current context and situation of the sports apparel business in Thailand, including market orientation factors, corporate transparency from the customer's perspective, and creating brand value from the customer's perspective of sports apparel in Thailand.

Situations of sports apparel business in Thailand

The sports apparel business in Thailand represents a significant segment of the sporting industry that receives ample support from multiple sectors, including the government and the Federation of Thai Industries. Furthermore, the Department of International Trade plays a critical role in promoting the export of Thai sports apparel, thereby expanding the market to foreign countries. Presently, the Thai sportswear industry is experiencing continuous growth, driven by a more open market and increased focus on consumers' physical and mental-wellbeing. The heightened awareness

of the importance of health has resulted in the growing popularity of exercise and sports, leading to the expansion of the sports apparel business in Thailand.

Market orientation of sports apparel business in Thailand

The sports industry is currently experiencing intense competition, with new competitors emerging domestically and internationally to invest and operate in Thailand. Moreover, due to the increasing emphasis on health and fitness, the industry is expanding rapidly and is highly dynamic.

Market orientation is a crucial factor in understanding and navigating the complex market dynamics of the sports industry. This involves gaining an in-depth understanding of customers' consumption behavior, which has changed significantly both before and after the COVID-19 outbreak. Additionally, businesses must acquire sufficient information about competitors to make informed decisions and plan effective business operations. Furthermore, internal processes must foster cooperation within the organization, and effective information management systems must be in place to facilitate timely responses to market changes.

Corporate transparency from the customer perspective of sports apparel in Thailand

Corporate transparency from the perspective of customers is a vital concept in the realm of business, as it indicates the extent to which organizations value their clients' input in their operations. It also reflects the level of credibility and confidence that customers have in the business. This is only possible when the organization provides accurate and truthful information about its operations, which is accessible to the public, and when it adheres to ethical principles and good governance practices. A clear system for supervising business operations is also essential, to control any misconduct and minimize damage for both executives and employees. This includes a standard for conducting business that is fair and equitable to all stakeholders, enabling efficient measurement and comparison of

operations under the corporate governance system.

Corporate transparency also plays a significant role in building confidence among existing and potential customers. It enhances customer trust and perception of the organization, serving as a public relations strategy to establish credibility and influence customer purchase decisions. By prioritizing stakeholder interests and considering the public's benefits, the organization demonstrates its commitment to honesty and good governance practices, thereby reinforcing its corporate values.

In contemporary business, corporate transparency is an essential strategy for competition, in addition to value creation through differentiation and cost competition. It also underscores the significance of building trust through transparent operations and governance, reinforcing the organization's reputation and competitive advantage.

Results of market orientation and corporate transparency on brand value from the customer perspective

Brand equity comprises two main perspectives, namely the non-customer and the customer perspective. However, businesses must give equal attention to both groups to create a unified view of brand value. This is commonly referred to as customer perception of the brand or customer perception. By making customers aware of the value that a business provides through its products, the brand becomes strengthened due to the confidence that customers have in both the product and the brand. It is essential that the value of the product originates from the product itself, which ultimately leads to brand acceptance.

The value of a product is determined by its ability to cater to the present and future needs of customers. This entails addressing their prevailing concerns or creating novel demands that offer long-term value. Achieving this necessitates a deep understanding of the market dynamics and obtaining reliable market information. Additionally, establishing stakeholder confidence is crucial to foster trust and instill faith in purchasing and consuming the product. This holds special relevance in the sportswear business, where the customer's trust can only be won through product trials. Therefore, the parameters that influence the initial purchase hold significant importance, with brand credibility playing a pivotal role in shaping stakeholder trust in the business.

In order for a business to effectively comprehend the market, a comprehensive understanding of the customers, competitors, and internal management of information is paramount. Establishing trust and fostering transparency within the organization are crucial factors in building a positive relationship with stakeholders. This includes disclosing relevant information to assist customers in making informed decisions and acknowledging the value proposition of the product. Adherence to good governance practices is

not only consistent with ethical business practices, but also contributes to enhanced monitoring of business operations and the promotion of stakeholder interests. These aspects collectively contribute towards the creation of brand value as perceived by the customers.

Confirmation of findings from focus group discussions

The efficacy of qualitative research and interviews was substantiated through focus group sessions involving key informants with specialized knowledge and experience in the sports apparel industry in Thailand. The focus group comprised the same individuals as those interviewed in-depth. The congruence between the outcomes of the focus group discussions and the in-depth interviews indicates a market-oriented approach that prioritizes customer data, competitor analysis, and efficient data management. These strategies have contributed to enhancing brand value by fostering trust in the organization's transparent operations that acknowledge stakeholder interests through effective corporate governance and standardized business operations. These practices have bolstered confidence in the brand and the product, leading to increased credibility in the business operations.

The informant group discussions yielded valuable recommendations to leverage the findings of this research for the betterment of the sports apparel industry in Thailand. These include the dissemination of research outcomes through diverse communication channels, the development of management manuals, and organizing training programs in collaboration with educational institutions and sports business entities in Thailand. Additionally, the informants who participated in this study can serve as role models for effectively applying the research outcomes in their respective organizations.

8. Conclusion and discussion

[39] argued that customer engagement, competitor analysis, and effective management of data collection and distribution are critical for achieving brand value in business. This viewpoint is consistent with the findings of [40] who posited that the correlation between market understanding and business credibility serves as a significant variable for creating and sustaining brand loyalty. This relationship is characterized by a deep understanding of market dynamics and fostering brand credibility through fulfilling market needs or creating novel demands. The outcomes of this study reinforce this notion, revealing a strong association between Market Orientation, organizational transparency, customer perspectives, and brand equity in the sports apparel business in Thailand.

[41] highlighted the positive relationship between market orientation and corporate transparency from the customer's viewpoint, which can enhance the value of both the business and brand. In the context

of marketing management, [4] contended that market access is a critical factor that enables firms to acquire precise and reliable marketing intelligence, which can be utilized to formulate effective business strategies based on good governance principles that consider the interests of stakeholders. Such an approach can foster trust between businesses and customers and engender long-term confidence in the organization's operations and product. The study finds a positive relationship between market orientation, corporate transparency, and brand value from the customer perspective in the sports apparel business in Thailand. This aligns with the variable-driven approach that emphasizes the understanding of the market and customer needs to build trust and create customer value for the brand [27]. The study highlights the importance of accessing customer data for developing and building trust in line with the principles of corporate transparency. It also emphasizes the need to disseminate information while safeguarding the privacy of informants and closely monitoring the use of information [42]. These findings are consistent with [41], showing that a business that is attentive to the market must closely supervise the use of market data to ensure effective and responsible governance. The study by [23] reinforces the significance of customer orientation, competitor orientation, internal coordination, data collection management, and information distribution for market response and the transparency of the organization from the customer's perspective.

According to [33], the brand value of sportswear businesses as perceived by customers reflects the effectiveness of business management, which instills confidence in both product quality and good governance practices that take into account the interests of consumers. The creation of brand awareness necessitates the cultivation of a positive image of the sportswear organization that prioritizes transparency and effective communication of product and service quality to customers, thereby fostering long-term loyalty. From the customer perspective, trust is generated by the authenticity and integrity of the business, as emphasized by [9]. Corporate transparency serves as a manifestation of a business commitment to honesty and ethical conduct towards all stakeholders.

9. Suggestion

Future research could further advance the conceptual framework presented in this study by incorporating additional control variables that are clearly delineated, such as the size of the business and the characteristics of operators who organize sporting events in diverse formats. This may facilitate the testing of potential variations in market orientation and organizational transparency, as perceived by customers, that could affect brand value in the context of sports apparel business in Thailand.

This study explicates the theoretical foundations and constructs pertaining to market orientation and organizational transparency as perceived by customers with regard to the augmented value of Thailand's sports sector. Although this research offers insightful contributions to this domain, it is pertinent to acknowledge that there exist other concepts that may be germane and could be incorporated in future studies that explore the genesis of value addition in the sports industry.

It is evident that the findings of this study hold significant implications for various stakeholders, including the industry, businesses, and related industry groups such as the Sports Authority of Thailand and Sports Association. The outcomes of this research can assist in creating value for products or services, ultimately leading to macro-level benefits for the overall sports industry sector in Thailand.

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Develop a Driving System of Management in Work-Integrated Education for Rajabhat Universities in the Upper Northern Region

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Abstract

This research was aimed to 1) construct a primary draft of a driving system of management in work-integrated education for Rajabhat Universities in the upper northern region, 2) verify the accuracy and suitability of a driving system of management in work-integrated education for Rajabhat Universities in the upper northern region, and 3) complete a driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. The instruments used were a primary draft of a driving system of management in work-integrated education and a verification form. Data were analyzed using frequency and percentage and categorized into a system. The results of the research were as follows: 1) a developed draft of a driving system of management in work-integrated education for Rajabhat Universities in the upper northern region consisted of 5 components as follows: 1.1) information, 1.2) matching, 1.3) co-designing and implementation, 1.4) assessment and development, and 1.5) outreach activities; 2) the verification of the driving system of management in work-integrated education showed that the accuracy was averagely 91.70 percent and the suitability was averagely 90.91 percent; and 3) the complete driving system of management in work-integrated education for Rajabhat Universities in the upper northern region consisted of policy, curriculum, implementation, students and workplaces, and employers according to input, process, and output process.

Keywords: Driving system, Work-integrated Education, Management, Rajabhat Universities, Upper northern region

1. Introduction

The announcement of the Higher Education Act 2019 [1], Section 35 states that higher education institutions should collaborate with governmental organizations, the private sector, and industrial sectors to support the management of teaching and learning in higher education institutions so that students can learn by doing real-world jobs and develop their knowledge, skills, competencies, and other characteristics in line with the needs of the nation. The higher education institutions might make a memorandum of understanding with the agencies in educational curriculum management, learning and teaching, measurement, and evaluation by allowing the students to spend part of their time working in higher education institutions and part in the workplaces of those agencies.

Many Thai universities have attempted to design work-integrated education management in teaching and learning that focuses on practices, provides for student monitoring, supervision, and performance evaluation, and allows students to reflect on their practice. Khasuwan, Hongsiriwat Polsaram [2] re-

vealed the current conditions and problems of work-integrated learning management for learners and graduates as follows: 1) the structure of some courses was not conducive to work-integrated learning and lacked supporting factors to meet the work-integrated learning curriculum; 2) the work skills of learners and graduates did not meet the requirements of the workplace for professional experience; 3) instructors, lecturers, advisors, and supervisors did not realize the importance of work-integrated learning, so it could be seen as an increase in the workload; 4) workplaces (also called establishments, enterprises, and companies), administrators, advisers, and mentors were unaware of the value of work-integrated learning; and 5) finance or budget was not allocated in proportion to the cost responsibility for work-integrated learning.

Similarly, Supising, et al. [3] studied the needs assessment for developing the driving system of work-integrated education management. It was found that under the current conditions in terms of policy, some administrators who did not see the benefits of cooperative and work-integrated education programs for instructional management were frequently changed, resulting in policy changes, as well as responsible personnel was also often changed, affecting work inter-

mittently. Regarding the curriculum, some administrators are unaware of the advantages for students, despite the fact that the cooperative and work-integrated education curriculum was common in educational institutions. In terms of implementation, the method of enhancing the quality of education had not been used to preserve and promote the work-integrated education program. Furthermore, as for the students, the curriculum was not provided for all students and all faculties. Most students misunderstood that the work-integrated education programs might be more difficult than normal training. Regarding the workplaces and employers, there was no official Memorandum of Understanding (MOU) with the workplaces (also called establishments, enterprises, and companies).

Moreover, Sebolao Ntshoe [4] studied work-integrated practices in a technology education setting. Thematic data analysis revealed that a work-integrated learning approach seemed to be a workable paradigm for outcomes in education related to real-world technology transfer. The use of field practice; for example, customer service-focused abilities, curriculum improvement, the transfer of technology, and professional development, was among the benefits that lecturers believed Universities-industry collaboration brings to learning and teaching.

In line with Pažur Aničić Divjak [5], who studied work-integrated learning in higher education, the results of this study showed that common motivators for stakeholders' participation in work-integrated learning included student learning, student career development, and improving learning and teaching quality. Additional elements relevant to the expectations and motivations of the respective stakeholders were also found. The findings of this study might assist higher education institutions (HEIs) in structuring work-integrated learning practices to boost motivation and satisfy all stakeholders' expectations.

The obstacles to the work-integrated education program at Rajabhat Universities were the development and strengthening of human capital to enhance necessary skill development, which still did not focus on improving students' ability to effectively manage their learning and encouraging their learning abilities and skills to create more applications in the workplace and in daily life, which is inconsistent with the announcement of Thailand's 20-year National Strategy (2018–2037) [6]

However, the driving system of management in work-integrated education at universities can take several forms to enhance skills and work experience and is recognized as making a significant contribution to the transition of graduates to the workplace. It includes ensuring that each work-integrated education management activity meets the needs of students and enables them to engage in work practices that are relevant to their degree. Additionally, the driving system ensures that students are given the opportunity

to demonstrate progress toward the necessary professional standards of practice in accordance with professional accreditation requirements. Furthermore, the study of the driving system of management in work-integrated education will help to establish policy, curriculum, implementation, students, workplaces (also called establishments, enterprises, and companies), and employers to ensure the same direction of the driving system of management in work-integrated education for the next semester and compliance with the Higher Education Standards Framework.

2. Research Questions

2.1 What is the primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region?

2.2 What are the accuracy and suitability of the primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region?

2.3 What is the complete driving system of management in work-integrated education for Rajabhat Universities in the upper northern region?

3. Research Objectives

3.1 To draft the primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region.

3.2 To verify the accuracy and suitability of the primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region.

3.3 To complete the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region.

4. Research Objectives

The research process was divided into three phases as follows:

Phase 1: Construct a primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. This phase was subdivided into three steps:

Step 1.1: The researchers synthesized components of the driving system for management in work-integrated education. The instrument used was a synthesized record form. The data were analyzed by frequency [7].

Step 1.2: The researchers investigated the requirement for developing the driving system of management in work-integrated education at Rajabhat Universities in the upper northern region. The instrument used was an in-depth interview form. Data were analyzed by content analysis [3].

Step 1.3: The researchers drafted a primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region by analyzing the synthesis results of components from step 1.1 and the investigated results from step 1.2. Data were analyzed by content analysis.

Phase 2: Verify the accuracy and suitability of the primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. The key informants were eleven experts as stakeholders with work-integrated education. The instrument used was a verified form. Data were analyzed by percentage and frequency.

Phase 3: Complete the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. The key informants consisted of thirteen experts positioned as supervisors and workplace employers. The instrument used was a record form in the workshop via the Zoom meeting program. Data were analyzed by summarizing into issues.

5. Results and Discussion

Phase 1: Construct a driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. This phase was divided into three steps:

Step 1.1: The researchers synthesized components of the driving system for management in work-integrated education. The instrument used was a synthesized record form. The data were analyzed by frequency. The results of synthesizing components of the driving system of management in work-integrated education consisted of five preliminary components as follows:

1) Information consisted of an information technology system.

2) Matching consisted of an educational reform driving system, the development of education at all levels and types, a teamwork system, and a network.

3) Co-designing and implementation consisted of digital technology for education, the development of knowledge assets, and an educational supervisory system.

4) Assessment and development consisted of quality criteria and indicators, evaluation methods, durational conditions, evaluation by stakeholders, and evaluation by impartial agencies or institutions.

5) Outreach activities consisted of the management of educational service systems, service systems, and networks.

Step 1.2: The researchers investigated the current conditions for developing the driving system in work-integrated education at Rajabhat Universities in the upper northern region. The instrument used was an in-depth interview form. Data were analyzed by content analysis. [3]

In terms of policy, all levels of education institutions should follow the policy and strategy of Thailand HES 2563-2570 and Thailand SRI Plan 2563-2565 to drive a system for cooperative development among higher education institutions, and the cooperative and work-integrated education program should be implemented in accordance with an indicator.

In terms of curriculum, the management of cooperative and work-integrated education curricula should integrate studying with hands-on occupational experience and require participating companies to work in collaboration with all related sectors. Additionally, the courses should help equip students with real-world work experience that responds to market demand.

In terms of implementation, the Office of National Higher Education Science Research and Innovation Policy Council (2020) and the Higher Education, Science, Research, and Innovation Policy and Strategy (2020–2027) were developed by taking into account government reform, as well as local, state, and global current events pertaining to the growth of the workforce and of knowledge, particularly those aimed at enhancing knowledge, present, and future work skills, and capacities to meet the demands of an industry that was constantly being disrupted by technology.

In terms of students, the participative relationships the universities, employers, mentors, and organizational environments had an impact on students' performance and provided students with pre- and post-knowledge of cooperative and work-integrated education programs.

In terms of workplaces (also called establishments, enterprises, and companies) and employers, a needs assessment should be aimed at strengthening engagement with employers. There should be the provision of an official Memorandum of Understanding (MOU) with the workplaces, which should give importance to the workplaces by honoring certificates or awards. There should be a budget from the government in order to motivate workplaces (also called establishments, enterprises, and companies) willing to welcome students.

Step 1.3: The researchers drafted a primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region by analyzing the synthesis results of components from step 1.1 and the investigated results from step 1.2. Data were analyzed by content analysis.

Similarly, Dollinger D'Angelo [8] mentioned the principles of co-design were to share responsibility, and solve problems, and strengthen our relationships. By working with everyone, we gain mutual respect and trust that can invigorate our communities.

Phase 2: Verify the accuracy and suitability of a primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region. The key informants were eleven experts who were stakeholders in work-

Table 1. Results of drafting a primary driving system of management in work-integrated education for Rajabhat Universities in the upper northern region

Components	Input	Process	Output
1. Information			
1.1 At a policy level	-Expand knowledge and comprehension of the concept of WIE.	-Provide training workshops for all relevant personnel and students to access information.	-All relevant personnel and students have been trained on how to discover, utilize, and apply information to WIE.
1.2 At a	-Utilize the standards in organizing the curriculum of WIE.	-Organize the curriculum in accordance with WIE.	-The standard curriculum was adapted in accordance with WIE.
1.3 At the implementation level	-Give all relevant personnel and students access to information.	-Create and promote freely available information resources.	-Meet standards and quality assurance.
1.4 At the student level	-Explore how information affects work-integrated education. -Produce and share correct information.	-Synthesize the information based on its degree of routineness and complexity.	-Applying information can be as simple as making the operation easier.
1.5 At a workplace level/employer level	Apply knowledge to workplace communication.	-Create information for employers' acceptance and share ideals.	-Promote cooperation to use the information and mutual support in all parts of the workplace.
2. Matching			
2.1 At a policy level	-Prepare an MOU to coordinate between higher education institutions and workplaces.	-Investigate partners' needs. -Seek cooperation with the partnership.	-Share recommendations with one another. -Collect information from all relevant departments.
2.2 At a curriculum level	-Prepare a matching MOU to drive curriculum reform.	-Have a driving system of curriculum reform.	-Develop the curriculum at all levels and in all fields.
2.3 At the implementation level	-Provide teamwork. -Everyone on the team can speak openly and honestly without worrying about being critical.	-Arrange the priorities of each individual's readiness.	-There is information and a platform for demand and supply to take advantage of partnerships.
2.4 At the student level.	-Allocate roles and responsibilities between different levels and relevant personnel.	-Organize partnership and teamwork system.	-Cooperate with the discussion on common techniques of data manipulation.
2.5 At a workplace level/employer level	-Match demand-supply. -Guide new and engaging WIE.	-Guide new and engaging WIE.	-There is a One Stop Service system.
3. Co-designing and Implementation			
3.1 At a policy level	-Promote co-designing and implementation of a WIE program.	Appoint the responsible departments for the WIE program.	-Enable or empower people affected by a policy issue to contribute to its solution of a WIE program.
3.2 At a curriculum level	-Encourage co-designing curriculum among faculties, workplaces, and students to promote knowledge, professional skill, and digital literacy.	- Provide co-designing curriculum, lesson plan, and learning outcomes among faculties, workplaces, and stakeholders.	-Accept the change and empower faculties lecturers to make changes to the curriculum. -Have quality assurance at a program level.
3.3 At the implementation level	-Create a pilot work-integrated education program that will prove technical feasibility to top administrators.	-Have supervision at workplaces and create a monitoring system after graduation by communicating to all stakeholders, and graduates' employers.	-Assemble an implementation team to champion the new WIE program.
3.4 At a student level	-Launch the highest levels of participation in co-design activities of the WIE program to do with activities.	-Share responsibility in co-design activities of work-integrated education program.	-Students participate in co-design activities to have knowledge, professional skill, and digital literacy.

Components	Input	Process	Output
3.5 At a workplace level/employer level	-Treat students in the co-design process. -Set a suitable approach to employability preparation.	-Co-create designers and personnel to develop solutions to complex problems.	-Rely on the partnership of individuals who share a common objective but hold diverse perspectives and experiences.
4. Assessment and Development.			
4.1 At a policy level	-Define assessment by student self-assessment, peers, faculty lecturers, and employers/mentors.	-Provide participative assessment practices. -Guarantee by quality assurance.	-Aim policies aiming for greater clarity and interconnections for the assessment frameworks.
4.2 At a curriculum level	-Review competency-based assessment.	-Building assessment competencies among faculty lecturers and employers/employers.	-Students demonstrate a competency ability to work through the WIE program.
4.3 At the implementation level	-Test and review learning outcomes.	-Quantitative and/or qualitative assessments are made during a WIE program.	-Enhancing the quality and reliability of student assessments.
4.4 At a student level	-The WIE assessment is up-to-date and consistent with the modern working world.	-Evaluation by students, relevant personnel, and stakeholders.	-Use the authentic assessment for students' progress in developing skills.
4.5 At a workplace level/employer level	-Collaborative assessment and mutual recognition among faculties, workplaces, and students	-Evaluation by impartial agencies or institutions.	-Develop for continuous improvement.
5. Outreach Activities			
5.1 At a policy level	-Focus on scientific and technological research and scientific innovation.	-Collect other forms of innovation.	-Add value to higher education institutions. -Enhance WIE assessment to a world-class standard.
5.2 At a curriculum level	-Co-designing and implementing a WIE curriculum serves as a credible demonstration for other universities.	-Develop a curriculum to build competencies in accordance with the career for the future.	-Bring knowledge and expertise on a particular curriculum to the general public.
5.3 At the implementation level	-Utilize digital to provide information within a shorter timeframe.	-Provide management of educational service systems and add value to students.	-Facilitate student learning to employers or mentors at a workplace.
5.4 At a student level	-Practice presentations and workshops in real workplaces.	-Prepare a career for the future. -Be challenged while trying to learn a WIE program.	-Become professional skills and upgrade students to become an entrepreneur.
5.5 At a workplace level/employer level	-Create designers and people to develop solutions to complex problems.	-Solve problems using research studies and explain the benefits of research	-Upgrade the quality of the workplace through in-depth research questions and add value to the workplace.

Table 2. The verifying results of components of a primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region.

Components of a primary draft of the driving system	The verifying results			
	Accuracy		Suitability	
	Frequency	Percentage	Frequency	Percentage
1. Information	10.33	93.94	10.00	90.91
2. Matching	10.33	93.94	10.00	90.91
3. Co-designing and Implementation	9.67	87.89	10.33	93.94
4. Assessment and Development	9.33	94.85	9.00	81.82
5. Outreach Activities	9.67	87.89	10.67	96.97
Average	**91.70**		**90.91**	

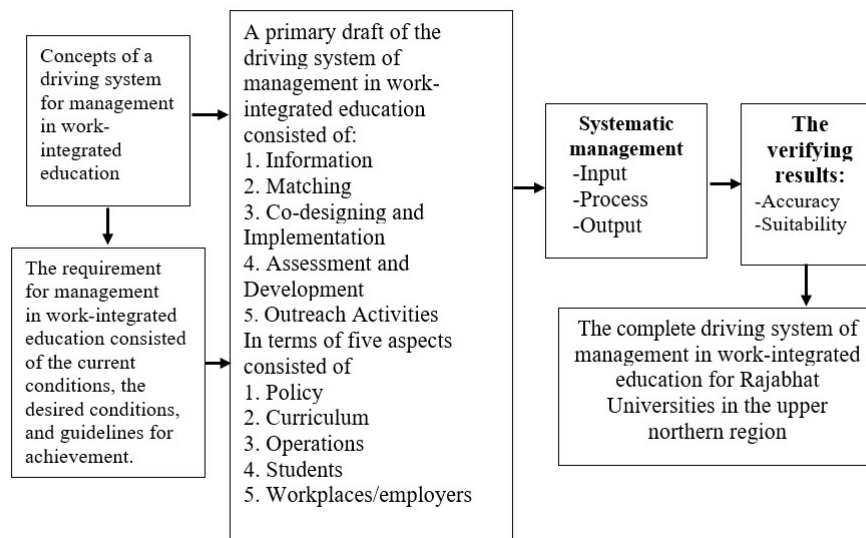**The research framework was as shown in Figure 1.**

Figure 1: Research framework

integrated education. The instrument used was a verified form. The data were analyzed by percentage and frequency.

From Table 2, results of verifying the components of a primary draft of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region by eleven experts found that the accuracy was averagely 91.70 percent and the suitability was averagely 90.91 percent

Phase 3: A complete management of driving system in work-integrated education at Rajabhat Universities in the upper northern region. The key informants consisted of thirteen experts positioned as supervisors and workplace employers or mentors. The instrument used was a recording form in the workshop via the Zoom meeting program. Data were analyzed by summarizing issues named IMCAO(IPO)PCISW/E as follows:

Components of the driving system of management in work-integrated education for Rajabhat Universities in the upper northern region.

1. I = Information: Explore and synthesize information that affects work-integrated education.

2. M = In accordance with educational reform, all relevant universities provided me with a Memorandum of Understanding (MOU) as partners. They are ready to work as a team and network.

3. C = Co-designing and implementation: Digital technology learning appears as knowledge assets by educational supervisory authorities and transfers education outcomes.

4. A = Assessment and development: Set up the quality criteria and indicators by evaluation methods.

5. O = Outreach activities: Management of educational service systems with a partnership among

the universities and workplaces (also called establishments, enterprises, and companies) should be aimed at expanding the cooperative and work-integrated education program and strengthening engagement with employers.

The driving system of management in work-integrated education at Rajabhat Universities in the upper northern region was studied through the IPO system as follows:

- Input: Begin with a Memorandum of Understanding (MOU), hold a workshop, and use technology to connect.

- Process: Investigate the needs assessment, implement work-integrated education, and formulate the driving system.

- Output: Collaboration is authored and collectively accepted among faculty lecturers and employers by communicating clearly and sharing knowledge effectively to promote professional skills for the future.

The driving system of management in work-integrated education at Rajabhat Universities in the upper northern region consists of:

1. P = Policy: According to the Higher Education Act 2019, students learn by practicing real careers and acquire knowledge, skills, competencies, and other characteristics by training to hold great promise for policymakers in accordance with the requirements of the country.

2. C = Curriculum: Develop students as specialists with the Digitech curriculum in both science and art through work-integrated learning and participatory processes for implementation to be a key force in driving the digital economy for the development of the country.

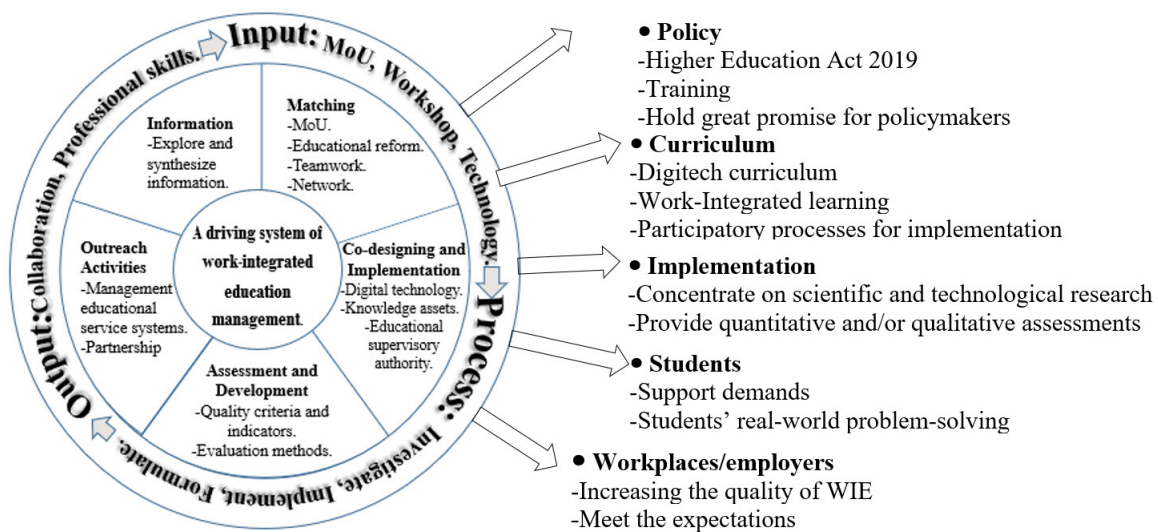3. I = Implementation: Higher education institu-

• **Policy**
-Higher Education Act 2019
-Training
-Hold great promise for policymakers
• **Curriculum**
-Digitech curriculum
-Work-Integrated learning
-Participatory processes for implementation
• **Implementation**
-Concentrate on scientific and technological research
-Provide quantitative and/or qualitative assessments
• **Students**
-Support demands
-Students' real-world problem-solving
• **Workplaces/employers**
-Increasing the quality of WIE
-Meet the expectations

Figure 2: A driving system of management in work-integrated education for Rajabhat Universities in the upper northern region

tions concentrate on scientific and technological research and provide quantitative and/or qualitative assessments.

4. S = Students: Additional support perceptions and demands can be both long- and short-term or can simply refer to helping students get through a difficult period, and students may require flexibility, resilience, resourcefulness, and interaction with the environment during real-world problem-solving.

5. W = Workplaces (also called establishments, enterprises, and companies) or employers: Increasing the quality of the cooperative and work-integrated education program to meet the expectations of faculty lecturers, employers, students, and stakeholders. A complete driving system of management in work-integrated education for Rajabhat Universities in the upper northern region was shown in Figure 2.

Likewise, Poungkaew Puthaprasert [9] studied a model of work-integrated learning to prepare educational administrators in Thailand. It was concluded that the universities also played a crucial role in giving students the chance to complete internships within their educational institutions so they could apply what they learned to their future employment. Although work-integrated learning was not a novel concept in higher education, Thai institutions adopted it because students needed to change with the times. As a result, practicum was made a requirement for one of the student's courses.

6. Conclusion

From the studying, synthesizing, and analyzing of the driving system of management in work-integrated education, all information was essential and affected work-integrated education for all relevant universities as a partnership through digital technology with criteria and indicators. Startups with MOU, workshops, and the use of technology for collaboration among faculty lecturers and employers will support students during real-world jobs. Therefore, the driving system of management in work-integrated education at Rajabhat Universities in the upper northern region can be a benefit for all relevant sectors. The majority of work-integrated education at universities should take place at the undergraduate degree level, although it can also occur at the postgraduate level. Universities, workplaces (also called establishments, enterprises, and companies), and organizations must collaborate on work-integrated education.

7. Recommendations

7.1 The Office of the Board of President of Rajabhat Universities should take its involvement in the driving system of management in work-integrated education seriously.

7.2 The Office of the Board of President of Rajabhat Universities should use the network of Rajabhat Universities in the upper northern region to develop and share a teaching management system for all courses in order to meet the policy and strategy of Thailand HES 2563-2570 and Thailand SRI Plan 2563-2565.

7.3 The Ministry of Higher Education, Science, Research and Innovation should provide tax incentives for workplaces that accept students for the work-integrated program.

8. Recommendation for Further Research

8.1 In the other programs, there should be research on the management of work-integrated education by quality teachers.

8.2 There should be monitoring and follow-up research on the continuity of the management in the work-integrated education network, involving all faculty lecturers and stakeholders.

9. Acknowledgment

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