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**RANGSIT JOURNAL OF SOCIAL SCIENCE AND HUMANITY (RJSH)****Volume 8, Number 2, July – December 2021****Editor's Note**

This issue of the Rangsit Journal of Social Science and Humanity (RJSH) presents you with eight articles from various disciplines. Among them, several articles are related to the ASEAN countries. We hope that the RJSH will have more articles from ASEAN countries. Apart from that, this issue offers two creative research composition articles, an article on art creation, and an article on the linguistic landscape.

In the first article, Niña Fatimah D. Borbon studied the relationship between time management, learning motivation, and academic performance of dental students in a dentistry college in the Philippines. This study found that task prioritization was the dominant time management skill of dental clinicians. In addition, the appreciation of the value of the course was their highest learning motivation.

The second article takes us to Myanmar. Hnin Set Win and Sasiphattra Siriawato discovered an interesting concern that some difficult situations exist for the political candidates in the 2020 general election. Nonetheless, the authors found that the 2020 general election was still freer and fairer than the 2015 general election.

The third article is about a creative research composition, “King Bhumibol and his Phenomenal Music Legacy for Jazz Orchestra,” in which Palangpon Songpaiboon, Weerachat Premananda, and Den Euprasert composed a four-movement jazz orchestral suite to honor His Majesty, King Bhumibol. This masterpiece truly expresses the grateful moments and love of the Thai people.

The next article still revolves around music. This study by Sirarat Sukchai and Weerachat Premananda is about the creative research composition of the Siamese Mass for the Roman Catholic Liturgy. It was composed in Latin for choir, solo, and piano accompaniment.


In the fifth article, Piyyarat Pipattarasakul studied the linguistic landscape of the Bangkok Railway Station, known as Hua Lamphong Railway Station. The author interestingly found 314 signs used for providing general information, giving direction, advertising, and so on. Thai and seven foreign languages were found, which reflects multilingualism and globalization.

The sixth article from Gomesh Karnchanapayap lets the reader explore the creation of physical art objects through virtual reality. The author believes that virtual reality could be used to deliver a satisfying art-viewing experience to audiences.

In the seventh article, Pearpilai Jutasompakorn, Chu Yeong Lim, and Seck Tan studied migratory factors for accountancy students within the ASEAN countries. The opportunity to acquire learning exposure was an important migratory factor, particularly for Singapore students. However, for non-Singapore students, the economic growth of the destination country was an important migratory driver.

Last but not least, the study by Kok-Pin Lim, Kim-Leng Goh, and Chin-Sieng Chong highlights the effects of global commodity prices on ASEAN-5 stock markets. The authors found that global commodity price movements had effects on the returns of ASEAN-5 stock markets, and the spillover effects were generally positive.

We welcome your comments and, of course, your manuscripts. Links to our manuscript submission site can be found at RJSH Online Submission and Review System: [www.rsu.ac.th/rjsh](http://www.rsu.ac.th/rjsh). We look forward to hearing from you and thank you in advance. We wish you good health and happiness in the new year of 2022.

A handwritten signature in blue ink, reading "Thamavit Teichadonham". The signature is written in a cursive, flowing style.

Editor-in-chief



**RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)**  
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## Time Management, Learning Motivation and Academic Performance of Dentistry Students

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### Abstract

This study aimed to identify the time management skills and learning motivation of the dental clinicians that may impact their academic performance, and test significant difference on time management and learning motivation between the junior and senior clinicians. The research also explored whether there is significant relationship between time management, learning motivation and academic performance of the dental clinicians and proposed action plans based on the findings. Data were gathered using a standardized questionnaire that assessed time management skills which was divided into three components such as task prioritization, task listing and task scheduling; and the learning motivation of the students, adapted from motivated strategies for learning questionnaire from University of Michigan, in terms of value, expectancy and affective components. Sixty-seven dental clinicians of Doctor of Dental Medicine participated and consented the evaluation of their previous semester's General Weighted Average (GWA) in the professional subjects to assess their academic performance. The findings revealed that task prioritization is the dominant time management skill among junior and senior dental clinicians. Value is the highest learning motivation among the junior and senior dental clinicians. Furthermore, majority of the respondents have GWA of 2.00-2.49. Third year students have greater learning motivation in terms of value. There was no significant relationship exists between GWA, time management skills and learning motivation, implying that the students' GWA was not affected by their time management and their level of motivation. Proposed action plans may also be considered by the college of dentistry to help look at possible means to provide quality education that will address the current problems in student's self-regulated learning, enhance teaching strategies in motivating the students to be competent in using their time in studying and finishing their requirements.

**Keywords:** *academic performance, time management, learning motivation, value, expectancy and affective component*

### 1. Introduction

The collegiate years of dental students are very important to train them in being excellent dental practitioners, who are able to deliver quality dental services to the society. In their college years, the dental students acquire not only the knowledge and clinical skills, but also the necessary academic self-management skills such as good time management and learning motivation to perform well academically. These skills are essential due to the rigors and intensity of the academic and clinical responsibilities of dentistry students. Acquiring these two self-management skills enables them to achieve their goals and trains them in being efficient dentists in the future.

College students may have the tendency to be overwhelmed with feelings that there is insufficient time to complete all requirements adequately. This can be observed in the college of dentistry where some students tend to delay in completing their course requirements, thereby extending their stay in the university. However, the challenge for most dental students is not that there is inadequate time to accomplish what must be done, but that most students do not know how to manage their time wisely and be highly motivated to follow through the plan of their use of time, to accomplish every demand of their academic and clinical loads. Given the many clinical requirements, proficiency examinations and other stressors in the academic life of a dentistry student he who has difficulty in managing his time well can find it very challenging to become more successful and effective, and oftentimes having the tendency to lose his motivation to study and improve his performance.



A student may use his time differently from another student and may also be motivated in varying ways than the other. A successful student takes charge of his own learning, and more specifically takes charge of how he will use his time and attention to perform well academically (Dembo, 2013). They should acquire efficient and effective learning strategies to understand and apply knowledge, are well-motivated in achieving goals and can evaluate and produce change in behavior to improve the outcomes.

According to Kaushar (2013), time management entails creating goals and priorities, establishing strategic timeline which includes keeping a to-do list and breaking down of tasks, and organizing the hours and tasks in an orderly way to accomplish the set forth goals. Task prioritization focuses on accomplishing tasks according to their importance and urgency. Establishing goals and prioritizing selected tasks is essential so that the series of actions to take are objectively aligned toward achieving them. Upon establishing the priority level of tasks, each activity will be divided into workable units and enumerated sequentially through the process of task listing. Breaking down of tasks to do makes the work more organized and concretely measured. For each task, a specific period of time will be given and allotted to ensure when it will be done and how long will be devoted to finish the task. This is further done through the process of task scheduling, which may include the use of calendars, weekly timetables and reminder systems. Schedules guide the person systematically and enable him to go through the daily and weekly routine of the work.

Lacorte, Añonuevo, Guan, Mendoza and Pateña (2017) maintains that accurately prioritizing the work that matters most daily is one of the greatest challenges for a clinician. They engage this challenged by beginning in long procedure requirements that demand extensive time allotment such as in prosthodontics, endodontic therapy, then short procedure requirements such as oral prophylaxis, restorations and extractions. A senior clinician would have to manage his time systematically to perform all these clinical requirements, participate in lecture and laboratory classes, special studies and research, written and practice proficiency exams to be able to satisfactory pass and finish his degree.

Aside from time management skills, students should also have the motivation to acquire learning. According to McCoach and Flake (2018), motivation is considered as an important component for success in school because it serves as the fuel to ignite student's abilities and turn them into achievements. It is their driving force in doing the things that they have set their mind to do.

For each student, his motivation may vary from time to time, and is different from one person to another. Learning motivation may come from the appreciation of the Value of the course to the students. With this motivation, students understand the importance and value of the course material to them, thus having the interests to learn based on the appreciation of the benefits they can get from the course material. Another learning motivation may come from the Expectancy of responsibility and hard work coming from the students, wherein the students themselves understand that they must strive hard and put in the effort to learn and acquire the skills they need. The affective component of learning motivation focuses on the test anxiety, which influences the motivation of the students to perform during examinations. In this component, positive or negative emotions, aside from test taking skills, may play an important role in the student's motivation to perform well or poorly in their examinations.

Several researches examined how motivation is related to academic performance of college students. Self-regulated learning and motivation facilitate the effects of emotions on academic achievement (Mega, Ronconi, & De Beni, 2014). Positive emotions nurture academic achievement when they are mediated by self-regulated learning and motivation. Students who have interest and acknowledges the value of education, tend to perform well and do their tasks as guided by this mindset. While there are also some studies which reveal motivation as insignificant mediator to academic success. There were findings that students can perform well in their studies even with low motivation or lack of motivation (Robbins et al., 2004; Basila, 2014).

Due to this inconsistency, the researcher would like to explore further whether motivation level of dental students play a key role in having good academic performance. Also, as part of its institutional mission, Lyceum of the Philippines University (LPU) - Batangas is committed to provide quality education and develop leaders, lifelong learners and globally competitive professionals. With this, it is vital to monitor the student's academic performance through studying further the various factors that affect their academic success.

Furthermore, the researcher wanted to explore how time management and motivation level of dental students are related to their academic performance in the college of dentistry. In this study, the researcher assessed the academic performance of the junior and senior dental clinicians, focusing primarily on the student's general weighted average (GWA) of the professional subjects in the previous semester, when there is a great academic stress due to the many clinical requirements and dental subjects that they must cover for that period. This research determined the time management skills and learning motivation of the dental clinicians that may affect their academic performance and test significant difference on time management and learning motivation between the junior and senior clinicians. The research tested the significant relationship among time management, learning motivation and academic performance of the dental clinicians, and proposed action plans based on the findings.

The result of this study may help the dentistry students to assess their time management skills and learning motivation to further improve their academic performance. This may also benefit the college of dentistry in terms of looking at possible means to address the current problems in student's self-regulated learning and enhance teaching strategies of clinical instructors and faculty members in motivating their students to be competent and be self-directed in using their time and efforts in studying and finishing the requirements. Reinforcement of proposed action plans ultimately hopes to improve the students' academic standing, that will help them to succeed in their college life and as future dentists. Lastly, future researchers may also explore how time management and motivation level affect the academic performance of other colleges, investigate other non-cognitive factors that might affect learning, and assess the effectiveness of the proposed action plans that might be implemented consequently.

## **2. Objectives**

The study aimed to investigate the relationship of time management skills and motivation level of the junior and senior dental clinicians in the college of dentistry school year 2018-2019, to their academic performance. Specifically, it aims the following:

- 1) to identify the junior and senior clinicians' time management skills; to assess the clinicians' motivation level of learning.
- 2) to determine the academic performance of the respondents on their professional subjects during the first semester, school year 2018-2019.
- 3) to test significant difference on time management and learning motivation when respondents were grouped according to year level
- 4) to test significant relationship between time management, learning motivation and academic performance of the dentistry students.
- 5) to propose an action plan based on the findings of the study.

## **3. Materials and Methods**

Descriptive method of research was used in the study to determine the academic performance of the students in the doctor of dental medicine course. The correlational method was used to examine the relationship that exists between time management skills and academic performance on the doctor of dental medicine course, as well as motivation level of the students to their academic standing. According to Shields and Rangarajan (2013), descriptive research is commonly used to describe characteristics of a certain group of people and/or phenomenon. Moreover, a study using this method seek to explain an entity and seek solution to a relevant issue.

The researchers used the total population of the junior and senior dental clinicians batch 2018-2019 of the college of dentistry in Lyceum of the Philippines University - Batangas. The respondents were composed of the sixty-seven dental clinicians of doctor of dental medicine, who have undergone academic and clinical experiences. Forty-six of them were junior dental clinicians and on their third year dental proper, while twenty-one of them were senior dental clinicians and on their fourth year dental proper. Respondents included were only those enrolled under third and fourth year dental proper for the current school year. Excluded were those irregular students because their general weighted averages were still incomplete.

The researcher used a standardized questionnaire, as the main instrument, which was composed of three parts. Part 1 included the profile of the junior and senior clinicians of the college of dentistry. Part 2 dealt with the time management skills taken from Wayne State University (2014), which was divided into three components such as task prioritization, task listing and task scheduling. The 4-point Likert Scale (always, sometimes, often and never) was used in this part of the questionnaire. Part 3 assessed the learning motivation of the clinicians, adapted from motivated strategies for learning questionnaire from University of Michigan (Duncan et al., 2015), in terms of value, expectancy and affective components. The 4-point Likert Scale (very true of me, true of me, untrue of me, very untrue of me) was used in this part of questionnaire. Moreover, an informal interview was used to get more pertinent information to support the results of the study.

All data were encoded, tallied, tabulated and interpreted using different statistical tools. These data were treated with confidentiality. Descriptive statistical tools to be utilized included frequency distribution and ranking to identify the performance of students. To assess the time management practices of the respondents in their professional courses, weighted mean was taken. Independent sample t-test was used to test the significant difference on time management and learning motivation when grouped according to year level. In addition, all data were treated using a statistical software known as PASW version 18 to further interpret the results of the study.

In accordance with the code of ethics, the researcher ensured that all the data to be collected from the respondents will be free consent- fully volunteered from the respondents. The researcher also ensured that there is a high reverence and value regarding the integrity of their respondents in the treatment to receive an effective response from them. Hence, respecting the ideas and opinions of the respondents and recoding their advice on the research topic can ensure a fruitful study.

#### 4. Results and Discussion

**Table 1** Dental clinicians' time management skills in terms of task prioritization

Indicators	WM	VI	Rank
1. I keep my workspace tidy so that I can work efficiently.	3.37	Often	7
2. I take a positive attitude towards frustration and failure.	3.15	Often	16
3. I do tasks in order of their importance.	3.66	Always	1
4. I try to complete one task before going on to the next.	3.48	Often	3.5
5. I set myself specific and clearly defined goals.	3.37	Often	7
6. I keep scheduling so that I achieve my objectives on time.	3.22	Often	13
7. I don't just do the simple, easy things first, but the most important.	3.33	Often	10
8. I realize that efficiency and effectiveness are not the same.	3.28	Often	11
9. I don't put off making decisions.	3.03	Often	20
10. I have a daily "to do" list that I update regularly.	2.91	Often	21
11. I persevere when things are not working out.	3.10	Often	18
12. I say "no" to others when I am short of time.	3.09	Often	19
13. I agree with the principle that the best time to do something is usually now.	3.34	Often	9
14. I prioritize tasks so that I do the most important and urgent first.	3.51	Always	2
15. I manage my fear of doing things I don't like to do and realize that this is part of procrastination.	3.15	Often	16
16. I share tasks or problems with others if possible	3.15	Often	16
17. I set myself realistic and achievable goals.	3.39	Often	5
18. I don't allow constant interruptions to my work.	3.16	Often	14
19. I am able to analyze my present position and assess what action I need to take to achieve my goals.	3.37	Often	7
20. I reward myself for achieving intermediate objectives as well as my final goal.	3.48	Often	3.5
21. I am taking down notes during lecture.	2.79	Often	22
22. I listen to the professor more than I take down notes.	3.27	Often	12
23. I keep my notes organized.	2.70	Often	23
<b>Composite Mean</b>	<b>3.23</b>	<b>Often</b>	

Table 1 presents the clinicians time management in terms of task prioritization. The composite means of 3.23 indicates that the respondents often performed the indicators. Among the items cited, doing the tasks in order of their importance (3.66) and prioritizing tasks so that they do the most important and urgent first (3.51) topped the list and rated always.

Prioritization involves doing tasks in order of their importance and urgency, and this is practiced among dental clinicians due to the various workloads that they have in the clinical requirements, lecture subjects, research, preboards and course examinations, not to mention their other social responsibilities outside school. A clinician also mentioned that it was helpful for him to know the importance of each tasks that he will be doing so that he can engage on it efficiently, considering the time constraints and the effort it requires for it to be completed.

According to Lawrence (2015), prioritization occurs in three phases. First, determining the urgency of work in relation to its importance, which may include reviewing a rundown of tasks and their deadlines, from which, students often prioritize the assignment that is due the soonest. Second, evaluating the importance of the task to them according to some factors, such as if the assignment is needed by a course in the student's major or if it will influence their career after graduation. Lastly, devoting a specific portion of time to the assignment. Some of the clinicians practice this method and find it useful in their goal to finish their clinical requirements in due time.

Other items were assessed often and items such as having a daily "to do" list that they update regularly (2.91), taking down notes during lecture (2.79) and keep their notes organized (2.70) got the lowest mean value.

Organized note keeping is the least practiced task prioritization skills of the dental clinicians because it is becoming more common to have access to lecture handouts and notes from their professors. When time is limited, and study materials are readily available for the students, creating review notes may not be too appealing to students because of the time and effort it demands to keep this discipline in place. A clinician admitted he does not have his own made notes for each subject because he has no time to do it for each subject and it so time-consuming for him to do that. However, he contested that he just compiled the handouts given to their class by their professors, collecting as well as the copies of reports made by his classmates on their lecture classes.

Lecture handouts from their professors dissuade them from creating their own notes and keeping them organized, making their learning inefficient (Friedman, 2014). Giving notes before lecture can hinder learning because students can less likely make connections between ideas and processes that they could have learned with their own note-taking skills. The students may be encouraged to review the connections they made between ideas during instruction as effectively by letting them take generative notes from their lectures.

**Table 2** Dental Clinicians' Time Management Skills in terms of Task Listing

Indicators	WM	VI	Rank
1. I use a highlighter pen or underlining to emphasize key facts in my lecture notes.	3.51	always	1
2. I write things down rather than trying to remember everything in my head.	3.34	often	2
3. I use my diary to write down appointments, deadlines and things to do.	2.52	often	7
4. I write down specific objectives in order to work towards my ultimate goal.	3.07	often	4
5. For last minute revision, I make minimal notes recording just key facts, and diagrams	2.91	often	5
6. I use lists to remind me of what I need to do and when.	3.21	often	3
7. I summarize my lecture notes when revising for examinations.	2.90	often	6
<b>Composite Mean</b>	<b>3.07</b>	<b>often</b>	

*Legend: 3.50 – 4.00 – always (A); 2.50 – 3.49 – often (O); 1.50 – 2.49 – sometimes (S); 1.00 – 1.49 – never (N)*

Table 2 presents the clinicians time management in terms of task listing. The composite mean of 3.07 indicates that the respondents often performed the indicators. Among the items cited only, their using highlighter pen or underlining to emphasize key facts in their lecture notes (3.52) topped the list and rated always; followed by their writing things down rather than trying to remember everything in their heads (3.34) and their using of lists to remind them of what they need to do and when (3.21), which both are rated often.

Using highlighter pen or underlining to emphasize key facts in their lecture notes is important and well-practiced among dental clinicians to keep them focused and help them be reminded of the key

statements that they get from various topics that they need study. Because of the expanse and depth of the course materials in Dentistry, students find means to make their studying strategic by using tools that will make their learning more efficient. One of this is marking important words with highlighter. According to a clinician, she has her own set of highlighter, sticky notes and colored pens as her tool during study and review. It helped her keep track of the progress of her scheduled topics to study and break the monotony of reading entirely the topic again during scanning and reviews.

As students make progress in reading, highlighting acts as a visual motivator for them, giving pertinent information on what they are working on which they can later on review. According to Foasberg (2014), highlighters, index cards, and pens served as “productivity supplies” that aid students in studying. For undergraduate medical students, they understood that highlighting enhances their memory performance, so they use highlighter for important points yet should learn to identify which key points to mark (Yik, Yi, Somadam, Amirudin, & Ananthan, 2018). This skill of selecting what to highlight may be an important factor in the efficacy of studying.

Other items were assessed often and items such as making minimal notes recording just key facts, diagrams and formulae for last minute revision (2.91), summarizing their lecture notes when revising for examinations (2.90) and using of diary to write down appointments, deadlines and things to do (2.52) got the lowest mean value.

The least practiced item on the task listing skills by the clinicians is using of diary to write down appointments, deadlines and things to do. Most of them no longer write down on a piece of paper what they need to do on a daily basis. Based on the observation of the researcher, some clinicians are adept in using their smartphones instead for organizing their appointments, setting alarms and reminders for deadlines and listing down of things to do, especially in setting appointments for their patients in the Clinical Dentistry. Aside from the purpose of organization, smartphones, tablets and other gadgets make communication among other students, professors and their patients easy.

According to Santandreu and Shurden (2017), students can benefit from using smartphones applications and technologies that will make their time management convenient, accessible and efficient allowing them to perform their day-to-day activities and will allow the flexibility to perform multiple tasks using just one device.

**Table 3** Dental clinicians’ time management skills in terms of task scheduling

Indicators	WM	VI	Rank
1. I plan out a revision timetable for examinations.	2.91	often	11
2. I review my progress towards goals and revise my plans as appropriate.	3.01	often	9.5
3. When revising, I take a few minutes break every hour to refresh my mind.	3.16	often	4
4. I prepare contingency plans in case my first line of action fails.	3.49	often	1
5. I organize my work to meet deadlines in good time.	3.10	often	7
6. I know the times of day when I am most productive and schedule my most demanding work for these times.	3.30	often	2
7. I have a reminder system to remind me of when to do things.	3.13	often	5
8. I have developed effective strategies to help deal with pressure - such as taking exercise or going to the cinema.	3.01	often	9.5
9. I map out several routes towards my goals in case my first course of action fails.	3.04	often	8
10. I break difficult tasks down into their components, so that I can accomplish them one step at a time.	3.12	often	6
11. I don't procrastinate when I need to take action.	2.84	often	12
12. I set deadline to finish a specific task.	3.21	often	3
<b>Composite Mean</b>	<b>3.11</b>	<b>often</b>	

*Legend: 3.50 – 4.00 – always (A); 2.50 – 3.49 – often (O); 1.50 – 2.49 – sometimes (S); 1.00 – 1.49 – never (N)*

Table 3 presents the clinicians time management in terms of task scheduling. The composite means of 3.11 indicates that the respondents often performed the indicators. Among the items cited only, their preparing contingency plans in case their first line of action fails (3.49) topped the list and rated often,

followed by knowing the times of day when they are most productive and schedule their most demanding work for these times (3.30) and setting deadline to finish a specific task (3.21).

In terms of scheduling, clinicians often have the practice of preparing contingency plans in case their first line of action fails. Because they recognize the limited period, they have in a semester to complete all the extensive course requirements, it helps them to prepare and plan ahead of time if ever their initial expected outcome will not happen. This will earn for them the benefit of not wasting time and making each day productive despite emergencies and problems that might affect their tasks. Based on the observation of the researcher, dental clinicians are consciously aware of the value of time, especially in the clinics. They would maximize the use of their clinical duty hours to accomplish what they plan to do. For instance, long procedure patients are scheduled firstly and with foresight that if this patient does not come, another patient undergoing short procedure can readily come to fill in the time.

Other items were also assessed often and items such as reviewing their progress towards goals and revising their plans as appropriate (3.01), developing effective strategies to help deal with pressure (3.01), planning out a revision timetable for examinations (2.91) and not procrastinating when they need to take action (2.84) got the lowest mean value.

Least practiced task scheduling skill is avoiding procrastinating when they need to take action. As observed in the clinical dentistry by the researcher, some clinicians would often do most of the clinical requirements during the last few days of the semester, which could have been done during the spread of the earlier months. Avoiding and putting off for a time some of the rigorous and challenging tasks that must be finished by a clinician is one of the common pitfalls that has negative impact in how they manage their time. Poor impulse control, inability to persevere, lack of self-discipline and time management skills and failure to work systematically lead to this delaying behavior, which is common to most college students (Scent, & Boes, 2014). Avoiding procrastination also ranked least in the time scheduling skills of dental clinicians in a recent research done by Lacorte et al (2017), which reveals procrastination as an ever-present concern among dental clinicians.

**Table 4** Summary table on junior and senior clinicians' time management skills

Indicators	WM	VI	Rank
1. Task Prioritization	3.23	often	1
2. Task Listing	3.07	often	3
3. Task Scheduling	3.11	often	2
<b>Overall Composite Mean</b>	<b>3.14</b>	<b>often</b>	

*Legend: 3.50 – 4.00 – always (A); 2.50 – 3.49 – often (O); 1.50 – 2.49 – sometimes (S); 1.00 – 1.49 – never (N)*

Table 4 presents the summary of junior and senior clinicians' time management skills. The overall composite means of 3.14 indicates that the respondents often performed the indicators. Task prioritization (3.23) ranked first, while task listing (3.07) ranked least with both indicators rated as often.

The dental clinicians find it helpful and important to practice appropriate time management skills and so they do often apply these in their day-to-day responsibilities. Their recognition of the importance and urgency of the tasks and duties assigned to them enables them to rank the different tasks based on their value on which one must be done first and must be given focus. Because they understand their priorities, this enables the clinicians to do one task at a time and align it with a working schedule that will enable them to accomplish the list of things to do.

**Table 5** Dental clinicians' value learning motivation

Indicators	WM	VI	Rank
1. I prefer course material that really challenges me so I can learn new things.	3.16	TM	11
2. I prefer course material that arouses my curiosity, even if it is difficult to learn.	3.21	TM	10
3. The most satisfying thing for me is trying to understand the content as thoroughly as possible.	3.34	TM	7.5
4. When I have the opportunity, I choose course assignments that I can learn from even if they don't guarantee a good grade.	3.06	TM	13

Indicators	WM	VI	Rank
5. Getting a good grade is the most satisfying thing for me right now.	3.15	TM	12
6. The most important thing for me right now is improving my overall grade point average, so my main concern in my class is getting a good grade.	3.24	TM	9
7. If I can, I want to get better grades in my class than most of the other students.	3.01	TM	14
8. I want to do well in my class because it is important to show my ability to my family, friends, employer, or others.	3.34	TM	7.5
9. I think I will be able to use what I learn in my course in other courses.	3.39	TM	4.5
10. It is important for me to learn the course material in my class.	3.40	TM	3
11. I am very interested in the content area of my course.	3.43	TM	1
12. I think the course material in my class is useful for me to learn.	3.42	TM	2
13. I like the subject matter of my course.	3.36	TM	6
14. Understanding the subject matter of my course is very important to me	3.39	TM	4.5
<b>Composite Mean</b>	<b>3.28</b>	<b>True of Me</b>	

*Legend: 3.50 – 4.00 – very true of me (VTM); 2.50 – 3.49 – true of me (TM); 1.50 – 2.49 – untrue of me (UM); 1.00 – 1.49 – very untrue of me (VUM)*

Table 5 presents the dental clinicians' value learning motivation. The composite means of 3.28 shows that the indicators are true of the respondents. Among the items cited only, the respondents being very interested in the content area of their course (3.43) topped the list and rated true of them, followed by their thinking that the course material in their class as useful for them to learn (3.42) and importance for them to learn the course material in their class (3.40).

The dental clinicians being very interested in the content area of their course indicates that they are aware of the usefulness and importance to them of their course, because this will be their future practice and career as a dentist. They are very attentive in their dental subjects because of the usefulness of its clinical implication to their dealings with the patients they are treating in the clinic, which they will further apply in their future dental practice. A clinician shared that she is highly interested in learning the practical application and relevance of the dental subjects she is studying, as to when she is treating the patients in the clinical dentistry, and hopefully in her future dental career. She is motivated by the benefits she can get from being able to apply the things she learned during her college years,

According to Harackiewicz, Smith and Priniski (2016), students are more inclined to go and give their focus in their class, be more involved and get more courses, when they are interested in an academic topic. Interest is hence described as the students' momentary experience of being captivated by an object as well as more lasting feelings that the object is enjoyable and worth further exploration. Their interest becomes a powerful motivational factor that boosts their learning, directing academic and career trajectories. It is therefore important to the students' academic success. The students give high value to their learning because they nurture the interest that they have in a certain topic or course.

Other items were also assessed as true of them and items such as getting a good grade as the most satisfying thing for them right now (3.15), choosing course assignments that they can learn from even if they don't guarantee a good grade (3.06) and wanting to get better grades in their class than most of the other students (3.01) got the lowest mean value.

Because wanting to get better grades in their class than most of the other students holds that lowest mean value, this indicates that the dental clinicians does not possess a motivation that is competitive or looking with comparison to one another. They tend to recognize their own individual pace in learning and do what they can to learn based on their capabilities and learning skills. According to a clinician, it gives her negative feelings whenever she compares herself to her classmates' progress, so she decided she will not look and compare her skills and progress to them. She recognizes her capabilities need time to develop and she has her own pace of learning. She admits that the negative feelings that she gets from comparison and unhealthy competition cripples her from learning more and being more engage during discussions and examinations. It adds pressure to her studying, and she does not want that to affect her performance in the clinics as well.

A minority of dental students in a research done by Almajed, Skinner, Peterson and Winning (2016) supported the claim that competition may affect academic performance of the students. The study

indicated that the presence of competition between dental students led to limited sharing of learning, resulting to an uncomfortable atmosphere among the students and hampering the students' learning. The competitiveness between the group members impacted them in a stressful way because it became difficult for them to work together, because some students keeping things to themselves more. Another group, who reportedly was less competitive and very open with sharing resources and supporting each other when they lack knowledge, experienced much more relaxed disposition and facilitated more learning and enjoyment in learning among themselves.

**Table 6** Dental clinicians' expectancy learning motivation

Indicators	WM	VI	Rank
1. If I study in appropriate ways, then I will be able to learn the material in my course.	3.49	TM	2
2. It is my own fault if I don't learn the material in my course.	3.27	TM	4
3. If I try hard enough, then I will understand the course material.	3.55	VTM	1
4. If I don't understand the course material, it is because I didn't try hard enough.	3.30	TM	3
5. I believe I will receive an excellent grade in my class.	3.00	TM	9
6. I'm certain I can understand the most difficult material presented in the readings for my course.	2.96	TM	10.5
7. I'm confident I can understand the basic concepts taught in my course.	3.22	TM	5
8. I'm confident I can understand the most complex material presented by the instructor in my course.	2.85	TM	12
9. I'm confident I can do an excellent job on the assignments and tests in my course.	2.96	TM	10.5
10. I expect to do well in my class.	3.18	TM	6
11. I'm certain I can master the skills being taught in my class.	3.03	TM	7.5
12. Considering the difficulty of my course, the teacher, and my skills, I think I will do well in this class.	3.03	TM	7.5
<b>Composite Mean</b>	<b>3.15</b>	<b>True of Me</b>	

*Legend: 3.50 – 4.00 – very true of me (VTM); 2.50 – 3.49 – true of me (TM); 1.50 – 2.49 – untrue of me (UM); 1.00 – 1.49 – very untrue of me (VUM)*

Table 6 presents the dental clinicians' expectancy component as learning motivation. The composite means of 3.15 shows that the indicators are true of the respondents. Among the items cited only, given they try hard enough, then they will understand the course material (3.55) topped the list and rated very true of them. This is followed by given they study in appropriate ways, then they will be able to learn the material in their course (3.49) and given they don't understand the course material, it is because they didn't try hard enough (3.30), both rated as true of the respondents.

It was evident among the dental clinicians that they were trying hard enough to understand the course material. Due to the various dental specialties that must be learned by the students taking on general dentistry, it takes a great effort to understand each branches of study in dentistry. The students also expected from themselves that they need to give appropriate effort and strategies and be diligent in studying their course. Because these various specialties also demand acquiring variety of skill sets and interdependent body of knowledge, dental students must be diligent and train well to comprehend and relate them to one another. Diligence, being the measure of the energy and effort toward the achievement of the goal, is an indicator of academic success among dental students (Stacey, & Kurunathan, 2015). Diligence belongs to the noncognitive predictors which also includes self-discipline, achievement-striving, task orientation, deliberation, and resilience, and enhances the prediction of students' academic and clinical performance early in the dental curriculum, and more so as they advanced through the curriculum sequence.

Other items were also assessed as true of them and items such as being certain they can understand the most difficult material presented in the readings for their course (2.96), being confident they can do an excellent job on the assignments and tests in their course (2.96) and being confident that they can understand the most complex material presented by the instructor in their course (2.85) got the lowest mean value.



The confidence level of the dental clinicians to understand the most complex material presented by the instructor in their course was rated least in the expectancy learning motivation. Some students are sometimes doubtful in their capability to produce the outcomes called forth by the dental subjects which are seemingly difficult for them. This may be due to the bulk of learning materials that they have to learn within the semester when they are also doing clinical requirements in application to the theoretical side of the course. This lack of confidence often holds them back from engaging in the difficult topics and assignments. According to one clinician, dentistry demands from her a sense of confidence and positivism that she can do what it requires, and she can do her best when called for. There are times that she thought of giving up, especially when things are not going as planned, or there are many delays and unexpected things happening in her clinical requirements, or she just sometimes lacks the motivation to continue or feel lazy to keep trying. She also mentioned how confidence may also come from the people around her who support her, especially her family and friends. Confidence combined with a healthy self-concept and self-efficacy, is very important for education. Confidence accounts for higher variance in achievement, while measures of students' previous cognitive performance in combination with other non-cognitive variables account for lesser variance compared to confidence, thereby revealing confidence as one of the strongest predictors of performance (Stankov, Morony, & Le, 2014). This motivational boost may rekindle the passion for the student's goals and get him back on track and keep him going.

**Table 7** Dental clinicians' affective learning motivation

Indicators	WM	VI	Rank
1. When I take a test I think about how poorly I am doing compared with other students.	2.69	TM	5
2. When I take a test I think about items on other parts of the test I can't answer.	3.01	TM	1
3. When I take tests I think of the consequences of failing.	2.99	TM	2
4. I have an uneasy, upset feeling when I take an exam.	2.90	TM	3
5. I feel my heart beating fast when I take an exam.	2.82	TM	4
<b>Composite Mean</b>	<b>2.88</b>	<b>True of Me</b>	

*Legend: 3.50 – 4.00 – very true of me (VTM); 2.50 – 3.49 – true of me (TM); 1.50 – 2.49 – untrue of me (UM); 1.00 – 1.49 – very untrue of me (VUM)*

Table 7 presents the dental clinicians' affective learning motivation. The composite means of 2.88 shows that the indicators are true of the respondents. Among the items cited only, thinking about items on other parts of the test they cannot answer (3.01) topped the list and rated as true of the respondent, followed by thinking of the consequences of failing (2.99) and having an uneasy, upset feeling when they take an exam (2.90).

Thinking about items on other parts of the test they cannot answer topping the list indicates that the dental clinicians are conscious on items and topics that they cannot understand or answer. This may aggravate their test anxiety, leading to uneasiness and being distracted in answering well the other items of the examination. Based on the observation of the researcher, the students are keen in asking their classmates and their professor whenever there are items in the examinations that they cannot answer. Some of them are worried that their answers are wrong, so they confirmed it to their classmates at the end of their examination.

This anxiety may be due to inadequate preparation for the test, discomfort with the testing situation even though they have knowledge of the covered topics, and lack of test-taking skills. Students experiencing test anxiety have negative feelings of fear, vulnerability, and a sense of failure, which may lead them to perform poorly because of the incapacitating effects that examinations trigger upon them. If left unaddressed, the students may continue to suffer from poor concentration, easy distractibility, difficulty remembering stored information, and misreading test items increases students' prevailing fears related to failing. In the long run, these issues have harmful consequences on the students' physical and emotional well-being (Shapiro, 2014).

Other items were also assessed as true of them and items such as feeling their heart beating when taking an exam (2.82) and thinking about how poorly they are doing compared with other students (2.69) got the lowest mean value.

Having the lowest mean for thinking about how poorly they are doing compared with other students, indicates that the dental clinicians less likely compare themselves to one another during examinations. This is congruent with the result found in Table 5, which further implicate the dental clinicians being less competitive and comparative to one another. The reason for this is because they recognize their individual capabilities and learning curve for both the theoretical and clinical requirements of the course. However, competition that promotes learning may be encouraged through collaboration among peers.

According to Khalaila (2015), due attention must be given to promote motivational factors such as a healthy self-concept, as well as to lessen the negative consequences of situational factors such as test anxiety when giving psycho-educational interventions to enhance students' academic performance. One of the factors that increase test anxiety is the unhealthy comparison between students that leads them to work on their own instead of collaborating with each other.

**Table 8** Summary table on junior and senior dental clinicians' learning motivation

Indicators	WM	VI	Rank
1. Value	3.28	TM	1
2. Expectancy	3.15	TM	2
3. Affective	2.88	TM	3
<b>Composite Mean</b>	<b>3.10</b>	<b>True of Me</b>	

*Legend: 3.50 – 4.00 – very true of me (VTM); 2.50 – 3.49 – true of me (TM); 1.50 – 2.49 – untrue of me (UM); 1.00 – 1.49 – very untrue of me (VUM)*

Table 8 presents the summary on junior and senior clinicians' learning motivation. The overall composite mean of 3.10 shows that the indicators are true of the respondents. Value (3.28) topped the list while affective motivation (2.88) got the lowest mean, both indicators rated as true of the respondents. Of all the learning motivation assessed, the dental clinicians are mostly driven by the value component of learning, where in there is utmost regard for students' appreciation and interest on the course material, subject matter, content and course assignments, as well as getting a good grade and improving it, while making their learning relevant and useful for them in the future.

To be able to recognize the importance of the dental education itself enables the students to devote their efforts in learning and mastering the skills they need to perform well in the course. Their understanding that they are the ones responsible for the outcomes of their learning should also match their capability to strategize on how they can comprehend and apply the skills, despite the difficulty and complexity of the material and technical skills they should perform. Having a realistic mind frame of what diligent effort is expected from themselves is also important for the students so that they can make progress in their learning and can be motivated to accomplish the goals they set for themselves. Even though dental clinicians are routinely exposed to examinations, whether in written or practical forms, they are less likely being motivated by affective and test anxiety. Having the confidence, competence and helpful test taking skills motivate them to learn and to be an effective clinician.

**Table 9** Performance of junior/senior dental clinicians on their professional subjects, first semester., school year 2018 - 2019

Indicators	Frequency	Percentage	Rank
1.75 – 1.99	4	6.0	4
2.00 – 2.49	32	47.8	1
2.50 – 2.74	21	31.3	2
2.75 – 2.99	8	11.9	3
3.00 – 3.49	2	3.0	5

Table 9 presents the performance of junior and senior dental clinicians on their professional subjects during the first semester of school year 2018-2019. 32 out of 67 respondents (47.8 percent) achieved a general weighted average (GWA) of 2.00-2.49. This is followed by 21 out of 67 respondents (31.3 percent) that achieved a GWA of 2.50-2.74. Next to this ranking is the 8 respondents who achieved 2.75-2.99 GWA and 4 respondents achieving 1.75-1.99 GWA. The two remaining clinicians (3 percent) achieved a GWA of 3.00.

Majority of the respondents are above average in their academic performance during their previous semester. This indicates that they have good academic standing and satisfactorily completed their clinical requirements. This is because dental clinicians are required to have higher passing grade in their clinical requirements wherein in some cases, they must have grades of 80 for their case to be credited. Grades below this are not credited and they must repeat the case. Aside from this, there is a minimum requirement in student's stanine in their admission testing. The college dean and faculty also worked together to monitor the academic performance of the students on a regular basis. Only two students have GWA ranging from 3.00-3.49, indicating there are very few students who performed poorly. Despite efforts and attention being given by the college to monitor and improve the academic performance of the students, there are still few students who cannot make progress and high grades, which due to individual factors affecting academic performance such as non-cognitive factors.

According to York, Gibson and Rankin (2015), to attain academic success is to ensure that the following is present: academic achievement, engagement in educationally purposeful activities, satisfaction, attainment of desired knowledge, skills and competencies, persistence, attainment of educational outcomes, and post-college performance. Most importantly from these, persistence can capture students' academic goals across multiple programs of study and included as an important component of academic success to highlight the focus, drive, and advancement necessary for the students to finish their course.

**Table 10** Difference on time management and learning motivation when grouped according to profile variables

Profile Variable	T	p value	Decision	Interpretation
<b>Time Management Skills</b>				
1. Task Prioritization	47.459	0.253	Accepted	Not Significant
2. Task Listing	42.174	0.721	Accepted	Not Significant
3. Task Scheduling	41.473	0.054	Accepted	Not Significant
<b>Learning Motivation</b>				
1. Value	56.573	0.007	Rejected	Significant
2. Expectancy	0.688	0.496	Accepted	Not Significant
3. Affective	0.480	0.633	Accepted	Not Significant

*Legend: Significant at p-value < 0.05; HS – highly significant, S – significant, NS – not significant*

Table 10 presents the difference of the time management and learning motivation of dental clinicians. Based from the table, in terms of value learning motivation, when grouped according to year level, the computed t – value was greater than the critical value and the resulted p-value was less than 0.05 level of significance ( $0.007 < 0.05$ ) ; therefore the null hypothesis of no significant difference is rejected. Thus, there is significant difference on the value learning motivation between third year and fourth year respondents of the study. Based on the result, 3<sup>rd</sup> year students have greater learning motivation in terms of value.

The junior clinicians tend to have greater learning motivation, specifically in value because of their inquisitiveness and interest in learning and applying what they acquired during their preclinical years into their first steps in the clinical dentistry. Junior clinicians, although initially exposed to the rigors of the clinics, are excited in applying theoretical and practical knowledge to their first few patients in the basic clinical requirements of the clinics. They tend to have high hopes and interests in the dynamics and pattern of interactions in the clinics, which they have not yet experienced during their early academic years. Being able to engage well with patients, perform satisfactory under the supervision of their clinical instructors and having the proper conduct while in the clinics are just the first few steps in the junior clinician's life.

According to one junior clinician, she finds the last semester as an interesting leap in her college life because the topics she learned from her earlier years in dentistry are then finally being practiced and tested through her engagement with her patients. This motivated her to be more involved in her dental subjects and be more serious in studying. She appreciates her last semester as both challenging and rewarding since the course material and learning are becoming more practical and relatable. She also acknowledges the help of the practical wisdom that she received from her instructors and colleagues, that enables her to learn even more despite the difficulty and intensity of the training in her clinical years. Junior clinicians prefer course material that challenges them to learn new things, and which arouses their curiosity, even if it is difficult to learn and adapt at the beginning. They try to understand their dental subjects as thoroughly as possible so that they can show their abilities to apply it in the clinics and in the future.

**Table 11** Relationship between GWA, time management skills and learning motivation

Profile Variable	r-value	p value	Interpretation
<b>Time Management Skills</b>			
1. Task Prioritization	-0.014	0.908	Not Significant
2. Task Listing	-0.077	0.535	Not Significant
3. Task Scheduling	0.044	0.725	Not Significant
<b>Learning Motivation</b>			
1. Value	0.162	0.189	Not Significant
2. Expectancy	0.111	0.372	Not Significant
3. Affective	0.133	0.284	Not Significant

*Legend: Significant at p-value < 0.05; HS – highly significant, S – significant, NS – not significant*

Table 11 shows the relationship between GWA, time management skills and level of motivation of the dental clinicians. It was observed that the resulted r-values indicate almost negligible association, and the computed p-values were all greater than 0.05 alpha level. This means that there was no significant relationship exists and implies that the students' GWA was not affected by their time management and their level of motivation.

The academic performance of the dental clinicians is not affected whether the students applied time management skills and be highly motivated in learning. This is because some students who may lack adequate time management skills and are not so highly motivated in learning, may still find the means to excel by keeping up with his duties and responsibilities as a student. There may be other factors that help him achieve good grades and perform well in his classes.

Even if the students may have difficulty in managing his time, which is highly visible in the life of a dental clinician, the student may still have his means of coping up with the academic load and find other strategies that will enable him to learn and finish his requirements in due time. Despite procrastination and limited time to complete the clinical cases, clinicians are resourceful to pursue their goal to comply with their classroom and clinical requirements.

Even without extrinsic or intrinsic goals and motivation, the dental clinicians continue to muster the courage to fulfill all academic demands. According to a clinician, there are times that he may lose his goal and motivation, but even if without motivation or drive, he keeps on going and continues to do the assigned tasks anyway. He understands that there are more problems and challenges than good times, but even so, his determination must not just be based on the positive feeling that may motivate him at times or may be gone after a while. He is convinced being a professional, he must also be trained to keep on doing the things required of him despite the difficulty and challenges.

These two non-cognitive self-management skills, time management skills and motivation, though helpful to them in terms of their studying, have no relation to student performance, also because there are other factors that affects academic performance. According to Robbins et al (2004), educational persistence theory may be a factor that influences student performance, highlighting the effects of contextual influences, which relate to an institution that may affect college outcomes, such as institutional size, institutional selectivity, and its financial support to students; social influence, embodied by perceived social

support of the students; social engagement, which pertains to social integration and belonging; and academic engagement, including student's commitment to his degree and institution.

Moreover, there are other non-intellective factors that may correlate to the academic performance which includes the student's personality traits such as conscientiousness, agreeableness, need for cognition, emotional intelligence, and extraversion; as well as the student's unique approaches to learning which may be deep, surface or strategic (Richardson, Abraham, & Bond, 2012).

**Table 12** Relationship between time management skills and learning motivation

	Value			Expectancy			Affective		
	r-value	p-value	I	r-value	p-value	I	r-value	p-value	I
1. Task Prioritization	.570**	0.000	HS	.453**	0.000	HS	0.117	0.347	NS
2. Task Listing	.336**	0.006	S	0.217	0.078	NS	0.199	0.107	NS
3. Task Scheduling	.573**	0.000	HS	.562**	0.000	HS	.362**	0.003	S

*Legend: Significant at p-value < \*\*0.01; \*0.05; HS – highly significant, S – significant, NS – not significant*

Table 12 shows that the computed r-values indicates a moderate to weak direct association while not all p-values were less than 0.05 and 0.01 alpha level. Based on the result, there was a significant relationship between time management skills and level of motivation in terms of value and implies that the better the time management skills employed, the more that they are motivated as to value.

This means that the dental clinicians who possess better time management skills were motivated highly because of the value and importance of the course materials to them. Understanding the benefits of their course to themselves and appreciating the topics because of its usefulness and its relevance to them enable the clinician to focus their time into studying, prioritizing and allocating time to efficient cover the topics that they need to learn and apply. Value as a learning motivation focuses on the student's interest and appreciation of their course, thus becoming the driving force for them to be eager in learning and exploring further the topics they have at hand. Dental students are interested and engaged in learning their dental subjects during their clinical years because they are able to apply the theoretical knowledge they have acquired during their early years, as they treat different cases of dental patients.

According to Taylor (2012) task value refers to an individual's appreciation for a task's relevance and relates to the degree of personal interest a learner has for a given task and includes beliefs about utility, relevance, and importance. With this in perspective, dental clinicians can manage their time according to what interests them and what they value most in their course material.

With regard to the relationship between time management and level of motivation, it was observed that there was a significant relationship between task prioritization (0.000) and task scheduling (0.000) on expectancy. Among the dental clinicians who adequately practiced task prioritization and task scheduling, they are also highly motivated in expectancy, with the belief that self-efficacy is expected from them. This is because when the dental clinicians have ordered the tasks that they need to do in order of urgency and importance, they tend to more consciously aware that effort and due attention must come from them to achieve what they have prioritized to do.

Expectancy to follow through the tasks they have prioritized and scheduled to do reveals how well the students are aware of their role in the learning process, how they are to regulate and direct themselves in their course, and how much effort they will be giving to each task they have to accomplish. Dental students recognize the importance of self-regulated learning and being responsible to their own duties and acquiring the necessary skills in giving dental treatments. Having the awareness that quality education is not possible without their diligent participation and hard work, it urges them to devote the necessary effort, attention and passion to learn.

If the dental clinicians have this kind of awareness and willingness to learn, then the priorities that they have set in mind to do and the schedule of daily tasks will be done in an orderly and realistic way. Likewise, students who have no sense of self-efficacy and who does not own his responsibility in the learning process will find it difficult to follow through the priorities and schedule that he has in mind to do.

This is where procrastination and lack of focus come into play and add pressure on the shoulders of such students.

Furthermore, there was a significant relationship between task scheduling and affective (0.003). This means that dental clinicians who have high test anxiety tend to practice task scheduling more. This happens because students with high test anxiety tend to seek for effective strategies to help deal with pressure, and so put reminders, working timetable and helpful schedule in place. This may be their way to compensate for their anxious thoughts during examinations.

**Table 13** Plan of action to improve time management and learning motivation of dentistry students

KRA/ Objectives	Strategies	Expected Outcome
<b>Task prioritization</b> – to assist in notes organization	- Faculty members may require students to submit synthesis of the topics as part of the course requirement	- Improved note-taking skills
<b>Task listing</b> – to train students to write down appointments, deadlines and things to do	- Utilize google calendar to synchronize deadlines for the course - A student workshop on managing time and organizing may be conducted.	- Improved listing and task organizing skills
<b>Task scheduling</b> – to eliminate procrastination	- Timeliness may be included in the rubric for the grading both in the academic and clinical requirements	- Reduced procrastination habit
<b>Value</b> – to promote healthy competition among students	- Course-based competition such as quiz bee may be done during annual college days	- Better valuing and interest on learning through healthy competition
<b>Expectancy</b> – to increase the confidence of the students in understanding the course materials	- Learning materials may be given in advance during the summer break to given them ample time to do advance reading - To boost the confidence, a personality development seminar maybe held	- Students may have higher level of confidence in understanding the course materials
<b>Affective</b> – to promote healthy competition among students	- Peer tutorial, wherein high performers will facilitate learning opportunities for low performers, may be conducted for collaborative student learning. - Reward system may be implemented to boost healthy competition	- Student may decrease test anxiety through collaboration

Table 13 presents the plan of action proposed by the researcher to improve time management and learning motivation of dentistry students. The basis of this action plan are the room for improvement from the least ranking for each variables. The key results areas were taken from the three components of time management and three components of learning motivation, with underlying objectives taken from the components' least practiced item. Strategies were also proposed to be able to accomplish the objectives and expected outcomes were also presented to be guided on what observable results can happen when strategies were implemented accordingly.

To improve task prioritization skills, faculty members may require students to submit synthesis of the topics as part of the course requirement to assist in notes organization. To improve task listing skills, students may utilize google calendar to synchronize deadlines for the course to train them to write down appointments, deadlines and things to do. To improve task scheduling, timeliness may be included in the rubric for the grading both in the academic and clinical requirements to eliminate procrastination.

To promote value component of learning motivation, course-based competition such as quiz bee may be done during annual college days to promote healthy competition among students. To promote expectancy component of learning motivation, learning materials may be given in advance during the

summer break to give them ample time to do advance reading, to increase the confidence of the students in understanding the course materials. To promote affective component of learning motivation, peer tutorial, wherein high performers will facilitate learning opportunities for low performers, may be conducted for collaborative student learning, to increase positive learning motivation through collaboration.

## 5. Conclusion

Based on the result of the study, task prioritization was the dominant time management skill among junior and senior dental clinicians. Value was the highest learning motivation among the junior and senior dental clinicians. Majority of the respondents have GWA of 2.00-2.49. Third year students have greater learning motivation in terms of value. There was no significant relationship between GWA, time management skills and learning motivation, implying that the students' GWA was not affected by their time management and their level of motivation. Plan of action was proposed based on the result of the study.

The study recommends for the dental clinicians to apply time management strategies such as note taking, using work timelines and reminder system. The faculty members of the college of dentistry may provide incentives to motivate diligence and timeliness of completion of requirements; and instill the importance and relevance of the course material to the students. The college of dentistry may organize seminars on time management and improving learning motivation of the students. Finally, future researchers may conduct similar study using different variables that were not used in the present study such as emotional intelligence, social skills and stress factors affecting dental students, since the study is limited to a particular group of dental clinicians

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## Free and Fair elections in Myanmar: A Case Study of the 2015 and 2020 General Elections in Myanmar

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### Abstract

Election law and electoral system are formed according to its national conditions. Myanmar has been recognized that it has a truly democratic election for the first time after 2015 general election. Arranging free and fair elections is a very important basic of democracy. This research aims to find out whether political candidates still have more challenges with freedom of participation in the 2020 general election when compared with the 2015 general election and to analyze whether the 2020 general election process is freer and fairer when compared with the 2015 general election. Approximately, six participants who were the political candidates from the National League for Democracy (NLD) and the Union Solidarity and Development Party (USDP) in the 2020 general election in Myanmar were interviewed. This research found that there were three main challenges for the political candidates in the 2020 general election. The first challenge is no freedom of participation in the election, especially in rural areas. The second challenge is that some political parties lost their constituencies because of armed conflict zones and the last challenge is that some candidates had been abducted and abused by an armed group before the election. Furthermore, this research also found that there were two reasons why this election was freer and fairer than the 2015 general election. The first reason is that the 2020 general election was more transparent because citizens, media, and many local and international observers were closely observing the election process. However, only a few observers were allowed to observe the 2015 general elections. The second reason is that the Union Election Commission (UEC) organized the 2020 general election very well, especially the advanced voting system. In this election, elderly voters, overseas voters, and Burmese voters who were in the quarantine centers across the country due to the COVID-19 pandemic were able to vote in this election. However, it can be said that the 2020 election was not completely free and fair.

**Keywords:** *Free and fair election in Myanmar, The 2015 general election in Myanmar, The 2020 general election in Myanmar, Election processes in Myanmar*

### 1. Introduction

Myanmar had been under the control of military dictatorship for many decades since 1962 (BBC News, 2021). Although people throughout the whole nation revolted and demanded democracy in 1988, the military still had control (Myint, 2020). Later, the military generals unreasonably held an election in 1990 and the National League for Democracy (NLD) party participated in this 1990 election. This party was led by Daw Aung San Suu Kyi while she was placed under house arrest at her home. In this election, the NLD party won with a majority votes with 60% of the votes and around 80% of the seats in the parliament, however; the military denied to hand over its power (Asian Network for Free Elections, 2016). After this incident, the military had written the 2008 undemocratic constitution under the discussion for several years and it had actually done with an unfair referendum to preserve their grip on power (Myint, 2020).

The military government held the first general election in 2010 and the military-backed the Union Solidarity and Development Party (USDP), the NLD's opposition party, won over 70% of seats in the Union of Parliament under the 2008 Constitution (Asian Network for Free Elections, 2016). However, Sithu Aung Myint, a reporter from Frontier Myanmar, pointed out the 2010 general election was unfair and lack of transparency in the election process, it did not have legitimate representation of the people's will, and any other international groups and free media were not also allowed to observe the election (Myint, 2020).

Thus, the opposition party, NLD boycotted the military government after the election result's announcement, but it was not changed until the end (Asian Network for Free Elections, 2016).

With its election result, President Thein Sein as the head of a nominally civilian government was sworn into office. He was a former high-ranking general, but his power was transferred to take up the civilian role of President (Asian Network for Free Elections, 2016). On the sixth day after the election, Daw Aung San Suu Kyi was freed from house arrest and she as an NLD member participated in the by-election in 2012 again. Fortunately, her party won by a landslide with a seat of Kawhmu, a district of Myanmar (Asian Network for Free Elections, 2016). Following the years, the 2015 general election came up. At this time, the military had already noticed that the NLD and other opposition ethnic parties would be able to take part, so they legislated the reservation of 25% of parliamentary seats for the military both at state/regional and national level based on the 2008 constitution to ensure the military will win enough seats to join forces and have power in the parliament (Asian Network for Free Elections, 2016).

As expected, the election result had produced a landslide victory for the NLD Party even though there was a 25% quota of military seats. The Union Election Commission (UEC) had announced that the NLD won 58% in Lower House (Amyotha Hluttaw) and 60% in Upper House (Pyithu Hluttaw) (Grafilo, 2015). The NLD party could win a landslide because the majority in urban areas and the other ethnic Burma regions believed that the NLD would perform well for the nation. Surprisingly, the NLD even had attention in rural areas and also in some ethnic minority areas like Kachin (Fisher, 2015).

Unlike the 2010 election, the UEC accepted more observer accreditation procedures and invited over 11,000 local observers from 52 civil society organizations and over 1,000 international observers for the 2015 general election (Carter Center, 2016). There were also more opportunities for broadcasting media to monitor and report freely and critically on the election process even though there were some specific restrictions. Due to these local and international observations and media monitoring, much information and news about the election process were available before and after the election (Carter Center, 2016).

However, not only positive outcomes but challenges and problems during the 2015 election process were also reported. Four main problems of instance occurred during both pre-election processes and on the election day. First, political parties and candidates had difficulty registering and participating in the election process because of discrimination under the laws and regulations and unfair approval or recommendation from the UEC. For example, the authorities mostly tended to be stricter when it was concerned with Muslim candidates than other Chinese and non-Muslim ancestry (Asian Network for Free Elections, 2016). Second, the problem concerned the performance of the UEC in the election. The advance-voting process became a serious problem with a lack of transparency with electoral fraud. For example, the military advance voting system was not permitted to be observed by international and even domestic observers and party agents in the 2015 election (Carter Center, 2016).

Third, the role of female and younger candidates in the election still had lower chances to join and win in the 2015 General Election compared with male candidates. Even after the 2015 general election, all of the military appointees in the Union Parliament were male with the age over 35 years old (Minoletti, 2016). In the 2015 election, female and younger candidates had not increased. Only 13% of women and 8% of younger candidates were elected in the union parliament (Asian Network for Free Elections, 2016; Paungsie Facility, 2020). Fourth, the ethnic minorities from armed conflict areas and the Internally displaced persons (IDPs) around national borders did not have any right to vote in the 2015 general election (Naw, 2020).

All of these problems had been founded in the 2015 general election. Although it had gained better outcomes if compared with the 2010 election, it still did not have a completely free and fair election and the candidates were still challenging for more opportunities and freedom. A free and fair election process, freedom of speech, freedom of participation is very important to practice in a country. Right to participation can also help to create a better society. Therefore, the main objectives of this research paper are to observe whether the candidates still have more or fewer challenges with the freedom of participation and to analyze how much the 2020 general election process has been improving after lesson learned from the 2015 general election and how the organizers would manage to bring up freer and fairer election processes in the 2020 general election.

This research paper is divided into five sections. The first section defines the election legal framework and electoral system and also describes the challenges and problems of the 2010 general election and the 2015 general election in Myanmar. The main research objectives are described in the second section. The third section then focuses on the methodology by describing the detailed information of the research design and about the participants in this research. The research results and discussion part are in the fourth section by reporting the challenges of the political candidates and analyzing the free and fair election process in the 2020 general election by comparing it with the 2015 general election. Lastly, in the fifth section, the research results and analysis are summarized and the possible recommendations are also mentioned for the political representative candidates and fairer and freer elections in the upcoming election process.

### 1.1. Definition

**The 2008 Constitution** is known as the third constitution of Myanmar after 1947 and 1974 constitutions and it was held the first referendum on a draft constitution under military coups.

**The general election in Myanmar** can be defined as an election that included contests in the upper house (Amyotha Hluttaw), and the lower house (Pyithu Hluttaw) of the Phyidaungsu Hluttaw for seats in each of the fourteen local state/region assemblies. It is supposed to be held every five years.

**By-election in Myanmar** is defined as an election that can be held within six months when a seat becomes vacant. The Commission holds it under the election law due to the postponement of election or resignation, death, termination, or revocation of duty from a Hluttaw representative.

**Tatmadaw** is named as the official name of the armed forces of Myanmar. These armed forces are administered by the Ministry of Defense and are composed of the Army, the Navy, and the Air Force.

**Hluttaw Representative** can be defined when a person is elected to any Hluttaw or Defence Services personnel Hluttaw representative nominated by the Commander-in-Chief of the Defence Services.

**Member of a religious order** is applied to a religious monk, nun, Christian priests, Muslim imam, or any members who are serving temporarily or permanently in the religion.

**A free and fair election** can be defined when an election process is transparent, inclusive, and accountable, and when all citizens have equitable opportunities to compete or to participate in the election.

### 1.2. Election in Myanmar

#### 1.2.1 The Election Legal Framework and Electoral System

The 2010 general election became the first general election under the 2008 constitution. Elections in Myanmar are conducted and stipulated by administrative directives and codes of conduct based on the different laws with different ranks. The 2008 Constitution has already contained the basic provision for the conduct of the election, therefore; it can provide the Election Legal Framework (Asian Network for Free Elections, 2016). In this framework, there are Presidential Election Law, Political Parties Law, Amyotha Hluttaw Election Law, Pyithu Hluttaw Election Law, State/Region Hluttaw Election Law, other related laws such as citizenship law, media laws, criminal law, and lastly, Union Election Commission Law (Democracy Reporting International, 2016).

The electoral system is held by the first-past-the-post (FPTP) system (or) plurality voting system to choose a representative from single-member constituencies, meaning one representative for each legislative body (Asian Network for Free Election, 2016). In the elected bodies, the Parliament of the Republic Union of Myanmar, also known as the Phyidaungsu Hluttaw, is comprised of two assemblies (Hluttaws) such as the Amyotha Hluttaw and the Pyithu Hluttaw at the national level. Besides, while there are fourteen states and regions in Myanmar, each of them has its own Hluttaw called the State/Region Hluttaw. Its Hluttaw also includes reserved seats for representatives of the minority group from an ethnic community, also known as "National Race Representative" for local assembly. A National Race Representative or Ethnic Affairs Minister will be elected for any national race in each state and region when its ethnic community has a population equal to, or greater than 0.1% of the total Union population of Myanmar (International Institute for Democracy and Electoral Assistance, 2020).

### 1.2.2 Members of parliament

Under the 2008 Constitution, the Myanmar military was guaranteed 25% representation in all three levels of assemblies to secure a permanent place in Myanmar's politics (Asian Network for Free Elections, 2016). All military appointees in three levels of Hluttaws are appointed by the Commander in Chief (International Institute for Democracy and Electoral Assistance, 2020).

First, the Amyotha Hluttaw is made up of a maximum of 224 seats: a total of 168 seats with 12 constituencies from every 14 states and regions and 56 seats for military appointees. Each constituency is representing on one township, but if there are more than 12 townships in a state or a region, the number of constituencies should be based on districts and if there are less than 12 townships in a state or a region, two populated townships would be split into two constituencies (Democracy Reporting International, 2016).

Second, the Pyithu Hluttaw is formed of 440 members of seats: a total of 330 constituencies based on 330 townships division plus 110 seats for military appointees (Chau, Liu, & Htet, 2020).

Third, the State/Regional Hluttaw consists of a maximum of 644 seats: two representatives from each township, but not including the Union Territory, and one-third of the total elected number are the military appointees. Its Hluttaw also includes 29 reserved seats for National Race Representative. Besides, at State/Region level, when there is only one candidate in one constituency, the elections will not be held and that candidate will automatically get a seat (Democracy Reporting International, 2016).

### 1.2.3 Free and Fair Election in the 2010 General Election

After being controlled by the military dictatorship for many years, the 2010 general election became the first general election in Myanmar. While it was held, the NLD party was rejected from participation in it by the Union Election Commission (UEC) with giving an excuse as "null and void" (Aktar, 2020). However, the 2010 general election could also not prove as a free and fair election either because of three main problems.

First, the 2010 election was a very low-profile event and it was not worth calling as 'the free and fair election'. According to Wilson (2010), he reported that there was not any signage to indicate where voting was being held and the UEC under military control even announced any election observer was unnecessary to observe in this election. Second, the election registration process and election campaign had not been transparent and it was not free and fair at all. For this statement, Lehmann (2010) mentioned that although this election was so-called disciplined democracy, the registration process for political parties to the nomination of candidates and election campaigning periods were controlled by the military government in 2010. He further stated that many ethnic minorities did not have equal opportunities to register in this election because the UEC announced that the election did not take place in some certain regions and states where large ethnic minority populations by excusing "security concerns". Third, the voters in sensitive areas could not vote for the 2010 general election. Wilson (2010) reported that most voters from border regions such as the Thailand-Myanmar border and Bangladesh-Myanmar border had been excluded to vote because the UEC mentioned that the government could not provide full security provision to hold the election around those border regions.

As a result, the 2010 general election was not a free and fair election at all since it had been under military control with an undemocratic system. Election observers did not have the right to observe the election process, the political candidates, including many ethnic minorities, did not have equal rights to register for the election, and voters around border regions had lost the right to vote in the 2010 general election. Therefore, the 2010 general election had been undermined and a sham election. The election process was not transparent and the citizens had lost their equal opportunities to contest or to vote in this election.

### 1.2.4 Free and Fair Election in the 2015 General Election

After five years, the NLD party had gained the opportunity to participate in the 2015 general election. As expected, the election result of the NLD party had produced a landslide victory even though there was a 25% quota of military seats in the parliament. As a total result, the Union Election Commission (UEC) had announced that the NLD won 258 seats out of 440 seats in Amyotha Hluttaw and 138 seats out of 224 seats in Pyithu Hluttaw (Grafilo, 2015). According to both domestic and international observers'

reports, the 2015 general election had been recognized as the first democratic general election in Myanmar since Burmese citizens had gained more right to participate with their will and election observers and media had received more freedom to observe in this election (Callahan, & Oo, 2019).

However, it was not a completely free and fair election due to three main reasons. The first reason is that the military government's sway in the decision of the UEC. According to Human Rights Watch report, the UEC during the 2015 general election obviously lacked independence and transparency after they were put under pressure by local government officials and they had demonstrated a pro-USDP and military bias. Moreover, the international observers from Carter Center reported the UEC did not state transparency information about the number of requests, voting location, or the schedule for polling for the advance voting day in both the 2010 and 2015 general elections (Carter Center, 2016). Therefore, it seemed that the voting process was the lack of transparency and short of international standards during the previous election processes.

The second reason is unequal rights for ethnic minorities and Internally Displaced Persons (IDPs). Naw (2020) stated while the UEC had canceled 34 townships in Kachin, Kayin, Mon, Shan States, and Bagon regions, which were the conflicts and war zones. At that time, millions of ethnic minorities had lost their vote and hundreds of thousands of IDPs from Kachin, Rakhine, and Shan had been disenfranchised to vote in the 2015 election. The last reason is that gender inequality and a low number of younger representatives had been founded in the parliament. The international observers from ANFREL also pointed out that only 800 female candidates were included to participate and just 151 female candidates were successfully elected in the 2015 General Election (Asian Network for Free Elections, 2016). Besides, for the younger representatives who were under 35 years old, approximately 34 out of 491 seats in the parliament were taken (Paungsie Facility, 2020). Apart from these reasons, the military group even abused power by selecting only male candidates for the military seats, which had created gender inequality in the parliament.

As a result, the international observers and reporters had found that the 2015 election lacked justice, freedom, and equal rights. Even though the democratic party won the election, the elected government could not make many new paths since the military group had taken the major controls and the 2008 constitution had also favored the military group (Aktar, 2020). Due to the undemocratic 2008 constitution, the development and improvement were delayed in the country. To amend this undemocratic constitution, more than 75% of members in the parliament are needed to agree to do so. However, while there was a 25% reservation of the military group in the parliament, it was not possible to revise the 2008 constitution (Aktar, 2020). Therefore, although the 2015 general election became the first democratic election in Myanmar, the election process was still under military controls and the political candidates and the citizens had still faced many challenges in the 2015 general election due to the 2008 constitution.

Even after the 2015 general election, the elected government had still failed to amend the 2008 constitution because of the military power in the parliament; also, it had not been significantly addressed to the human rights of the ethnic minorities from unrest areas between the period of 2015 to 2020. With all of these reasons, this research is important, to observe whether the candidates still have more or less challenges with the freedom of participation in the 2020 general election when compared with the 2015 general election and whether the election process is freer and fairer in the 2020 general election. This research mainly highlights the difficulties faced by the political candidates as the result of the undemocratic 2008 constitution and the electoral law, as well as highlighting the challenges of the ethnic minorities from civil wars and also even mentioning the challenges of Rohingya from Rakhine State to participate in the 2020 general election processes. Furthermore, it also covers the issues related to free and fair elections that are difficult to achieve due to military intervention. Therefore, the findings of these facts and reasons will make this research different from other research.

## 2. Objectives

- 1) To examine the challenges for political parties' candidates who participate in the 2020 general election in Myanmar
- 2) To analyze whether the 2020 election process is freer and fairer in Myanmar when compared with the 2015 general election

### 3. Methods

This research is mainly based on the study of election processes and electoral rules and regulations in Myanmar. The research paper is applied to the qualitative research method. The research has also used both primary and secondary data to identify election legal framework, electoral systems, and the whole election process with case studies of the 2015 and 2020 general elections in Myanmar. A semi-structured interview was used in this research.

#### 3.1 Data Collection

This research has included both primary sources and secondary sources. As the primary sources, the interviewing process was conducted with a total of six participants. For the secondary sources, data were collected from the 2008 Constitution, the Election Laws in Myanmar, International Election Observers' reports, 1982 citizen law, and the other published articles related to the elections. After collecting the data and information, the researcher analyzed what those authors mentioned and identified to explain the specific election's rules and regulations, other challenges, and the differences in the election system of Myanmar.

#### 3.2 Participants

All six participants were the political candidates who ran for the 2020 general election in Myanmar. There are two main political parties known as the National League for Democracy (NLD) and the Union Solidarity and Development Party (USDP). Both parties have been recognized as the powerful parties in Myanmar because both of them have taken the most seats after the 2015 general election. Therefore, the interviewing process will be conducted with one woman and two men from the NLD party and one woman and two men from the USDP party.

The participants were chosen based on four criteria. The first criterion is that they must run for election in Shwe Pyi Thar Township since it is known as one of the developing areas in Yangon. The Shwe Pyi Thar township has been known as an industrial zone with a diverse population with many different ethnicities and religions. There were also some conflicts among citizens and politicians after the 2015 general election. As a result, the researcher would like to focus on this area to explore more challenges with the political candidates who are living in this township.

The second criterion is about the period of participation in their political parties. The interviewees for this research must have participated for more than five years because a long-term professional candidate can give more details about the election. The third criterion is age. All participants must be over 35 years because the researcher believes that middle-aged participants usually have a more specific idea and knowledge of what they have been experiencing in the parties. The last criterion is about the ethnicity, such as Karan and Rakhine who have been most marginalized in participation in the election process, because interviewing those candidates can get more information about the ethnic minorities' challenges.

All participants who meet all criteria have been chosen by both NLD and USDP parties by giving names of people who can participate in this research to the researcher. The researcher conducted all interviews between October 2<sup>nd</sup>, 2020, to October 29<sup>th</sup>, 2020. Table 1 shows the list of participants in this research.

**Table 1** List of interviewees of the Political Candidates of Representative

No.	Participants	Gender	Age	Ethnicity	Political Party's Name	Representative Constituency
1.	Participant A	Male	37	Burmese & Rakhine	The National League for Democracy Party (NLD)	Shwe Pyi Thar Township, Yangon
2.	Participant B	Female	55	Burmese	The National League for Democracy Party (NLD)	Shwe Pyi Thar Township, Yangon
3.	Participant C	Male	43	Karan & Burmese	The Union Solidary and Development Party (USDP)	Shwe Pyi Thar Township, Yangon
4.	Participant D	Female	42	Burmese	The Union Solidary and Development Party (USDP)	Shwe Pyi Thar Township, Yangon
5.	Participant E	Male	38	Burmese	The Union Solidary and Development Party (USDP)	Shwe Pyi Thar Township, Yangon
6.	Participant F	Male	44	Burmese	The National League for Democracy Party (NLD)	Shwe Pyi Thar Township, Yangon

### 3.3 Limitation

The researcher initially contacted all six intended participants from social media but the researcher could not interview everyone by phone or video call since not all participants were available due to proximity to the election time and the interview process was during their campaigning period. Therefore, the researcher sent the list of questions to the participants by E-mail. Moreover, during the interviewing process, the researcher noticed that most participants did not feel comfortable answering all questions openly and freely due to their parties' policies and restrictions, therefore, the participants did not answer some questions directly.

## 4. Results

The results will mainly describe the interviewees' reports by dividing them into four main points 1) Registration process of parties and candidates, 2) Younger, Women, and Ethnic Political Candidates, 3) Political Campaign Situation, and 4) Free and Fair Election for political candidates. This section will report how the 2020 general election and which kinds of challenges and problems that the parliamentary candidates have experienced for contesting the general election.

### 4.1 Registration of Parties & Candidates

The Political Parties Registration Law has prescribed the rules and regulations that the candidates must follow. To participate in the election, all participants reported that they must pay around 300,000 kyats (around 7,000 baht) according to the law, but if a candidate could not afford to pay for it, the party would pay for it instead. However, participant A mentioned that this situation is rarely seen in most constituencies, which means that most candidates had to pay this fee by themselves.

During the registration process, participants C and D from the USDP party mentioned that they had a difficult time registering when the UEC could not provide clear and specific instructions and regulations. As the complexity of the registration process, participant C reported that we have to go to the registration office at least two times a week to wait for the registration results that will be approved by the UEC.

Additionally, in the process of being eligible candidates for the election, participants B, E, and F from both parties reported the candidates from Shwe Pyi Thar township had never been rejected by the UEC since all of them had followed the regulations. On the other hand, participant B stated "numbers of political candidates in other small political parties have been rejected by the UEC because some rejected

candidates might violent to regulations in some ways or some may not be Burmese citizens, or their parents may not be citizens when those candidates were born according to the citizenship law. As a result, based on the participants' responses, the registration process in this township was quite positive although a few participants had some problems registering due to the mismanagement of the UEC.

#### **4.2 Younger, Women, and Ethnic Political Candidates**

In the 2020 general election, the participation of women, younger, and ethnic political candidates in some parties have increased. The participants from the NLD party reported that even though ethnic participation rates are slightly increased, there has been a considerable increase for the younger participation by 30% and the women participation by 50% because the role of Daw Aung San Suu Kyi is significantly cited by aspiring younger and women politicians.

On the other hand, the participants from the USDP party pointed out that the percentage of the younger, women and ethnic participation in their party has slightly increased if compared to the previous election, but the majority of candidates for the 2020 general election are men. However, the results of younger, women and ethnic participation in politics have not been significantly improved in some parties than the 2015 general election, so the need and the supports of the government are also questioned. All six participants suggest that (1) the government needs to promote equal opportunities and participation; (2) the government needs to educate the young people to know more about politics; (3) the government needs to promote freedom of speech among them regarding the laws and regulation; (4) the government needs to promote the equal role for women and men; and (5) the government needs to create the freedom of environment for its people.

#### **4.3 Political Campaign**

The 2020 election campaign environment was very different from the 2015 election campaign period. All political candidates did not have a free campaigning period because of the Covid-19, which is threatening the lives of human beings. Approximately, the four participants reported that political parties must not campaign with the crowded people or door-to-door campaigning in accordance with the Ministry of Health and Sports' announcement and they must follow the "Stay-at-home order". On the other hand, the political parties with only limited numbers of people are allowed to campaign and hand out leaflets to the citizens with specific guidelines mandated by the government's Covid-19 prevention measures.

All participants mentioned that the candidates have to use the online media campaigning strategy by using social media platforms, especially Facebook. When the political parties were not allowed to campaign freely during the middle of the pandemic, the participants expressed that they were worried about some small townships and villages with limited knowledge about the election, especially for those who are living in the rural areas and remote areas because they are very poor in voter education and with very low awareness about democracy and politics. As a result, the political candidates and members were dissatisfied the 2020 general election was held without having much freely campaigning because of the pandemic.

#### **4.4 Free and Fair Process for Political Candidates**

All participants from these main parties reported that the candidates could demonstrate their freedom of expression and speech and then they could freely exchange their different political perceptions through news broadcasts on Channel Media Platform during this election.

Participants A, C, and D reported that there was no race, ethnic, and religious discrimination to anyone to participate in their parties, but she mentioned that the citizens who have held national citizen cards and follow all criteria and rules promulgated by the UEC are available to vote or run as a candidate for the election.

Participant B mentioned that "the women participation rate has increased and they also have gained equal opportunities to be able to run for the election freely and fairly with the men". However, she also pointed out "every woman still faces with some challenges because women usually have to take family's responsibilities and also the candidates' responsibilities at the same time and then when we are traveling for campaigning in some remote areas where are insecure, we also have to take a risk".



Therefore, four participants including male participants stated that the candidates who would win the seats really need to ensure and encourage women to be more involved in politics and to bring more security concern for the women by promoting their rights and by increasing equal opportunities for them.

## 5. Discussion

Based on the secondary sources, the discussion part will analyze the four main challenges of the political candidates in Myanmar and also discuss why the 2020 election process is still far from a free and fair election process.

### 5.1 Challenges of the Political Candidates

In Myanmar, there was a really difficult situation for the political candidates to contest in the general election while every election process was mainly controlled by the 2008 constitution made by the military group. Even though the interviewees did not mention any serious difficulties and challenges of their experiences, the situations of the political candidates from other states and divisions were not the same. Generally, several candidates from various parties have faced different challenges such as discrimination, insecurity, and harassment to run for the election.

There are three main challenges for the political candidates, which have been reported in the 2020 general election. The first challenge is the candidates did not have the full freedom of participation in the election. The reason is that the local election sub-commission has still abolished the political parties, especially from Shan, Kachin, Rakhine, and also Rohingya based on the election laws and 1982 citizenship law. For example, according to interviewees' reports, the candidates could not run for an office if they were not followed by the promulgated laws, which are unfairly restricted. Based on the 1982 citizenship law, Rohingya candidates have been rejected by saying that their parents were not citizens at that time of their birth and even some Rohingya have not been still accepted as full citizenship to participate in the election (ANFREL's International Election Observation Mission, 2020).

Other political candidates from Shan and Kachin States were also disqualified for not meeting eligibility criteria (Phoo, 2020; Burmese News International Multimedia Group, 2020). Additionally, the Rakhine candidates whose son is in the Arakan Army, recognized as a group labeled as terrorist by the government of Myanmar, had also been denied to participate in the election because the UEC mentioned that the candidate has violated the parliamentary election law (Khine, 2020). With these restricted laws and regulations, they had lost their rights and opportunities to run for the election in 2020.

The second challenge is the candidates from some political parties have lost their constituencies because of armed conflict zones in Myanmar. There were many conflicts and wars between the ethnic armed groups and military groups in the states such as Shan, Kachin, Karen, Rakhine, Chin, and Mon. When those states were unrest and the military service was an inability to provide security for all citizens during the election day, the safety of the citizens and the political candidates to participate in the election was not guaranteed. Therefore, the UEC has canceled at least 56 townships and 665 villages in those states, even including the Bago region, which is close to Rakhine State (Progressive Voice, 2020). As a result, Tower (2020) also pointed out that the political candidates had lost more than 22 constituencies from those states and regions during the 2020 general election.

The third challenge is some candidates have been abducted and abused by an armed group before the election. This incident could happen when the candidates had to contest around remote or armed conflict areas like Rakhine state because there was not full security provision during fierce between an armed group and military group. As an incident, three candidates from the NLD party in Taungup Township, Rakhine State, were arrested and abused physically by the Arakan Army to demand releasing all Rakhine politicians and the student protesters in return (Nyein, 2020). At that time, those three candidates had lost the chance to participate in the election. For this incident, the other candidates and some international observers seriously condemned and reported that the candidates during the campaigning need more security provisions (ANFREL's International Election Observation Mission, 2020; Nyein, 2020).

Due to these three challenges, the numbers of constituencies were reduced from 1,171 to 1,117 and the numbers of registered election candidates were also decreased from 6,969 to 5,643 near the election day in the 2020 general election (Xinhua, 2020). Because of the unfair laws and restricted regulations, the

political candidates had lost their rights. It is still proved that there is no specific and democratic rule and laws for all political candidates to freely participate and to access to equality and security. To change these laws and regulations, the decisions cannot be made by the elected government because it also mainly depended on the military group's decision. As a result, the political candidates' opportunities and rights in the 2020 general election have been still hindered by the undemocratic laws and constitution in Myanmar when compared to the 2015 general election.

## 5.2 Free and Fair Election in 2020

During the election day, the overall election processes and campaign environment were considered as partly free and fair election according to the international and local observer's reports and other the political candidates' reports, however; it was also found peaceful with no major incidents and more transparent election process than the previous election. To mention it, there are two main reasons why this election was freer and fairer than the 2015 elections.

The first reason that brought free and fair election is that citizens became more interested in the election, media also tended to focus on how the election process run and the international and local observers are encouraged to observe the election. For example, when the voter lists posted by the UEC were an error or when some were not on the list, the citizen immediately requested corrections from social media or at the regional election committee because of the voter awareness and attention on the election process (ANFREL's International Election Observation Mission, 2020). If compared to the 2015 general election with 34.3 million eligible voters, there were 38 million eligible voters in the 2020 general election (Enlightened Myanmar Research Foundation, 2020). Moreover, thousands of international and local observers, broadcasting media, and reporters had eagerly observed how the UEC would manage the election process during the pandemic. Because of these reasons, the UEC became more transparent and managed well to hold this safe and peaceful election in Myanmar (ANFREL's International Election Observation Mission, 2020). Thus, it could assume the 2020 general election was freer and fairer than the 2015 general election.

The second reason is the UEC could make an extraordinary change in the advanced voting system, unlike the 2015 general election. For example, ANFREL observers reported that the polling and counting system during the advance voting days was conducted diligently and transparently with well-implemented health guidelines (ANFREL's International Election Observation Mission, 2020). The UEC also could enhance the voting system for elderly voters at home or their respective ward and arranged polling stations even in quarantine centers across the country. Moreover, the UEC managed well for overseas voters to be able to cast their ballots and there was a threefold increase from 34,697 in the 2015 general election (ANFREL's International Election Observation Mission, 2020). As a result, even in a challenging environment due to the global pandemic, the UEC could manage to have greater participation and to have a more free and fair election.

On the other hand, it also cannot deny that the 2020 election was not completely free and fair. There are four main reasons why the 2020 general election was partly free and fair. The first reason is the discriminated 1982 citizenship laws have affected political candidates and citizens to participate in the election freely and fairly. According to this citizenship law, only a citizen who holds a pink or green national citizen card can be able to participate in the election (International Institute for Democracy and Electoral Assistance, 2020). For example, most of the ethnic minorities from Kachin and Karen, and Rohingya in Rakhine State have lost the right to participate in the 2020 election. The reason was that they have not been recognized as citizens according to the 1982 citizenship law even though they have been living in the same country for many years (ANFREL's International Election Observation Mission, 2020).

The second reason is the Covid-19 pandemic contributed to a hazardous campaign environment and an unlevel playing field. Under the specific restriction on a political campaign, the candidates could not campaign freely and online campaigning also could not perform well in all areas. As a result, ANFREL's International Election Observation Mission (2020) pointed out while the two major parties were automatically given more attention by the public, the smaller and ethnic parties had faced more disadvantages during this election. For example, since smaller and ethnic parties had minority supporters,

they could not compete with strong supporters from the major parties, who voluntarily campaigned for their parties even during the Covid-19 pandemic.

The third reason is internally displaced persons (IDPs) still lost their rights to vote in the 2020 general election since the national laws could not be revised by the elected government from 2015 to 2020. Because of the fierce fighting between armed groups and the military group in Shan, Kachin, Karen, and Rakhine states, hundreds of thousands of people have to move to other areas like the Karenni States, Tanintharyi Regions or other refugee camps along the Thailand-Myanmar border for their safety (Progressive Voice, 2020). As a result, those displaced persons who are living in refugee camps around the borders and who do not actually have their household registration in Myanmar, unfortunately, lose their right to vote in the 2020 general election like the 2015 general election. Until now, the government still cannot reform the laws and make them happen yet. Therefore, the impact of the conflict and civil wars definitely affect the citizens' rights and the election results.

The fourth reason is the lack of UEC's management in ballot papers. According to Radio Free Asia (2020), Daw Htu May, an individual candidate, reported that the UEC has been lack of efficient preparations of ballot-boxes and inaccurate voting lists, and also many ethnic minorities had lost voting for Ethnic Race Representatives in some regions and states, especially in Yangon region. For example, any ethnic citizen who is living in another state or region in Myanmar has one more ballot paper to vote for Ethnic Affairs Minister for their national representative, however; due to the lack of UEC's management in those ballot papers, many ethnicities have lost their right to vote for their ethnic minister. Even after the election day, the UEC did not respond to this incident.

Overall, the candidates still have a lot of challenges, the violations and conflicts have been found, the small parties, ethnic minorities, and the displaced persons still lost their right in the election. Moreover, as the researcher's assessment, the electoral process has been undermined by the systemic problems and right abuses of the people to elect their government, and the legal framework for elections still undemocratic because there are unchanged 25% of seats reserved for the military. Therefore, even though some levels and areas have been increased and improved, most of the situations still need to be enhanced to approach a more free and fair election.

Apart from these challenges, on November 8th, 2020 general election, the NLD party has been reelected to govern the country for five more years with the results of 396 seats out of 476 seats in the union parliament and 501 seats in State/Region Hluttaw and 23 seats in ethnic affairs minister (Chau, Liu, & Htet, 2020). However, even though the result has been approved by domestic and international observers, the USDP, which won only 71 seats (6.4%) nationwide, has refused to accept the election result and demanded to rerun the election by claiming it was "widespread fraud" (Radio Free Asia, 2021). For this statement, the UEC even reported that no one can still prove with exact evidence to support this claim (Cuddy, 2021). Despite what the UEC mentioned, the military group took places by detaining State Counselor Daw Aung San Su Kyi with various charges, including the Export and Import Law after the military had found illegally importing walkie-talkies in her home and detaining President U Win Myint with the charge under Article 25 of the Natural Disaster Management Law for violating Covid-19 restrictions while campaigning (The Irrawaddy, 2021). Since then, Military Coup d'état has been restarted on February 1<sup>st</sup>, 2021, in Myanmar and the military group announced that a "free and fair" election will be begun once the state of emergency is over (Cuddy, 2021).

Nevertheless, the free and fair election in Myanmar can only be seen after the military group handover the power or after the constitution and some laws are revised. As long as the military control exists in the parliament, it cannot bring total free and fair election for all citizens and the election process will still be flawed.

## 6. Conclusion and Recommendations

### 6.1 Conclusion

To summarize this research paper, the researcher has found the challenges of the political candidates who participated in the 2020 general election and the researcher has also analyzed how the 2020 general election looked like.

#### 6.1.1 Challenges of the political candidates

Whenever an election is to be held, some difficult situations or challenging issues are always there for the political candidates, the organizers, and even for the voters. In the 2020 general election, although the women political candidates' participation has been considerably increased and women have also acquired better equal opportunities in the parties as men, there have still been discovered three challenges for the candidates. First, due to the Election Law and 1982 Citizenship Law, many ethnicities and Rohingya were also prevented from running for office. Second, many political candidates have lost the constituencies for the election when some regions and states are still unrest, armed conflict, and violation. Third, they have been violated and abused by the armed group during campaigning.

Moreover, every political candidate had to compete with the situation of 25% of reserved seats in the parliamentary for the military under the undemocratic 2008 constitution like the previous elections. By looking at these situations, the political candidates will never access free and fair election processes until this constitution and the laws are revised and until the peace process in local areas has been brought.

#### 6.1.2 Free and Fair Election

The 2020 general election is not completely free and fair since many political candidates had still faced with challenges, problems, and discrimination during the election process because of the 2008 constitution and 1982 citizenship law. Moreover, even though the UEC's performance on this election became more transparent and had better management on advanced voting days than the previous elections, some eligible voters had still lost their right to vote due to the poor management of the UEC. The displaced people had also lost their opportunities to vote because of the restricted national law in Myanmar. Until the 2020 general election, there was still 25% of the military quota in the parliament to control their power and seats. Despite these problems and challenges, the democratic NLD party had won with majority votes, however; the USDP party who won with few percent of votes could not accept this result. Therefore, its party and the military group had sued the winning party by claiming "the election was a fraud" and had demanded to rerun the election even though the UEC mentioned there was not any evidence to prove the fraud election. In the end, on February 1<sup>st</sup>, 2021, the military group had detained the state counselor and president of Myanmar and they had announced they had to do it as a state of emergency. They also reported the "free and fair" election will be held after the state of emergency is over.

To bring free and fair elections, the country should have a more liberal and democratic constitution and laws. Due to undemocratic rule regulation and the military controls in the country, it is unlikely to make significant change and improvement in the election process and it still fails to ensure free and fair elections.

### 6.2 Recommendations

In Myanmar, the main problem is the current government has still been suffering from military oppression. The government's efforts to amend the constitution have failed due to the veto granted to the military. It still lacks institutional support for initiatives to empower women and attain gender equality. The younger's role in politics should be considered and their participation and their interest in politics can enhance the future political system and can bring more peace process. The ethnic minorities and the displaced people who have been marginalized should also have equal rights to every citizen who lives in the same country. Therefore, the following recommendations aim to bring up more free and fair elections in the upcoming election process for all political candidates and all citizens.

6.2.1 To support the political candidates, the main recommendations are:

- The criteria for the political candidates should be determined in accordance with national constitutions and other related laws, but those constitutions and laws should be under a democratic system and fair enough for all participants.
- To access equitable opportunities to compete in the elections, the role of the military and its commander-in-chief in politics needs to be reduced.
- The role of the younger, women and ethnic minorities' participation needs to be emphasized by promoting more international standards to bring freedom from discrimination.

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6.2.2 To bring up a free and fair election, the main recommendations are:

- The election processes should be transparent, inclusive, and accountable.
- The government needs to take more practical actions to improve the gender equality of participation and to reduce social norms that confine women to their traditional roles.
- The government should act more for the peace process and reduce the civil wars and conflicts between the armed groups and the Military groups.
- The government should reform the national laws to enable the displaced people to register and vote in the displacement area or their origin area without facing adverse consequences.
- Myanmar's 2008 constitution and 1982 citizen law should be reviewed and changed to be able to bring freer and fairer elections for all.

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## Doctorate Creative Research Composition: King Bhumibol and His Phenomenal Music Legacy for Jazz Orchestra

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### Abstract

The doctorate creative research composition: King Bhumibol and His Phenomenal Music Legacy for Jazz Orchestra is large-scale program music for paying tribute to King Bhumibol Adulyadej, the King who connected and touched the people hearts with Music. His compositions bring joy, courage, unity, and rising the nation. The 35-minute duration of the four comprising movements expresses the grateful moments and love from the people. The 1<sup>st</sup> movement, *King Bhumibol Adulyadej Square*, is opening music that presents number 4 as to represent the “Bhumibol Square” theme whereby it has been served as the main musical concept and aspect throughout the composition. The 2<sup>nd</sup> movement, *His Passion and Inspiration*, was composed on Lydian melodic mode combined with Dixieland Jazz rhythmic and the highlight cadenza played by solo violin using Rondo form to function the movement. The 3<sup>rd</sup> movement, *His Music and His People* is a sectional form of five motives that applied the complex meters and repeating technique inspired by minimalism music. The 4<sup>th</sup> movement, *The Musical Legacy of the Nation*, presents a polyrhythm technique as the functional element of the entire movement. Pentatonic scale plays a vital role in creating melodic and harmonic functions as well as outstanding quantal-quintal harmony. The first public presentation was on April 7<sup>th</sup>, 2021, at Conservatory of Music, Rangsit University, and received high acclaim as the composition that has fulfilled an academic purpose as a national novel composition.

**Keywords:** Program Music, Dixieland Jazz, Jazz Orchestra, Cyclic Form, Improvisation

### 1. Introduction

Not only His Majesty King Bhumibol Adulyadej the Great dedicated his life to his people but he also devoted his passion to music. His 48 compositions, which gained jazz-influenced, were widely admired by Thais and foreigners. In 1964, the Institute of Music and Arts of the City of Vienna praised and granted King Bhumibol the 23<sup>rd</sup> Honorary member, which made him the first Asian member.

When he was young and lived in Switzerland, he began to take saxophone lessons and studied western music theory. That knowledge led him to Dixieland's jazz music scene, the Preservation Hall Jazz Band was his favorite band. After he was enthroned as the King of Thailand, he started to compose more than 48 original songs that were performed by a jazz big band named “Aor-Sor.” Although he composed songs in jazz and blues styles, he intended to write them for love, people, and nation. Thus, music could create a great relationship between the King and his people. King Bhumibol wrote many tunes that were of significant value to inspire the people's life, to arouse the masses, and to support the nation. The research explicated to us how people have been getting close to the monarch through music. Ragtime and blues-based jazz music was originated in New Orleans city, Louisiana, in the late 19<sup>th</sup> century and became Dixieland jazz and others later. In 1920, the Jazz big band was also known as the jazz orchestra, which was a significant reform of jazz. Today, jazz orchestras become a notable performance and advanced art of composition in jazz scholars.

The purpose of this creative research is to compose a four-movement jazz orchestral suite to honor King Bhumibol as one of the genius music composers by giving the name “King Bhumibol and his Phenomenal Music Legacy for Jazz Orchestra.” The original jazz orchestral suite was composed as program

music; all movements were described as his musical pathway and his music legacy. Western harmony and jazz composition techniques were applied into pieces. The strings section and wind section collaborated with the band, so audiences could more deeply touch. This creative research aims to give present-day knowledge of jazz composition and arranging for large ensembles and preserve the music of our beloved King.

## 2. Literature Review

### 2.1 Biography and The great value of music composition: His Majesty King Bhumibol Adulyadej The Great

This doctorate creative research composition: King Bhumibol and His Phenomenal Music Legacy for Jazz Orchestra is a piece of program music regarding King Bhumibol Adulyadej's life and music story. The first section of this literature review presents a survey of King Bhumibol's biographical information and musical background while the second section provides a study of technical and conceptual composition.

#### 2.1.1 King Bhumibol's Birthplace, Dwelling place, and Monument

In September 1926, Prince Mahitala Dhibesra Adulyadej Vikrom, the Prince Father (1892-1929), formerly Mahidol Adulyadej, attended the public health program at Harvard University, Cambridge, Massachusetts, USA. During that time, he lived at 63 Longwood Avenue, Brookline with his wife, Sangwan Talapat, formerly Princess Srinagarindra, the Princess Mother (1900-1995), his daughter Princess Galyani Vadhana (1923-2008), and son Prince Ananda Mahidol, King Rama VIII (1925-1946). Shortly, Princess Srinagarindra gave birth to the new member of the Mahidol family named "Bhumibol Adulyadej," which means "Strength of the Land, Incomparable Power." King Bhumibol was born on December 5<sup>th</sup> 1927 at Mount Auburn Hospital, Cambridge, Massachusetts, USA. The Mahidol Family lived in Boston during 1926-1928 before moving back to Thailand in December 1928. Prince Mahidol Adulyadej passed away with his liver abscess on September 24<sup>th</sup> 1929, after he began teaching at the Faculty of Medicine, Siriraj Hospital, and also working as a resident doctor in McCormick Hospital in Chiangmai.

King Bhumibol Adulyadej of Thailand Square or "Bhumibol Square" is located on Eliot street and Bennett street, which is close to Harvard Square and Mount Auburn Hospital, Cambridge, Massachusetts. This monument was built from the cooperation between Thai citizens who live in Boston and the government of Massachusetts to honor His Majesty King Bhumibol Adulyadej the Great (Kumvisate, 2016).

#### 2.1.2 His passion for music and musical genius

King Bhumibol, Princess Srinagarindra, and his sister and brother visited Pully, Lausanne, Switzerland, to study primary school in 1933. During that time His Majesty started to get interested in music when he was 13 years old. Saxophone and clarinet were musical instruments that he first chose and took lessons with Mr. Weybrecht, a french music teacher from Alsace (Sripauraya, 1997). King Bhumibol learned music theory, music notation, and all scales applied in classical music. He fascinated by the jazz genre, especially the Dixieland jazz style, which was originated in New Orleans, United State. One of his favorite bands was The Preservation Hall Jazz Band. Not only the saxophone and clarinet, but he also practiced others instruments such as trumpet, piano, and guitar.

#### 2.1.3 The compositional legacy

His Majesty ascended the throne after returning to Thailand. He started to compose his original song on the piano for rehearsal with his private own band (The Fine Arts Department, 2009). King Bhumibol composed 48 original songs during 1946-1955. The first of which is called "Candlelight Blues" (1946), which he wrote when he was only 19 years old. Although most of the lyrics were written by Prince Chakraband Pensiri and others, there were 5 songs that King Bhumibol wrote music and lyric in English by himself, such as Echo, Still on My Mind, Old Fashioned Melody, No Moon, and Dream Island. The former ambassador of Thailand to the United States of America, Washington D.C., Mr. Sakthip Krailerk, explicated to function of King Bhumibol's pieces that he employed his music to communicate with his



people via live music with Aor Sor Wansook band, his own band. The band performing his tunes and broadcast on the very popular Aor Sor radio station (The Fine Arts Department, 2009). In 1964, the Institute of Music and Arts of the City of Vienna praised and granted King Bhumibol an honorary membership 23<sup>rd</sup>, making him the first Asian member (The Foundation of The 50th Anniversary Mahavajiralongkorn hospital, 2011).

## 2.2 Concept, technique, and composition

In addition to jazz's influence on this composition, the 20<sup>th</sup> century classical music also was a deep concern during the process of composing.

### 2.2.1 Form

Rondo form developed by the classical composer from the ternary form, 3 parts musical form ABA. While Rondo form, a principal section "A" alternates with one or more sections. They all comprise 5, 7, or 9 parts. Rondo's 7-section form was often used by the composer in the classical eras, such as Ludwig Van Beethoven who composed "*Piano Sonata in C minor, op.13, III*" that consists of 7 sections; ABACABA, and C section contains more texture and longer than other sections (Pancharoen, 2017).

### 2.2.2 Scale and Mode

According to Kostka (1999), major and minor scales were widely used by Baroque, Classical, and Romantic composers. Furthermore, there are other scales that new composers could use as an option. Those scales might be preceding or modern, which will make the audience feel unfamiliar and thus, aid the composers in avoiding writing songs in the old fashion. Kostka stated that the pentatonic scale comprising five notes. Their distance in major 2<sup>nd</sup> and minor 3<sup>rd</sup> intervals produces the sound of authentic Eastern music, which we could hear from folk music and children's songs (Kostka, 1999). Research by Rader (2011) supports that in the late 19<sup>th</sup> century, a French composer, Claude Debussy, was inspired by Russian pentatonic scale and eastern folk music, which led him to use the pentatonic scale in his experiment work "*Printemps*" in 1887. By the first 5 bars on the 1<sup>st</sup> section, Debussy composed flute and piano in a unison line with F# major pentatonic scale (F#, G#, A#, C#, D#).

Rader (2011) explained that in 1888 Debussy also composed the song titled *Arabesque No.1*, in which he presented the main theme in E major pentatonic scale though those melodies were interrupted with the 7<sup>th</sup> note of the E major scale at some point (Rader, 2011). Jazz music was influenced by the sound of pentatonic scale too. Ligon (1999) explained that when analyzing songs from around the world, it was founded that some of them were created by using pentatonic voice and much more than a major scale. It means the pentatonic scale was not invented by Debussy. Jazz musicians and jazz composers tend to employ pentatonic as fundamental melody over those traditional chords, modal tunes, and pedal forms. The way to use pentatonic in jazz music is by creating a motif and develop it to be a variety of interesting melody rather than only simply use it as a pentatonic scale (Ligon, 1999). The tune "*I Got Rhythm*" (1930) was composed by the 20<sup>th</sup>-century American composer, George Gershwin. Its main melody is a pentatonic scale in Bb major (formerly in Db major) in 32 bars AABA form. King Bhumibol's song titled "*The Impossible Dream*" also used the pentatonic scale melody (1971), in which the melody itself is C major pentatonic (C, D, E, G, A) in range C4 to C5.

According to Titus (2010), in the late 1950s, modal jazz songs were presented to challenge all jazz musicians and jazz music educators. It was defined as a type of tonal organization that has its own character by using modes (Titus, 2010). Miles Davis's album "*The Kind of Blue*" (1959) is a notable modal jazz album. Bill Evans who played on this record briefly explained that track "So What" is a simple song form with D Dorian mode for 16 bars and another mode in Eb Dorian for 8 bars then back to the first mode for 8 bars. This tune was introduced by the piano part and free rhythmic bass riff. The "Flamenco Sketches" song is a movement that consists of 5 modes (C Ionian, Ab Mixolydian, Bb Mixolydian, G Harmonic Minor, and G Dorian mode) (Titus, 2010). According to White (2008), in the mid-1960s, other modes were applied into the composition of the modal tunes such as Lydian mode that is frequently used in the modern jazz tune "*Inner Urge*" (1966) composed by Joe Henderson, a jazz American saxophonist. He used the F#m7b5

chord on the first 4 bars like the modal tune and the remaining chords are major 7<sup>th</sup> with tension #11 such as the Fmaj7#11 chord, which is the 4<sup>th</sup> mode from the major scale (White, 2008).

### 2.2.3 Quartal and quintal harmony

The quartal harmony was widely used by 20<sup>th</sup>-century composers. The distance between the 2 notes is the perfect 4<sup>th</sup> interval without the 3<sup>rd</sup> that could not specify the type of chord in major or minor. Research by Deimler (1981) showed 12 available types of quartal harmony structure from a piece of 20<sup>th</sup>-century music (Deimler, 1981). Daimler explained the piano piece "*Bagatelle No. 11*" from 14 Bagatelle per Pianoforte, Op.6 (1908) composed by a Hungarian composer and pianist, Bela Bartok, that these 88 bars tune switched register between the system of quartal harmony and tertian harmony. Randall J. (2009) explained that using quartal harmony in jazz tunes began in the 1960s by the predominant jazz pianists such as McCoy Tyner (1938-2020), Herbie Hancock (1940), Chick Corea (1941-2021), and others. Randall mentioned the "*Now He Sings, Now He Sobs*" album (1968) by Chick Corea, a remarkable masterpiece, that he employed quartal harmony on the "*Matrix*" song (Randall J., 2009, p. 64-66). According to Kenagy (2009), The quintal harmony in jazz music appeared in the theory of "*The Lydian Chromatic Concept*" by George Russell (2001), an American pianist and jazz composer. This theory shows the sonic unity of quintal harmony, which is the fundamental voice in Lydian mode.

## 3. Research Objectives

This Doctorate creative research composition aimed to honor King Bhumibol as the great jazz musician and composer through an original composition for jazz orchestra, which combines elements of classical music and jazz. The original composition will be performed in a doctoral music composition concert.

## 4. Research Design and Methods (Music composition)

Since the purpose of this music research was to create an original piece of 4 movements to honor King Bhumibol as the great jazz musician and composer, the composition and arranging process was implemented. The four movements consist of (1) the 1<sup>st</sup> movement "*King Bhumibol Adulyadej Square*," which was an overture that describes the history of King Bhumibol's birthplace, Harvard square, Massachusetts, USA. The King was born on December 5<sup>th</sup>, 1927 at Mt. Auburn Hospital, Cambridge, MA. The 5<sup>th</sup> interval of motive will be used for the main theme. (2) The 2<sup>nd</sup> movement "*His Passion and Inspiration*" represents his love, influence, and inspiration for music. The King took a saxophone lesson while he studied in an elementary school in Switzerland. A binary form will be employed in the composition and the lead melody was a tenor saxophone. (3) The 3<sup>rd</sup> movement "*His Music and His People*" outlines the King's objective that he would like to closely connect to his people through his royal music. Royal music has been of significant value to inspire the people's life, to arouse the masses, and to support the nation. The tension 9<sup>th</sup> harmony will be used in this composition with swing feel rhythm. (4) Finally, the 4<sup>th</sup> movement "*The Musical Legacy of the Nation*" describes worthy and beautiful songs that were written by the King. The brass section will be used in this movement to honor our beloved King Bhumibol. All 4 movements will be merged with jazz and classical theory and composition techniques to create an innovative jazz orchestral suite. This creative music research is organized as follows;

- 1) Study the history of King Bhumibol and his royal songs
- 2) Review selected works of literature involved the composition method of western music and its influence on music
- 3) Compose a main theme and melody before appropriately arranging them
- 4) Present all works to the advisor
- 5) Prepare score and parts for musicians and rehearsal
- 6) Perform the piece in a doctoral music composition concert
- 7) Present the complete thesis paper
- 8) Publish the research article in an academic journal

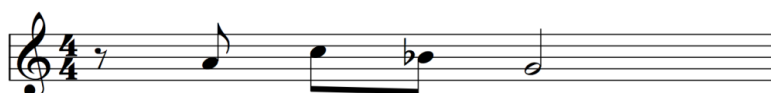
## 5. Results and Analysis

### 5.1 Theme and variation

*King Bhumibol and His Phenomenal Music Legacy for Jazz Orchestra* is a four-movement composition, the 1<sup>st</sup> movement “*King Bhumibol Adulyadej Square*” was an overture that came up with conceptual of number 4. The main theme was influenced by the rhythmic idea of King Bhumibol’s “*Candle Light Blues*” shown in Example 1A and altered the new pitches of the 4 notes group to A, C, Bb, and G or “*Bhumibol Square*” theme shown in Example 1B. The Bhumibol Square theme will be utilized as the structural foundation through all movements.



**Example 1A** The rhythmic idea of King Bhumibol’s “*Candle Light Blues*”



**Example 1B** The “*Bhumibol Square*” theme

The 2<sup>nd</sup> movement “*His Passion and Inspiration*” was composed based on the rhythm of Dixieland jazz music with some classical elements, rondo form, and cadenza for violin solo. Although the main melody was composed in Ab Lydian mode, the Bhumibol Square theme occurred in bars 3-4 in different pitches. Then, there is another sequence on bars 7-8 shown in Example 2.

**Example 2** Melodic development, 2<sup>nd</sup> movement

The 3<sup>rd</sup> movement “*His Music and His People*” was a five-section through-composed form. This movement presents music in minimalism and more modern than the others. The composition utilized the conception of complex time by switching the time signature between 9/8 and 7/8 on the cello part and rhythmic repetition in bars 5-8. *Bhumibol Square* theme is inverted in bars 1 and 3, which means reversing the basic direction of the original theme shape. However, the theme continues in bars 5, 6, 8 but altering note values to sixteen notes. The melody was developed using sequence technique, so the direction of the melody ascending in the whole step like in bars 5, 6, and 8 as in Example 3.

**A** ♩ = 148

*f* Inverted "Bhumibol Square" theme  
*f* Inverted "Bhumibol Square" theme variation  
*mp*

Sequence of "Bhumibol Square" Theme

**Example 3** Melodic development techniques, 3<sup>rd</sup> movement

The 4<sup>th</sup> movement "*The Musical Legacy of the Nation*" was written using a polyrhythm technique. These rhythmic elements were altered, and the tempo was changed in a variety from slow to fast swing. In an interlude section, music was influenced by Thai music. In bars 1-4 in Example 4A, melodic and harmonic material were derived from C major pentatonic (C, D, E, G, A) as well as perfect 4<sup>th</sup> (P4) from quartal harmony technique was used. Example 4B shows how the "*Bhumibol Square*" theme became a coda on the C section in time signature 5/4, and phrasing was extended by the melodic sequence in bars 62-65.

**Interlude** ♩ = 92

Cmaj7(#11) P4  
 C Major Pentatonic

**Example 4A** Melodic ideas on pentatonic scale Perfect 4<sup>th</sup> interval, 4<sup>th</sup> movement

**C**

Eb/F  
 "Bhumibol Square" Theme  
 Sequence

**Example 4B** "Bhumibol Square" theme in 5/4 meter and its melodic sequence

## 5.2 Instrumentation

Uncommonly used in a jazz orchestra, woodwind section and strings section were added on these large jazz ensembles. All instrument consists of woodwind on top, followed by the strings, saxophones, and brass, and finishing with the rhythm section on the bottom as shown in Example 5.

## IV. The Music Legacy of the Nation

Concert Score

Palangpon Songpaiboon

$\text{♩} = 60$  A  $\text{♩} = 92$

Flute 1

Oboe

Clarinet

Bass Clarinet

VN 123

VN 456

Violoncello

AT1

AT2

TN1

TN2

BT

TP1

TP2

TP3

TP4

TB1

TB2

TB3

TB4

Piano

BASS

Drum Set

Example 5 Score, an orchestral composition, 4<sup>th</sup> movement.

## 5.3 Voicing

In the ensemble voicing, the saxophones soli (bars 19-22) on the 1<sup>st</sup> movement represented rapid melody in 4 parts, drop 2 voicing with the melody doubled at the octave. Dropping the second voice from the top by octave made the top melody more clear. The 1<sup>st</sup> alto saxophone (AT1) and 2<sup>nd</sup> tenor saxophone (TN2) play the same note, but they have separated one octave apart as shown in Example 6.

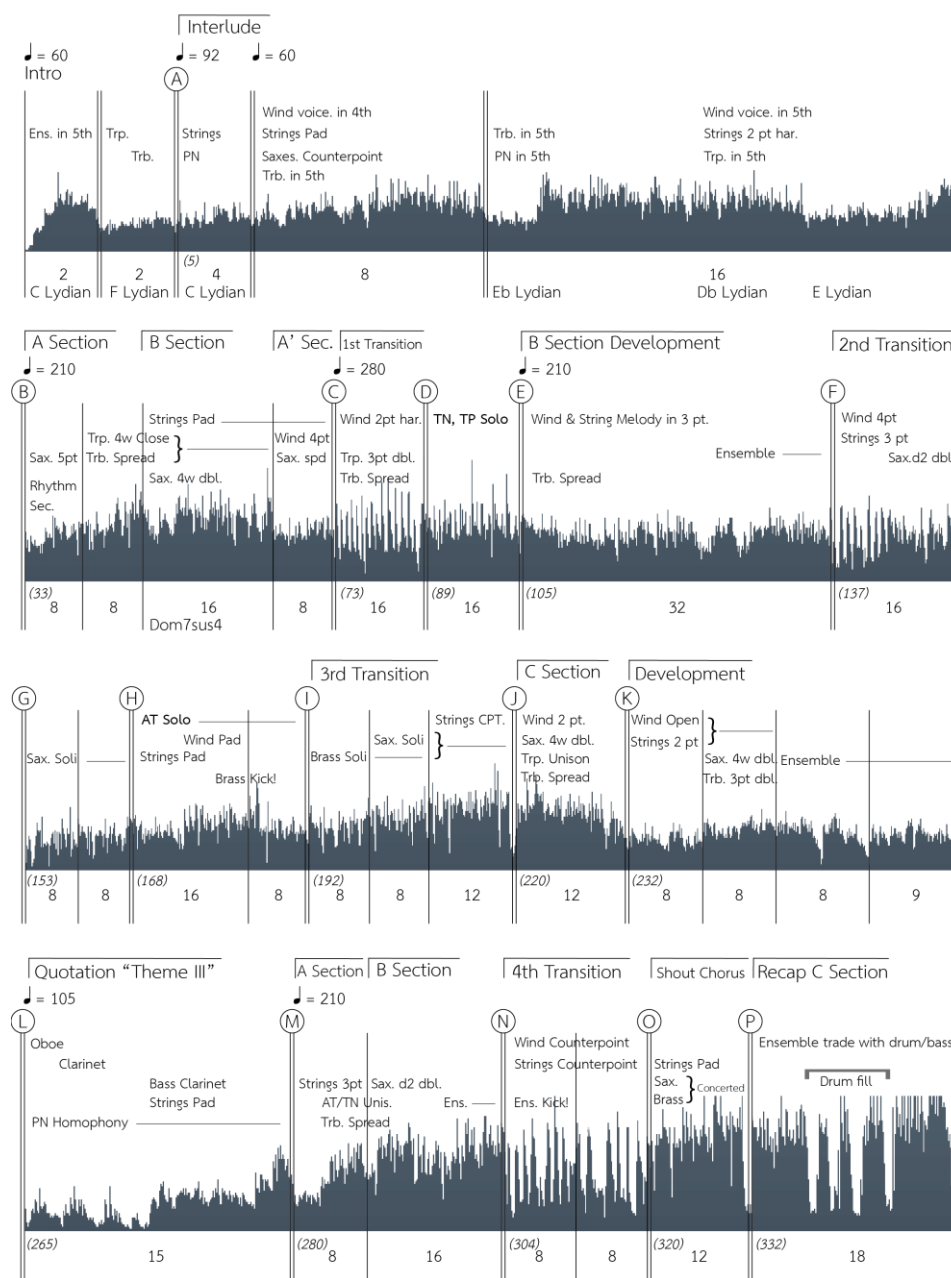
Example 6 Drop 2 voicing, 1<sup>st</sup> movement

Sometimes polyphony voicing was employed to a passage that wants to emphasize horizontal voicing such as movement II (bars 43-50), the woodwind section. The clarinet plays the melody while the flute and oboe take counterpoint melody as in Example 7.

Example 7 Polyphony texture

#### 5.4 Form arrangement

In Example 8, the 4<sup>th</sup> movement was a prestigious tune to honor His Majesty King Bhumibol Adulyadej the Great. Waveform presented the dynamic arrangement of the whole song, which is a wide range, especially from pianissimo (*pp*) on rehearsal mark L to fortississimo (*fff*) on rehearsal mark P.



**Example 8** Waveform presented the dynamic of the composition

## 6. Conclusion

This creative research was intended to design on a large-scale form of contemporary jazz orchestra, which was uncommon work we could found in Thailand. Strengthening a foundation in the composition is an ongoing process for the song. An interpretation is significant of how we generated all notes that could present those stories. As composers, we were inspired by all the things around us not only method and music theory. Motive is the main melody that will be used throughout the whole song in cyclic form. It will lead audiences to imagine along with each song title. Though it is quite difficult that music could explain meaning like illustration or movie, the audiences who have experience with this creative

research composition might get a new direction of their thought and aspect to jazz composition. They will have appreciated the story of our genius beloved King.

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## Doctoral Creative Research Music: Siamese Mass of The Roman Catholic Liturgy

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### Abstract

The Ordinary Mass is a choral composition popular around the world, which reflects the beliefs and faith of Christianity and is an important element of sacred rituals. In addition, famous composers have written a large number of Mass compositions. In Thailand, there are few Thai composers who have composed an ordinary mass. As a result, the researcher was inspired to create the Siamese Mass of the Roman Catholic Liturgy. The objectives are to 1) create a contemporary Mass for the Roman Catholic Liturgy; 2) disseminate the Siamese Mass of The Roman Catholic Liturgy, and knowledge of the composition to the public. The researcher studied the context of religion and music, analyzed and interpreted numerous chants, and composed the Siamese Mass for a mixed choir and solo in Latin, with a total of 8 sections, namely Kyrie, Gloria, Credo I - IV, Sanctus, and Agnus Dei, with the complete musical piece being 30 minutes long.

**Keywords:** *Mass, Liturgical Music, Sacred Music, Choral Music*

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### 1. Introduction

Mass, a worship service of the Catholic Church (Crocker, 2000) demonstrates faith in God through ritual, celebrating the Eucharist with bread and wine representing the Blood and Body of Jesus Christ (Ulrich, 1973). Mass in a musical context refers to two groups of sacred music, namely the Ordinary and the Proper Mass (Grout, & Paliscca, 2000). Sacred music has played an important role in the Roman Catholic Liturgy, while many world-famous Christian composers have composed an Ordinary Mass to reflect the beliefs and faith of Christianity. Mass has become popular and has developed into a music for listening. Today, Mass is not just a music for worship, but also serves the aesthetic demands of people around the world.

The topic of Musicam Sacram (1967) is mentioned in Chapter IV of The Sacrosanctum Concilium (His Holiness Pope Paul VI, 1963) providing instruction regarding sacred music, noting that in the modern world the purpose of sacred music is to praise God; composers should compose melodies with the authentic nature of sacred music which can be sung by a large or small choir, incorporating a melody that the whole congregation can participate in singing. It can be seen that the Church encourages the composition of sacred music and singing in the Mass, and that the chorus plays a very important role in this (Sacred Music Department Council of Catholic Bishops of Thailand, 2013).

After the Second Vatican Council, the Sacred Music Commission of the Archdiocese of Bangkok, Thailand fulfilled the intention of the Vatican by promoting and encouraging Thai ritual compositions. The committee collected Thai Catholic ritual songs published since 1984, edited the music scores and published the first edition of the new Catholic songbook under the name of *Sathukarn* in 2008 (Sub-Committee of Sacred Music of Thailand, 2008). Few choral pieces were published in this book, and it was found that there are few sacred choral music compositions, especially regarding ordinary mass compositions by Thai composers. As a result, the researcher was inspired to create a Doctoral Creative Research Music: Siamese Mass of The Roman Catholic Liturgy, through composition of an Ordinary Mass for mixed choir and solo singer in Latin including the sections of the Kyrie, Gloria, Credo, Sanctus, and Agnus Dei.

## 2. Objectives

1. To create a contemporary Mass for the Roman Catholic Liturgy.
2. To disseminate the Siamese Mass of The Roman Catholic Liturgy, and knowledge of the composition to the public.

## 3. Materials and Methods

### 3.1 Scope of creative music research

In this research, data were collected from related documents, textbooks, research papers, musical literature, and chants from the Catholic service, to analyze, and synthesize, the conceptual ideas and materials necessary to compose the Siamese Mass, with an emphasis on composing an Ordinary Mass comprised of the Kyrie, Gloria, Credo I - IV, Sanctus, and Agnus Dei appropriate for a mixed choir, solo, and piano.

### 3.2 Composition Method

1. Study the knowledge of choral music literature and documents related to the Ordinary Mass.
2. Analyze and synthesize data in order to obtain ideas and materials for composition.
3. Design the composition structure, form, melody, voicing, and accompaniment.
4. Compose and consult relevant experts.
5. Meeting of the choir members for rehearsal and recording processes.
6. Recording, mixing, and mastering the music, and presentation of the Siamese Mass via social media.
7. Complete the written creative research music of the Siamese Mass composition.

## 4. Results

### 4.1 Structure of Siamese Mass

After studying the information and musical literature, the researcher analyzed, synthesized, and designed the structure of the Siamese Mass, adapting the music from 5 sections into 8 sections, and ensuring suitability for mixed choir, solo, and piano. The structure of the Siamese Mass for each section was designed with diverse characteristics, tone color, voicing, time signature, and key signature, as shown in Table 1.

**Table 1** Siamese Mass Structure

Ordinary Mass		Mixed Choir	Time Signature	Key Signature
Kyrie		S1 S2 A1 A2 T B	4/4	D minor
		Piano		
Gloria		SATB	6/8, 4/4	D Major
		Piano		B minor
Credo	I. Credo in unum Deum	Solo & SATB A cappella	4/4	F Major
	II. Et in unum Dominum	SATB Piano	6/8	C Major
	III. Et incarnatus est	SATB Piano	4/4	E♭ Major C minor C Major
	IV. Et in Spiritum sanctum	SATB Piano	4/4	C Major
	Sanctus	SATB Piano	4/4	F Major
Agnus Dei		Solo & SATB	3/4	D Major B minor
		Piano		D Major

## 4.2 Siamese Mass

### 4.2.1 Kyrie

The Greek chant *Kyrie* is a three-part text set in an ABA form, consisting of the *Kyrie eleison*, *Christe eleison*, and *Kyrie eleison*, meaning *Lord have mercy*, *Christ have mercy*, and *Lord have mercy*. The introduction of this piece presents the idea that people may come from different places and have different rhythms of life, but everyone has faith and wants to plead to God for help. The music starts with SATB on different rhythmic patterns while the piano accompaniment plays a homophonic texture with chords on the right hand and arpeggios on the left hand. The bass is sung on a descending D Minor scale while the tenor and alto are sung in harmony with the same rhythmic pattern. The soprano line was designed to harmonize with the skipped note on the weak beat as shown in Example 1.

Adagio ♩ = 63  
mp

SOPRANO  
Ah Ah Ah Ah Ah

ALTO  
Ah Ah Ah Ah

TENOR  
Ah Ah

BASS  
Ah Ah

Piano  
Adagio ♩ = 63  
mp

**Example 1** Introduction of the Kyrie

The melodic line was composed by the nature of the text by reading text out loud, searching for the rhythmic motive for the “*Kyrie eleison*”. The idea of the melody line was designed with less movement on the pitches to give a feeling of prayer as demonstrated in Example 2.

Ky-ri - e e - le - i - son,

**Example 2** The rhythmic motive of the “*Kyrie eleison*” is derived from the rhythm of speech

The section of “*Christe eleison*”, was presented with the new tune. The second soprano sings the main theme from bar 27 to 32. Then, in bar 37, the theme of “*Kyrie eleison*” comes back in G minor, with the melody started by the bass, tenor, alto, and soprano respectively, and all voices harmonized in a homophonic texture. The expression of this section presents a thick harmony with a simple rhythmic pattern, imitating the congregation’s prayer as shown in Example 3.

41 *mf* *mp* *mf*

Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son,

*mf*

Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son,

8 Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son,

Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son, Ky-ri - e e - le - i - son,

**Example 3** The Kyrie theme in G minor with homophonic texture

#### 4.2.2 Gloria

*Gloria* is set in the introductory rites of the Mass, containing a long text praising God and Jesus Christ. The difficulty in composing this section lies in designing melodies that are most suitable for the unrepeatable text. To produce a composition which creates a glorious sensation without any breaks, the music must be composed in through-composed form, starting in D major and modulated by several keys to end in B minor. The time signature starts with 6/8 and later changes to 4/4, with a variety of tempos being used to change the mood, tone and characteristic of each section as shown in Example 4. The concept of rhythmic motive from the “Kyrie” is also applied in this piece as shown in Example 5.

75 *rit.* *Cantabile* ♩ = 40

ha

ha

*rit.* *Cantabile* ♩ = 40

**Example 4** Changing tempo

**Majestic** ♩ = 60

Soprano & Alto

SOPRANO  
ALTO

*f* Glo-ri a, —

Tenor & Bass

TENOR  
BASS

*f* Glo-ri a, —

**Majestic** ♩ = 60

Piano

*f*

**Example 5** The rhythmic motive of “Gloria” is derived from the rhythm of speech

### *Credo*

*Credo*, the longest chant in the ordinary Mass, is intended for Christians to pray, proclaiming their faith in the Father, the Son, and the Holy Spirit, and jointly announcing a belief in the teachings of Catholicism. The researcher studied and interpreted the *Credo*, dividing the text into: 1) Belief in the Father 2) Belief in Jesus 3) Jesus descent from heaven and becoming man 4) Crucifixion 5) Resurrection on the third day 6) Ascension to Heaven 7) Belief in the Holy Spirit 8) Belief in the One Church, 9) Confession of Baptism, and 10) Resurrection. After understanding the overall picture, the researcher analyzed and divided the *Credo* into 4 sections as follows:

- I. *Credo in unum Deum*
- II. *Et in unum Dominum*
- III. *Et incarnatus est*
- IV. *Et in Spiritum Sanctum*

#### 4.2.3 Credo I. Credo in unum Deum

*Credo in unum Deum* was composed as a cappella. This piece has a simple, calm, mainstream, melody and harmony. The researcher did not specify the type of soloist voice as either male or female, with the idea that in the creation of the world, the gender of living beings had not yet been determined and all things were equal. The melodies have a rather slow tempo, while the long tone harmony of the SATB creates a calmness as shown in Example 6.

**Calmato** ♩ = 60

Solo *mf* *legato* Cre - do in u-num De - um, Pa - trem Om-ni-po- ten - tem, fac-

SOPRANO *mp* hoo hoo hoo hoo

ALTO hoo hoo hoo hoo

TENOR *mp* hoo hoo hoo hoo

BASS hoo hoo hoo hoo

**Example 6** *Credo I* - the long tone harmony of the SATB creates calmness

#### 4.2.4 Credo II. Et in unum Dominum

The lyrics of the *Et in unum Dominum* refer to faith in Christ. This piece is composed in a 2-part harmony for a male and female. The composition is in C major, with a 6/8 time signature. The accompanying text mentions faith in Jesus Christ who is the light and true God. The melodic line was designed with a lively tune, using an upbeat note with repeating text from the female voice. During the introduction, the piano sets the mood of the music with the acciaccatura on the left hand representing the sound of a bird as shown in Example 7. Meanwhile, the melody gives a cheerful tune. Part II presents the main theme while part I is harmonized with the repeated text as shown in Example 8.

Piano

L.H. 8va

**Example 7** The acciaccatura on the left hand represents the sound of a bird

43

De-um de De-o, lu-men de lu-mi-ne, De-um ve-rum

De - um de De - o, lu - men de lu - mi - ne, De - um ve - rum de

**Example 8** Part II presents the main theme while part I is harmonized with the repeated text



## 4.2.5 Credo III. Et incarntus est

*Et incarntus est* refers to the belief that the Son of God became man, was crucified, died, and then rose again on the third day. The story is lead to music full of emotion, tranquility, suffering, sorrow, and joyfulness. The researcher presents these ideas using a through-composed form as with the *Gloria*, 4/4 time signature, and the key of Eb Major at the start; the key is modulated to C minor during the crucifixion, as shown in Example 9, but then ends in C major, expressing gladness for the resurrection.

41

Cru-ci - fi - xus Cru-ci - fi - xus Cru-ci - fi -

*f* Cru-ci - fi - xus Cru-ci - fi - xus Cru-ci - fi -

Cru-ci - fi - xus Cru-ci - fi - xus Cru-ci - fi -

*f* Cru-ci - fi - xus Cru-ci - fi - xus Cru-ci - fi -

**Example 9** The crucifixion in C minor

## 4.2.6 Credo IV. Et in Spiritum Sanctum

The text of *Et in Spiritum Sanctum* describes a belief in the Holy Spirit, and the Church, affirming belief in baptism and waiting for a new life in the next world, while also referring to a declaration of faith in a Christian life. The music uses the form of 2-part, 3-part and 4-part harmony in C major, and has 4/4 time signature. The tune is designed with a simple and sweet melodic line and an arpeggiated piano accompaniment as shown in Example 10.

5

*Soprano and Alto*

*mf* Et in Spi - ri - tum sanc - tum Do-mi-num

*mp* hoo hoo

**Example 10** Simple and sweet melodic line with an arpeggiated piano accompaniment

#### 4.2.7 Sanctus

The text is set in the Eucharistic liturgy to praise the holy Lord with a delightful spirit. This music, composed in F major, has a time signature of 4/4, and 3 themes with a lively and cheerful melodic line. The researcher found that the word *Sanctus* was most suitable with short notes while it was necessary to be careful with the vowels and consonants to make the sound more effective. The refrain *Hosanna* in the soprano and bass line were designed with a regular rhythm while the alto and tenor were to sing short words in syncopation, generating a playful melody to match the praise as shown in Example 11.

14 Ho - san - na Ho - san - na Ho - san - na Ho - san - na  
 Ho - san - na Ho - san - na O - san - na Ho - san - na  
 Ho - san - na Ho - san - na O - san - na Ho - san - na  
 Ho - san - na Ho - san - na Ho - san - na

**Example 11** Alto and tenor sing short words in syncopation

#### 4.2.8 Agnus Dei

*Agnus Dei* is set in the Communion rites of the Mass, mentioning the Lamb of God who took away the sins of the world, inferring the great sacrifice of Jesus Christ. This piece was designed in D major, with 3/4 time signature, for solo and SATB. The composer presents the main melody through a soloist at first and then moves to the chorus. There are switching melodies and harmony between the SA and TB in the middle section of the piece, which is combined with a mixture of legato and staccato articulations as shown in Example 12. The music then moves to an expressive section with a soprano solo accompanied by the SATB singing a long-tone to enhance the melody line, and gradually moves to the final section with a graceful harmony of all parts singing together. At last, the music ends with a cappella on *Dona nobis pacem* to present a peaceful feeling for the end of the Siamese Mass as shown in Example 13.



44

*i,*

*mf*

Ag - nus De - i, Ag - nus

*p*

Ag - nus De - i, Ag - nus De - i, Ag - nus De - i,

Example 12 A mixture of legato and staccato articulations

84

*rit.*

do - na no - bis pa - - - - - cem.

*cem.* do - na no - bis *rit.* pa - - - - - cem.

*cem.* do - na no - bis pa - - - - - cem.

*cem.* do - na no - bis pa - - - - - cem.

*cem.* do - na no - bis pa - - - - - cem.

*rit.*

Example 13 The cappella ending

## 5. Discussion

Siamese Mass composition is recommended for proclaiming the Christian faith and performing. The *Kyrie*, *Sanctus*, and *Agnus Dei* can be sung in the catholic service and concert, due to the text setting is presented in the same format of the chant while the *Gloria* and *Credo* are more suited to the performance as the long texts are divided into sections.

Those who are interested in church music can apply the knowledge gained from this research as a guideline for composing sacred music for rituals or for aesthetic purposes, such as composing the ordinary mass in Thai or composing the proper mass which requires knowledge and skills in wide areas such as theory and composition, history, linguistic and interpretation, and the understanding of church music.

## 6. Conclusion

This Doctoral Creative Research Music: Siamese Mass of The Roman Catholic Liturgy was composed in Latin, for choir, solo and piano accompaniment. It is comprised of eight sections, namely the Kyrie, Gloria, Credo I - IV, Sanctus, and Agnus Dei, with a combined performance time of 30 minutes. The Siamese Mass presents the idea of composing a choral sacred music in various styles. The melodies of each section were designed to serve the conceptual ideas of the text and lead to different music structures, forms, tempo, key signatures, and voice. The researcher found that to compose the choral music a composer must have a range of concerns, particularly pronunciation, as this can affect the melodies and accompaniments supporting and highlighting the choral part.

Due to the situation of the Covid-19 pandemic around the world, a live performance was not possible. The researcher solved this situation by presenting the Siamese Mass on social media. The concert plan was changed to rehearse and record online, which was a very challenging process. The choir members (reduced to only 4 singers) and 2 pianists, recorded the music at home with their own equipment. Mixing and mastering was a long-run process during the new normal situation. The Siamese Mass was presented as music with score through online channels. This composition has enabled the researcher to enhance their own home studio skills which are considered essential to creative work nowadays.

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## Linguistic Landscape of The Legendary Century-old Bangkok Railway Station

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### Abstract

Linguistic landscape (LL) has been gaining ground because of an interest in multilingualism and globalization tendencies where languages interact in establishing a global environment. Studies of LL help improve images and services provided by the government and commercial organizations. In line with this, this paper proposes a computerized method of examining the linguistic landscape of the Bangkok Railway Station, known as Hua Lamphong Railway Station, in terms of language use and functions. Moreover, a top-down and bottom-up approach was used to analyze the organizations that created the signs. A total of 314 signs were collected and their contents were stored in a database. Then, the Query by Example (QBE) approach was applied to generate information based on the languages on the signs and their categories. The results showed that the following seven foreign languages were found: English, Chinese, French, Japanese, Burmese, Bahasa Melayu, and Yawee. Thai was the most predominant language used in this station, and English was the foreign language that was mostly used to help create a global environment. The signs were used for providing general information, giving direction, advertising, preventing diseases, prohibition, warning, conveying greetings, and welfare messages. Most of the signs were produced by government agencies, followed by companies, and then local shops. The image of the Bangkok Railway Station can be enhanced through cooperation between the public and private sectors and multilingualism should be promoted for more effective communication. Apart from creating a larger scale research opportunity, our proposed method could efficiently provide insights into linguistic diversity and the functions of language on signs. Importantly, the results can be applied to improve communication on signs for other railway stations throughout the country.

**Keywords:** *language diversity, language functions, linguistic landscape, Query by Example, railway stations, top-down and bottom-up approach*

### 1. Introduction

The Bangkok Railway Station, operated by the State Railway of Thailand (SRT), was officially opened on June 25<sup>th</sup>, 1916. Since then, it has played a major role in serving the nation's transportation needs. Hua Lamphong Railway Station, as shown in Figure 1, is one of the oldest train stations in Thailand. It was commissioned by King Rama V after he made a royal visit to Germany in 1907 and admired the Frankfurt railway. It is used by passengers from the suburbs and other cities throughout Thailand to travel into the city as well as across Bangkok. Not only does it serve domestic commuters, but it also accommodates tourists from around the world who flock to tourist attractions throughout Thailand. The constant flow of tourists requires different language use on signs to convey the intended messages. The railway station is closely connected to the development of tourist destinations that are further afield. The station has served as a hub of public service transportation and a famous Bangkok landmark for more than 100 years.



**Figure 1** The Bangkok Railway Station (Hua Lamphong)

Thailand is an ethnically diverse and pluralistic country (Rappa, & Wee, 2006; Smalley, 1994). The official language of Thailand is Central Thai, Bangkok Thai. English is used as the lingua-franca and holds a special position as a language for communication in various sectors such as education, communication, politics, media, and tourism (Prasert, & Zilli, 2019).

According to Gorter (2006), language surrounds us in textual form as it is shown on shop windows, business signs, banners, official notifications, and traffic signs. The study of written languages appearing on signs in the public sphere has steadily been gaining ground from academics in fields such as applied linguistics and media studies. The languages of public street signs, street names, place names, public signs on government buildings, business shop signs and advertising billboards join to form the linguistic landscape of a given territory, region, or urban agglomeration. Public signs are utilized to disseminate messages of public interest like directions and warnings and to pass on information to visitors from business, shops and organizations.

### Literature Review

Research into the linguistic landscape (LL) has become of academic interest and has been conducted in many countries such as Singapore, Japan, South Korea, the Netherlands, Spain, and Hong Kong (Rungswang, 2018). LL has drawn academic interest and has become a dynamic field of research in applied and sociolinguistics which endeavors to comprehend multiple forms of languages when presented in public spaces (Chanda, Hossain, & Rahman, 2018). Perhaps the most notable meaning of linguistic landscape was given by Landry & Bourhis (1997), who defined LL as the visibility and salience of languages on open and commercial signs in a given territory or region. LL presents the concept like environmental print (Huebner, 2006), the word on the street (Foust, & Fuggle, 2011) and multilingual cityscape (Gorter, 2013). Several scholars have coined the term to accentuate the written languages or text displayed and presented in public spaces (Pavlenko, 2010; Coulmas, 2009; Backhaus, 2006; Gorter, 2006). Reh (2004) emphasizes that the study of LL confers upon us the social layering of the community, the relative status of the various societal segments, and the dominant cultural ideals. These can be portrayed in the form of language use and functions, the objectives of signs, and prominent linguistic actors who concretely build and shape the landscape elements based on preferential tendencies, deliberate choices, or policies to promote good services and advertise products to target business groups. Gorter (2013) postulated that previous studies carried out LL in one specific geographic area such as a city, a street, a neighbourhood, or even the whole country, or a comparative study of those could be analyzed as well.

LL allows us to understand various key language perspectives such as sociolinguistic contexts and the use of different languages on signs (Cenoz, & Gorter, 2006). We can also learn the diversity of languages and culture underlying the messages since public signs are a sort of semiotic sign in that they also represent something other than themselves (Akindele, 2011). Besides, studying the diversity of languages and functions of signs helps establish better communication and service between service providers and customers.

In the Thai context, language use on public signs has changed dramatically resulting from globalization, immigration, and international trade. The advent of the Asian Economic Community (AEC) (Siwina, & Prasithrathsint, 2020) allows the mobility of migrant workers from neighboring countries such as Myanmar and Laos to come to Thailand to find jobs that offer higher wages than their own countries. For this reason, Thailand has become an open country where immigrants have been employed in, for example, the fishing industry and industrial factories. Several LL studies in Thailand have investigated the choice of foreign scripts on signs. The results indicated that English was the most prominent foreign language used on signs (Prapobratanakul, 2016; Sutthinaraphan, 2016; Thongtong, 2016; Sirichareon, 2016). Research has been conducted to investigate the language use and functions of signs in a Thai community centre in Singapore. The language functions of shop signs were divided into shop names and shop details (Rungswang, 2018). The results showed that English, utilized in shop names, was employed as a transcription for Thai shop names because English is the language of global communication. The acceptance of English was also supported by another investigation conducted by Pikulthong (2011) on the status of language on business signs along Phra Arthit Road, an iconic street in Bangkok catering for tourists. The results showed that English was the most predominant, in both positioning and font size, on the signs because it was perceived as a lingua-franca for both foreigners and Thais. The font size, large or prominent, signified the importance of the national language (Scollon, & Scollon, 2003). In signs that are bilingual or multilingual, one language will stand out from the other to attenuate the significance of that language in the context of the national language.

Chuaychoowong (2019) concluded that LL results are useful information for policymakers or policy planners when examining a language policy or planning a language policy and its implementation. In addition, Wiriyaichitra (2002) stated that English played a crucial role in country development in developing countries including Thailand. The emergence of advanced technology like the internet has facilitated global collaboration with foreign enterprises in several domains: namely, business, education, science, and technology both domestically and internationally. This agrees with Pennycook (1994) and Phillipson (2004), who proposed that the use of English, as well as its presence, was a mark of globalization that fostered economic activities such as marketing, production, and consumption, resulting in enhanced sales revenues and brand awareness. Moreover, the utilization of different languages in the sign mirrored the power, status, and economic significance of the different languages (Cenoz, & Gorter, 2009).

In light of globalization, it is undeniable that Thailand, one of the countries in the Expanding Circle according to Kachru's model of "World Englishes" (1986), has been immensely influenced by English usage particularly in tourism, digital technology, international business, politics and media (Bolton, 2012). In effect, numerous LL research conducted in Thailand has showcased the incremental spreading of English usage exhibited on signs around the country. Thai words have entered into English such as *acharn* (a teacher), *khun* (a polite title preceding the first name of a man or a woman), *muang* (city or town), *phi* (an elder brother or sister), and *phra* (a monk). The emergence of Thai-English words is interesting and a few Thai-English words have appeared at the Bangkok Railway Station. For example, the Thai-English word "Pad Thai", which is defined in the Merriam-Webster dictionary as a Thai dish consisting of rice noodles stir-fried usually with any of various additional ingredients (such as bean sprouts, peanuts, chicken, shrimp, and egg), was found at the station.

In parallel with this research, De Los Reyes (2014) examined the linguistic landscape of two major Light Rail Transit (LRT) and Metro Rail Transit (MRT) stations on the Manila Metro in the Philippines. The paper sought to determine the languages utilized and give possible explanations as to how the language was used in 76 signs found in two stations. The findings indicated that English and Filipino languages were predominantly utilized in the signs; however, between the two languages, English dominated as there were more English signs than those in Filipino. In addition, research conducted into the two terminals of the Kuala Lumpur International Airport indicated that Malay was the most predominant language that appeared in the multilingual signage, whereas English was positioned as the second most important language (Woo, & Nora Riget, 2020). Besides, the linguistic landscape of a territory serves two fundamental functions which are informational and symbolic. Apart from the study of languages found on signs, Singhasiri (2013) studied the language functions of signs in a train station and classified them as follows: 1) providing general information, 2) greetings and farewell messages, 3) giving direction, 4) warning, 5) prohibition, and 6)

advertising. This classification was comprehensive, and it should be further studied and extended to analyze the signs in train stations and other contexts.

Top-down and bottom-up are a LL influential approach that can be applied to understand the roles of linguistic actors such as the government and commercial enterprises in a specific area. In Cenoz and Gorter's study (2006), top-down signs referred to the official signs placed by the government or related institutions, while bottom-up signs referred to the nonofficial signs installed by commercial enterprises or by private companies. This approach was used in various studies (Ben-Rafael, Shohamy, Hasan Amara, & Trumper, 2006; Cenoz, & Gorter, 2006). Similarly, Shohamy and Gorter (2009) coined the terms to differentiate signs into the following two types: top-down and bottom-up items. Understanding language functions and the top-down and bottom-up approach can help promote services and advertise products.

Therefore, this study proposes an innovative computerized method using a database and queries created by QBE to explore the signs in the Bangkok Railway Station. Instead of storing LL data on paper, word processing software, or spreadsheet software, a database and queries were used as it was a more efficient method of conducting linguistic landscape research on a larger scale. In addition, the study applied the classification of the language functions suggested by Singhasiri (2013) together with the top-down and bottom-up approach to analyze the linguistic diversity of the signs. It is hoped that this analysis of the Bangkok Railway Station linguistic landscape can serve as a blueprint for other railway stations to better manage their signs and improve domestic and international passengers' travel experience.

## 2. Objectives

1. To investigate the diversity of languages and functions of signs displayed in the Bangkok Railway Station.
2. To explore the linguistic landscape actors using the top-down and bottom-up approach in the Bangkok Railway Station.

## 3. Materials and Methods

### 3.1 Data Collection

A total of 314 signs were collected from the Bangkok Railway Station. The researchers classified them based on the diversity of the languages and their functions. The signs were classified into 1) monolingual signs, 2) bilingual signs, and 3) multilingual signs. The multilingual signs were signs consisting of more than two languages. Then, the signs were categorized as 1) providing general information, 2) giving direction, 3) advertising, 4) preventing diseases, 5) prohibition, 6) warning, and 7) sending greetings and farewell messages. Based on the top-down and bottom-up approach, the signs were classified based on the following linguistic landscape actors: 1) government, 2) companies, 3) shops, and 4) others.

### 3.2 Methods

Once the data were collected and stored in a Microsoft Access database, QBE was used to filter the contents of the signs according to their categories, functions, and linguistic actors. QBE is a visual approach where a user enters the queries, and it can be used by not only computer scientists but also social science researchers as it is easy to use. Instead of writing an SQL command, users can easily fill in fields or select items to create a query. Using the QBE grid, the user generally does not need to know how to write SQL queries for advanced searching. Table 1 shows the field names and data types (SignsInBangkokRailwayStation) used to store the sign data. The QBE example in Figure 2 was used to find signs consisting of Thai and English that function as prohibition.

**Table 1** Field names and data type of the SignsInBangkokRailwayStation table

Field Name	Data Type	Description
ID	Number	ID
ImageNo	Short Text	Image number
Content	Long Text	Text on the sign
NumberLanguages	Number	Number of languages appearing on the sign
NumberFunctions	Number	Number of language functions
Thai	Yes/No	Thai language
English	Yes/No	English language
Chinese	Yes/No	Chinese language
French	Yes/No	French language
Burmese	Yes/No	Burmese language
Japanese	Yes/No	Japanese language
BahasaMelayu	Yes/No	Bahasa Melayu
Yawee	Yes/No	Yawee language
ProvideInformation	Yes/No	Content used for providing information
GiveDirection	Yes/No	Content used for giving direction
Advertising	Yes/No	Content used for advertising
DiseasePrevention	Yes/No	Content used for disease prevention
Prohibition	Yes/No	Content used for prohibition
Warning	Yes/No	Content used for warning
Greetings	Yes/No	Content used for sending greetings and farewell messages
Government	Yes/No	Sign created by the government
Company	Yes/No	Sign created by companies
Localshop	Yes/No	Sign created by shops
Others	Yes/No	Signs that were not created by the government and companies or shops

Field:	ImageNo	Content	NumberLanguages	Thai	English	Prohibition
Table:	SignsInBangkokRailw	SignsInBangkokRailw	SignsInBangkokRailw	SignsInBangkokRailw	SignsInBangkokRailw	SignsInBangkokRailw
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:			2	Yes	Yes	Yes
or:						

**Figure 2** QBE to find the content of the signs consisting of Thai and English languages that function as prohibition

Based on the QBE, the query showed the texts in the ImageNo, Content, NumberLanguages, Thai, English, and Prohibition fields when the number of languages was two and the value in the Thai, English, and Prohibition fields was “Yes”. Queries were created to search for results based on the criteria including languages on the signs, language functions, and linguistic landscape actors.

## 4. Results

### 4.1 Diversity of Language Use

The signs in the Bangkok Railway Station were classified into three categories: monolingual, bilingual, and multilingual. The findings indicated that bilingual signs were mostly found (57.96%), followed by monolingual Thai signs which accounted for 40.13%, and multilingual signs accounted for 1.91%. A total of 176 signs containing both Thai and English languages were reported, and 86 signs were



monolingual Thai. Only a few signs were written in Chinese, Japanese, Burmese, French, Bahasa Melayu, and Yawee. The percentage of each type of sign and languages used are shown in Table 2.

**Table 2** Type of the signs in the Bangkok Railway Station

Type of sign	Signs & percentage	Languages used
Monolingual signs	126 (40.13%)	Thai = 86 (68.25%), English= 39 (30.95%), Japanese = 1 (0.79%)
Bilingual signs	182 (57.96%)	Thai-English =176 (96.72%), Thai-French = 1 (0.55%), Thai-Yawee = 1 (0.55%), English-Chinese = 3 (1.64%), Thai-Bahasa Melayu = 1 (0.55%)
Multilingual signs	6 (1.91%)	Thai-English-Burmese = 1 (16.67%), Thai-English-Japanese = 1 (16.67%), Thai-English-Chinese = 3 (50.00%), Thai-English-Chinese-Japanese = 1 (16.67%)

#### 4.2 Language Functions

Figure 3 shows examples of signs in the Bangkok Railway Station and their language functions.



**Providing information**



**Giving direction**



**Preventing diseases**



**Prohibition**



**Warning**



**Advertising**



**Greetings and farewell**

**Figure 3** Functions of signs



The number of signs and percentages categorized according to their language functions are shown in Table 3. The results revealed that 11 language functions consisting of seven main language functions and the other four combined functions were found. These language functions were providing information (I=33.76%), giving directions (D=13.69%), advertising (A=22.29%), disease prevention (DP=6.37%), prohibition (P=10.51%), warning (W=9.24%), greetings and farewell messages (G=1.91%), providing information and giving directions (I&D=0.96%), providing information and prohibition (I&P=0.64%), providing information and warning (I&W=0.32%), and warning, advertising and sending greetings and farewell messages (W&A&G=0.32%). It appeared that the signs had more than one language function. 1.91% and 0.32% of signs had two and three language functions, respectively.

**Table 3** The number of signs and percentages according to their language functions

Language	Language functions										
	I	D	A	DP	P	W	G	I&D	I&P	I&W	W&A&G
Thai	25 (7.96%)	6 (1.91%)	12 (3.82%)	3 (0.96%)	19 (6.05%)	17 (5.41%)	1 (0.32%)	0 (0.00%)	1 (0.32%)	1 (0.32%)	1 (0.32%)
English	10 (3.18%)	2 (0.64%)	26 (8.28%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Japanese	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English	68 (21.66%)	35 (11.15%)	27 (8.60%)	17 (5.41%)	11 (3.50%)	12 (3.82%)	3 (0.96%)	3 (0.96%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-French	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-Yawee	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
English-Chinese	0 (0.00%)	0 (0.00%)	3 (0.96%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-Bahasa Melayu	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English-Burmese	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English-Japanese	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English-Chinese	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	2 (0.64%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English-Chinese-Japanese	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Total	106 (33.76%)	43 (13.69%)	70 (22.29%)	20 (6.37%)	33 (10.51%)	29 (9.24%)	6 (1.91%)	3 (0.96%)	2 (0.64%)	1 (0.32%)	1 (0.32%)

#### 4.2.1 Thai Language Functions

The results show that the monolingual Thai signs exhibited 10 out of 11 language functions, while bilingual Thai-English signs had eight functions. This was because Thai was the main official medium of communication inside the Bangkok Railway Station. The Thai language often co-occurred with other languages on the signs to perform the following functions: providing information, giving directions, preventing diseases, prohibiting smoking and alcohol drinking, warning, advertising, and conveying greetings and farewell messages. For example, bilingual Thai-English signs were used to give information on how to book tickets via the phone. Thai-English signs such as ทางออก Exit, สุขา-อาบน้ำ TOILET-SHOWER, and ทางเข้า ENTRANCE were used for giving directions. During the COVID-19 pandemic, it became evident that many signs exhibited the new normal lifestyle and preventive measures that passengers should follow strictly for hygiene reasons. Some examples of signs for disease prevention included: ปกป้องตัวเราจาก COVID-19 ทำความสะอาดมือ ด้วยเจลแอลกอฮอล์ Prevent COVID-19; Wash Your Hands with Antiseptics. For prohibition, signs such as บนรถไฟและสถานีปลอดบุหรี่และสุรา No smoking and drinking alcohol on the trains and inside the stations; and ห้ามขายห้ามดื่มสุราบนรถไฟและสถานี No selling, no drinking alcohol on the trains and inside the stations were shown at the station. Warning signs were displayed to advise passengers to check departure times and platforms, to care for their belongings, and not to leave their luggage unattended while waiting in the station. For instance, กรุณาตรวจสอบทรัพย์สินของท่านก่อนออกจากที่นี่ PLEASE CHECK YOUR BELONGINGS BEFORE LEAVING is an example of a Thai-English warning sign found in the Bangkok Railway Station. Regarding advertising, the names of the shops such as ร้านกาแฟแบล็คแคนยอนคอฟฟี่ BLACK CANYON COFFEE comprised of both Thai and English to target both local and foreign customers. It is customary that the greetings and farewell signs like ยินดีต้อนรับ WELCOME; and ขอให้ทุกท่านเดินทางโดยสวัสดิภาพ Bon voyage are situated in train stations to greet and wish passengers safe trips. In addition, bilingual Thai-English signs performed multifunctions which were providing information and giving directions. For instance, a large directory map that illustrated venues and provided directions was installed inside the Bangkok Railway Station so that the passengers could know where they were going. Apart from the bilingual and multilingual signs, the functions of the monolingual Thai on signs were investigated and examples are shown in Table 4.

**Table 4** Examples of Thai language functions on monolingual Thai signs

Language Functions	Example
Providing information	ประวัติศาสตร์รถไฟกรุงเทพ (History of Bangkok Railway Station) ขอความร่วมมือผู้ขึ้นขี้นขบวนสาธารณะทุกประเภทโปรดแต่งกายให้สุภาพและเรียบร้อย (Please cooperate: All public taxi drivers are kindly requested to dress modestly and neatly.)
Giving directions	ทางไปรถไฟ ทางไปรถไฟฟ้า the way to trains, the way to the electric locomotives
Disease prevention	ชีวิตวิถีใหม่ สวมหน้ากากอนามัย - เคารพกฎจราจร ปลอดโควิด - ปลอดอุบัติเหตุบนท้องถนน (A new normal life, Wear a mask, Respect traffic rules, COVID-free, Safe from road accidents)
Prohibition	ห้ามทิ้งขยะ (Do not litter) ห้ามนำสินค้ามาวางขายตลอดแนว หากฝ่าฝืนมีโทษปรับ 500 บาท หรือทั้งจำทั้งปรับ (Do not sell products along the pathway. If violated, there is a penalty of 500 baht or both imprisonment and a fine)
Warning	ตรวจสอบป้ายข้างรถไฟให้แน่ชัดก่อนขึ้นขบวนรถ หากสงสัยกรุณาสอบถามเจ้าหน้าที่ (Be sure to check the sign on the side of the train before getting on. If in doubt, please ask the staff.)
Advertising	เครื่องดื่มมอลต์สกัด โอวันติน (Malt beverage, Ovaltine) กระทิงแดง ของกินมีประโยชน์ (Red Bull, healthy food)
Providing information & Prohibition	ประกาศการรถไฟแห่งประเทศไทย เรื่องการเปิด-ปิดให้บริการผู้โดยสารและข้อห้าม (State Railway of Thailand Announcement: Opening & Closing time for passengers and prohibitions)

Language Functions	Example
Providing information & Warning	ตรวจสอบสัมภาระติดตัว ก่อนขึ้นหรือลงจากขบวนรถ สัมภาระที่เกินสิทธิ์ต้องชั่งและเสียค่าระวางที่สถานี (Please check your belongings before getting on and off from the train. Excess luggage must be weighed and passengers have to pay for freight)
Warning, Advertising & Greetings and farewell messages	ตื่น ตื่น ตื่น ง่วง เมา เราไม่ขับ ลาถาขับซึบตลอดกัข ขอให้เดินทางโดยสวัสดิภาพ ด้วยความปรารถนาดีจากวัดบ้านไร่และเสือซูเปอร์ ตรานเสือ (ปูนตราเสือ) (Wake up! Wake up! Wake up! Sleepy or drunk, don't drive - the magic spell for life-saving on the roads, bless you have a safe trip - the best wishes from Baan Rai Temple and Super Tiger (Tiger cement))

The results show that none of the monolingual Thai signs were found to convey greetings and farewell messages. Often the Thai language together with English or French was used to perform this function.

#### 4.2.2 English Language Functions

English has become an increasingly global language. The results show that monolingual English signs performed four functions and the signs comprising of Thai and English performed eight language functions. The bilingual Thai-English signs were predominantly used for advertising products and services such as food and drinks and providing information to passengers. Monolingual English was found to notify foreigners about an automated external defibrillator (AED), a portable electronic device that assists in life-threatening situations when passengers become unconscious due to a sudden loss of blood flow leading to heart failure. English was used for shop names, as well as products and services because some business owners focused more on foreign travelers. Another important function of English was to give directions such as identifying assembly venues or meeting points as well as providing package tour information to foreign travelers. Table 5 shows examples of the functions of monolingual English.

**Table 5** Examples of monolingual English functions

Language Functions	Example
Providing information	AED Automated External Defibrillator
Advertising	Café Amazon, BLACK CANYON COFFEE, DUNKIN'S DONUTS, Enjoy! Coca Cola, Anna's home-style bakery, Bangkok Airways, Thai Smooth as silk (Slogan of Thai Airways), Bus direct to Siem Reap (Angkor Wat)
Giving directions	If you booked any bus ticket from "other agency." Your meeting point is at "BLACK CANYON COFFEE" on your right -> NOT HERE

#### 4.2.3 Chinese Language Functions

As indicated in the findings, the signs containing Thai and Chinese language communicated two functions which were advertising and prohibition. Monolingual Chinese signs were not found. The Chinese language co-occurred with other languages. For instance, bilingual English-Chinese signs in front of a restaurant were used to advertise and promote food and drinks especially coffee to attract Chinese customers. Multilingual signs in Thai-English-Chinese were used to convey prohibition messages about smoking and drinking alcohol inside the Bangkok Railway Station. No passengers are allowed to smoke at any time on the trains or at any of the stations.

#### 4.2.4 Japanese Language Functions

In a similar vein, the results revealed that a sign written in monolingual Japanese exhibited the function of providing information. One monolingual Japanese sign was posted to provide information about Japanese language facilitators. Bilingual Japanese signs were not found in the Bangkok Railway Station. However, a multilingual sign in Thai-English-Chinese-Japanese prohibited smoking and drinking inside the train station and on the trains. There was one poster used to advertise green tea drinks that was written in Thai-English-Japanese.

#### 4.2.5 French Language Functions

A sign written in the French language expressed welcoming and greeting purposes. No monolingual French signs were found. The bilingual Thai-French signs were to greet and wish passengers farewell when they visited Thailand. A large sign with “Bon voyage” on it was used to express good wishes to passengers or tourists about to go on a journey.

#### 4.2.6 Burmese Language Functions

The Burmese language that appeared on a sign was used to advise passengers on how to top up their mobile phones. One banner containing multilingual Thai-English-Burmese was found. It was used to give instructions on how to use a machine to top up a mobile phone.

#### 4.2.7 Bahasa Melayu Functions

The Bahasa Melayu was used on a sign to advise passengers that an Islamic prayer room was available. A bilingual sign consisting of Thai and Bahasa Melayu “ห้องละหมาด SEMABAHYANG” was found in a prayer room for Islamic passengers who could worship Allah during their journey.

#### 4.2.8 Yawee Language Functions

A sign written in the Yawee language served two functions: providing information and prohibition. Regarding religious practices, the sign written in Yawee provided information pertinent to the proper conduct when using the Islamic prayer room. One bilingual sign with Thai and Yawee was found. The sign was posted to advise Islamic passengers to keep the prayer room clean and pay respect to the place of worship, and not to use the room for sleeping, eating, and drinking after worshipping. It announced to Muslims that they could come to pray and worship and that they had to keep the room clean and respect the sacred place. Meanwhile, the sign also indicated that the passengers were not permitted to sleep and eat food there.

### 4.3 Linguistic Landscape: Top-down/bottom-up Signs

Top-down refers to signs which were created by government agencies. The percentage of signs created by government agencies was 67.20%, as shown in Table 6. Top-down signs emphasized declaring SRT regulations, restrictions, policies, announcements, and services including disease prevention. It was assumed that these signs were created by the SRT and by the Ministry of Transport, the Ministry of Public Health, the Department of Disease Control, and the Ministry of Social Development and Human Security.

Bottom-up refers to signs which were created by local businesses and international companies operating in the Bangkok Railway Station such as banks, restaurants, money exchange bureaus, convenience stores, baggage services, fast food chains, book shops, and travel agencies. The local shops included book kiosks, food stalls, and food shops in the food court. Local shops created signs advertising services such as foot massage, battery charging services, and tattooing. The companies created signs to display the names of their shops and their brands such as Coca-Cola, Dunkin’ Donuts, Black Canyon, Café Amazon, and the Bangkok bank.

The percentage of signs created by companies and local shops was 21.66% and 10.19% respectively. The results indicated that many signs created by the companies consisted of English because English represented globalization and the intended messages targeted foreign customers. For local shops, most advertising signs containing monolingual Thai and bilingual Thai-English were used to sell food and drinks to both local people and foreigners. Only 0.96% of signs were not created by the government, companies, and local shops. One Thai sign was used to recruit housewives and babysitters. The other two Thai-English signs were used to ask for donations.

**Table 6** Language distribution in signs created by LL actors (Number of signs and percentages)

Language	Government	Companies	Local shops	Others
Thai	71 (22.61%)	8 (2.55%)	6 (1.91%)	1 (0.32%)
English	7 (2.23%)	22 (7.01%)	10 (3.18%)	0 (0.00%)
Japanese	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
Thai-English	128 (40.76%)	30 (9.55%)	16 (5.10%)	2 (0.64%)
Thai-French	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
English-Chinese	0 (0.00%)	3 (0.96%)	0 (0.00%)	0 (0.00%)

Language	Government	Companies	Local shops	Others
Thai-Bahasa Melayu	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai -Yawee	1 (0.32%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Thai-English-Burmese	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
Thai-English-Japanese	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
Thai-English-Chinese	2 (0.64%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
Thai-English-Chinese-Japanese	0 (0.00%)	1 (0.32%)	0 (0.00%)	0 (0.00%)
Total	211 (67.20%)	68 (21.66%)	32 (10.19%)	3 (0.96%)

## 5. Discussion

Inside the Bangkok Railway Station, Thai was the most predominant language that appeared on official, non-official and commercial signs. Government agencies regulate the use of signs to some extent and were categorized in prior studies as “top-down”. The signs written in bilingual Thai-English were categorized as bottom-up. Signs in monolingual English showcased commercial activities. As the tourism industry expands, the use of English geared toward international tourism creates a multinational atmosphere. Signs in English were used to raise brand name awareness.

The current findings showed that Thai and English were the two main languages prevalently used in the Bangkok Railway Station. The number of signs written in monolingual Thai was greater than those written in monolingual English. Furthermore, regarding the font size, large signs were written in Thai script using a large font size, signifying the prominence of the Thai language in the Bangkok Railway Station. This might stem from the fact that many passengers are local blue-collar workers who travel by train for whom the fares are not overly expensive. In other words, the signs in the Bangkok Railway Station mostly targeted local people who made up the majority of the passengers that use the services. English was important but was not the major language used. English was featured as a language of wider communication among international passengers. The findings obtained from the Bangkok Railway Station were different from those found in the train stations in the Philippines (De Los Reyes, 2014) and similar to those found in the two terminals of the Kuala Lumpur International Airport (Woo, & Nora Riget, 2020). In the Bangkok Railway Station and the Kuala Lumpur International Airport, the national language was dominant, however, in the Philippines English was dominant. Although Filipino is the official language in schools and various media, it is less important than English.

LL research on language choices on Nimmanhemin chill-out road and Phra Atit road in Bangkok concluded that English was the most dominant language used on the signs found there. This is because Phra Atit Road, a fun Bohemian street next to Khao San Road, is an iconic street featuring a collection of quaint shophouses, guesthouses and restaurants, and a vibrant mix of art where international tourists choose to stay when visiting Bangkok.

The results of this research show that the following languages were used in the Bangkok Railway Station: Thai, English, Chinese, French, Burmese and Japanese, Bahasa Melayu, and Yawee. The following multilingual variations were found: Thai-English-Chinese and Thai-English-Chinese-Japanese, as shown in Figure 4.



**Figure 4** A sign consisting of four languages

Regarding language functions, disease prevention was included because monolingual Thai and bilingual Thai-English signs were posted to advise passengers of preventive measures for COVID 19 in the Bangkok Railway Station.

Based on the current findings, it seems that the Chinese language was used to communicate with Chinese passengers relating to product advertising and prohibition. However, none of the signs were solely written in Chinese. The Chinese language normally co-occurred with Thai, English, or Japanese, and its use was not as significant as English and Thai. Over the past decades, the mobility of the population, as well as government and commercial activities, have changed dynamically. This has greatly affected the way signs are used. Many signs were found to be bilingual written in English and another language to target not only local people but also foreign tourists, multilingual signs should be endorsed to create self-reliance among international tourists. Further qualitative research should be conducted to obtain more information about the LL found in this study. Questionnaires and interviews could be used to derive more profound information that could be used for communication planning and creating an attractive atmosphere for tourists.

For the data analysis, this research used a computerized method applying Microsoft Access and QBE to facilitate data storage and queries while minimizing the time spent and providing accuracy of the analysis. Researchers do not need to write computer programs. They can derive results that are stored in a database which is much faster than using the time-consuming manual approach. Manual investigation techniques produce errors and do not support data changing and large-scale data analysis. Most importantly, the derived results are useful sources to assist language policymakers and planners in creating more effective communication on signs in railway stations and other public venues.

## 6. Conclusion

This paper investigated the diversity of languages, the functions of the signs displayed, and the top-down and bottom-up linguistic landscape actors at the Bangkok Railway Station. The languages used varied according to the number of passengers from each nation and the amount of information the government agencies and the companies intended to convey. The number of monolingual, bilingual, and multilingual signs accounted for 40.13%, 57.96%, and 1.91% of the total signs, respectively. More than half of the signs were bilingual Thai-English (56.05%), 27.39% were monolingual Thai, and 12.42% were monolingual English signs. Most of the signs provided information, followed by advertising, giving directions, warning, prohibition, disease prevention, and greetings and farewell. An increase in the number of signs was observed due to Covid 19 which accounted for 6.37% of signs.

Thai was the most dominant language displayed in the Bangkok Railway Station while English was represented as a global language. English was the foreign language that dominated the linguistic landscape of the station. Due to the increasing number of Chinese tourists visiting Thailand annually, Chinese was also used for prohibition and commercial purposes especially food advertising in restaurants. French was used on greetings and farewell signs. Bahasa Melayu and Yawee were used solely in the Muslim prayer room. Signs with Burmese characters were associated with using the telephone and included instructions for topping up smartphones. Japanese signs indicated that language facilitators were available for Japanese tourists to get information. The linguistic landscape was produced by the SRT and other government agencies as well as private companies. Furthermore, regarding language use, businesses and financial institutes tended to use multilingual signs more than local shops. The use of languages was dependent upon the passengers. To create international images, multilingualism should be promoted particularly in main railway stations, while retaining a local Thai identity. This study can fill a gap in knowledge of previous work and assist in the process of creating a global linguistic landscape for other future train stations.

Multilingual signs with well-designed content empower travelers to navigate transport terminals easily and they feel welcome while travelling abroad. They also enhance positive images of host countries, resulting in mutual understanding and trust among different countries. In the future, it might be interesting to conduct a comparative linguistic landscape study of the Bangkok Railway Station with the Bangkok Skytrain (BTS), and the Bangkok Subway (MRT). Consequently, research on LL should be continually conducted to unravel strengths and pitfalls which can ameliorate the semiotic landscape to provide more effective communication.

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## The Research and Creation of Physical Art Object Through Virtual Reality

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### Abstract

Art and technology have been evolving side by side. Humans invent technologies for their art-making quests, from various painting media to modern-day computer hardware and software. New technologies, such as digital painting and digital sculpture, provide artists convenience and flexibility to optimize their creative flow. The objectives of this research were 1) to study and explore Virtual Reality as a creative platform for creating new media artwork, 2) to create and output a new media artwork in a form of physical art through the use of additive manufacturing technology, and 3) to compare and analyze virtual art and its physical counterpart in a commercial art exhibition setting. An analysis of the audiences' survey data concerning the Virtual Reality art piece and physical artwork in art exhibition setting indicates that 1) Virtual Reality can be used to deliver a satisfying art-viewing experience and 2) most audiences would rather purchase physical art piece instead of Virtual Reality work because of product tangibility.

**Keywords:** *Virtual Reality, Art creation.*

### 1. Introduction

According to Oxford Learner's Dictionaries, the term "Virtual Reality" is defined as images created by a computer that appears to surround the person looking at them and seem almost real (Hornby, Turnbull, Deuter, & Bradbery, 2017). Although Virtual Reality has been around for many decades, the term "Virtual Reality" is often associated with the entertainment industry particularly computer gaming. Virtual Reality has a broad spectrum of applications including medical, military, architectural visualization, and even fine art. Since the dawn of Virtual Reality, forward-thinking artists have been trying to incorporate technology as an artistic medium. Since then, Virtual Reality artworks in the forms of installation art have begun to appear in galleries and exhibitions all around the world.

As artworks created using Virtual Reality technology require the audience to wear Head Mounted Displays to be transported to Virtual Reality art, one cannot easily purchase the artworks and take them home. Hence, for Virtual Reality artists, the most common revenue streams for this type of Virtual Reality art are either through exhibition tickets or project sponsorship. When the exhibition's over, these types of artworks leave no physical footprints behind as the artworks were created and displayed digitally during the exhibition as a visual experience through a physical head-mounted display powered by a computer. Oftentimes, one can only trace Virtual Reality arts in the form of documents may it be documentation videos or news.

#### 1.1 Development of Virtual Reality artwork

Morton Heilig, an American cinematographer and inventor, is one of the scholars who is often credited as the pioneer of Virtual Reality. Heilig examined the relationship between film and viewer in 1955. This famous study revealed which of human's five senses is being used at any given point during the film viewing experience. According to the study, senses are being utilized in the following proportions: sight 70%, hearing 20%, smell 5%, touch 4%, and taste 1%. From this study, Helig began inventing and proposing a device for the cinema of the future (Payatagool, 2008). The Sensorama Machine was invented in 1957 and patented in 1962 (USC School of Cinematic Arts, online). Sensorama is a simulation device that incorporates visual, auditory, somatosensory, olfaction, and taste. The device claimed to stimulate the

users' senses; a screen for visual perception, audio speakers for auditory, vibrating fans for somatosensory, and a smell emitting device for olfaction (Poetker, 2019). While the device itself was very cutting edge and ahead of its time, this device never took off due to the high cost involved in the production of the contents and manufacturing of the device (Payatagool, 2008).

In 1961, Comeau and Bryan, two Philco Corporation engineers, developed the first Head Mounted Display with head tracking ability – the Headsight – by incorporating a video screen for each eye and a magnetic motion tracking system linked to a closed-circuit camera. The device application allows immersive remote viewing by the military. The device would detect the wearer's head movements which in turn instruct the movement of a remote camera, allowing the user to naturally albeit virtually look around through the camera lens (BCC Research Editorial, 2018). Approximately 8 years later in 1968, Ivan Sutherland utilized a computer instead of a camera to connect to a head-mounted display, which allows greater computing power to be displayed on the Head Mounted Display (Sutherland, 1968). An early application showed a 3D wire-frame virtual room that the user could explore by moving their head around. Since the Head Mounted Display is tethered with a large overhead weight support system hung from a ceiling, the machine came to be known as The Sword of Damocles.

Due to the past failures to launch, Virtual Reality was believed to be an unfeasible product for mass adoption (Scoble, & Israel, 2016). However, Oculus Rift, a successfully crowd-funded Head Mounted Display project had forever changed the landscape and perception of Virtual Reality technology. The Oculus Rift project was a brainchild of Palmer Luckey, who in 2011 was only 19 years old. He aspired to invent an affordable Virtual Reality headset for the indie gaming community. His prototype was highly praised by John Carmack, a living legend in the gaming industry responsible for multi-million-dollar games such as Doom and Quake. With this heavy momentum, he started a Kickstarter campaign offering game developers a chance to get Virtual Reality technology at a US\$300-an affordable price point. The project took off and eventually surpassed \$2 million in pledges from 9,522 backers (Kickstarter, 2018).

The consumer version of Oculus began shipping on March 28, 2016. The headset was well received by its patrons for its high quality of display and unprecedented affordability. In the wake of Oculus' success in penetrating the Virtual Reality market, many tech giants such as Sony, HTC, and Samsung began announcing their versions of Virtual Reality headsets. According to the study by Statista research department, the Virtual Reality industry is growing at an accelerated pace, with the market size of consumer Virtual Reality hardware and software projected to increase from 6.2 billion U.S. dollars in 2019 to more than 16 billion U.S. dollars by 2022 (Gordon, 2020). Virtual Reality can truly now gain critical mass adoption for it to propel to the next level. At first, Virtual Reality attracts mainly game enthusiasts. However, the innovative technology also sparks more ideas and it did not take long for the world to begin imagining creative applications for Virtual Reality beyond gaming. In this study, the researcher would like to expand Virtual Reality usage as a creative tool for making physical art of black leopards.

The researcher was inspired by the tragic event regarding a rich poacher who invaded Thailand's protected forest and murdered the endangered creature. Although this horrendous act was national headline news, it soon fades. Thus, the researcher would like to use his artistic voice to make a statement about such crime. To gain a deeper understanding of the subject matter, the researcher went on and studied black leopards, their physical forms, activities, and ecology. Often black leopards are called black panthers. However, the term "Black Panther" is the melanistic color variant of any *Panthera* including the leopard (*Panthera pardus*) in Asia and Africa, and the jaguar (*Panthera onca*) in the Americas. According to the book "Comparative Genetics of Coat Color in Mammals," black leopards are most common in the dense tropical forests of south and southeast Asia. Their coloration enhances their ability to blend with the thick vegetation in the low light of the forests (Searle, 1968).

As illustrated by Eliot Goldfinger in the book, *Animal Anatomy for Artists: The Elements of Form*, you can see the proportion of leopards in comparison to other big felines (Goldfinger, 2004). Leopards are considered large felines; upon further investigation, you can see big cats may have different proportions. Baby leopards weigh only about half a kilogram and are about 13-18 centimeters long. The mother leopard has a gestation period of 93 to 100 days. Leopards, particularly in Asia, regularly give birth to just one cub (Animal Facts Encyclopedia, 2020). Male leopards are slightly larger than females. The average length and height of a full-grown male leopard are 183 and 66 centimeters while the average length

and height of a full-grown female leopard are 152 and 56 centimeters, whereas the males can weigh up to 54 kilograms while the female average is 40 kilograms. Leopards can live up to 23 years in captivity, however, their average lifespan in the wild is only around 12 years.

In this study, the researcher would like to explore the possibility of producing both Virtual Reality art and physical art as commercial art objects through the qualitative research process.

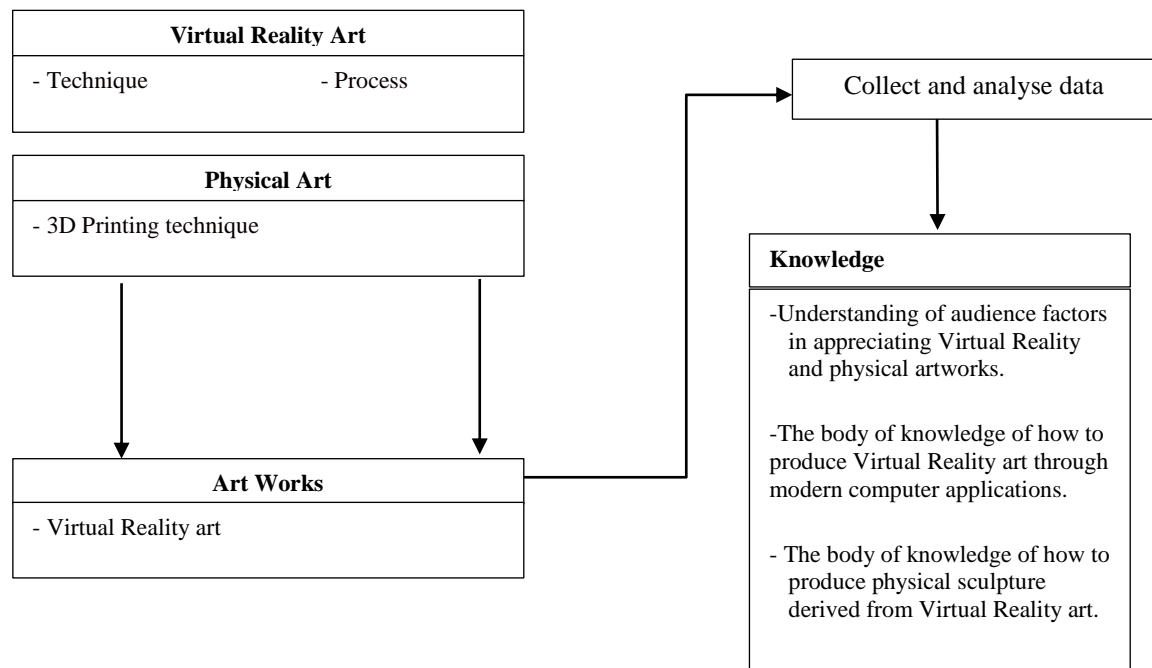
## 2. Objectives

1. To study and explore Virtual Reality as a creative platform for creating new media artwork
2. To create and output a new media artwork in a form of physical art through the use of additive manufacturing technology
3. To compare and analyze virtual art and its physical counterpart in a commercial art exhibition setting

## 3. Materials and Methods

### 3.1 Research Framework

The framework of this research is illustrated in Figure 1.



**Figure 1** Research Framework

### 3.2 Methodology

#### 3.2.1 Scope of research

The researcher studied the physiology of black leopards as the subject of artistic creation. The Virtual Reality artwork on the topic was developed using the software Google Tilt Brush. The physical artwork was refined from the exported Virtual Reality file using the software Pixologic ZBrush and 3D printed to produce a bronze sculpture through the wax casting method. Oculus Virtual Reality Head Mounted Display was utilized for viewing the Virtual Reality artwork while the physical artwork was displayed on an exhibition stand. This research collected field data from 115 samples of volunteers who have viewed and experienced both Virtual Reality and bronze artworks. The artworks were exhibited as part of the “Ror Sor 238: Zodiac Art” exhibition on October 25, 2019.

### 3.2.2 Research tools

The researcher used data collecting tools as follows: camera, interview questionnaire, electronic equipment such as telephone, computer, and devices to record pictures and data.

### 3.2.3 Data collection

Data were collected from the fieldwork which was conducted by observing the audience and asking survey questions. With this method of data collection, the researcher was able to acquire both qualitative and quantitative data necessary for this study. The research tools used are an interview questionnaire and a camera.

### 3.2.4 Physical output of Virtual Reality art

The idea of producing Virtual Reality art into a physical tangible sculpture is almost like the ability to conjure physical materials out of thin air, which could potentially be beneficial to many industries such as fine arts, toys, and other applications. 3D Printing is a technology that can transform a digital sculpture into a physical one through an additive manufacturing process (ISO, 2015).

There are many 3D Printing technologies invented described below.

#### **Stereolithography (SLA)**

This type of additive manufacturing technology began in the 1980s. In 1981, Hideo Kodama of Nagoya Municipal Industrial Research Institute invented an additive method for additive manufacturing (Hahn, 2018). Kodama created a product that used ultraviolet lights to harden polymers and create solid objects, which was a steppingstone of a widely adopted 3d Printing technology known as stereolithography (SLA). In stereolithography as invented by Charles Hull, the object is printed layer by layer, rinsed with a solvent, and hardened upon exposure to ultraviolet light (ISO, 2015).

#### **Fused Deposition Modeling (FDM)**

Fused Deposition Modeling is an additive manufacturing process developed by Scott Crump. It is the most common form of 3D printing today. To realize an object into a physical form, the printer heats a cable of thermoplastic into liquid form and extrudes it layer by layer (Mongeon, 2017). FDM works with a range of standard thermoplastics such as ABS, and PLA. According to a whitepaper published by FormLab, although the FDM technique is suitable for basic proof-of-concept models, FDM has the lowest resolution and accuracy when compared with SLA or SLS and is not the best option for printing complex designs (FormLab, 2020).

#### **Selective Laser Sintering (SLS)**

Selective Laser Sintering is another form of additive manufacturing. It uses a powder polymer to create objects by emitting a laser to fuse the powder, layer by layer, into solid shapes. Objects printed with SLS technology have a slightly rough surface finish, but almost no visible layer lines (ISO, 2015).

Based on the initial testing of the three different 3D printing technologies, the researcher selected SLA technology as the mean to output the Virtual Reality art in the physical form as this 3D printing technology provides high quality output and cost-effective.

The researcher investigated the following 3D Printing methods in order to decide the most suitable solution for this research.

### 3.2.5 Virtual Reality art and physical art Construction

The researcher studied the Google Tilt Brush application, which can be used to create Virtual Reality artwork. In this study, the researcher utilized Oculus Rift CV1 on the Oculus platform to create the artwork. The following are the creation steps.

#### **Setting up the Oculus Rift Virtual Reality Head Mounted Display**

The researcher ensured that the computer must be able to handle the high demand of performance the Virtual Reality headset is going to need. Oculus has released its recommendations of which graphics cards to use, the minimum requirement was NVIDIA GeForce GTX 970. Oculus installation program can

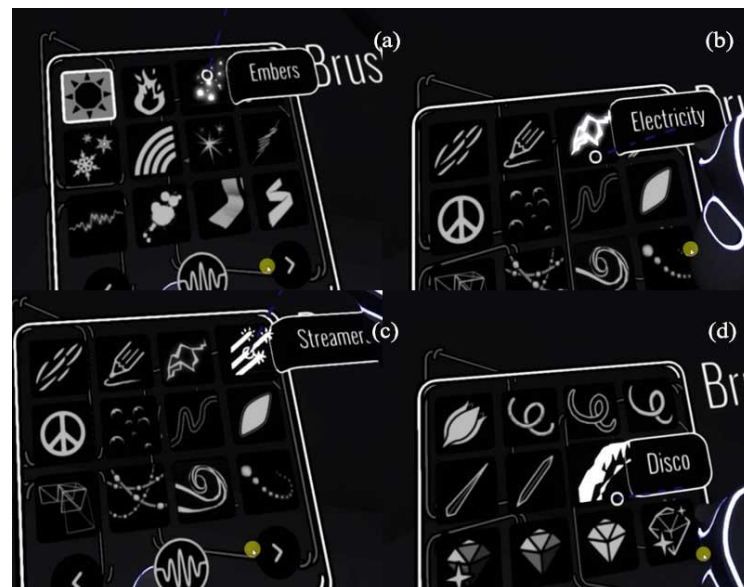
be downloaded from the website [oculus.com/setup](https://www.oculus.com/setup). The installation process took approximately 30 minutes requiring 1.22 GB of disk space. A Facebook account is required for using Oculus Virtual Reality headset as Oculus is a subsidiary company of Facebook. After attaching the Oculus Head Mounted Display and Oculus sensors to the PC, the installation software will go through the steps including inputting height and sensors' placements. The last step is to calibrate the Head Mounted Display by picking it up in all directions in front of the sensors until the software confirms correct detection.

#### Acquiring and using Google Tilt Brush software

As the researcher chose the Oculus platform for the study, Tilt Brush software can be purchased directly on the Oculus store at US\$19.99. Since the artwork is created using Virtual Reality, it is imperative to learn how to use the input device. The Oculus Touch consists of a pair of handheld controllers, each comes with an analog stick, three buttons, and two triggers. Rings on the controller contain infrared Light Emitted Diodes (LEDs) that allow the controllers to be fully tracked in 3D space by the Oculus Rift system. With this, the movements and actions made by the controllers can be represented in the virtual environment.

#### Creating the Virtual Reality artwork

The researcher practiced Virtual Reality art creation by testing out paint stroke in Tilt Brush. There are 48 brushes in Tilt Brush populating across 4 brush pages. The Virtual Reality artwork in this research utilized Embers brush, Electricity brush, Streamers brush, and Disco brush. Figure 2 shows the brushes and their locations.



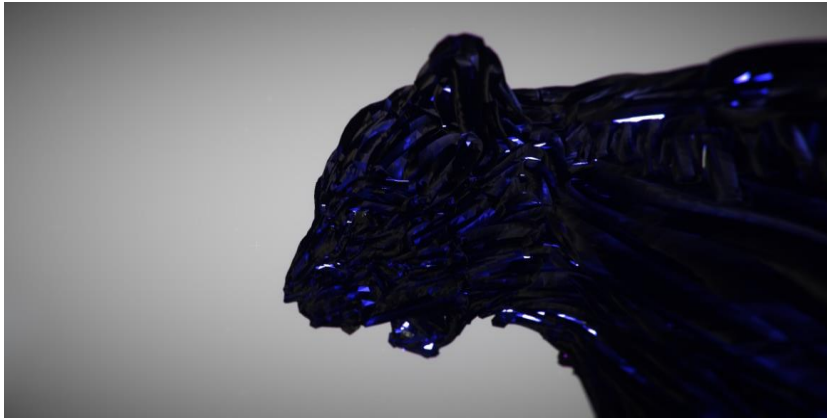
**Figure 2** The artwork in this research was created using 4 brush types

- (a) Embers brush on brush selection page 2
- (b) Electricity brush on brush selection page 3
- (c) Streamers brush on brush selection page 3
- (d) Disco brush on brush selection page 4

By using Disco brush, the overall mass on the left side of leopards can be constructed as shown in Figure 3. Colors were used in this artwork to distinguish the gender of the creatures; dark blue representing male and pink representing female respectively.

The Electricity brush was then used to construct polygonal lines on the right side of leopards. Blue and pink colors were again used by the researcher to signify gender as shown in Figure 4.

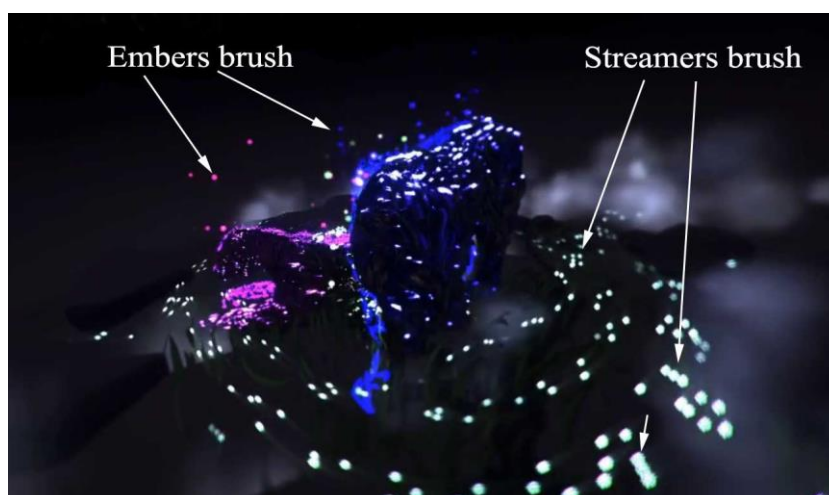
In Figure 5, Streamers brush set to light green color was painted at the base of the artwork to create animated flowing streams. Embers brush was used to create animation of light flickering from the leopards.



**Figure 3** The form on the left side of constructed leopards using Disco brush strokes



**Figure 4** The polygonal look on the right side of created leopards using Electricity brush strokes

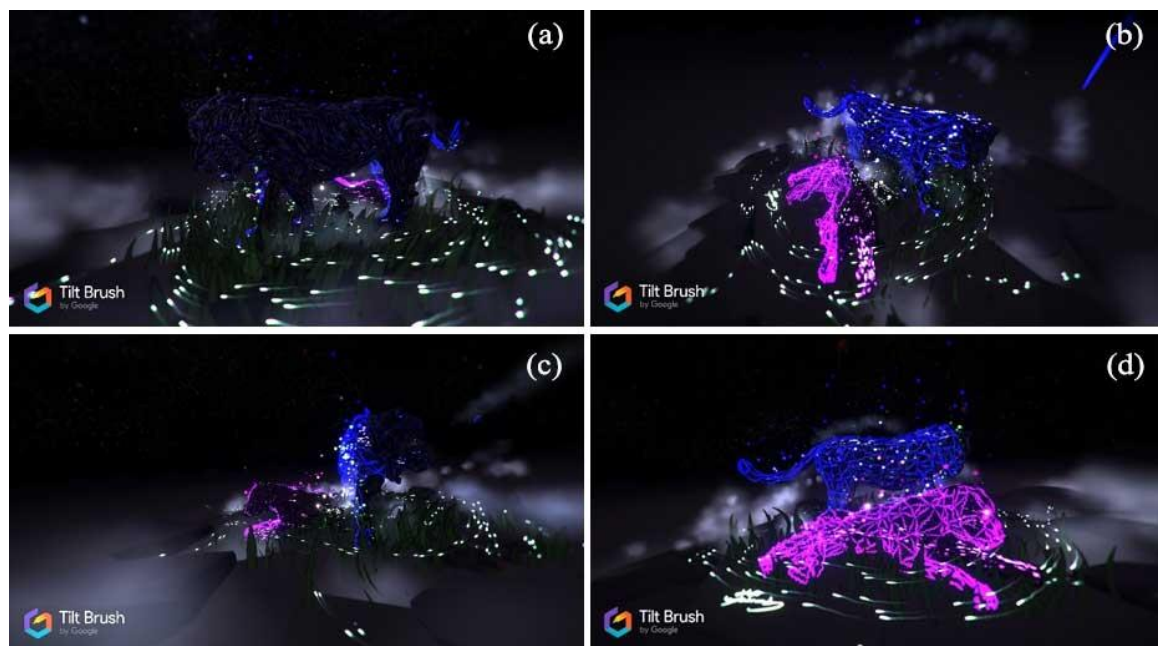


**Figure 5** Streamers brush strokes create animated flow of streams on the floor while Embers brush strokes create flickering effect floating off the leopards



The researcher named the artwork “Silence Roar: The Last of Us”. The title suggests a dim future of leopards. As the species continue being murdered by humans and no one can hear their cries for life, there might not be any leopards left in the forest except the ones in this Virtual Reality artwork. The design choice of this artwork reflects the message through the use of polygonal lines suggesting future leopards may exist only as 3D polygon models.

As shown in Figure 6, once the audience put on a Virtual Reality Head Mounted Display, the artwork can be experienced in full 360 degree. There are three family members of the leopard in the artwork; the standing father leopard on the left, the laying down mother leopard on the right, and the baby leopard in the middle of the scene. One side of each leopard’s drawn in a realistic style while the other side’s represented as connected polygonal lines.



**Figure 6** “Silence Roar: The Last of Us” as viewed through a Virtual Reality Head Mounted Display

- (a) Left view of the artwork shows realistic style of leopards
- (b), (c) The audience can move around within the artwork and the adjusted views accordingly
- (d) Right view of the artwork shows leopards in polygonal style

### 3.2.6 Development of physical artwork

#### *Digital sculpting*

The artwork completed in the Google Tilt Brush was exported in Filmbox (FBX) file format. As this file format allows the artwork to be interchanged with other major applications, the researcher was able to import the file to Pixologic ZBrush for enhancing sculpt details. As shown below in Figure 7, the sculpture was refined in ZBrush portraying realistic style on the left side and polygonal style on the right side of the leopards.



**Figure 7** Digital sculpting of “Silence Roar: The Last of Us”

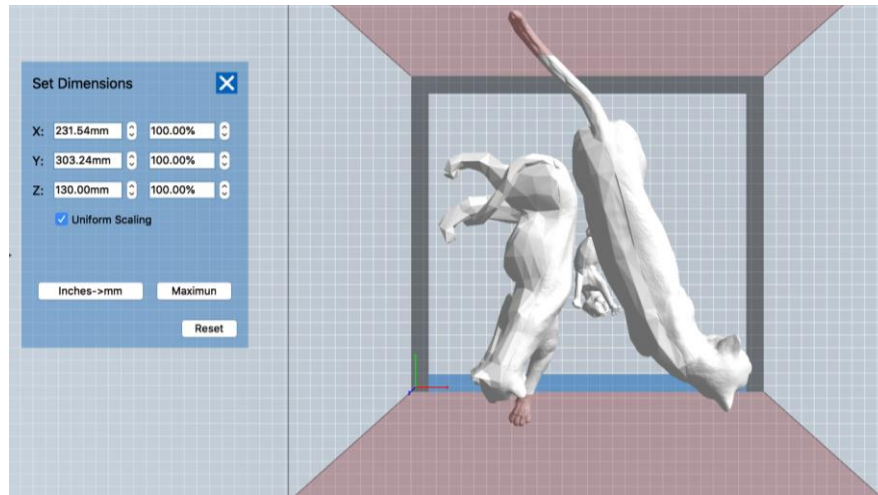
(a) Left view represents leopards in realistic style

(b) Right view represents leopards in polygonal style

### 3D Printing

The researcher exported the sculpt from ZBrush in the STL format, which allows the model to be physically printed with the additive manufacturing process. In this step, the researcher employed OctoPrint, a 3D printing service in Thailand. As shown in Figure 8, the researcher set physical dimension to the digital sculpture prior to printing out. The physical output dimensions were set to 23.2 cm (width) x 30.3 cm (length) x 13 cm (height).





**Figure 8** Top view showing physical dimensions setting of “Silence Roar: The Last of Us”

#### *Bronze casting*

3D printer used for outputting the physical sculpture was the Form 2 by Formlabs. The printed model was then molded and cast in bronze as a final physical product. Figure 9 shows the wax cast of the adult male leopard which was produced from casting a 3D print out.



**Figure 9** Wax cast of “Silence Roar: The Last of Us” produced from 3D printing ready to be cast in bronze

The researcher tasked Thai Metal Crafters Bronze (TMC Bronze) foundry with the responsibility to cast and patina the sculpture. In Figure 10, the bronze sculpture was created through lost wax casting method.

Patina is a surface coloration generated by a chemical response on a metal surface. Patina may be a natural or man-made process since the process of placing patina on a sculpture of metal may add to the final appearance of a piece of art. In this study, jet black patina finish was achieved by applying hydrochloric acid atop the surface. The final look of the bronze sculpture with black patina's shown in Figure 11.



**Figure 10** Bronze cast of “Silent Roar: The Last of Us”



**Figure 11** The final look of the bronze sculpture with black patina

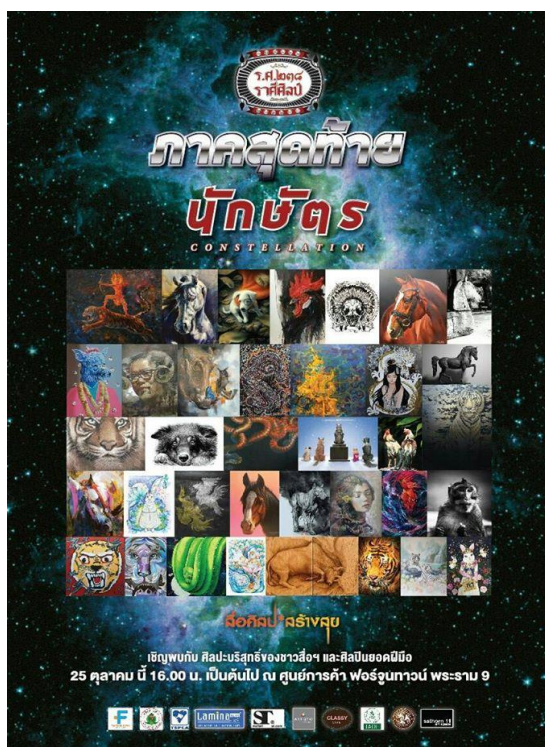
(a) Left side of the bronze sculpture shows realistic style

(b) Right side of the bronze sculpture shows polygonal style

## 4. Results

### 4.1 Virtual Reality and physical artworks exhibition

During the course of creating the artworks, the researcher was invited by an art curator, Mr. Yuttana Phongphasuk, to exhibit the artworks at “Ror Sor 238: Zodiac Art,” which is a moving exhibition held on October 25, 2019 that takes the artworks to 4 art-centric locations; Fortune Town, Sathorn 11 Art Space, the Seven Art Gallery, and the Combine Café & Art Gallery. The event attracted many art lovers and enthusiasts. The researcher was able to show the artworks to 115 individuals. The poster of the exhibition’s shown in Figure 12.



**Figure 12** The “Ror Sor 238: Zodiac Art” exhibition held on October 25, 2019

Figure 13 shows how the researcher setup artworks for exhibition. The physical bronze sculpture was placed on a display stand along with the Virtual Reality Head Mounted Display.



**Figure 13** The setup consists of a Head Mounted Display for viewing the Virtual Reality artwork and the physical bronze statue



With the play area of 3 x 3 meters, this spatial volume provides adequate space for audiences to view and interact with the Virtual Reality artwork. As the artwork can be appreciated from any angles and directions once wearing the Head Mounted Display. Within the Virtual Reality, the audience can experience the artwork virtually in full 3D. They can take their sight at any angle or even trying to touch the artwork as shown in Figure 14.



**Figure 14** The stances of the audiences while viewing the Virtual Reality artwork

- (a) Sitting down (Location: Combine Café & Art Gallery)
- (b) Standing with hand movement for touching the Virtual Reality (Location: the Seven Art Gallery)
- (c) Crouching (Location: Sathorn 11 Art Space)

#### 4.2 Survey results

Due to the nature of the exhibition, the artworks were shown in 4 locations; Fortune Town, Sathorn 11 Art Space, the Seven Art Gallery, and the Combine Café & Art Gallery, which provided exposure of the artworks to a large amount of audience. Through volunteer sampling, the data were collected from 115 participating audiences.

**Table 1** Virtual Reality experience of the audience

Experience in Virtual Reality	Count	Percentage
No experience prior to the exhibition	105	91.3 %
Have played Virtual Reality in the past	9	7.8 %
Utilize Virtual Reality for work	1	0.9 %
Total	115	100%

Table 1 depicts the Virtual Reality experience of the audiences. The majority of the audiences in this study had no experience prior to the exhibition. Only 7.8 percent of the samples had experienced Virtual Reality in the past, which indicates that the technology is rather novel to the audience especially in the area of Art.

**Table 2** Satisfaction level of the samples viewing artworks in 2 mediums

Format	Very Satisfied	Satisfied	Fair	Dissatisfied	Very Dissatisfied
Physical artwork	17%	80%	3%	0%	0%
Virtual Reality artwork	45%	55 %	0%	0%	0%

Shown in Table 2, the study reveals that the audiences had a high level of satisfaction while viewing the Virtual Reality artwork. Comparing the two formats of the artwork, 45 percent of the audiences

rated very satisfied with the Virtual Reality while the rest 17 percent rated the same for the physical artwork.

**Table 3** Pricing suitability level of the artworks

Format	Very Suitable	Suitable	Fair	Unsuitable	Very Unsuitable
Physical artwork	7.8%	75%	15%	2.2%	0%
Virtual Reality artwork	0%	4.3 %	22.7%	73%	0%

The listing prices for the artworks were determined by the cost of development and the materials of the artwork multiply by 3. The cost for producing the bronze was approximately 8,000 Baht and the Oculus head-mounted display price was around 12,000 Baht. Hence, the bronze statue was listed at 25,600 Baht and the Virtual Reality artwork was set at 36,000 Baht. Table 3 depicts audiences' views on the pricing suitability of both the Virtual Reality artwork and the physical bronze. While majority of the audiences was highly satisfied with viewing the Virtual Reality artwork, 73 percent rated the pricing is unsuitable. On a contrary, 75 percent of the audiences deemed the physical artwork pricing is suitable.

## 5. Discussion

Through an in-depth interview, the audiences informed that the Virtual Reality platform brings excitement and expands the horizon in the art-viewing experience. Not only can Virtual Reality technology be used as a new and emerging format for displaying artwork, but it can also transport the audience into the center of the artwork itself, providing an unprecedented level of audience immersion.

## 6. Conclusion

In "The Research and Creation of Physical Art Object Through Virtual Reality" the researcher focused on 1) studying and exploring Virtual Reality as a creative platform for art-making, 2) creating and outputting physical art through the use of Virtual Reality and rapid prototype technologies, and 3) comparing and analyzing Virtual Art and its physical counterpart in gallery display setting as sellable art pieces. Through this study, the researcher was able to create a process for producing artworks with the use of Virtual Reality. The process did not only allow the artists to create Virtual Reality artwork but, when combined with additive manufacturing techniques, could also export Virtual Reality arts into a physical one. The Virtual Reality arts, in cases around the world, are normally deployed as special exhibitions earning revenues through ticket sales. It means once the exhibition period's over, the Virtual Reality arts would also vanish along with the event. The physical realization process of the Virtual Reality artwork in this research allows the Virtual Reality derivatives to live on as physical artworks adding additional economic value to the artwork aside from ticket sales.

The majority of the audiences had a high level of satisfaction while viewing the Virtual Reality artwork. The technology brings a new sensation of viewing artwork by placing the audience at the center of the artwork itself. However, as sellable art objects, physical artworks are still more favorable among art collectors. Virtual Reality artworks require electronic devices to operate while physical artworks are exhibit-ready, which makes physical artworks more tangible and accessible in the eyes of art patrons.

The Virtual Reality arts may not be suitable as standalone purchasable artworks. Virtual Reality can, however, be used to complement physical artworks. While deploying alongside physical artworks, Virtual Reality can provide engaging activity during the exhibition that ultimately brings a memorable art-viewing experience.

## 7. Acknowledgements

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## Migratory Drivers of Human Capital – A case of Accountancy students in Association of Southeast Asian Nations (ASEAN)

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### Abstract

This study aims to investigate and recognize migratory drivers for accountancy students within the Association of Southeast Asian Nations (ASEAN) countries. In 2020, the ASEAN region has a market of 661.5 million people, with an estimated Gross Domestic Product (GDP) of USD 3.1 trillion. The establishment of the ASEAN Economic Community (AEC) in 2015 is a major milestone for regional economic integration. One of the frameworks of AEC amongst others is to transform ASEAN into a single market and production base, reducing barriers to human capital mobility within the region and ultimately achieving a free flow of skilled professionals. However, the intra-ASEAN migration flow statistic is nowhere near AEC's aspiration where the majority of migrants are unskilled workers. Progress towards unrestricted skilled mobility has been sluggish. accountancy is a skilled regulated profession governed by Mutual Recognition Arrangements on accountancy Services within ASEAN. Surveys were carried out with accountancy students in ASEAN countries and found that gaining learning exposure is an important migration factor for respondents, particularly those who aspire to work in Big Four audit firms or MNCs/banks located in another country within the ASEAN region. While there have been studies that address the challenges from a macro perspective, concerns from the micro perspective have largely been ignored. The findings contribute to the explanatory discourse on existing obstacles towards an aspiration of free movements of the accountancy profession; furthermore, the results have the potential to mitigate unemployment within ASEAN.

**Keywords:** *Human Capital, Migration, Migration drivers, Accountancy, Association of Southeast Asian Nations (ASEAN), ASEAN Economic Community (AEC)*

### 1. Introduction

This study aims to investigate and recognize migratory drivers for accountancy students within the Association of Southeast Asian Nations (ASEAN) countries. In 2020, the ASEAN region has a market of 661.5 million people, an estimated Gross Domestic Product (GDP) of USD 3.1 trillion (O'Neill, 2021a; O'Neill, 2021b). By 2030, ASEAN will be the fourth largest single economy, behind the European Union (EU), United States of America (US), and China, with a GDP of USD 10 trillion (East-West Center, 2014). The 10 ASEAN nations (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam) have been propelled by rising incomes and growing middle class, rising meat consumption, decreasing farmland, demand for grains, and an interest in dairy. ASEAN remains highly import-dependent for food, with most ASEAN economies importing for domestic consumption from outside the region, which is largely due to a lack of resources and a lack of scalable production to meet the rapid growth in consumption (Gray, 2018).

The establishment of the ASEAN Economic Community (AEC) in 2015 is a major milestone for regional economic integration. One framework of AEC is to transform the region into a single market and production base, reduce barriers to human capital mobility within the region and ultimately achieve a free flow of skilled professionals. There are potential gains from successful region-wide skill mobility. For

instance, it helps alleviate skills shortages and gaps as well as unemployment for youth that has skyrocketed to 12.7 percent in 2012, which equates to 73 million jobless youth (Sugiyarto, & Agunias, 2014). Besides, region-wide skill mobility contributes to ASEAN's GDP growth and promotes inter-cultural society. However, the intra-ASEAN migration flow may not meet AEC objectives due to inappropriate skillsets of the human capital (ILO, 2018). Progress towards unrestricted skilled mobility has been sluggish. There remain integration problems at the regional level (Onyusheva, Thammashote, & Kot, 2018). While there have been studies that address the challenges from a macro perspective, concerns from the micro perspective have largely been ignored. Micro perspectives would include barriers to free human capital mobility, ground-up perceptions to a common ASEAN economy, insights, and surveys from the labor force that would help shape the migratory process. World Economic Forum (2015) identified learning, employment, and weights (contribution to an economy) as significant factors of human capital.

Human capital demonstrates potential earning capacity and this source of wealth for any individual lies with future income expectations. To realize future income expectations, individuals must be invested as a form of capital required for economic development; and thus, termed human resource development (Nafukho, Hairston, & Brooks, 2004). Individuals desire to work in a firm that can maximize the capacity of their human capital and fulfill their income expectations. Corporates are an aggregation of individuals; and as Crook et al. (2011) and Bernstein, and Beeferman (2015) suggest, human capital influences the performance of corporates with their knowledge, skills, and abilities. Before any individual can contribute meaningfully to a firm, human capital gets educated from schools (Griliches, 1997) and undergoes on-the-job training (informally and formally). Together with education, work experience is a positive influence on expected earnings (Sahn, & Alderman, 1988). According to Sweetland (1996), human capital theory suggests that individuals and society derive economic benefits from investments in people – one investment being education.

Education is found to improve long-term economic growth for an economy (Barro, 2001). An earlier study by Blundell, Dearden, Meghir, and Sianesi (1999) identified the contribution of education to economic performance; however, effects from schooling can only be realized when an economy crosses a threshold level of development (Ahsan, & Haque, 2017). Human capital is a significant factor in economic growth (Romer, 1990), and (improved) human capital also has a positive impact on city employment growth (Champion, 1994; Simon, 1998). Although the impact of human capital (though significant) is mixed over international research and development (Engelbrecht, 1997), the evidence remains clear that this self-feeding mechanism from individuals aggregating to corporates to economic development is pivotal on human capital – to which Blundell et al. (1999) summarized in a succinct fashion and Douglas (1988) operationalizing this in a South American economy. For any economy, its human capital is capped by population numbers given how many births there is every annum. Training is time-consuming as individuals go through school, higher education, and on-the-job training.

Surely, economies must explore alternatives to not be limited by its lack of human capital nor the patience for trained individuals. This gives birth to the idea of attracting migrants (highly skilled, skilled, and unskilled) to undertake tasks that would propel economic development; specifically, migratory development in a neutral context (Hermele, 2021). During the process of migration, the general well-being of human capital should not be ignored either. Migration is judged a key route out of socio-economic adversity for the less privileged and the fairer gender. For instance, although education is found to improve long-term economic growth, highly educated women are not well utilized in the labor market (Barro, 2001). There had been migratory policy discourses such as explicit influence on trade by immigrants (Lin, & Yang, 2017), aspects of well-being driving migration (Tibshraeny, 2017), the impact of the Global Financial Crisis 2007/08 on migration (Tilly, 2011), potential of temporary migration programs (Ruhs, 2006), family-related migration (Kofman, 2004), factors influencing migration (El-Agraa, 2001), highly-skilled (Koser, & Salt, 1998) migration and trends (Skeldon, 2002) in Asia-Pacific (Iredale, 2000), movements within developed countries (Greenwood, 1997), women in Asia (Lim, & Oishi, 1996), labor mobility in Asia-Pacific (Athukorala, 1993), and women in developing countries (Chant, & Radcliffe, 1992). In the case of Australia, immigration policy has created consumption, demand, and employment; whilst enjoying over-burdened infrastructure, soaring housing prices, and low wage growth (Scott, 2018). Of late, innovation (Che Sulaiman, Saputra, & Muhamad, 2021), internet penetration (Haini, 2019), and



environmental degradation (Nathaniel, 2021) have been included in the migration discourse on human capital. Therefore, enabling human capital mobility requires an appreciation and understanding of migration theories.

Classical immigration theory hinges on the influence of wages as determining factor for move and migration slows when wage differentials equalize. The new economics of migration is pivoted less on wages but more on group behavior for individuals from a similar background to act collectively. There are limitations to the new economics of migration when the market fails (in capital and futures markets). International migration is also driven by intrinsic labor demands of modern industrial societies that is, dual labor market theory. This evolvement is indicative of the forces of globalization that are known as the world-system theory. This theory rests on the underlying forces of capitalism where there are no wrong decisions as long as there are profits and wealth accumulated. Such attainments are made easy with access to technology and low barriers for employment for unskilled labor. Massey et al. (1993) had appraised the different theories that include, network and institutional theories, cumulative causation, and migration systems theory in their review. Studies on the effects of migration (Budnik, 2011) and economic and policy determinants on international trade flows (Ortega, & Peri, 2013) follow Borjas (1989) in characterizing immigration as the trading of people from the lens of a host country with trade as underlying currency.

There had been studies on policies and theories conducted in Asia and Asia-Pacific but analyses in the ASEAN region seem to bank fewer interests; lest the theory of structuration is applied by Goss, and Lindquist (1995) and Carling (2005)'s gender migration with the Philippines case. The Philippines presents an interesting context for remittances, and Russell (1986) had argued for a greater focus upon the social and political consequences of remittance flows – not solely on economic outcomes. Others have discussed theories of migration in the context of; flows to North America (Karema et al., 2000), Swedish refugee immigrants (Klinthäll, 2006), EU East to West flows (Kurekova, 2011), Global North to South (Segal, 2019), as well as contemporary debates of climate shocks (Shor, & Roelfs, 2019). Incentives would influence the choice of a work destination such as wages, costs, and liquidity constraints but this choice must be reviewed with the inclusion of unemployment risk and asymmetric information (Batista, & McKenzie, 2021). A network analysis of global migration by Windzio (2018) found demographic, economic, and geographic effects to be in line with migration theories. Thus, it is politicians' duty to shape the public's views on immigration and its associated costs and benefits (Eaqub, 2017); though state power and open borders should not be overlooked (Song, 2018) as well as political systems of liberal democracies (Natter, 2018). The whips to enable these views are the regional and government policies, bilateral and multilateral agreements – which are critical in explaining patterns of migration (Iredale, 2000). It is the argument that has led to the ASEAN intra-agreements facilitating AEC.

In a bid to integrate the ASEAN region, mutual recognition agreements (MRA) have been established for eight identified professions; and accountancy is one of them. ASEAN-wide regional economic growth and competitiveness demand that the accountancy profession achieve a higher level of integration and liberalization in ASEAN. One of the components of achieving skilled mobility within ASEAN is to target tertiary students, who are a key precursor to future professional accountant mobility. For example, initiations to encourage student exchange across ASEAN, which serve as a network platform for students to explore the region before stepping into the intra-region workforce. Another initiative is ASEAN University Network (AUN) promoting the collaborative study, research, and educational programs to be compatible for stepping into AEC (Papademetriou, Sugiyarto, Mendoza, & Salant, 2016).

### **Literature review**

There are four main objectives that this paper aims to contribute in meeting the goal of integration of the accountancy profession:

A) Understanding the level of interest and drivers of such interests among ASEAN accountancy students to move within ASEAN Surveys were conducted to understand the level of student awareness, and how to raise their awareness of the opportunity to move across countries within ASEAN.

Literature shows that there is a lack of awareness among employers in the MRAs, which is a challenge to the implementation of an integrated policy if businesses do not take intra-region employment as consideration for hiring. There are noticeable observations for this lack of awareness. In the accounting

field, a survey of employers of accountants in Thailand conducted in 2014 found that only 16 percent had both knowledge and understanding of the MRA (Pichayasupakoon, 2014). In the tourism field, an ASEAN-funded regional survey of 240 tourism stakeholders conducted in 2013 evidenced that less than 30 percent were knowledgeable about the MRA (Papademetriou et al., 2016). Similarly, another study finding shows that hotel managers in Jakarta, Indonesia were not aware of or did not place importance on the MRA. Huelser and Heal (2014) had argued for MRA to be expanded and linked to genuine market access. Echoing Huelser and Heal (2014), and Asian Development Bank report unraveled tremendous backlogs of operationalizing MRA principles into detailed regulations, plans, procedures, as well as mechanisms that professionals can utilize (Mendoza, & Sugiyarto, 2017).

This is not unanticipated. Even for an integrated economic community like European Union (EU), there is an explicit lack of awareness of enterprises and national authorities on the existence of the mutual recognition principle (ASEAN, 2015). Therefore, findings from this survey can certainly improve access to information and quality of information on cross-border movements within ASEAN, which will be beneficial to students as well as for employers, policymakers, regulators, and respective industry stakeholders. It has also been argued that the promotion of labor mobility will balance the surplus and deficit of the labor market and boost the growth of the region (Kikkawa, & Suan, 2019).

B) Identifying barriers to accountancy professional migratory flow within ASEAN due to perceived cultural, language, and socio-economic differences for international and regional ASEAN countries. AEC is facing three identified challenges that impede unrestricted cross-borders movements.

First, the complexity of the recognition process of different country qualifications. Second, lack of access to entry and employment due to domestic regulations such as immigration regulations. Third, lack of interest by many professionals to move within the region and by ASEAN employers to hire them, due to perceived cultural, language, and socioeconomic differences (Papadimitriou et al., 2016). The third challenge is unique to ASEAN, unlike other integrated economic community agreements. For example, the Trans-Tasman Mutual Recognition Arrangement (TTMRA) between Australia and New Zealand, which share similar heritage, culture, languages, and education systems. Immigration is one of many factors that has allowed Australia to expand economically and has population growth by 50 percent over three decades since 1991 (the last recession) (Scott, 2018). For (all) professionals to move and work in other ASEAN countries, they have to deal with people from different sets of beliefs and customs. Although learning other ASEAN languages may not always be necessary, the need to be better schooled on the region's unique and varying history and culture is critical.

In terms of intra-ASEAN migration, Gentile (2019) points out that while almost all ASEAN members describe a shortage of skilled labor, most intra-ASEAN migration involves low-skilled workers. In contrast, migration from ASEAN to non-ASEAN countries involves more skilled workers. Gentile (2019) explains that the reason for the low level of high-skilled intra-ASEAN migration may be due to the difference in earnings between source and host country that is not substantially large. Another obstacle for intra-ASEAN migration is the lack of support from policymakers in the region. For example, there are no preferential work-based immigration systems for ASEAN citizens that may deter migration due to lengthy visa application procedures and different documentation requirements. Another study by Corong, and Aguiar (2019) found that skilled migrants account for only 12% of the total estimated 1.5 million migration within the ASEAN region. This migration is connected to geographical proximity and cultural similarity. Their simulated results also indicate that a policy that allows a freer flow of skilled labor and with a 5% increase in the initial ratio of the migrant to permanent resident wages in the host country would increase GDP across AEC economies.

Relative to research on trade and investment flows, there have been fewer studies on human capital movements across borders. The studies that have been conducted largely covered developed countries such as the EU (Greenwood, 1997; Karemera, Oguledo, & Davis, 2000). There is a gap in the literature on human capital flow in an Asian setting. Our study aims to fill this gap by examining the human capital flow in a large Asian community, namely the ASEAN. The unique characteristics of the accountancy profession are that this is a regulated industry. The mobility of the accountants within ASEAN depends on the Mutual

Recognition Arrangement on Accountancy Services (MRAA). Hence, there is a policy dimension to consider in the migration of accountants.

There is limited literature on the mobility of Accountants within the ASEAN region, except for a few studies in the Thailand context. Luekitinan (2014) examines Thai graduates' (including accountants among others) employability skills and factors that influence mobility in 2012. The findings show that the popular destination countries for migration are Singapore, Malaysia, and Brunei and the determinants for mobility are work experience, higher wages, gaining promotions, life enhancement, and family concerns. In a similar vein, Tirasriwat (2017) examines the readiness and willingness of Thai professional accountants towards their working in ASEAN member countries. The findings reveal that the determinants for mobility are a higher remuneration, better profile from experience at an international level, and more opportunity for traveling and networking. The factors that deter professional accountants from working in AEC are family problems, social and political involve risk and insecurity in the host country.

Studies in the ASEAN context have examined the various accountancy education systems (Yapa, 1998) and the capacity building necessary in the management accounting profession in Indonesia (Adhariani, 2020). This paper studies the flow of accounting professionals across and within the ASEAN region. In the accountancy arena, accountants could be categorized into practicing accountants and non-practicing accountants. Practicing accountants are authorized to sign off on audited accounts and are regulated by local authorities. For example, in Singapore, practicing accountants need to register with Accounting Corporate Regulatory Authority (ACRA). Non-practicing accountants could be accountants working in the commercial sector or auditors who do not sign off on accounts. While it has been argued that the above regulation limits the flow of accounting professionals across the ASEAN region, this is not an apparent empirical question. Accounting professionals could work as non-practicing accountants, which will not be restricted by the regulations. AEC has the objective to transform the ASEAN region into a single market and production base with free movement of goods, services, capital, and skilled labor.

Under the AEC, the mobility of accountants within the region is facilitated by the MRAA, which was signed by all ten ASEAN member states in 2014 (Papademetriou et al., 2016). The objectives of the MRAA are as follows:

- a) To facilitate mobility of accountancy services professionals across ASEAN;
- b) To enhance the current regime for the provision of accountancy services in ASEAN members;
- c) To exchange information to promote the adoption of best practices on standards and qualifications.

Under the MRAA, a professional accountant who is an ASEAN national and possesses the necessary qualifications and experiences that comply with the MRAA may apply to be an ASEAN Chartered Professional Accountant (ASEAN CPA). ASEAN CPAs are legally allowed to provide accountancy services (except for signing off on independent auditor's reports and providing accountancy services that require domestic licensing) in ASEAN markets without having to undergo extensive re-training or re-qualification procedures.

In the light of MRAA, this research aims to inform the policymakers on the cultural, economic, political, or social factors that drive the interest of ASEAN CPA to migrate, which is significant in meeting the AEC objective of creating a single ASEAN market. The research findings serve to provide new insights into the underlying drivers of migration in an Asian setting, and Asia is the largest continent on Earth, while prior studies mainly focus on Europe (Greenwood, 1997; Karemera et al., 2000). The owners of destination firms and accounting students will benefit from this study if changes in employment conditions result from an understanding of the migratory factors.

To the best of our knowledge, a study of this nature is novel and has not been undertaken. The purpose of identifying migratory barriers enables ASEAN policymakers to implement policies that facilitate favorable conditions for graduating accountancy students to move across ASEAN countries. ASEAN is home to 9 percent of the world's population and emerging economic powerhouses like Indonesia and Vietnam (Gray, 2018). The trends in migration will depend on the gaps of economic development across Asia; creating inequalities that encourage migration (Skeldon, 2002). Earlier ASEAN studies had focused on reviewing the tertiary accountancy curriculum at regional universities – with recommendations aimed at streamlining regional professional accreditation. There is a literature gap for studies that identify potential barriers towards free labor capital movement. The corresponding policy recommendation/s serve to

operationalize unrestricted activities. The remainder of this paper is organized as follows. Section 2 outlines the objectives of this study. Section 3 describes materials and methods. Section 4 highlights the results of this study and discusses implications to the region and sector. Section 5 concludes and reports the limitation of this study.

## 2. Objective

This study aims to investigate and recognize migratory drivers for ASEAN undergraduate accountancy students – utilizing qualitative (surveys and interviews) and quantitative analysis. The survey seeks to comprehend what factors accountancy students within the region would consider when making decisions to work across ASEAN countries and explore how universities can facilitate the mobility of students. The findings contribute to the explanatory discourse on existing obstacles towards an aspiration of free movements of the accountancy profession; furthermore, the results have huge potential to mitigate youth unemployment within ASEAN. The outcomes of this study will be policy recommendations for regional policymakers.

## 3. Materials and Methods

A web-based survey was administered for undergraduate ASEAN students from various universities; Indonesians, Filipinos, Singaporeans, and Thais. Participants were recruited with no incentives from the 7<sup>th</sup> ASEAN Accounting Education Workgroup Meeting at the Singapore Institute of Technology in June 2018. Recruiters provided instructions to ensure the quality of data collection and online links to a web-based survey. After eliminating responses with missing values and those who wished to migrate outside of ASEAN, 212 valid surveys were retained for regression.

Data from 265 participants were collected in 2018 in the original sample. 53 data points were discarded; disagree to participate (2 participants), incomplete surveys (47 participants), age above 25 years old (3 participants), nationality outside ASEAN (1 participant). The final sample consists of data from 212 participants who are undertaking a bachelor's degree in accountancy. Nationality of participants; Indonesians (22), Filipinos (109), Singaporeans (79), and Thais (2). The age range of the participants is from 17 to 25 years old.

Surveys were conducted via a web-based Qualtrics platform and face-to-face focus group discussions. The Focus group serves as a pilot to evaluate the effectiveness of the questionnaire aimed at gathering graduating students' thoughts about job prospects in the accounting industry; as well as views pertaining to intra-region job relocation/migration. Participation in the focus group is voluntary with no offered incentives; and students (from Indonesia, the Philippines, and Singapore) were advised that results will be aggregated with absolute anonymity. As much as possible, the questions asked in the focus group are open-ended and easy for students to understand. The conversational nature of the questions enabled the sharing of insights that would otherwise be difficult to capture. Further, complementing interaction within the group enabled confusing questions to be excluded from the actual questionnaire. This exercise allowed the final questionnaire to be simplified and comprehensible for the target audience. Students and faculty in ASEAN universities serve to unravel key findings, with examples of factors and variables to be studied in the surveys listed as follow,

- a) The closeness of culture between your home country and destination country
- b) Salary in the destination country for a similar job position
- c) Economic growth of destination country versus origin country
- d) Career opportunity (e.g. promotion, new job scope) in the destination country
- e) The legal system in the destination country
- f) Migration process, regulation, and condition in the destination country

Participants were asked about the preferred country and duration to work in within ASEAN, level of importance (0 not important at all, 5 very important) participants place on four broad categories of factors in deciding to work in a foreign country; (i) cultural/social (ii) Institutional (iii) Financial and career (iv) Macroeconomics. The classifications into 4 main groups (social/cultural, institutional, financial and career, macroeconomics) broadly follow prior study (Zanabazar, Kho, & Jigjiddorg, 2020). The first category is related to Cultural/Social factors: Cultural, Socio (Friends and Family, Safety and Security), Lifestyle. The

second category is related to Institutional factors: Labor laws (work permit), Migration process, Practicing Accountant License. The third category is related to Financial and Career: Remuneration, Cost of Living, Career Progression, Learning exposure (lateral and vertical moves). The final category is related to Macroeconomic stability: Political, GDP per capita, Economic status (Development and growth). See Table 1 for details of questions under each of the four categories.

There are two new variables created from the participants' responses about the preferred country to work. Binary migration decision; 'migration within ASEAN' and 'no migration.'

**Table 1** Variable definition

Variable name	Variable category	Explanation
Migration		Binary 0 (participants who do not wish to migrate) and 1 (participants who wish to migrate within ASEAN)
Quality_living	cultural/social	Quality of living environment in the destination country
Friendliness		Family friendliness (e.g. education for children, job opportunity for spouse)
Distance		Distance between destination country and home country
Family		Presence of family and friends in the destination country
Migrate process	Institutional	Ease of migration process (VISA/Work Permit) to destination country
PR		Prospect of attaining permanent residency status
Legal		The legal system (Law enforcement) in the destination country
License		Practicing Accountant License
Cost_living	Financial and career	Cost of living in destination country versus origin country
Salary		Salary in the destination country for a similar job position
Career		Career progression e.g. promotion opportunities in the destination country
Learning		Learning exposure e.g. wider job scope in the destination country
Economic_growth	Macroeconomics	Economic growth of destination country versus origin country
GDP		Per capita GDP in destination country versus origin country
Political		Political stability in destination country versus origin country
Inflation		Inflation in destination country versus origin country

#### Model Specification

Our model is based on logistic regression to estimate the probability of a migration conditional on the participant's responses:

$$p(x) = P(Y=1|X=x) = \frac{1}{1 + e^{-(x\beta)}}$$

where  $Y=1$  represents the decision of immigration,  $x$  is a vector of survey responses, and  $\beta$  is a vector of unknown parameters. To estimate the unknown parameters, the authors maximize the following Bernoulli likelihood functions such that:

$$\max_{\beta} \sum_i y_i \ln(p(x_i)) + (1 - y_i) \ln(1 - p(x_i)).$$

#### 4. Results and Discussion

Table 2 reports the descriptive statistics. The mean of 0.3868 shows 39% of the respondents indicated an interest to migrate to another country within Asia for work. The 16 factors that influence respondent interest to migrate are added as independent variables in subsequent tables. The factors in which the respondents indicated play important roles in their decision to migrate are salary (4.4097 on a scale of importance from 1 to 5), learning exposure (4.3260), career prospects (4.3040), quality of living (4.2731), and legal environment (4.2247). In particular, the economic factors salary, learning exposure, and career prospects are given the highest weights in the decision to migrate.

**Table 2** Descriptive Statistics

	Mean	Median	Std. Dev.	Observations
Migration	0.3868	0.0000	0.4882	212
Quality_living	4.2731	4.0000	0.8121	227
Friendliness	4.0396	4.0000	0.9233	227
Distance	3.0661	3.0000	1.2795	227
Family	3.2247	3.0000	1.2293	227
Migrate_process	3.9075	4.0000	1.0498	227
PR	3.2819	3.0000	1.2408	227
Legal	4.2247	4.0000	0.8913	227
License	4.0000	4.0000	1.1328	227
Cost_living	3.9868	4.0000	0.9933	227
Salary	4.4097	5.0000	0.7668	227
Career	4.3040	4.0000	0.7815	227
Learning	4.3260	5.0000	0.8463	227
Economic_growth	3.8150	4.0000	0.9827	227
GDP	3.6344	4.0000	1.0233	227
Political	4.0352	4.0000	0.9258	227
Inflation	3.7885	4.0000	1.0556	227

The correlation tables 3.1 and 3.2 show that migration is correlated with quality of living, friendliness of the locals, ease of obtaining permanent residency in the country, cost of living, salary, learning exposures, destination country's economic growth, GDP, and inflation rate at 5% statistical significance.

**Table 3.1** Correlation Matrix

	Migration	Quality _living	Friendliness	Distance	Family	Migrate _process	PR	Legal	License
Migration	1.0000								
Quality _Living	0.1619*	1.0000							
Friend- liness	0.1513*	0.3278*	1.0000						
Distance	0.0424	0.1742*	0.2412*	1.0000					
Family	0.0107	0.2219*	0.3820*	0.6516*	1.0000				
Migrate _Process	0.0705	0.3775*	0.4466*	0.3208*	0.3008*	1.0000			
PR	0.1866*	0.2218*	0.3726*	0.2363*	0.3383*	0.4108*	1.0000		
Legal	0.1189	0.4344*	0.4085*	0.1809*	0.3777*	0.4716*	0.3546*	1.0000	
License	0.1261	0.2405*	0.3850*	0.2015*	0.3368*	0.4502*	0.4061*	0.4996*	1.0000
Cost_ living	0.1617*	0.3226*	0.4348*	0.3001*	0.3576*	0.4826*	0.3872*	0.5032*	0.4287*
Salary	0.1873*	0.5442*	0.4332*	0.2519*	0.2868*	0.4266*	0.2408*	0.4021*	0.3922*
Career	0.1093	0.4124*	0.3696*	0.1789*	0.2188*	0.4174*	0.2489*	0.3652*	0.4199*
Learning	0.2404*	0.4621*	0.3515*	0.1761*	0.1760*	0.4275*	0.2745*	0.3600*	0.4154*
Economic_growth	0.2306*	0.3297*	0.4178*	0.3054*	0.3129*	0.3737*	0.4603*	0.4013*	0.3021*
GDP	0.2300*	0.3177*	0.3948*	0.3261*	0.3435*	0.3020*	0.5903*	0.3233*	0.3016*
Political	0.1007	0.4403*	0.3193*	0.2072*	0.3157*	0.3357*	0.2109*	0.4837*	0.2067*
Inflation	0.1873*	0.2947*	0.3174*	0.2725*	0.2754*	0.4295*	0.5119*	0.4222*	0.3885*

\* indicates statistical significance at 5%.

**Table 3.2** Correlation Matrix (continue)

	Cost_ living	Salary	Career	Learning	Economic_growth	GDP	Political	Inflation
Cost_ living	1.0000							
Salary	0.4951*	1.0000						
Career	0.4555*	0.6773*	1.0000					
Learning	0.3894*	0.5774*	0.6189*	1.0000				
Economic_growth	0.4871*	0.4827*	0.4481*	0.3974*	1.0000			
GDP	0.4219*	0.4229*	0.3664*	0.3937*	0.7333*	1.0000		
Political	0.3614*	0.3971*	0.3582*	0.4201*	0.4644*	0.4200*	1.0000	
Inflation	0.5628*	0.4136*	0.3947*	0.3301*	0.6958*	0.6040*	0.4423*	1.0000

\* indicates statistical significance at 5%.

Table 4 reports the results of multivariate regressions with migration as the dependent variable. The respondents are disaggregated into international ASEAN country, which is represented by singaporeans, and regional ASEAN country, which is represented by non-singaporeans from our sample. The objectives of disaggregation of the respondents into Singapore residents and non-Singapore (Table 4) is to gain insight on migratory drivers for two groups of ASEAN countries: Singapore is more international and outward-looking (with the higher gross domestic product per capita) compared with non-Singapore countries, which are more domestic and regional oriented (with the lower gross domestic product per capita). Learning exposure is positively associated with the decision to migrate at 5% statistical significance in the overall sample. The respondents decide to migrate to gain learning exposure. The weakly negative statistical significance of the family factor shows that the respondents may be deterred from migrating when they consider family to be an important factor. The second column of Table 4 shows that learning exposure plays an important role in the decision to migrate, particularly among the Singapore respondents as shown in the positive and statistically significant coefficient of learning exposure. The positive and weakly significant coefficient of inflation shows that singaporeans may be driven to work in other countries of lower inflation relative to Singapore. The negative coefficient of economic growth indicates that the Singapore respondents believe they should stay and work in Singapore if this is an important factor. It shows that the Singapore respondents are more positive about the economic prospects of Singapore relative to other Asian countries.

The third and fourth columns of Table 4 report results for non-Singaporean respondents. In the third column, economic growth is an important factor for this group of respondents when they consider moving beyond Asia as well as Asian countries. However, the coefficient of this variable becomes statistically not significant in the last column when we consider only respondents interested to migrate within Asia. Hence, it appears that there are no factors that will positively influence non-singaporeans to consider moving to countries within Asia, despite the intent of the AEC.

Overall, learning is the most important factor in deciding to migrate as it is consistently shown positive signs across different groups. According to World Economic Forum (2015), workplace learning is one of the main factors that constitute the human capital index. It is consistent with the theory that singaporeans who consider migrating to other Asian countries for work are primarily looking for learning opportunities (Quah, 2018). There is no surprise that overall respondents and singaporeans who consider migrating to other Asian countries for work are primarily looking for learning opportunities through learning-by-doing, tacit knowledge, exchange with colleagues as well as through formal on-the-job learning, continued education, and staff training, as a tool to develop their skills and capacities.

**Table 4** Factors of Decision to Migrate

<b>Dependent: migration</b>	<b>Overall sample</b>	<b>Singapore respondents</b>	<b>Non-Singapore respondents</b>	<b>Non-Singapore, migration within Asia</b>
Quality_living	0.2410	-0.4472	0.1772	0.2085
	-0.9200	(-0.51)	-0.5500	-0.6200
Friendliness	0.0573	0.8515	-0.1185	-0.2351
	-0.2600	-1.4700	(-0.43)	(-0.80)
Distance	0.0253	0.1159	-0.1583	-0.2153
	-0.1700	-0.2000	(-0.73)	(-0.94)
Family	-0.2862*	-0.6327	-0.0884	-0.0604
	(-1.66)	(-1.49)	(-0.38)	(-0.23)
Migrate_process	-0.2904	-0.4511	-0.3200	-0.2917
	(-1.56)	(-0.59)	(-1.31)	(-1.08)
PR	0.2752	0.2229	0.1943	0.2960
	-1.5700	-0.4600	-0.8800	-1.2300
Legal	-0.0598	0.3218	0.0716	0.0277
	(-0.28)	-0.6100	-0.2500	-0.0900
License	0.0982	-0.3890	0.0134	0.0306
	-0.6100	(-0.79)	-0.0600	-0.1200
Cost_living	0.0000	-0.5713	-0.0371	-0.1291
	(-0.00)	(-0.60)	(-0.14)	(-0.45)
Salary	0.2444	0.7222	0.1698	0.1865
	-0.7800	-0.8300	-0.4400	-0.4500
Career	-0.3799	-0.5074	-0.0623	0.0528
	(-1.40)	(-0.79)	(-0.19)	-0.1500
Learning	0.6229**	1.2624**	0.1509	0.0901
	-2.5300	-2.2400	-0.4500	-0.2600
Economic_growth	0.2426	-1.9322***	0.6328*	0.5603
	-0.9200	(-3.19)	-1.8600	-1.4900
GDP	0.1576	0.8236	0.0343	0.0206
	-0.6500	-1.3000	-0.1000	-0.0600
Political	-0.2584	0.0699	0.1036	0.0520
	(-1.21)	-0.1000	-0.3700	-0.1700
Inflation	0.1897	1.5631*	-0.2283	-0.1131
	-0.8800	-1.8900	(-0.82)	(-0.38)
Constant	-4.0155***	-6.7398*	-2.0188	-1.9645
	(-2.75)	(-1.75)	(-1.17)	(-1.12)
N	227.0000	80.0000	147.0000	133.0000
Pseudo R-squared	0.1092	0.2363	0.0666	0.0665

\*\*\*, \*\*, \* indicate statistical significance at 1%, 5% and 10% respectively.

Table 5 disaggregates the respondents into sub-samples based on the target types of firms in which they would like to work in. Target firms analysis provides an insight on migration factors behind a group who may have interests in ASEAN CPA (target small firms) and those who may not have interests in ASEAN CPA (Big 4 audits and MNCs/Banks). When the target employers are big 4 audit firms (in the first column of Table 4), learning exposure is positive and statistically significant. It shows that the respondents would consider migrating and working in a Big 4 audit firm within another country to gain learning



exposure. On the other hand, they believe that working in another country does not help in their career, from the negative and statistically significant coefficient of the career variable. The opportunity to obtain the practicing license is a pull factor for the respondents to migrate and work in a Big 4 audit firm of another country (shown in positive and statistically significant coefficient of *License* variable). Besides, the opportunity to obtain permanent residence in another country is a reason for the draw towards joining small firms of another country. It shows that granting a practicing license and permanent resident status can be tools governments use to attract foreign accountants to work in small firms that lack labor. However, the administrative process in migration is a deterring factor for the respondents to migrate and work overseas (shown in negative and statistically significant coefficient of *Migrate\_process* variable). Such obstacles in administrative processes include forms required to complete, waiting period for the process, interview requirements. Simplification of migration process includes simplification of the forms and shortening of waiting time.

**Table 5** Types of Destination Firms

Dependent: migration	Destination: Big 4 audit	Destination: Small firms	Destination: MNCs/Banks
Quality_living	0.2885	-0.8368	0.3009
	-0.9300	(-0.70)	-1.0300
Friendliness	0.2234	-1.1932*	0.3176
	-0.8500	(-1.73)	-1.3500
Distance	0.1646	-0.0456	0.2133
	-0.8600	(-0.06)	-1.2400
Family	-0.3338	-0.9645	-0.5081**
	(-1.55)	(-1.40)	(-2.53)
Migrate_process	-0.4066*	-2.0648**	-0.3714*
	(-1.93)	(-2.26)	(-1.87)
PR	0.1235	3.5962**	0.3187
	-0.6100	-2.4000	-1.5800
Legal	-0.0890	-6.4228**	0.0779
	(-0.30)	(-2.40)	-0.3200
License	0.4267*	3.6126**	0.0073
	-1.8100	-2.3500	-0.0400
Cost_living	-0.1160	1.8553*	-0.0658
	(-0.42)	-1.9500	(-0.26)
Salary	0.1194	3.1418	0.3535
	-0.2900	-1.4600	-1.0300
Career	-0.6875**	-1.5419	-0.3971
	(-1.99)	(-0.77)	(-1.32)
Learning	0.6531**	1.2882	0.6226**
	-2.1300	-1.5300	-2.3700
Economic_growth	0.2045	1.0994	0.5764*
	-0.6700	-0.5900	-1.8300
GDP	0.1877	0.3790	-0.1009
	-0.6400	-0.4500	(-0.36)

Dependent: migration	Destination: Big 4 audit	Destination: Small firms	Destination: MNCs/Banks
Political	-0.1232 (-0.48)	-2.4569 (-1.49)	-0.3755 (-1.58)
Inflation	0.2692 -1.0000	0.8320 -0.5500	0.1601 -0.6900
Constant	-4.0567** (-2.41)	-1.1171 (-0.24)	-5.0446*** (-3.43)
N	166.0000	48.0000	198.0000
Pseudo R-squared	0.1209	0.4509	0.1383

\*\*\*, \*\*, \* indicate statistical significance at 1%, 5% and 10% respectively.

When the target employers are small firms, the factors that drive the respondents to migrate are the cost of living and the opportunity to gain a practicing license and to attain permanent residency status. The factors that deter migration are the migration administrative process and the legal environment of the destination country. When the target employers are multi-national companies (MNCs)/banks, the factors that positively influence respondent decision to migrate are learning exposure and economic growth, while the administrative process in the migration process negatively affects respondent decision to migrate. In general, if they migrate, the respondents seek learning exposures in big companies (big 4 audit firms, MNCs/banks). When the respondents migrate to work in small firms with potential interests in ASEAN CPA, cost of living, the achievement of practicing license, and attainment of permanent residency are the main drivers. On the other hand, the administrative migration process is an obstacle to migration for all target employers.

The contribution of this study for the government policies in the region lies in the discovery of motivation that drives young citizens in the ASEAN region to migrate and work in another country. The authors extend the prior literature on migratory factors that largely focused on developed economies to examine the migratory factors of an important economic bloc ASEAN. Our study has practical implications to inform governments on the drivers and obstacles in young people moving within the ASEAN region. Besides, the researchers examine the differences in factors that young people consider in moving within ASEAN versus moving outside ASEAN. Future research could potentially explore variations in the motivation factors across age groups of citizens within the ASEAN countries, and their educational backgrounds.

## 5. Conclusion

The authors examine the factors that young people, namely accountancy students in universities in a group of ASEAN countries, consider to work in other countries within ASEAN or outside ASEAN. Factors were examined across the dimensions of the financial/career factors, cultural/social factors, macroeconomic factors, and institutional factors and were different across target firms - Big Four audit firms, banks, multi-national companies, and small firms. Overall, the opportunity to acquire learning exposure is an important consideration for all respondents, particularly for Singapore students. Specifically, learning exposure was shown to be an important migration factor for those respondents who aspire to work in Big Four audit firms or MNCs/banks located in another country within the ASEAN region. However, non-Singapore students consider the economic growth of the destination country as an important determinant of whether to migrate particularly outside ASEAN. If governments wish to encourage young people to work in another country within ASEAN, they should consider policies regarding the achievement of practicing license and ease of migration process (VISA/Work Permit) and attainment of permanent resident status in the destination country. The limitation of this study is the small number of participants from Thailand. The future potential study can aim to include a larger sample of ASEAN countries respondents with analysis of individual country's migratory drivers.

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## The Effects of Global Commodity Prices on ASEAN-5 Stock Markets

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### Abstract

The increasing participation of investors and financial institutions in the commodity markets to diversify their portfolios led to spillovers from the real to the financial sector. This paper examined the return and volatility spillovers from the world commodity markets to the returns of the ASEAN-5 stock market. The return spillovers from the commodity markets were closely linked to the production economy. Palm oil prices affected the stock market returns of Indonesia and Malaysia. The returns of the rice commodity market were found to affect the stock market of Thailand. However, no spillover effects from rubber were found. On non-agricultural commodities, fuel had the widest return spillover effects. The stock market of Thailand is particularly susceptible to price movements in the gold market. The volatility spillovers were less compared to the return spillovers. The rice market volatility had a negative impact on the stock exchange of Thailand. Gold market volatility was positively related to the stock market returns of Singapore, suggesting gold to be a commodity for hedging against stock market turmoil. However, the stock markets of Malaysia and the Philippines were insulated from these spillovers. Given the connectedness between the commodity and stock markets, any policy designed to advance the financial sector must take cognizance of the development in the world commodity markets. The dynamics between these markets should be considered by the investors for portfolio planning and diversification.

**Keywords:** Association of Southeast Asian Nations (ASEAN), Commodity market, Stock market, Spillover, Volatility

### 1. Introduction

Volatility in stock markets increased following the Asian financial crisis in 1997 and the subprime mortgage crisis in 2007-2008. The increase in volatility was also due to highly integrated financial markets across the globe, as well as international economic integration (Rodrik, 2000). This integration led to not only cross-country volatility spillovers in the financial markets, but also between the real and financial sectors. The spillover from the real to financial sector is in part due to portfolio diversification by investors to cover a variety of assets, most notably stocks and commodities. Ordu-Akkaya, and Soytaş (2020) showed that the connectedness between the stock and commodity markets was strengthened by foreign portfolio investment. The integration of the commodity and stock markets led to the proliferation of many studies on their relationship for different countries. Among others are Ahmed (2017), Antonakakis, Chatziantoniou, and Filis (2017); Arouri, Jouini, and Nguyen (2011); Kilian, and Park (2009); Martín-Barragán, Ramos, and Veiga (2015). Many researchers also investigated the shocks caused by commodities and the impact of these shocks on the stock markets (Cashin, & McDermott, 2002; Chkili, Hammoudeh, & Nguyen, 2014; Dwyer, Gardner, & Williams, 2011; Kang, McIver, & Yoon, 2016; Wright, 2011).

In quest of assets for portfolio diversification, financial institutions participated more actively in the commodity markets, leading to the financialization of these markets. Baldi, Peri, and Vandone (2016) and Ordu-Akkaya, and Soytaş (2020) attributed the link between the stock and commodity markets to the financialization of the commodity markets. The size of connectedness between the stock and commodity market returns was quantified by Yoon, Al Mamun, Uddin, and Kang (2019). Generally, researchers used either the commodity indices or future prices of three categories of commodities, namely the energy, agricultural and precious metal sectors in their analysis (Ahmed, 2017; Berger, & Uddin, 2016; Dolatabadi,

Nielsen, & Xu, 2016; Hammoudeh, Nguyen, Reboredo, & Wen 2014; Hegerty, 2016). On the energy and precious metal sectors, many studies opined that the mainshocks on stock markets originated from certain commodities like oil and gold (Antonakakis, et al., 2017; Do, McAleer, & Sriboonchitta, 2009; Kilian, 2008; Martín-Barragán et al., 2015; Nguyen, Bhatti, Komorníková, & Komorník, 2016; Zhang, 2017). Kilian (2008) showed that higher oil prices led to lower stock market returns when the oil market experienced demand shocks but the supply side shocks had a lesser impact. Their findings were supported by He, Wang, and Lai (2010) who also found that the demand for crude oil affected the stock markets. The wavelet analysis by Martín-Barragán et al. (2015) found little or no correlation between oil prices and stock market price movements in a stable market environment, but their correlation strengthened during stock market crashes. The findings of Fatima, and Bashir (2014) suggested that the relationship between oil price volatility and the stock market was weaker for emerging economies compared to the relationship reported for the developed countries by other researchers. The analysis of Baur, and McDermott (2010) on a sample of developed and developing countries suggested that gold served as a safe haven against stock market shocks, but its safe haven role is only significant in the developed countries. On the other hand, gold was reported to be useful for hedging against stock market risks by Afsal, and Haque (2016) for Saudi Arabia and Chkili (2016) for BRICS where the relationship between the two assets was weak particularly during crisis periods. Do et al, (2009) conducted a study on the effects of gold price on the stock market volatility of five ASEAN countries but found gold price volatility spillover to occur only in some of the markets. The analysis of the impact of agricultural commodities by Öztekin, and Öcal (2017) indicated evidence against rising trends in correlation with stock market movements and they attributed the correlations to heightened volatility during financial crises. Kang et al, (2016) found a positive relationship between agricultural commodities such as corn, wheat, and rice and stock markets after a financial crisis which indicated the lack of diversification benefits by including these commodities in a portfolio during economic instability.

In recent years, more advanced models were applied to find the link between the commodity and stock markets. One of the popular methods is the generalized autoregressive conditional heteroscedasticity (GARCH) model with the BEKK specification named after Engle, and Kroner (1995) and developed further by Engle, and Kroner (1995). BEKK GARCH models were applied widely to study the dynamics between the two markets (Afsal, & Haque, 2016; Bouri, Awartani, & Maghyreh, 2016; Khalfaoui, Boutahar, & Boubaker, 2015; Olsson, 2007; Olson, Vivian, & Wohar, 2014). The BEKK specification in conditional variance offers flexibility and is particularly informative for cross-market dynamics. They, however, lack parameter parsimony and typically involve the estimation of a large number of parameters which may not be tenable when an analysis covers many markets (Bauwens, Laurent, & Rombouts, 2006). Another competing method is the DCC (dynamic conditional correlation) GARCH proposed by Engle (2002). The method was used by Akkoc, and Civcir (2019) to examine the dynamic linkages between selected commodity markets and the Turkish stock exchange. DCC is easy to apply using a two-step estimator and is particularly useful if a large number of markets are involved. However, the two-step estimators are not consistent, and this is one of the ten issues cautioned by Caporin, and McAleer (2013) about the DCC representations. In comparison, Chang, McAleer, and Tansuchat (2013) examined the volatility spillovers between the crude oil and financial markets by applying the VARMA (vector autoregressive moving average) GARCH model of Ling, and McAleer (2003). This model offers insights when the first moment of all endogenous variables follows an autoregressive moving average process. The model suffers a restrictive assumption of a constant conditional correlation unless its application is combined with the CCC approach (Salisu, Isah, & Assandri, 2019).

Even though the relationship between global commodity prices and the stock market volatility was established by other researchers, many studies tend to use oil or gold as the main commodity of study. As more investors start to include other commodities in their portfolio for diversification, commodities such as agricultural commodities, food commodities, and non-metal commodities are also expected to affect stock market performance. Despite the inclusion of some of these commodities in past studies, they may not have a significant representation in the economic output of the countries analyzed. This paper took into consideration a range of different commodities, including palm oil, rubber, fuel, rice, and gold to investigate the relationship between the global prices of these commodities and the price movements in the stock markets of ASEAN-5. Although volatility spillover among the ASEAN-5 stock markets was examined by



Lee, and Goh (2016); Kang, Uddin, Troster, and Yoon (2019); Vo, and Tran (2020), they did not examine the influence of commodity markets in their analysis. While fuel and gold are commodities widely recognized to influence the world economy, palm oil, rubber, and rice are produced and exported by some of the ASEAN-5 countries. Crude oil is also exported by Malaysia.

## 2. Objectives

The objectives of this study are as follows:

1. To examine the relationship between the returns of world commodity markets and stock markets of the ASEAN-5 countries;
2. To assess the impact of movements in the commodity market returns on the returns of ASEAN-5 stock markets; and
3. To determine the impact of commodity market volatility on the returns of ASEAN-5 stock markets.

## 3. Methods and Data

We considered two types of impacts commodity markets may have on stock markets. These are the return and volatility spillovers. To model these impacts, the model is:

$$r_{it} = \mu_i + \sum_{c=1}^k \tau_{i1} r_{ct} + \sum_{c=1}^k \tau_{i2} r_{c,t-1} + \sum_{c=1}^k \tau_{i3} v_{ct} + e_{it}, \quad i=1, 2, \dots, n \quad (1)$$

where  $r_{it}$  is the returns for stock market  $i$ ,  $r_{ct}$  represents the returns for commodity market  $c$ , and  $v_{ct}$  represents the volatility of returns for commodity market  $c$ . The parameters are as follows:  $\mu$  is a constant, and  $\tau_{ij}$  is the slope coefficient for sensitivity of stock market returns to contemporaneous commodity market returns for  $j = 1$ , lagged commodity market returns for  $j = 2$ , and volatility of commodity market returns for  $j = 3$ . Given that five stock exchanges were included in the study,  $n = 5$ . The number of commodities under consideration is represented by  $k$ . The returns are  $r_{jt} = \ln P_{jt} - \ln P_{j,t-1}$ , where  $P_j$  refers to the price index of the stock market for  $j = i$  and the price index of the commodity market for  $j = c$ . Let  $\varepsilon_t = (e_{1t}, e_{2t}, \dots, e_{5t})'$  represent the stock market shocks where  $e_{it}$  is the error term.

The stock market price movements of ASEAN-5 are not independent of one another. Volatility spillovers were reported by Lee, and Goh (2016); Kang et al. (2019), and Vo, and Tran (2020), among others. Therefore, the error terms in  $\varepsilon_t$  do not follow an i.i.d. process. The dynamic volatility spillovers among the ASEAN-5 stock markets were modeled by applying a multivariate GARCH with the BEKK specification proposed by Engle, and Kroner (1995). Broadstock, Cao, and Zhang (2012) and Chang, McAleer, and Tansuchat (2011) showed evidence from the literature that the BEKK model is a robust model for analyzing volatility. The error terms follow a multivariate distribution  $\varepsilon_t | I_{t-1} (0, H_t)$ , where  $H_t$  is the variance-covariance matrix and  $I_{t-1}$  is the information set at time  $t-1$ . The conditional variance-covariance matrix  $H_t$  can be stated below:

$$H_t = \begin{bmatrix} h_{11t} & \cdots & h_{15t} \\ \vdots & \ddots & \vdots \\ h_{51t} & \cdots & h_{55t} \end{bmatrix} \quad (2)$$

where  $h_{iit}$  is the conditional variance of own stock market and  $h_{ijt}$  is the covariance between stock market  $i$  and  $j$ , for  $i \neq j$ . The volatility of stock market returns represented by the variance process of the BEKK specification is as follows:

$$H_t = C'C + A'H_{t-1}A + B'\varepsilon_{t-1}\varepsilon'_{t-1}B \quad (3)$$

where  $C$  is a  $5 \times 5$  constant matrix, and  $A$  and  $B$  are the parameter matrices of  $5 \times 5$ . Equation (3) demonstrates that the BEKK model produces a positive definite variance-covariance matrix.

There is a huge number of parameters that need to be estimated and the issue of convergence is a concern in a full BEKK model. In the simplest form of GARCH (1,1) specification for the five stock markets, equation (3) contains 65 parameters to be estimated. Chang and McAleer (2017) demonstrated that a full BEKK model has no underlying stochastic process, regularity conditions, or asymptotic properties. The diagonal version which is not subject to these issues was utilized in this paper. In the diagonal BEKK, all coefficient matrices in equation (4) are diagonal. The diagonal reduced form is shown below:

$$h_{iit} = c_{ii} + a_{ii}^2 h_{iit-1} + b_{ii}^2 e_{i,t-1}^2 \quad (4)$$

$$h_{ijt} = c_{ij} + a_{ii} a_{jj} h_{ijt-1} + b_{ii} b_{jj} e_{i,t-1} e_{j,t-1} \quad (5)$$

where  $c_{ii}$  and  $c_{ij}$  are constants,  $a_{ii}^2$  is the coefficient for lagged own stock market volatility, and  $b_{ii}^2$  is the coefficient for the lagged volatility of own stock market shocks. The number of parameters in equations (4) and (5) was reduced to 25. The co-volatility of two stock markets given by  $h_{ijt}$  is affected by the past co-volatility of both markets as well as the cross-product of their past shocks. The corresponding impacts are given by  $a_{ii} a_{jj}$  and  $b_{ii} b_{jj}$  which will be denoted as  $\alpha_{ij}$  and  $\beta_{ij}$  respectively.

The models were estimated using the maximum log-likelihood method. This log-likelihood function is as follow:

$$l(\theta) = -\frac{5T}{2} \ln(2\pi) - \frac{1}{2} \sum_{t=1}^T \left( \ln |H_t| + \varepsilon_t' H_t^{-1} \varepsilon_t \right) \quad (6)$$

where  $\theta$  denotes the vector for all unknown parameters.

This paper used monthly data from January 1999 to December 2020. The stock market prices of ASEAN-5 were represented by the MSCI stock market indices which were sourced from Datastream (Thomson Reuters, n. d.). The advantage of using the MSCI series is that these market capitalization-weighted indices can be converted to US Dollar (USD) to remove any exchange rate influences which may affect the analysis. Another advantage is that the MSCI series dated back to 1992 are consistently available for all five stock markets.

Five commodities were chosen based on their relevance to the ASEAN economies from the perspective of exports and contribution to Gross Domestic Product, as well as their role as investment assets. The five commodities include fuel, gold, palm oil, rice, and rubber. The ASEAN countries are highly dependent on these commodities (except gold) for their export revenues as well as other manufacturing industries (ASEAN, 2016). Although gold is not the main trade item, it is widely accepted for portfolio investment and gold price was shown to impact the stock market price movements (Afsal, & Haque, 2016; Chkili, 2016; Reboredo, & Ugolini, 2017). Monthly data on the commodity market indices were taken from the IMF website except for gold. Gold prices were extracted from the same source as the stock market indices. Since some of the commodity prices retrieved from the IMF website are spot prices that involve different units, all these variables were converted into indices. The base year for all series is 2005.

Table 1 lists the variables and describes the abbreviations used in reporting the analysis.

**Table 1** Variable abbreviation and description

Variable	Description
R_IND	Returns of the stock market of Indonesia computed from the MSCI Index, 2005=100
R_MAL	Returns of the stock market of Malaysia computed from the MSCI Index, 2005=100
R_PHI	Returns of the stock market of the Philippines computed from the MSCI Index, 2005=100
R_SIN	Returns of the stock market of Singapore computed from the MSCI Index, 2005=100
R_THA	Returns of the stock market of Thailand computed from the MSCI Index, 2005=100

Variable	Description
R_FUEL	Returns of the fuel market computed from the Fuel (Energy) Index, 2005 = 100 that includes crude oil (petroleum), natural gas, and coal price indices
R_GOLD	Returns of the gold market, computed from the gold price index, 2005 = 100
R_PALM	Returns of the palm oil market computed from the Palm Oil Index, 2005=100, Malaysia Palm Oil Futures (first contract forward) 4-5 percent FFA, US\$ per metric ton
R_RICE	Returns of the rice market computed from the Rice Index, 2005=100, 5 percent broken milled white rice, Thailand nominal price quote, US\$ per metric ton
R_RUBBER	Returns of the rubber market computed from the Rubber Index, 2005=100, Singapore Commodity Exchange, No. 3 Rubber Smoked Sheets, 1st contract, US cents per pound
V_FUEL	The volatility of the fuel market represented by the standard deviation in R_FUEL for the past 12 months
V_GOLD	The volatility of the gold market represented by the standard deviation in R_GOLD for the past 12 months
V_PALM	The volatility of the palm oil market represented by the standard deviation in R_PALM for the past 12 months
V_RICE	The volatility of the rice market represented by the standard deviation in R_RICE for the past 12 months
V_RUBBER	The volatility of the rubber market represented by the standard deviation in R_RUBBER for the past 12 months

#### 4. Results and Discussion

Table 2 shows some financial information on the ASEAN-5 stock markets. The stock exchange of Singapore was the largest in terms of market capitalization while the stock market of the Philippines was the smallest.

Figure 1 plots the price indices of the stock markets. The two shaded areas indicate the global financial crisis that occurred after the first quarter of 2008 until the third quarter of 2009 and the Covid-19 pandemic that hit the ASEAN region since March 2020. There was a huge drop in the stock market prices during the sub-prime mortgage crisis that spurred the global financial crisis in the year 2008 to 2009, which affected all five stock markets. After the crisis, all stock exchanges were growing steadily. Except for the Singapore market, the other four markets surpassed the pre-crisis peak. These markets suffered another drop when the pandemic started. Although they rebounded, the indices were still lower than the pre-pandemic levels by the end of 2020.

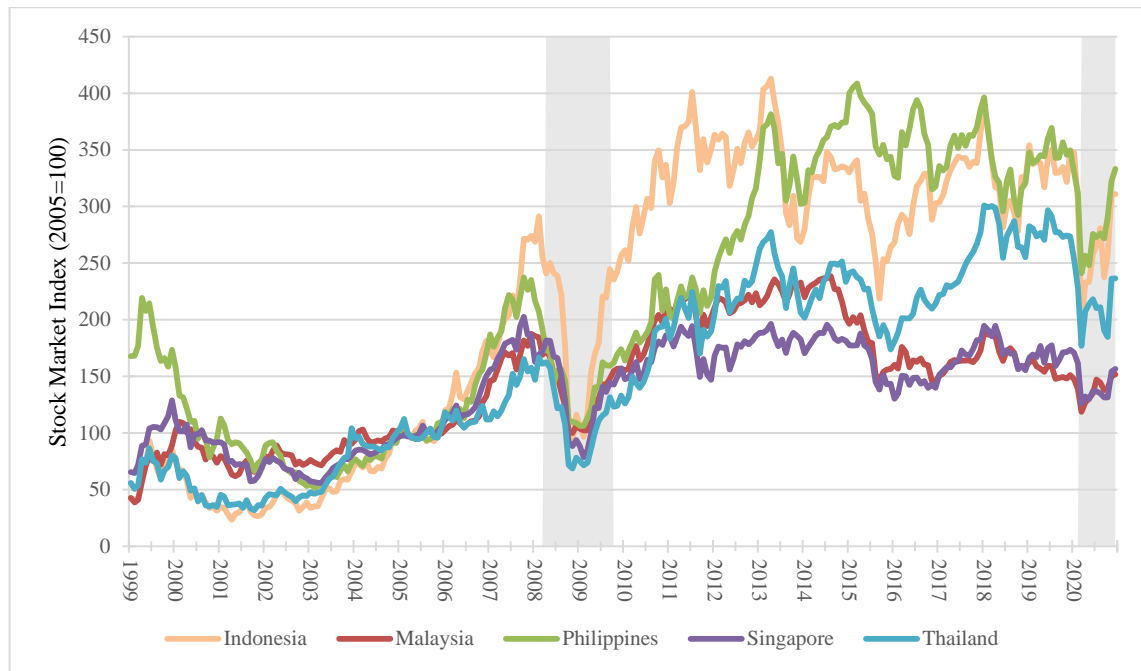
**Table 2** Financial information on the stock exchanges of ASEAN-5 as of 31 July 2017

Stock market	Market capitalisation (USD million)	Annualized 3-year price return (%)
Malaysia	112,199.97	-8.80
Indonesia	115,071.12	-0.16
Philippines	56,453.92	0.43
Thailand	104,321.15	0.33
Singapore	188,117.91	-0.28

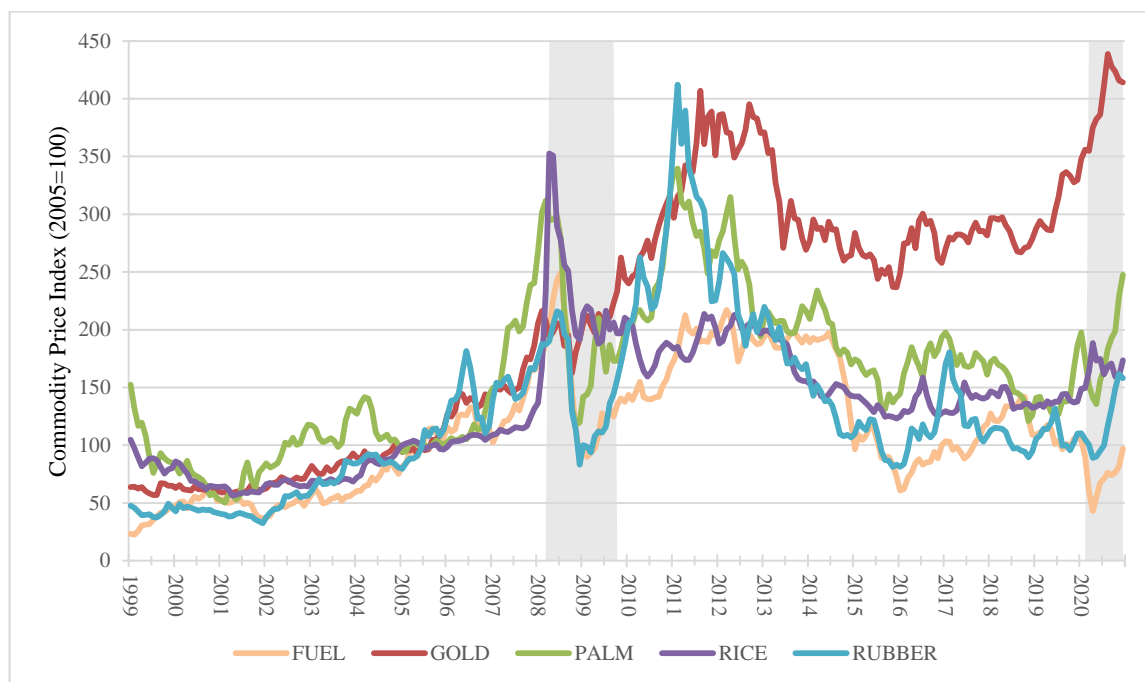
Source: www.msci.com

The commodity prices shown in Figure 2 did not follow similar patterns. The commodity prices were growing steadily throughout the years before they dropped due to the global financial crisis. The crisis did not affect gold prices as much as it affected the other commodities. Gold price gained momentum during this crisis subsequently, before the downturn in 2014 due to the economic slowdown that also affected the other commodity markets. Palm oil prices peaked after the global financial crisis. The recovery after the crisis pushed its price up but the momentum was not sustained beyond 2011 due to oversupply. Rubber prices also shot up after the crisis, which indicated the increase in its consumption for goods that

required rubber as an input during the upswing. However, like palm oil, its price began to fall after 2011. The rice price hiked beyond the crisis and stabilized after 2009 at a level higher than pre-crisis, reflecting the world's concern for food security. The fuel price dropped in 2016 to a level lower than that during the global financial crisis due to over-supply and was affected worse by a drastic reduction in its demand during the Covid-19 pandemic.



**Figure 1** Stock market indices



**Figure 2** Commodity price indices

The descriptive statistics for the commodity and stock daily returns are summarised in Table 3. Gold recorded the highest return with a mean of 0.007 with relatively low risk. Its standard deviation is the lowest compared to the other commodities. On the other hand, the rice market recorded the lowest return. Fuel, palm oil, and rubber had the three highest variabilities in their returns. The stock markets yielded daily returns of between 0.3% to 0.7%. The stock markets of Indonesia and Thailand experienced higher uncertainty than the other stock markets as reflected in the higher variability of their returns. Most of the commodity and stock market returns were negatively skewed except for the rice market and stock exchange of Malaysia. All of the returns displayed excess kurtosis, indicating fat-tailed distributions. The Jarque-Bera test confirmed that all return series did not follow a normal distribution.

**Table 3** Descriptive statistics of commodity and stock market daily returns

Variable	Mean	Maximum	Minimum	Standard deviation	Skewness	Kurtosis	Jarque-Bera Test
R_FUEL	0.0056	0.237	-0.404	0.082	-1.171	6.503	195.33***
R_GOLD	0.0071	0.165	-0.186	0.046	-0.147	4.175	16.14***
R_PALM	0.0017	0.290	-0.316	0.078	-0.177	4.606	29.77***
R_RICE	0.0022	0.412	-0.190	0.056	2.229	18.000	2693.59***
R_RUBBER	0.0048	0.188	-0.394	0.081	-0.586	5.269	71.76***
R_IND	0.0074	0.334	-0.507	0.104	-0.616	6.393	143.38***
R_MAL	0.0049	0.328	-0.194	0.059	0.429	6.867	172.61***
R_PHI	0.0026	0.215	-0.279	0.071	-0.398	4.297	25.49***
R_SIN	0.0033	0.214	-0.345	0.067	-0.899	6.947	206.89***
R_THA	0.0055	0.359	-0.402	0.088	-0.349	6.148	114.37***

**Note:** \*\*\*Significant level at 1%.

The plots in Figures 1 and 2 suggested the occurrence of structural breaks in all commodity and stock market indices. The stationarity properties of the series were established through the modified ADF breakpoint unit root tests. The test identified the global financial crisis to be the most common cause of breakpoints. It caused a structural break in the stock market and the rice and rubber markets. The breakpoint for fuel returns occurred during the Covid-19 pandemic. In Table 4, all commodity and stock indices were I(1) after their structural breaks were accounted for. All first differences were clearly stationary. The results supported the use of the first differences or returns for further analysis.

**Table 4** Augmented Dickey-Fuller breakpoint unit root test of commodity and stock market indices

Variable	Breakpoint unit root test (t-statistic)		
	Level	First difference	Order of integration
(a) Commodity Market Index			
Fuel	-4.706	-12.537***	I(1)
Gold	-3.930	-18.741***	I(1)
Palm	-4.694	-12.419***	I(1)
Rice	-3.794	-12.802***	I(1)
Rubber	-3.591	-12.790***	I(1)
(b) Stock Market Index			
Indonesia	-3.319	-15.575***	I(1)
Malaysia	-3.926	-14.804***	I(1)
Philippines	-3.321	-15.947***	I(1)
Singapore	-3.350	-16.499***	I(1)
Thailand	-3.545	-18.100***	I(1)

**Notes:** \*\*\*Significant level at 1%. The test regression has an intercept and trend. The critical values at 1% and 5% significance levels are -5.348 and -4.860 respectively. The test used innovation outliers and lag length selected by Schwarz information criterion.

Table 5 shows the correlation between the returns of the commodity and stock markets. The correlation coefficients were less than 0.3 and positive. The correlation between rice and the stock markets was the weakest while fairly strong correlations were found between palm oil and the stock markets.

**Table 5** Correlation between the commodity and stock market returns

Stock Market	Commodity Market				
	Fuel	Gold	Palm	Rice	Rubber
Indonesia	0.196	0.187	0.266	0.049	0.139
Malaysia	0.268	0.086	0.258	0.024	0.152
Philippines	0.147	0.164	0.152	0.003	0.098
Singapore	0.274	0.163	0.283	0.054	0.185
Thailand	0.190	0.208	0.244	0.090	0.117

The GARCH-BEKK model was estimated. Note that the news impact on the stock markets may be asymmetric (Botoc, 2014). Initially, the researchers tried to fit a threshold GARCH(1,1) model with diagonal BEKK specification. However, the estimation could not converge. A reduced threshold model with leverage order of 1 and GARCH(1,0) was then applied. Convergence was achieved but the market asymmetry coefficients were not significant. Subsequently, the GARCH(1,1) model was selected and the results are reported in Table 6.

These results are discussed to firstly examine the return spillovers from the commodity markets to the stock markets. Fuel price returns affected the stock markets of Indonesia, Singapore, and Thailand significantly. Every 1% increase in fuel returns led to an increase in the range of 0.16% to 0.18% in the returns of these stock markets. Indonesia, Singapore, and Thailand were the three largest consumers of oil in ASEAN, while Indonesia and Thailand were among the top three producers of oil in ASEAN (Economic Research Institute for ASEAN and East Asia, n. d.). Singapore is a financial hub in the region where financial institutions are highly responsive to fuel price movements and the impact on their investment portfolio.

The returns on gold impacted the stock markets of Indonesia and Thailand at the 5% significance level. Indonesia produced about 4% of world gold production and this ranked the country the sixth-largest world producer in 2019 (Baru Gold Corp, n. d.). Physical gold plays an important role in Thai culture and is generally accepted as an asset for the store of value (BullionStar, n. d.).

The palm oil returns exerted a significant impact on the stock markets of Indonesia, Singapore, and Thailand. The returns in these stock markets moved in the same direction as palm oil market returns. A 1% increase in palm oil returns was estimated to cause a 0.25% rise in the stock market returns of Indonesia, 0.17% rise in the stock market of Singapore, and 0.20% rise in the stock market of Thailand. Indonesia and Thailand are producers of palm oil. In 2018, they produced 40.57 and 2.78 million tonnes of oil palm crops respectively (Ritchie, & Roser, 2021). As palm oil exporters, their stock markets were buoyant when the palm oil market was doing well.

The return of the rice commodity market only affected the stock market of Thailand, whereby a 1% increase in the former led to a 0.23% increase in the latter. Given that Thailand is one of the largest world producers and exporters of rice, rice prices affect its economic performance closely.

The rubber commodity market was not found to have any significant effect on all stock markets. Rubber, although produced for export in the past by Indonesia and Malaysia, had been gradually replaced by oil palm crops and lost its dominant role in the GDP of these countries. Given the lack of correlation, rubber is a good candidate for portfolio diversification purposes.

The commodities that affected the stock markets significantly had positive coefficients at the 5% significance level. This finding suggested that they were not safe haven assets against turmoil in the stock market. However, at the 10% significance level, gold and rice exhibited safe-haven properties for Singapore, given their negative coefficients.

The spillovers from the volatility of the commodity markets to stock market returns were far less compared to their return spillovers. An increase in volatility of the gold market caused the stock market

returns of Singapore to increase, suggesting possible shifts from the gold to the stock market when uncertainty in the gold market heightened. This again showed the safe-haven role of gold for the stock market of Singapore. The volatility of the rice market impacted the stock market of Thailand negatively. Higher rice market uncertainty for this rice exporting country conveyed bad market news that did not augur well for its stock exchange. It also had a negative impact on the stock market of Singapore at the 10% level.

The results showed that none of the commodity markets had return or volatility spillover effects on the stock markets of Malaysia and the Philippines. There is a strong relationship between the stock markets of Malaysia and Singapore. The stock market of the Philippines had the smallest market capitalization. One possible reason for this finding is that the commodity effects could be transmitted through and subsumed in the volatility spillovers between the stock markets of these two countries and the other stock markets.

The conditional variance equation reported in Table 6 conveyed information on the volatility spillovers among the five stock markets. The results showed how the volatility of one stock market affected the volatility of another stock market. All coefficients of the lagged own- and cross-volatility spillovers ( $\alpha_{ii}$  and  $\alpha_{ij}$ ) were significant at a 1% level of significance. Most of the coefficients of lagged own- and cross-market shocks ( $b_{ii}$  and  $b_{ij}$ ) were also significant. In comparison to the past volatility, the past shocks of the ASEAN stock market had lesser effects on the markets' conditional variance regardless of whether they were the own- or co-market innovations. The significant coefficients of lagged co-volatility between different stock markets suggested that the movements in returns of one market were dependent on the movements of other markets. It is noteworthy that the cross-market spillover effect from shocks in the stock market of Singapore had the highest impact on all markets. The stock markets of Malaysia and the Philippines were the most exposed as the spillovers from their own-market shocks were not significant compared to cross-market shocks.

## 5. Conclusion

This study analyzed the return and volatility spillover effects of global commodity markets on the returns of ASEAN-5 stock markets. The impact of fuel was significant on the stock markets of Indonesia and Thailand, both of which are producers of oil. Likewise, the spillovers from palm oil returns on the stock markets of Indonesia and Thailand which are palm oil exporters were also significant. Thailand, an exporter of rice, experienced rice market return spillovers on its stock market. Rubber, a crop that had been widely replaced by oil palm in the region, did not show any significant impact on any of the stock markets. Besides, the study found gold return spillovers on the stock market of Thailand, given the important role this commodity plays in the Thai tradition. The stock exchange of Singapore, the financial hub of ASEAN with the largest market capitalization, experienced return spillovers from all commodity markets except rubber.

The volatility spillovers were less compared to the return spillovers. While the rice market volatility had impacted the stock exchange of Thailand negatively, the gold market volatility was positively related to the stock market returns of Singapore.

This research provided empirical insights that are of practical significance. First, global commodity price movements influenced the returns of ASEAN-5 stock markets, in terms of commodity returns and to a smaller extent, volatility. The returns of fuel, palm oil, and rice markets had strong effects especially on the economies that produced and exported them. The relationship between the commodity and stock market returns is therefore largely related to the production economy.

Second, the return spillovers from the commodity to stock markets were generally positive. An exception is gold return spillovers on the stock market of Singapore. Coupled with its positive volatility spillover effects, gold could be considered a safe haven for the stock market of Singapore. The lack of significant association between rubber and the stock markets renders this commodity a choice for portfolio diversification.

Third, the Philippines stock exchange was not affected by the movements in the commodity market, which may be due to it being the smallest stock market in the region. It was relatively insulated from external shocks and is therefore an investment destination for portfolio diversification.

The findings of this study showed that the commodity markets had a role to play in the development of the financial sector. The financialization of commodities had led commodity markets to be increasingly integrated with the financial sector. The policymakers must take cognizance that the development of the financial sector will not be complete without taking the growth and expansion of the commodity markets into consideration. The investors must recognize the connectedness between the two sectors in their portfolio planning and for diversification purposes. Future research could measure the extent of this connectedness and shed further light on how portfolio diversification can be achieved based on the dynamics of the commodity and stock markets.

**Table 6** Estimation of the diagonal BEKK GARCH model

Variable/ Coefficient	Indonesia ( <i>i</i> = 1)		Malaysia ( <i>i</i> = 2)		Philippines ( <i>i</i> = 3)		Singapore ( <i>i</i> = 4)		Thailand ( <i>i</i> = 5)	
	Coef	Std error	Coef	Std error	Coef	Std error	Coef	Std error	Coef	Std error
Constant	-0.025	0.023	0.026	0.205	-0.036	0.207	-0.028	0.018	-0.018	0.015
R_FUEL <sub><i>t</i></sub>	0.165**	0.073	0.258	0.355	0.104	0.295	0.163***	0.053	0.179***	0.060
R_FUEL <sub><i>t-1</i></sub>	0.095	0.097	0.056	0.258	-0.017	0.245	0.065	0.062	-0.071	0.065
R_GOLD <sub><i>t</i></sub>	0.279**	0.134	-0.027	0.646	0.157	0.562	0.081	0.079	0.261***	0.085
R_GOLD <sub><i>t-1</i></sub>	0.096	0.120	-0.092	0.466	-0.092	0.400	-0.166*	0.088	-0.116	0.088
R_PALM <sub><i>t</i></sub>	0.247***	0.085	0.133	0.335	0.096	0.280	0.173***	0.057	0.195***	0.067
R_PALM <sub><i>t-1</i></sub>	-0.063	0.103	-0.096	0.303	-0.018	0.253	-0.107*	0.063	-0.116	0.073
R_RICE <sub><i>t</i></sub>	0.093	0.132	0.053	0.552	0.055	0.511	0.139	0.087	0.230**	0.091
R_RICE <sub><i>t-1</i></sub>	-0.098	0.140	-0.148	0.672	-0.149	0.649	-0.146*	0.086	-0.191*	0.107
R_RUBBER <sub><i>t</i></sub>	-0.042	0.071	-0.039	0.486	-0.004	0.465	0.021	0.050	-0.024	0.055
R_RUBBER <sub><i>t-1</i></sub>	-0.027	0.086	-0.109	0.394	-0.013	0.361	-0.018	0.050	0.063	0.061
V_FUEL <sub><i>t</i></sub>	0.324	0.253	0.110	1.881	0.256	1.804	0.157	0.165	0.116	0.156
V_GOLD <sub><i>t</i></sub>	0.432	0.433	0.309	2.527	0.742	2.389	0.622**	0.291	0.437	0.312
V_PALM <sub><i>t</i></sub>	-0.046	0.268	0.087	1.160	-0.309	1.041	-0.060	0.178	0.046	0.227
V_RICE <sub><i>t</i></sub>	-0.284	0.239	-0.228	1.640	-0.320	1.660	-0.305*	0.168	-0.349**	0.173
V_RUBBER <sub><i>t</i></sub>	0.062	0.262	0.097	1.577	0.157	1.435	0.149	0.178	0.174	0.178
$\alpha_{i1}$	0.868***	0.038								
$\alpha_{i2}$	0.954***	0.021	1.048***	0.007						
$\alpha_{i3}$	0.955***	0.022	1.049***	0.004	1.051***	0.006				
$\alpha_{i4}$	0.875***	0.020	0.961***	0.015	0.962***	0.014	0.881***	0.026		
$\alpha_{i5}$	0.887***	0.024	0.974***	0.011	0.976***	0.012	0.893***	0.017	0.906***	0.021
$\beta_{i1}$	0.093**	0.043								
$\beta_{i2}$	0.060**	0.024	0.039	0.025						
$\beta_{i3}$	0.041**	0.019	0.027*	0.014	0.018	0.013				
$\beta_{i4}$	0.089***	0.031	0.058**	0.024	0.039***	0.015	0.086**	0.036		
$\beta_{i5}$	0.086***	0.029	0.055**	0.022	0.038**	0.016	0.082***	0.026	0.078***	0.026

**Note:** \*\*\*, \*\*, and \* denote significance level at 1%, 5%, and 10% respectively. The dependent variables are stock market returns R\_IND, R\_MAL, R\_PHI, R\_SIN, and R\_THA for the five countries, respectively. Coef refers to coefficient and std error refers to standard error. The constant values for the variance equations are not reported. The coefficients are  $\alpha_{ij} = a_{ii}a_{jj}$  and  $\beta_{ij} = b_{ii}b_{jj}$  in equations (4) and (5).

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## APPENDIX A

### RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)

#### ACKNOWLEDGEMENTS

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## **APPENDIX B**

### **RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)**

#### **NOTE FOR AUTHORS**

##### **1. Aims and Scope**

*Rangsit Journal of Social Sciences and Humanities (RJSH)* is a multidisciplinary international scholarly journal that aims to provide a high profile vehicle for publication of various new issues in different academic areas. The scope of the *Journal* encompasses, but not limited to Interdisciplinary Studies in Humanities and Social Sciences, any of the following areas:

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Social Innovation  
Political Science

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##### **2. Submission Deadline**

Submissions are to be permanently open. A manuscript submitted between July 1<sup>st</sup> and December 31<sup>st</sup> will be considered for publication in the January-June Issue of the subsequent year whereas a manuscript submitted between January 1<sup>st</sup> and June 30<sup>th</sup> will be considered for publication in the July-December Issue.

##### **3. Categories of Articles**

The *Journal* accepts the following types of articles:

1. **Research Articles:** A research article is a regular quantitative or qualitative article which aims to present new findings or interpretations.
2. **Review Articles:** A **review article** or survey articles, also called a literature review, is an article that survey of previously published research on a topic and summarizes the current state of understanding on a topic. It should give an overview of current thinking on the theme and, unlike an original research article, won't present new experimental results. By analyzing a large body of data from existing studies, some systematic reviews can come to new conclusions. Review articles can also provide recommendations for potential research areas to explore next. Moreover, a review article surveys and summarizes previously published studies, rather than reporting new facts or analysis.
3. **Innovations:** An innovation is an article that aims to present creative arts and designs, procedures or devices.

Research articles, review articles, and innovations should not exceed 15 pages of standard A4 paper using *RJSH* format. The manuscript template is available at <https://rjsh.rsu.ac.th>. All categories of articles must coincide with manuscript preparation instruction (see Manuscript Preparation Section).

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**General Instruction:** Submit your manuscript in both PDF and MS word formats. Manuscripts are acceptable in both US and UK English, but the use of either must be consistent throughout the manuscript. Please note that the editors reserve the right to adjust style to certain standards of uniformity.

**Format:** Unless specified, type text with 10-point Times New Roman font on 12-point line spacing, with a 1.25 inch left margin, 1 inch bottom and right margin, 2 inch top margin, 1.2 inch header, and 0.6 inch footer. Main text is set in single column. First lines of paragraphs are indented 0.5 inch. For hard copy, use standard A4 paper, one side only. Use ordinary upper- and lower-case letters throughout, except where italics are required. For titles, section headings and subheadings, tables, figure captions, and authors' names in the text and reference list: use ordinary upper- and lower-case letters throughout. Start headings at the left margin. If you wish, you may indicate ranking of complicated section headings and subheadings with numerals (1, 1.1, 1.1.1). Try not to exceed three ranks. All pages must be numbered in the top right-hand corner.

**Title:** Use 11-point bold font on 12-point line spacing. The length of the title of the article must not exceed 2 lines. A title should be concise and informative. The alignment of the title is centered.

**Author Names:** Use 10-point font on 11-point line spacing. Centered alignment and leave one line space below the title of the article. Begin with the first name of the author followed by the last name. For more than

one author, separate each name by a comma (,), and identify each author's affiliation by superscript numbers at the end of the author's last name.

**Author Affiliations:** Use 9-point font on 10-point line spacing. Centered alignment and leave one line space below the author names. Include institutional and e-mail addresses for all authors. Place superscript numbers at the beginning of each affiliation accordingly.

**Abstract:** Use 10-point font on 11-point line spacing for heading and 9-point font on 11-point line spacing for abstract content. An abstract of up to 250 words must be included as and when appropriate. For research papers; the purpose and setting of the research, the principal findings and major conclusions, and the paper's contribution to knowledge should be briefly stated. For empirical papers the locations of the study should be clearly stated, as should the methods and nature of the sample, and a summary of the findings and conclusion. Please note that excessive statistical details should be avoided, abbreviations/acronyms used only if essential or firmly established.

**Keywords:** List up to 6 keywords and separate each keyword by a comma (,). The keywords should accurately reflect the content of the article. The keywords will be used for indexing purposes.

**Main Text:** Use 10-point font on 12-point line spacing. In the main body of the submitted manuscript the following order should be adhered to: introduction, methodology, results (if any), discussion (if any), conclusion, acknowledgements, and references. Please note that some article categories may not contain all components above. Tables or figures must be included in the text for the reviewing process. In addition, tables and figures must also be submitted individually in separate files. Refer in the text to each table or illustration included, and cite them in numerical order, checking before submission that all are cited and in correct sequence.

**References in the Text:** To insert a citation in the text use the author-year system, i.e., the author's last name and year of publication. Examples are as follows: "Since Johnson (2008) has shown that..." or "This is in agreement with results obtained later (Benjamin, 2010)". For 2-3 authors; all authors are to be listed, with "and" separating the last two authors, for more than three authors, list the first author followed by et al. The list of references should be arranged alphabetically by authors' names. All in-text citation must be appeared in the reference list. The manuscript should be carefully checked to ensure that the spelling of authors' names and dates are exactly the same in the text as in the reference list. Responsibility for the accuracy of bibliographic citations lies entirely with the author(s). Citation of a reference as "in press" implies that the item has been accepted for publication. Authors are responsible for the accuracy of the content of the references.

**List of References:** *RJSH* uses the American Psychological Association (APA) referencing style, details of which can be found at <http://www.apastyle.org/>. References should be listed at the end of article, arranged alphabetically according to the last names of the authors and then chronologically. The following are examples of the APA referencing style. All in-text citation must be appeared in the reference list and all publications in the reference list must correspond to the in-text citation. Please delete the listed publications which are not appeared in the context.

### **Abstracts**

Author./ (Year of publication)./Title of Abstract (abstract)./Journal Title,/Volume(Issue),/Page number.

#### **Example:**

Clark, D. V., Hausen, P. H., & Mammen, M. P. (2002). Impact of dengue in Thailand at the family and population levels (abstract). *Am J Trop Med Hyg*, 67(2 Suppl), 239.

### **Books**

Author./ (Year of publication)./Book Title./Capital letter also for subtitle./Edition (if any)./Location,/Country :/Publisher.

### **Example:**

Cochrane, A. (2007). *Understanding urban policy: A critical approach*. Malden, MA: Blackwell Publishing.

Palmer, G. R., & Short, S. D. (2010). *Health care and public policy: An Australian analysis* (4th ed.). South Yarra, VIC: Palgrave Macmillan.

Bulliet, R. W., Crossley, P. K., Headrick, D. R., Hirsch, S. W., Johnson, L. L., & Northrup, D. (2011). *The earth and its peoples: A global history* (5th ed.). Boston, MA: Wadsworth.

### **Chapter in edited book**

Richards, K. C. (1997). Views on globalization. In H. L. Vivaldi (Ed.), *Australia in a global world* (pp. 29-43). North Ryde, Australia: Century.

### **Article or Chapter in an Edited Book**

Author./ (Year of publication)./ Title of chapter./ In/ Editor/ (Ed.),/ *Book Title*/(pages of chapter)./ Location:/ Publisher.

### **Example:**

O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: A metaphor for healing, transition, and transformation. In B. R. Wainrib (Ed.), *Gender issues across the life cycle* (pp. 107-123). New York, NY: Springer.

### **Conference and Seminar Proceedings**

To cite proceedings that are published regularly, use the same format as for a journal article. To cite proceedings that are published in book form, use the same format as for an article in a book.

### **Example:**

Tester, J. W. (2008). The future of geothermal energy as a major global energy supplier. *Proceedings of the Sir Mark Oliphant International Frontiers of Science and Technology Australian Geothermal Energy Conference*, Canberra, Australia: Geoscience Australia. Retrieved from [http://www.ga.gov.au/image\\_cache/GA11825.pdf](http://www.ga.gov.au/image_cache/GA11825.pdf)

### **Dissertation or Thesis**

Author./ (Year of publication)./ *Title of dissertation or thesis* /(Doctoral dissertation or Master's thesis)./ Awarding Institution.

### **Example:**

Norasingha, A. (2009). *Expression and distribution of mucorinic receptors in hepatic composite of the cirrhotic rat* (Master's thesis). Rangsit University, Pathum Thani.

### **Editorials**

Author./ (Year of publication)./ Title of Editorial (editorial)./ *Journal Title*,/ Volume(Issue),/ Page numbers.

### **Example:**

Fisher, R. I. (2003). Immunotherapy in Non-Hodgkin's lymphoma: Treatment advances (editorial). *Semin Oncol*, 30(2Suppl 4), 1-2.

### **Journal Articles**

Author./ (Year of publication)./ Article Title./ *Journal Title*,/ Volume(Issue),/ Page numbers.

### **Example:**

Leelawat, S., Leelawat, K., Narong, S., & Matangkasombut, O. (2010). The dual effects of delta 9-tetrahydrocannabinol on cholangiocarcinoma cells: Anti-invasion activity at low concentration and apoptosis induction at high concentration. *Cancer Investigation*, 28(4), 357-363.

Polk, A., Amsden, B., Scarrtt, D., Gonzal, A., Oknamefe, O., & Goosen, M. (1994). Oral delivery in aquaculture. *Aquacult. Eng*, 13, 311-323.

Seals, D. R., & Tanaka, H. (2000). Manuscript peer review: A helpful checklist for students and novice referees. *Advances in Physiology Education*, 23(1), 52-58.

Srichandum, S. & Rujiranyong, T. (2010). Production scheduling for dispatching ready mixed concrete trucks using bee colony optimization. *American J. of Engineering and Applied Sciences*, 3(1), 823-830.

### **Letters**

Author./ (Year of publication)./Title of Letter./ *Journal Title*./ Volume(Issue),/Page number.

#### **Example:**

Enzensberger, W., & Fisher, P. A. (1996). Metronome in Parkinson's disease (letter). *Lancet*, 347, 1337.

### **Notes**

Author./ (Year of publication)./Title of Note./ *Journal Title*./ Volume(Issue),/Page number.

#### **Example:**

Haier, R. J., Schroeder, D. H., Tang, C., Head, K., & Colom, R. (2010). Gray matter correlates of cognitive ability tests used for vocational guidance. *Biomed Central*, 3, 206.

### **Unpublished/In Press Articles**

Author./ (In press Year)./Article Title./ *Journal Title*./ (in press).

#### **Example:**

Veena, B. (2004). Economic pursuits and strategies of survival among Damor of Rajasthan. *J Hum Ecol.* (in press).

### **Internet periodicals**

Author./ (Year of publication)./Article Title./ *Journal Title*./ Volume(issue),/ page numbers./ Retrieved mm dd, year, from the full URL of the web page

#### **Example:**

Adams, P. J. (2000). Australian economic history. *Journal of Australian Economics*, 5(2), 117-132.  
Retrieved June 12, 2001, from <http://jae.org/articles.html>

### **Internet non-periodicals**

Author./ (Year of publication)./Article Title./ Retrieved mm dd, year, from the full URL of the web page

#### **Example:**

Lemire, D. (n.d.). *Write good papers*. Retrieved July 1, 2010, from <http://www.daniel-lemire.com/blog/rules-to-write-a-good-research-paper>

### **Newspaper retrieved from a database**

#### **Article – with an author**

Author./ (mm dd, Year)./Article Title./ *News agency*./ Retrieved from the full URL of the web page

#### **Example:**

Darby, A. (August 20, 2002). Rarest tiger skin a rugged survivor. *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>

#### **Article – without an author**

Article Title./ (mm dd, Year)./ *News agency*./ Retrieved from the full URL of the web page

#### **Example:**

Rarest tiger skin a rugged survivor. (August 20, 2002). *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>

**Illustrations and Figures:** All illustrations should be provided in a file format and resolution suitable for reproduction, e.g., EPS, JPEG or TIFF formats, without retouching. Photographs, charts and diagrams should be referred to as "Figure(s)" and should be numbered consecutively in the order to which they are

referred. In addition to placing figures with figure captions into the main text, **submit each figure individually as a separate file.**

**Line Drawings:** All lettering, graph lines and points on graphs should be sufficiently large and bold to permit reproduction when the diagram has been reduced to a size suitable for inclusion in the journal. Do not use any type of shading on computer-generated illustrations.

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**Color:** Where printed color figures are required, the author will be charged at the current color printing costs. All color illustrations will appear in color online, at no cost. Please note that because of technical complications which can arise when converting color figures to grayscale, for the printed version should authors not opt for color in print, please submit in addition usable black and white versions of all the color illustrations.

**Tables:** Tables must be cell-based without vertical lines. They should be produced in a spreadsheet program such as Microsoft Excel or in Microsoft Word. Type all text in tables using 9-point font or less. Type the caption above the table to the same width as the table. Insert tables and table captions into the main text. Tables should be numbered consecutively. Footnotes to tables should be typed below the table and should be referred to by superscript numbers. Submit separate files of tables in their original file format and not as graphic files in addition to incorporating in the main text. Tables should not duplicate results presented elsewhere in the manuscript (e.g., in graphs).

**Proofs:** Proofs will be sent to the corresponding author by PDF wherever possible and should be returned within 1 week of receipt, preferably by e-mail. Corrections must be restricted to typesetting errors. It is important to ensure that all of your corrections are returned to us in one all-inclusive e-mail or fax. Proofreading is solely the responsibility of the author(s). Note that *RJSH* may proceed with the publication of your article if no response is received in time.

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**English Language Editing before Submission:** Authors for whom English is a second language may choose to have their manuscript professionally edited before submission.

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Manuscripts should be submitted electronically to the Editor-in-Chief as an attachment via the *RJSH* submission system, in word processing format. The *RJSH* submission form must be completed. Included in the submission form are (a) the title and authors, (b) complete contact information for the corresponding author (mailing address, e-mail address, and telephone and fax numbers), (c) confirmation of the originality of the reported work, (d) approval of the submitted version of the manuscript by all authors, and (e) the authors' consent for publication in *RJSH*, if accepted. The submission form is available at <https://rjsh.rsu.ac.th>.

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There are four editorial decisions: Accept, Accept with Minor Revision, Resubmit with Major Revision, and Reject. A Reject decision is definitive and authors may not submit a new version of the manuscript to the *RJSH*. A Resubmit with Major Revision requires a major re-write of the manuscript and/or inclusion of significant new data, and thus the creation of a new manuscript, which will thus be assigned a new submission date. An Accept with Minor Revision decision implies that the paper can, in principle, attain the required standard of the *Journal* without major change. Editors may or may not have a revised manuscript reviewed (generally, by the original reviewers), in order to ascertain whether changes to the original manuscript adequately responded to the criticisms. If changes made do not result in a paper of the required

standard, the revised manuscript will be definitively rejected. If a revised manuscript of "Accept with Minor Revision" is accepted, the original submission date will be retained.

## **8. Copyright Agreement**

Once a manuscript is accepted for publication, authors will be required to sign a Copyright Transfer Agreement form (CTA). CTA is available at <https://rjsh.rsu.ac.th>. Signature of the CTA is a condition of publication and papers will not be passed for production unless a signed form has been received. Please note that signature of the Copyright Transfer Agreement does not affect ownership of copyright in the material. Please submit the completed form with the final version of the manuscript back to the *RJSH* submission system.

## **9. Further Reading**

The following resources will provide valuable guidelines for the preparation of manuscripts.

Anonymous. (n.d.). How to write abstract. Retrieved January 17, 2011, from

[http://www.journal.au.edu/au techno/2006/jan06/vol9num3\\_howto.pdf](http://www.journal.au.edu/au techno/2006/jan06/vol9num3_howto.pdf)

Anonymous. (n.d.). How to write an abstract: Links and tips. Retrieved January 17, 2011, from

<http://research.berkeley.edu/ucday/abstract.html>

Koopman, P. (n.d.). How to write an abstract. Retrieved January 17, 2011, from

<http://www.ece.cmu.edu/~koopman/essays/abstract.html>

Lemire, D. (n.d.). Write good papers. Retrieved January 17, 2011, from <http://lemire.me/blog/rules-to-write-a-good-research-paper/>

Plonsky, M. (n.d.). Psychology with style: A hypertext writing guide. Retrieved January 17, 2011, from <http://www.uwsp.edu/psych/apa4b.htm>

Seals, D. R., & Tanaka, H. (2000). Manuscript peer review: A helpful checklist for students and novice referees. *Advances in Physiology Education*, 23(1), 52-58.

Jones, A., & Pham, H. (n.d.). Basic Referencing using the APA System, Teaching and learning unit, Faculty of Economics and Commerce, The University of Melbourne. Retrieved February 15, 2011, from <http://www.scribd.com/doc/57603066/A-Pa-Style>



## APPENDIX C

### RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)

#### *Research Article Single-Column Template*

Please note that the paper size is standard A4 size (approx 8.27 x 11.69 in)

**Type your title here using 11-point Times New Roman bold font on 12-point line spacing.  
The length of the title of the article must not exceed 2 lines.**

Author Names (Use 10-point Times New Roman font on 11-point line spacing.

Begin with the first name of the author followed by the last name. For more than one author, type 'and' before the last author's name. For more than two authors, also separate each name by a comma (,).

Identify each author's affiliation by superscript numbers at the end of the author's last name.)

Author Affiliations (Use 9-point Times New Roman font on 10-point line spacing.

Include institutional and e-mail addresses for all authors. Place superscript number in front of author's affiliation corresponding to author's name.)

Received date month year / Revised date month year / Accepted date month year / Publish Online date month year

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#### **Abstract (10-point bold font on 11-point line spacing)**

For abstract content, use 9-point Times New Roman font on 11-point line spacing. First line is indented 0.5 inch. An abstract of up to 250 words must be included. Include your major findings in a useful and concise manner. Include a problem statement, objectives, brief methods, results, and the significance of your findings.

**Keywords:** List up to 6 keywords and separate each keyword by a comma (,). The keywords should accurately reflect the content of the article. The keywords will be used for indexing purposes.

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#### **1. Introduction**

The actual manuscript will be published in a single-column style in the RJSH journal. This single column template is adopted as a user friendly format. Thus, with this template, the main text is set in a single column. Type text with 10 point Times New Roman font on 12 point line spacing, with a 1.25 inch left margin, 1 inch bottom and right margin, 2 inch top margin, 1.2 inch header, and 0.6 inch footer. First lines of paragraphs are indented 0.5 inch. Please note that the paper size is standard A4 size (approx 8.27 x 11.69 in). In MS Word, select "Page Layout" from the menu bar, and under Paper Size select A4 Size.

The introduction should put the focus of the manuscript into a broader context. As you compose the introduction, think of readers who are not experts in this field. Include a brief review of the key literature. If there are relevant controversies or disagreements in the field, they should be mentioned so that a non-expert reader can find out about these issues further. The introduction should conclude with a brief statement of the overall aim of the experiments.

To insert a citation in the text use the author-year system, i.e., the author's last name and year of publication. Examples are as follows: "Since Johnson (2008) has shown that..." or "This is in agreement with results obtained later (Benjamin, 2010)". For 2-3 authors; all authors are to be listed, with "and" separating the last two authors, for more than three authors, list the first author followed by et al. The list of references should be arranged alphabetically by authors' names. All publications cited in the text should be presented in a list of references following the text of the manuscript. The manuscript should be carefully checked to ensure that the spelling of authors' names and dates are exactly the same in the text as in the reference list. Responsibility for the accuracy of bibliographic citations lies entirely with the author(s). Citation of a reference as "in press" implies that the item has been accepted for publication. Authors are responsible for the accuracy of the content of the references.

## 2. Objectives

The objectives of the study should be specified explicitly.

## 3. Materials and Methods

This section should provide enough detail to allow full replication of the study by suitably skilled investigators. Protocols for new methods should be included, but well-established protocols may simply be referenced.

## 4. Results

The results section should provide details of all of the experiments that are required to support the conclusions of the paper. There is no specific word limit for this section. The section may be divided into subsections, each with a concise subheading. The results section should be written in past tense.

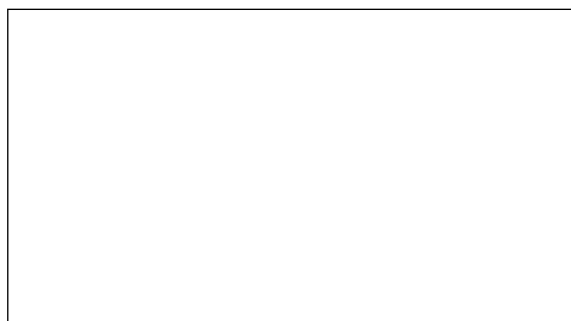
Tables must be cell-based without vertical lines. They should be produced in a spreadsheet program such as Microsoft Excel or in Microsoft Word. Type all text in tables using 9-point font on 10-points line spacing. Type the caption above the table to the same width as the table.

Tables should be numbered consecutively. Footnotes to tables should be typed below the table and should be referred to by superscript numbers. Submit separate files of tables in their original file format and not as graphic files in addition to incorporating in the main text. Tables should not duplicate results presented elsewhere in the manuscript (e.g., in graphs).

**Table 1** Table caption

C1	C2	C3	C4
R1			
R2			
R3			
R4			
R5			
R6			

If figures are inserted into the main text, type figure captions below the figure. In addition, submit each figure individually as a separate file. Figures should be provided in a file format and resolution suitable for reproduction, e.g., EPS, JPEG or TIFF formats, without retouching. Photographs, charts and diagrams should be referred to as "Figure(s)" and should be numbered consecutively in the order to which they are referred

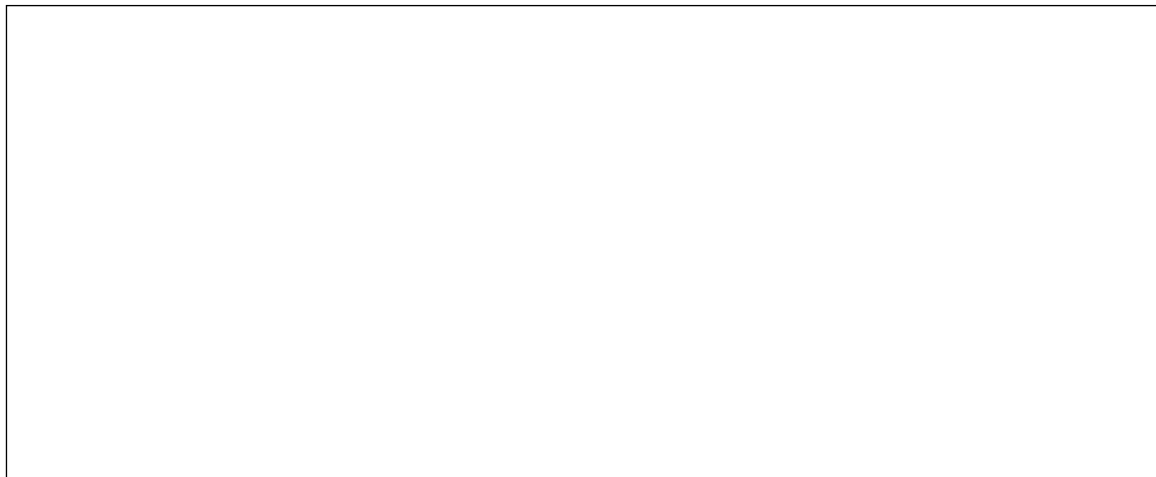


**Figure 1** Figure caption



**Table 2** Table caption

C1	C2	C3	C4	C5	C6	C7
R1						
R2						
R3						
R4						
R5						
R6						
R7						
R8						
R9						
R10						

**Figure 2** Figure caption

## 5. Discussion

The discussion should spell out the major conclusions of the work along with some explanation or speculation on the significance of these conclusions. How do the conclusions affect the existing assumptions and models in the field? How can future research build on these observations? What are the key experiments that must be done? The discussion should be concise and tightly argued. Conclusions firmly established by the presented data, hypotheses supported by the presented data, and speculations suggested by the presented data should be clearly identified as such. The results and discussion may be combined into one section, if desired.

## 6. Conclusion

The Conclusion section restates the major findings and suggests further research.

## 7. Acknowledgements

People who contributed to the work but do not fit criteria for authorship should be listed in the Acknowledgments, along with their contributions. It is the authors' responsibility to ensure that anyone named in the acknowledgments agrees to being so named. The funding sources that have supported the work should be included in the acknowledgments.

## **8. References**

*RJSH* uses the American Psychological Association (APA) referencing style, details of which can be found at <http://www.apastyle.org/>. References are arranged alphabetically according to the last names of the authors and then chronologically. The first line of each reference is aligned left. Use hanging style of 0.5 inch after the first line of each reference. Example of APA references format exists at appendix B.



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