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Student Attainment of Skill Sets Through Capstone Course in Diploma in Civil Engineering Programme

Narita Binti Noh¹, Nurul Izziyantie binti Mat Noor², Syed Muhammad bin Syed Yahya³, Muhammad Bazli Faliq bin Mohd Puad⁴

Universiti Teknologi Mara Cawangan Johor Kampus Pasir Gudang

Email: naritanoh@uitm.edu.my¹, izziyantie@uitm.edu.my², syed9490@uitm.edu.my³, bazlifaliq@uitm.edu.my⁴

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ABSTRACT

Engineering education has become challenging compared to previous decade, the readiness of graduates before entering employment world is vital for the academicians. Students are expected to possess all generic skill sets as needed by a qualified engineer including knowledge profile, engineering ability, communication, teamwork, and other relevant skills. In Malaysia, engineering graduates should possess 12 programme outcomes (PO) according to ETAC requirement, throughout the whole curriculum structure in diploma level. However, capstone course in Diploma Civil Engineering in UiTM only measures 3 main programme outcomes which are problem solving and scientific skills, communication skills, and ethics in engineering. The implementation of capstones course is reviewed for 3 consecutive semesters and student attainment based on grade and programme outcomes is observed. This paper provides the assessment tools that had been mapped to programme outcomes through out 14 week lesson plan for final year students in Diploma Civil Engineering. This study was conducted in UiTM Pasir Gudang to measure the attainment of student's skill set based on programme outcomes stated in the syllabus. It shows that, a graduate is considered to be good in communication skills and ethics in engineering but average in problem solving skills and scientific skills. Thus, a few recommendations have been made to improve the skills attainment among students at the faculty level.

Keywords: Civil Engineering, capstones course, student attainment.

1.0 INTRODUCTION

Capstone course is a must for Diploma in Civil Engineering (EC110) to complete the 3 year-programme structure in Universiti Teknologi Mara (UiTM). Capstone courses are expected to sum up all the prior knowledge that was acquired in lower semesters. Civil Engineering Design Project has been chosen as a capstone course to fulfil the curriculum that meets the requirement of Engineering Technology Accreditation Council, ETAC. All graduating students will enrol the course in their last semester as specified in the programme structure provided by faculty. This course focuses on student self-centred approach to solve given tasks within 14 weeks of that semester, which covers reinforced concrete structure and steel structure. The task given is real engineering problem related to structural work and design process. The scope of the task is students should be able to design a building not exceeding two (2) storey building using reinforced concrete structure. In addition, students should be able to design simple structures for steel building such as elevated steel water tank and foot bridges.

At the end of the semester, students are expected to develop their skills in a set of problem solving and scientific skills, communication skills, and ethic in engineering. These three skills are mapped to the specified student assessment based on ETAC criteria. This study was conducted based on the examination that took place from Sept 2018 until July 2019 in the Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang. This paper is mainly to review the implementation of the capstone courses for EC110 students and their performance based on students grade and programme outcomes.

2.0 LITERATURE REVIEW

Capstone course is a normal exercise for numerous courses that are offered at tertiary level for engineering and non-engineering courses. Meanwhile, Thomas (2013) define capstone as a representation of final achievement that builds upon prior knowledge offered in lower semester in any curricula to integrate multi-disciplinary subjects. Bauer et al (2012) and Deepamala & Shobha (2018) conclude that capstone courses is an end journey of the curriculum programme of any courses that integrate knowledge from semester one to final semester. Meanwhile, Jones et al (2013) agreed with Deepamala & Shobha (2018), as they found that capstone course is usually designed as a self-directed course. Students will be independently working on their task and lecturers will facilitate the teaching and learning session instead of being a knowledge conveyor as a typical class lecturer.

As an end milestone, researches done by Jones et al(2018), Daria et al (2010), Iganacio et al (2010), Chandrasekaran et al (2012) and Majanoja & Vasankari (2018) found similar teaching approach for capstone study, normally applies problem-based learning. Capstone courses also incorporate technical knowledge based, engineering ability, and real-world problem solving with an emphasis on generic skills should be possessed by engineering graduates towards professional competencies. In addition, Jaime et al (2013) stated that exposing engineering students to real engineering problem will lead to first-hand experience and active learning environment that nurture the development of professional skills as part of their formal education at tertiary level before graduating. Besides that, Deepamala & Shobha (2018) revealed that capstone courses assess the students on their readiness for employment phase that requires them to conduct research, do effective documentation, managing project, and planning.

3.0 COURSE IMPLEMENTATION

Civil Engineering Design project is a studio orientated course where students are guided in performing design of structural elements of a reinforced concrete building and a steel structure, by integrating the knowledge gained from previous courses. This course requires students to pass two courses i.e. structure analysis and concrete and steel design in lower semester. Students will be given 1-hour lecture and 4 hours studio within a week in order to complete a task. The maximum number of students in a group is 4 persons and the assessment is based on individual progress work.

At the beginning of the semester, students will be briefed on the lesson plan for 14 week activities together with the tasks that should be completed within the time frame. For the first ten (10) weeks, students need to complete all tasks relating to reinforced concrete structure, consisting of analysis of loading, and preparing design calculation for slab, beam, column, footing, and staircase. All work checking must be performed using Eurocode 2 and design work is validated using software known as ESTEEM. Meanwhile, the remaining 4 weeks is to prepare design for steel structure that covers beam, column, and connections. Design checking should be done according to Eurocode 3. The assessment will be monitored on weekly basis depending on the tasks that have been assigned in each week.

3.1 Assessment of the courses

Student attainment will be measured based on common test, project presentation, project report and technical talk or site visit. Usually technical talk is

favourable compared to site visit due to the large number of students undertaking the course in a semester. The three assessments are measuring student's skill set of problem solving and critical thinking, communication skill, and ethics in engineering. Each assessment is mapped to the programme outcome as stipulated by the ETAC guidelines summarised in Table 1.

Technical report will be evaluated based on weekly progress as required by lesson plan. Students must submit each task as subdivide as mentioned in Table 2. The submission of the task will be considered as written communication skills as an output of the design process. Problem solving and scientific skills will be measured from a common test at the end of the semester, which carries the majority of the total marks. Both skill sets are developed through completing the weekly task and tested during the common test. Problem solving and scientific skills are considered to be more important compared to other skill sets for diploma students for them to develop their fundamental basic towards engineering knowledge. The faculty is also expecting students to be able to deliver the content of the project through oral presentation. The exercise imitates the real duty of an engineer that needs to communicate with public and other stake holders.

Table 1: Mapping of the Skill Sets Through Programme Outcomes

Assessment tools	Programme Outcomes	Skills set	Percentage assessment
Common test	PO3: Design solutions for well-defined technical problems and assists with the design systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental consideration	Problem solving and scientific skills	60
Project presentation	PO10: Communicate effectively on well-defined engineering activities with the engineering community and society at large, by being able to comprehend the work of others, document their own works, and give and receive clear instruction	Communication skill (Oral)	20
Technical talk/site visit	PO7: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environment context.	Value, ethics, moral and professional skills	10
Project report	PO10: Communicate effectively on well-defined engineering activities with the engineering community and society at large, by being able to comprehend the work of others, document their own works, and give and receive clear instruction	Communication skill(written)	10

Upon completing the tasks, all work must be compiled and printed as a hardbound report. The report should be submitted after getting feedback from panel during presentation. All assessments will be measured based on rubrics provided by faculty. Technical talk or site visit is conducted to prepare students for the real-world situations in the construction industry. Students must be exposed to typical design problems and construction failures on site or new development of construction industry. Activities such as these will allow students to capture the expectation of the industry towards engineering graduates towards ethics, moral, and professionalism in working environment.

Table 2: Task distribution for 14 weeks lesson plan

Week	Project	Task
1-2	Reinforced concrete design	Introduction to the courses & finding architectural drawing from authorities, developer or any related company
3-4		Structural loading analysis for manual calculation and loading input into software
5		-Modeling of structure using computer software -Design of RC slab by manual
6-7		-Design of RC beam by manual - Software modelling
8		- Design of RC column by manual -Software modelling - Case study
9		-Design of RC foundation by manual -Software modelling
10		-Design of RC staircase manually
11		Steel beam design
12		Steel column design
13	Steel design	Steel tension member design
14		Steel connection design

4.0 Discussion

A study had been conducted for three consecutive semesters i.e. September 2018, Jan 2019 and July 2019 in UiTM Cawangan Johor Kampus Pasir Gudang. The observation is based on student attainment on grade and programme outcome. Referring to performance criteria matrix provided by faculty, majority of our students are classified as good whereby more than 50% of students scored grade B+,B and B- as shown in Figure 1. Followed by, satisfactory grade which recorded student attainment is more than 20% for each semester while excellent grade is between 4% up to 16 %. However, there are students which fall under the category below average (D & D+) and weak (E & F). Students that fall under the two

categories are due to bad attitude and failed to complete the assessment provided by the syllabus. Meanwhile fluctuating percentage of the students’ performance for each semester is due to student’s entrance result for Diploma in Civil Engineering. The September batch and the July batch are considered the second batch and their entrance results are slightly lower compared to January batch which is the first intake students from Sijil Pelajaran Malaysia, SPM.

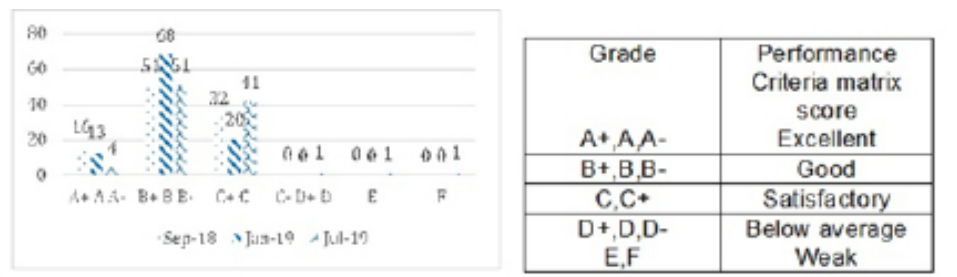


Figure 1 : Students performance based on grades and performance criteria matrix score.

Based on Figure 2, students’ score is excellent for ethics in engineering, where student attainment for PO7 is more than 85% for three consecutive semesters. It shows that students are attracted to the real problem happened in industry during technical talk or site visit. In addition, it also reflects that students are more concerned with the knowledge outside the classroom.

Students’ communication skills, both written and oral, at diploma level can be considered good for all batches. PO10 achievement for this course is more than 79%. Therefore, graduates for EC110 are able to communicate well in English and also able to produce good report that consists of manual calculation and structural drawing.

However, problem solving and scientific skills among students are considered satisfactory and below average for July 2019 session. It shows that students are unable to complete the common test questions within 4 hour test due to:

- Content of the common test is too wide which consist of reinforced concrete structure and steel structure. Students need to study both designs which require different types of code of practice (Eurocode 2 & Eurocode 3).
- Large number of questions need be answered by students which require lengthy answer.
- Wrongly interpreted the questions that leads to irrelevant answer.

- Lower students' result entrance for culminating courses from lower grade may contribute to the lower attainment of the PO 3. Since this course is being park at the final year which requires prior knowledge from lower semester such as Basic Solid Mechanics (which having high failure rate), Basic Soil Engineering, Structural Analysis, and a few more courses.

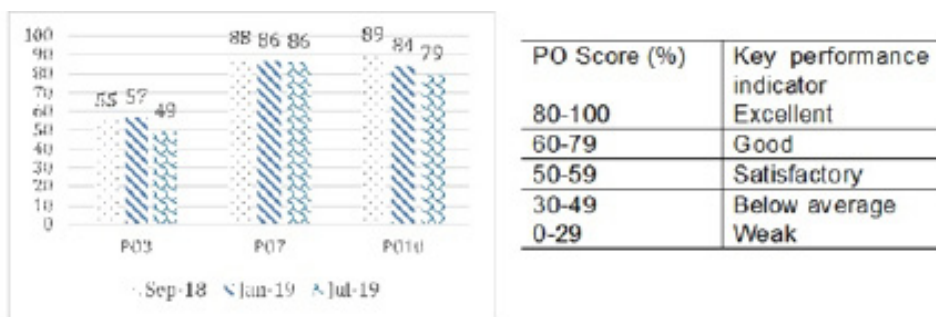


Figure 2: student attainment for program outcomes and scoring criteria.

Therefore, some changes should be done to overcome the problem regarding lower scoring of problem solving and scientific skills among students such as:

- Assessment tools for problem solving should vary instead of restricted for common test. The phase of changing the assessment tools can be done at faculty level by having curriculum review.
- Progress marks for manual calculations should contribute to PO3 since students are required to spend at least 4 hours per week to complete the task. Therefore, marks given will reflect the student's effort to complete the task.

5.0 Conclusion

Implementation of capstone course in Civil Engineering at diploma level is essential in fulfilling the requirement of ETAC for academic accreditation. Graduates are attracted to the real problem at the construction site and students are able to produce good communication skills at both oral presentation and written presentation. However, students are lacking in problem solving and scientific skills as shown in the average score of 50%. Something needs to be done to improve student attainment on problem solving at the faculty level. Students' fundamental basic on the entrance result to the programme should be restricted and assessment tools for problem solving should be revised through a curriculum review.

REFERENCES

- Bauer, D. H., & Heier Stamm, J. L., & Strawderman, L. (2012, June). A Review of Capstone Course Designs Used in Industrial Engineering Programs Paper presented at 2012 ASEE Annual Conference & Exposition, San Antonio, Texas. 10.18260/1-2—20858.
- Chandrasekaran, S., Stojcevski, A., Littlefair, G. and Joordens, M. (2012). Learning through projects in engineering education, in SEFI 2012: Engineering Education 2020: Meet The Future: Proceedings of the 40th SEFI Annual Conference 2012, European Society for Engineering Education (SEFI), Brussels, Belgium.
- Daria, K. S., Daniel, K. & Gary, P. (2010). First-Year and Capstone Design Projects: Is the Bookend Curriculum Approach Effective for Skill Gain?. American Society for Engineering Education, 2010. Page 15.586.2
- Deepamala, N., & Shobha, G. (2018). Effective approach in making capstone project a holistic learning experience to students of undergraduate computer science engineering program. *Journal of Technology and Science Education*, 8(4), 420-438. <https://doi.org/10.3926/jotse.427>
- Ignacio, D. L. R., Adolfo, C., Jose, M.D.P., Jose, L.Y. (2010). Project Base Learning in Engineering Higher Education Two decades of Teaching Competencies in real environments. *Procedia Social and Behavioral Science* 2, 1368-1378. DOI: 10.1016/j.sbspw2010.03.202.
- Jaime, N. S., Sheila, L.F., Ivan, E. E., (2013). A Project based learning approach for First year Engineering Courses. *Innovation in Engineering, Technology and education for Competitiveness and Prosperity. Eleventh LACCEI Latin America and Caribbean for Engineering and Technology*, Cancun Mexico.
- Jones, B. D. , Epler, C. M. , Mokri, P. , Bryant, L. H. , & Parette, M. C. (2013). The Effects of a Collaborative Problem-based Learning Experience on Students' Motivation in Engineering Capstone Courses. *Interdisciplinary Journal of Problem-Based Learning*, 7(2). Available at: <https://doi.org/10.7771/1541-5015.1344>.

Majanoja, A-M. and Vasankari, T. (2018). Reflections on Teaching Software Engineering Capstone Course. In Proceedings of the 10th International Conference on Computer Supported Education (CSEDU 2018) - Volume 2, pages 68-77 ISBN: 978-989-758-291-2.

Thomas A. Ward (2013). Common elements of capstone projects in the world's top-ranked engineering universities, European Journal of Engineering Education, 38:2, 211-218, DOI: 10.1080/03043797.2013.766676

Assessment of Affective Domain by Open Ended Laboratory Approach in Structural and Material Laboratory Course

Saiful Jumali¹, Siti Shahidah Sharipudin², Herda Balqis Ismail³,
Mohd Johan Mohamed Ibrahim⁴ and Mohd Amran Hasbullah⁵
Universiti Teknologi Mara Cawangan Johor Kampus Pasir Gudang

Email: saiful9649@uitm.edu.my¹, shahidahs@uitm.edu.my², herdabalqis@uitm.edu.my³,
mohdj2568@uitm.edu.my⁴, mohdamran@uitm.edu.my⁵

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ABSTRACT

The objective of this study is to improve the development of affective domain among students with the introduction of the Open-Ended Laboratory (OEL). This enables students to design and conduct experiments, as well as to analyze and interpret data in a groups. By conducting the laboratory exercises in a group, students shall develop the ability to function effectively as a leader, as well as an effective team member. The present paper describes the assessment of the affective domain in OEL of Structural and Material Laboratory course for Diploma Program. This study involved a group of second-year students of Diploma of Civil Engineering for March-July 2019 semester who enrolled in the Structural and Material Laboratory course. There were ten groups involvesd in this study with the total number of 233 students; 98 male and 135 female. The attainment of affective domains among students in the evaluation rubrics was investigated in discovering the effectiveness of the course assessment. Not many differences in affective domain attainment between genders are reported; females shows better performance in punctuality and discipline attributes as compared to males. The outcome of this study is to observe that the OEL approach creates positive impacts in developing student generic skills such as leadership, communication, and teamwork. This attribute is expected by the industry, thus this also contributes to the overall students' learning experience.

Keywords: Open-Ended Laboratory (OEL), affective domain, assessment, rubric.

1.0 INTRODUCTION

The laboratory component course is designed to provide hands-on experience to inculcate the experimental skills during assembling the equipment, planning and preparing for the laboratory procedures. Today one of the required criteria for accrediting engineering programs is improving engineering education. There is an increasing concern in trying to make learning more effective for engineering students. Numerous techniques of innovative teaching may be applied in the teaching and learning process such as Project-Based Learning (PBL), Project Oriented Problem Based Learning, Active Learning, Cooperative Learning, Independent Learning and others (Azinoor Azida et al., 2018). According to Bloom et al. (1956), assessment of educational learning known as Bloom's taxonomy categorised the educational objectives into three domains; cognitive domain, psychomotor domain, and affective domain. Learning domains have always played an important role in evaluating the students' knowledge and skills. The learning domains can be incorporated while designing the course outcomes for all courses in an educational programs (Kasilingam et al., 2014).

One of the important objectives of engineering education is to produce graduates who possess the appropriate level of engineering knowledge and skills, such as the ability to solve engineering problems and produce new knowledge. These two skills are mainly the learning outcomes for the cognitive domain (Gondim & Mutti, 2011). Other than that, engineering education is also intended at producing students who are competent in the other two domains, the psychomotor, and affective domain. One of the examples of psychomotor skills that could be adopted through a the learning process is the ability to conduct experiments for civil engineering fieldwork. Besides that, Atsumbe & Saba (2008) stated that engineering students do not have the ability to learn but also to have the ability to be empathetic, self-starters, critical and creative thinkers that reflects individual values, motives, and interests. These attributes are categorized under the affective domain.

In order to provide students with engineering practice prior to their graduation, open-ended laboratory (OEL) courses or practical work can be integrated into the curriculum. It is found that this alternative method has successfully developed independent learning amongst students during the conduct of the experiments (Azinoor Azida et al., 2018). Salim et al. (2013) stated that a laboratory is a proper learning environment for developing and enhancing students' knowledge, practical skills, and attitudes which cover the learning domains of of cognitive, psychomotor and affective. A number of published papers have reported on psychomotor implementations in laboratory work. One such previous paper by Baharom et al.

(2015) investigates the implementation of psychomotor skills assessments in the teaching and learning process in concrete laboratory experiments. A combination of traditional and problem-based techniques of teaching was used, including lectures, flip demos, lab work, reports, and surveys. The comparisons were made between the results obtained through psychomotor assessment and the final examination marks. They proved that the psychomotor domain of each student was successfully measured.

2.0 AFFECTIVE DOMAIN

Other than that, the affective skills component can also be assessed through the observation approach which involves the evaluation of students' generic skills in the areas of communications, leadership, teamwork, work ethics, attitudes, professionalism, critical thinking, problem-solving and decision making in the open-ended laboratory. However, Strobel et al. (2011) found that the affective domain of learning tends to be more widely incorporated in social science research in comparison with engineering education research. This is because engineering students are often perceived as being more object-oriented than people-oriented. Assessment of affective skills was seen as being less important than the assessment of psychomotor and cognitive skills. Thus, the objective of this study is to discuss the assessment of affective domain by open-ended laboratory approach in structural and material laboratory course for the Diploma Program at the Faculty of Civil Engineering, Universiti Teknologi MARA (UiTM), Johor Branch, Pasir Gudang Campus. Besides, the attainment of affective domains among students is also investigated to know the effectiveness of the course assessment.

3.0 METHODOLOGY

Students are required to attend the laboratory session and conduct all the experiments and laboratory works assigned to them as complied with the designated lesson plan. The instructor (lecturer and lab assistant) give optimum and minimal guidance as follows to the requirement of the experiment. The presence of an instructor is compulsory throughout each laboratory session so that the observation can be conducted smoothly. All elements as stated in the rubrics need to be observed; current performance are assessed and awarded marks are recorded in a proper format. Data collected was analysed using descriptive statistics.

3.1 Students' Demographic Information

This study involved second-year Diploma of Civil Engineering students, Faculty of Civil Engineering, UiTM Johor Branch, Pasir Gudang Campus for March-July 2019 semester who enrolled in the Structural and Material Laboratory course. There were ten groups involved in this study with the total number of 233 students; 98 are male and 135 are female as shown in Table 1.

In this course, students were exposed and introduced to the standard laboratory procedures for conducting the testing for basic mechanics of structures such as torsion, reaction, bending moment and shear force, influence lines, deflection, suspension cable, semi-circular arch, buckling of structs and pin-jointed truss. In addition, the course also covers the testing of standard consistency, setting time and fineness of cement, fresh concrete, steel tensile test, and concrete mixing and testing.

Table 1: Numbers of the student according to the group

Group	Gender		Total
	MALE	FEMALE	
4A	12	13	25
4B	10	16	26
4C	14	10	24
4D	11	13	24
4E	8	16	24
4F	3	22	25
4G	12	11	23
4H	12	11	23
4I	8	16	24
4J	8	6	14
TOTAL	98	134	233

3.2 Teaching and Learning Approach

The teaching method adopted for this course as stated in the course information is a face-to-face guided and non-guided approach. During the semester, it is compulsory for the students to attend the laboratory session according to the timetable. The designated contact hour for this course is 1 one hour per week. The time allocated for each laboratory session in a week is two hours. Thus, the

total hours for students need to attend a face-to-face laboratory session for one semester is 28 hours. The course consists of eleven main experiments that covered the aspects of structural and materials properties. The face-to-face guided and non-guided interaction among students and instructor (lecturer and laboratory assistant) conducting the open-ended laboratory has been conducted as per designed in the lesson plan and complying with the course information guideline. Through the open-ended laboratory approach, students directly and indirectly are exposed to the complex engineering activity which will assist the students to enhance their understanding of this course.

This study involved 233 students. Each student needs to work in a group of a maximum four people which consists of both male and female. The grouping approach is to ensure that students have the opportunity to play a role as a leader and a team player. This enhances students' abilities to brainstorm, discuss and communicate among them about the task which relates to the method and procedure of conducting the experiment and laboratory works. Students needs to participate and show commitment to the group during pre-preparing, preparing, executing and finishing stage of the laboratory activity.

3.3 Course Assessment Method

This course adopted formative assessment in which the evaluation is carried out continuously throughout the enrolled semester. The assessment is classified into three types; namely, laboratory activity, laboratory observation, and practical test. Overall, each assessment is designed to measure specific domains such as psychomotor and affective. Table 2 shows the types of assessments with mapping to the course outcomes, program outcomes, and domain indicators.

Table 2: Types of course assessment method

No	Course Outcomes	Program Outcomes	Domain indicator Psychomotor	Assessment Methods Practical Test
1	Assemble structural and material laboratory experiments using standard test and measurements.	Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard test and measurements.	Psychomotor	Practical Test
2	Laboratory activities related to structural and materials.	Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations.	Psychomotor	Laboratory Activities
3	Demonstrate leadership skills in task related to structural and materials.	Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant engineering technician practice and solutions to well defined engineering problems.	Affective	Laboratory Observation

3.4 Laboratory Observation

In general, a comprehensive briefing session is compulsory to be conducted by the instructor during the first meeting on week 1 every semester. This is to ensure that students understand the evaluation criteria and implementation procedures of OEL, including the matters pertaining to safety and health rules and regulations.

Hence, students equipped acquired themselves with the OEL knowledge and will make preparations before attending the laboratory session.

In the this context of the this study, the discussion focuses is focusing on the laboratory observation assessment which measured the affective domain. Each student will be evaluated individually based on their involvement and performance during the lab session for the whole semester from week 1 until week 14. Table 3 shows the six elements to be assessed which cover the intrapersonal and interpersonal aspects.

Table 3 Suggested elements for observation assessment

No	Elements to be Assessed	Remarks
1	Punctuality	√
2	Discipline (Dress Code, Safety Shoes, Safety Regulations)	√
3	Knowledge on Open Ended Laboratory	√
4	Communication	√
5	Leadership and Performing	√
6	Effectiveness of The Team	√

A set of the rubric was developed as a tool for assessing the students' involvement and performance during the laboratory session. The rubric is designed using a 10-point Likert Scale namely 1-10. Each scale is labeled with the criteria needed in measuring students' performance. The six criteria designed to be evaluated in this course includes punctuality, discipline (dress code, safety shoes, and safety regulations), knowledge on open-ended laboratory, communication, leadership and performing, and effectiveness of the team. Table 4 shows the rubric used for assessing a student's affective domain.

Table 4 Assessment rubrics for observation (individual assessment)

Category										
	E		D		C		B		A	
Punctuality	1	2	3	4	5	6	7	8	9	10
	Able to arrive laboratory on time.									
	More than 10 min. late		Between 5 to 10 min. late		Up to 5 min. late		Arrive on time but not fully utilizing lab hours		Arrive on time and fully utilizing lab hours	
	1	2	3	4	5	6	7	8	9	10

Discipline (Dress code, Safety Shoes and Safety Regulation)	Able to follow the laboratory dress code and follow all regulation and safety.									
	Does not wear dress code, shoe and did not follow lab procedures		Does not fully conform to lab's dress code and major flaws in safety		Conform to lab's dress code, and nearly follow all lab regulation but with minor flaws in safety		Conform to lab's dress code and nearly follow all lab regulation and safety		Conform to lab's dress code and follow all regulation and safety	
	1	2	3	4	5	6	7	8	9	10
Knowledge on open ended laboratory	Having basic knowledge on open ended laboratory.									
	Not able to explain, design and conduct the experiment-al work in the lab		Not able to explain the experiment and the work assigned		Able to design, conduct and explain the data obtained but not the work assigned		Able to design, conduct, testing and explain the data obtained and the work assigned		Able to design, conduct, testing, interpret and explain the data and the work assigned	
	1	2	3	4	5	6	7	8	9	10
Communication	The ability to exhibit interpersonal communication skills.									
	Unable to exhibit interperso-nal communication skills.		Able to utilize non-verbal skills minimally but with constant prompting		Able to utilize non-verbal skills limitedly.		Able to utilize non-verbal skills effectively and appropriately most of the time.		Able to utilize non-verbal skills effectively and appropriately at all times.	
	Delegation of tasks, good communication skills, capable of motivating, fair, inspire and confidence, and good cohesion									
Leadership and Performing	1	2	3	4	5	6	7	8	9	10
	Tasks are not delegated and members are not motivated all the time.		Tasks are not delegated and members are not motivated most of the time.		Some tasks are delegated with some motivation.		Tasks are delegated and members most of the times motivated.		Tasks are well delegated and members are highly inspired and motivated all the times.	
	Contributing ideas, completion of the task, shared mission/goals, communicate effectively									
Effectiveness of the team	1	2	3	4	5	6	7	8	9	10
	Members did not contribute ideas and not communicate. Tasks are not completed all the times.		Most members did not contributing ideas to accomplish common goals/ tasks and tasks are not completed within the stipulated given most of the times.		Some members contributing ideas to accomplish common goals/tasks and some tasks are completed within the stipulated given		Members contributing ideas to accomplish common goals/ tasks and tasks are completed within the stipulated given most of the times.		Members actively contributing ideas to accomplish common goals/tasks and tasks are completed within the stipulated given at all times.	

4. Results and Discussion

Figure 1 shows the final results obtained from by the students according to the grade. 88.4% (206 students) managed to secure For Grade A which consists of A+, A, and A-. This shows a normal distribution shape with the mean grade is A and A-. The marks for grade A is 80 - 89 marks and the interval marks for grade A- is 75 - 79. The lowest grade obtained by the student is B- which the interval mark is 60 - 64.

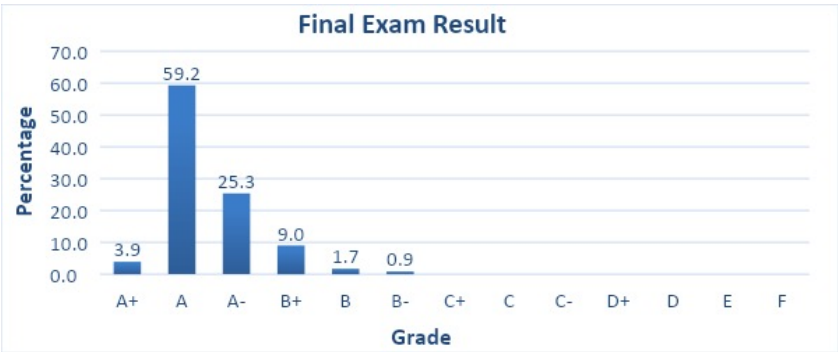


Figure 1: The final grade of students

The total mark for all course assessment is 100%. The percentage of assessment allocated for the affective domain is 10% which is evaluated from the laboratory observation. This assessment is mapped with Course Outcome 3 (CO3) which demonstrates leadership skills in task-related structural and materials. From the results as shown in Figure 1, all 233 students acquired the generic skills due to 100% marks attainment. Students were able to demonstrate leadership skills during the OEL session, as they were involved and participated in each laboratory and experiment exercise; thus, they managed to practise the leadership skill.

According to Sutkin et al., (2008) the acquisition of non-cognitive, relationship-based, and personal attributes is more difficult to develop and teach. Thus, to help in cultivating the non-cognitive attributes which is the affective domain, OEL can be adopted as an alternative of effective teaching. By practicing OEL, it develops many soft-skills and empowers the affective domain in student self-development. This is crucial for the students to improve their personal skills and attributes. This can be an additional value for them during the industrial training session.

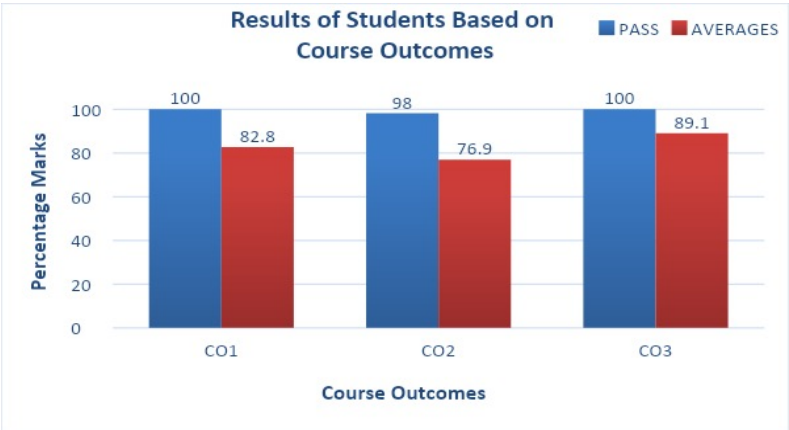


Figure 2: Results of students based on course outcomes

In comparison, the average scoring marks for each course outcomes are shown in Figure 2. The average attainment marks for CO3 is 89.1 %. This is the highest average mark if compared to CO1 and CO2. The difference between passing marks and average scores by the students is 10.9 %.

There are six elements of affective domains; namely, punctuality, disciplines, knowledge on OEL, leadership and performing and team effectiveness of the teams were being evaluated. The overall average marks of students for each element of the affective domain are shown in Figure 3. The students gained the highest average marks on disciplines element which is 93.1%. Besides, the lowest average mark is knowledge on OEL which is 84.6%. Overall, the score marks of all six affective domains for this course shown is greater than 80%.

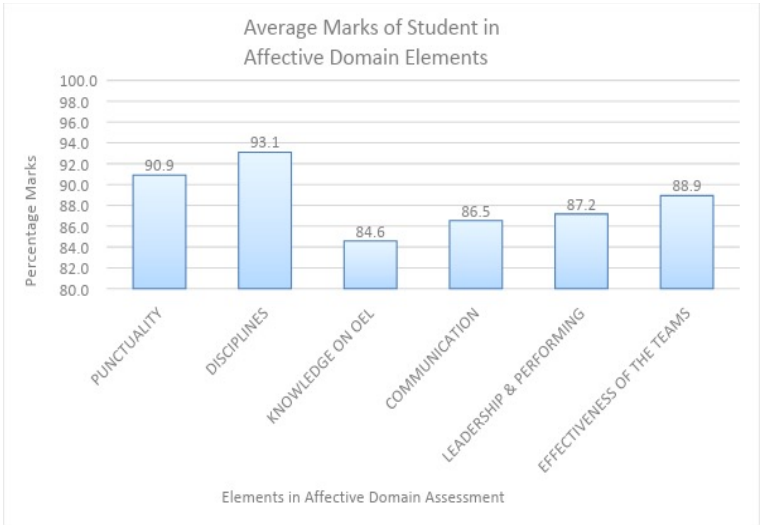


Figure 3: Average marks of students in affective domain elements

To further investigate the achievement of each element in the affective domain, the attainment between the two genders was established using descriptive analysis. The frequency analysis is adopted to indicate the different attainment of average marks between female and male students as shown in Figure 4.

The different average mark of punctuality element between female and male students is 8.8 %. Thus, It shows that female students are is more punctual compared to the male students. Besides, female students also show a better quality of discipline as compared to male students. This is indicated by the average score marks of 95.6% for female students and 89.6% for male students. For the element of knowledge of OEL, communication, and effectiveness of the teams, the female students show better understanding and performance compared to male students. This indicates the difference of 1% - 3% of the average score marks between both genders. On the other hand, both groups show almost similar performance in leadership and performing elements with the average marks of 87%. This shows positive implication as reported by Isacke (2013) and Remedios (2012), leadership is a valuable skill that industry looks into employees (students). Overall, even though this course is tough due to its nature, the results show that female students attained higher marks compared to the male students.

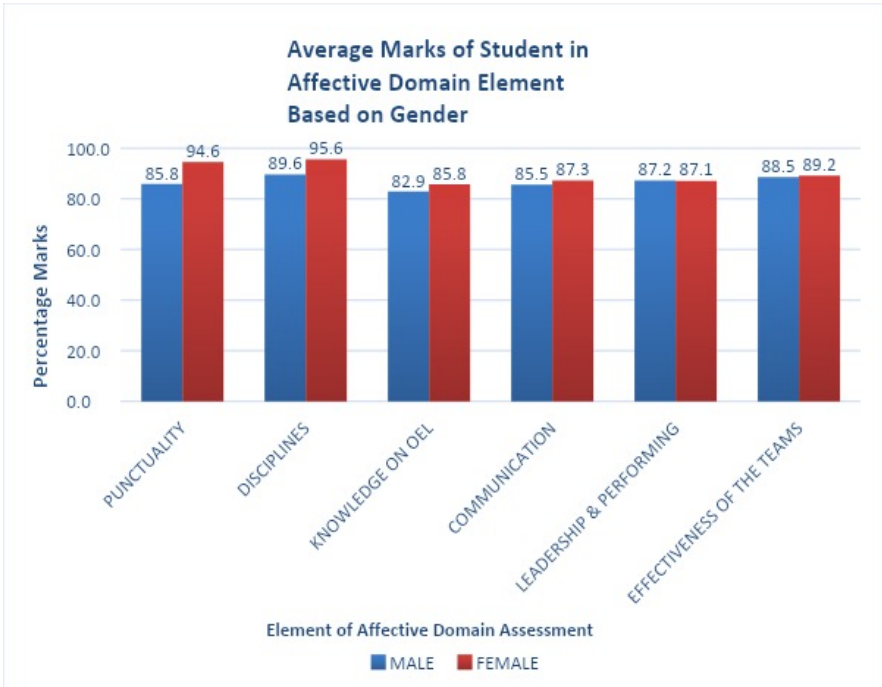


Figure 4: Average marks of student in affective domain element based on gender

5. Conclusion

The implementation of the affective domain in the laboratory course is not something new. In this study, the affective domain has been assessed through the observation approach which involves the evaluation of students' generic skills in the areas namely; punctuality, disciplines, knowledge on OEL, leadership and performing and effectiveness of the teams in the open-ended laboratory. All the students were graded by adopting evaluation rubrics. The descriptive statistics analysis was carried out and four categories have been classified; final grade of students, results of students based on course outcomes, average marks of students in affective domain elements, and average marks of students in affective domain element based on gender. The obtained results showed that the percentage of students obtained grade A (which consist of A+, A, and A-) is 88.4%, which almost 206 students. It shows that all 233 students acquired generic skills due to 100% marks attainment. Besides that, the average attainment marks for CO3 is 89.1 %. This is the highest average mark if compared to CO1 and CO2. By implementing an affective domain in OEL, it assists students to develop many soft-skills; as is crucial

for the students to improve their personal skills. It also serves as great attributes for them in their incoming industrial training session. Moreover, the students gained the highest average marks on disciplines element which is 93.1% compared to the other five elements in the affective domain. The lowest average marks among the six are knowledge of OEL which is 84.6%. Overall, the score marks of all six affective domain elements for this course shown is greater than 80%. On top of that, the achievement of each affective domain element, the attainment between the gender of the student is discovered. The average score mark between both genders is 1% - 3 %. On the other hand, both groups of the student show almost similar performance in leadership and performing elements with the average marks of 87%. This shows a positive implication where leadership is a valuable skill that the industry will look for in their future employees (students). Overall, even though this course is tough due to its nature, the results show that female students attained higher marks compared to male students. There are no many differences in affective domain attainment between gender. Female students shows better performance in punctuality and discipline attributes compared to the male students. Hence, few improvements are necessary to increase students' awareness about the importance of the affective domain elements. The new knowledge of this study is to observe that the OEL approach creates positive impacts in developing students' generic skills such as leadership, communication, and teamwork. This attribute is not only expected by the industry, but also it is believed that it will contribute to the overall students' learning experience.

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References

- Atsumbe, B. N., & Saba, T. M., (2008). A Study on Affective Work Skills Needs of Engineering and Technology Education Students of Universities In North Central States of Nigeria. *Bayero Journal of Pure and Applied Sciences*, 1(1), 95-98.
- Azinoor Azida, A. B., Nora Farina, M. H., Zuhaida, M. Z., & Fauzi, B. (2018). Implementation of Open-Ended Laboratory (OEL) in Environmental Engineering Subject for Civil Engineering Diploma Program *International Journal of Asian Social Science*, 4(8), 173-178. Doi: 10.18488/journal.1.2018.84.173.178
- Baharom, S., Khoiry, M. A., Hamid R., Mutalib A. A., & Hamzah N. (2015). Assessment of psychomotor domain in a problem-based concrete labrotary. *Journal of Engineering Science and Technology: Special issue on UKM Teaching and Learning Congress 2013*, 1 - 10.
- Bloom, B. S. and David, R. Krathwohl. (1956). *Taxonomy of educational objectives: The classification of educational goals,by a committee of college and university examiners. Handbook 1: Cognitive domain.* New York , Longmans.
- Gondim, S. M. G., and Mutti, C. (2011). Affections in Learning Situations: A Study of an Entrepreneurship Skills Development Course. *Journal of Workplace Learning*, 23(3), 195-208
- Isacke, H. (2013). *Soft skills for strong leaders: Ten steps to management success* New Generations. London: Legend Press
- Kasilingam, G., Ramalingam, M., & Chinnavan, E. (2014). Assessment of learning domains to improve student's learning in higher education. *Journal of Young Pharmacists*, 6(1), 27-33
- Salim, K. R., Haron H. N., Hussain, N. H., & Ali R. (2013). The Achievement of Laboratory Work Learning Outcomes: Students' Perceptions. *Proceedings of the Research in Engineering Education Symposium 2013*. Universiti Teknologi Malaysia, Kuala Lumpur.

- Strobel, J., Morris, C. W., Klingler, L., Pan, R.C., Dyehouse, M., & Weber, N. (2011). Engineering as a Caring and Empathetic Discipline: Conceptualizations and Comparisons. Proceedings of the Research in Engineering Education Symposium 2011. Purdue University, West Lafayette (USA).
- Sutkin, G., Wagner, E., Harris, I., & Schiffer, R. (2008). What Makes a Good Clinical Teacher in Medicine? A Review of the Literature Academic Medicine. Journal of the Association of American Medical Colleges, 83(5), 452-466. Doi: 10.1097/ACM.0b013e31816bee61
- Remedios, R. (2012). The role of soft skills in employability. International Journal of Management Research and Review, 2 (7), 1285-1292.

Alternative Tool to Engage Learners in Comprehending Written Forms in Mandarin

Arutchelvi K.Kumaran¹, Chong Geeng Ling², Evelyn Sharminnie Vasuthavan³,
Angeline Ranjethamoney Vijayarajoo⁴ and Teoh Joo Tong⁵

*Academy of Language Studies, Universiti Teknologi MARA Negeri Sembilan
Kampus Seremban, Malaysia*

Email: arutchelvi@uitm.edu.my¹, gengling@uitm.edu.my², evely029@uitm.edu.my³,
angierv@uitm.edu.my⁴, teohj7719@uitm.edu.my⁵

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ABSTRACT

In the Malaysian context, Mandarin is taught as a foreign language. Learning the written forms can be challenging, especially for non-native speakers. Furthermore, teachers found this component to be problematic, based on learners' classroom written tasks. In order to assist learners' comprehension of the written form, a board game called 'Catch Me If You Can' was developed. The focus of this study is to find out the effectiveness of the board game in learning the written forms. The study sample consisted of 20 respondents from a local University. Data comprised the responses from questionnaires and interviews. A pre and post test was administered to gauge students' performance in the written tasks. The findings showed the respondents enjoyed learning the written forms in a fun and engaging way. Hence, this game can be used as complementary tool in the teaching and learning of written forms.

Keywords: *Mandarin written form, foreign language, Mandarin, board game, language game, technology.*

1.0 INTRODUCTION

In view of the fact that student enrolment in Mandarin classes has been increasing rapidly, this subject must be given greater importance in the education system. One of the reasons attributed to this is the fact that China is emerging as one of the world's largest economic entities socially and politically, causing the phrase "Mandarin is becoming common currency" (Lu, 2007), to be coined. Having established that, it is noted that learning Mandarin is not easy as evidenced in a study by Tan (2016), whereby it was found that the learning of Mandarin as a foreign language did not seem to achieve the desired outcomes. One area of difficulty among learners to recognise or write the Chinese characters or forms, which can be challenging especially for foreign learners. This is because Mandarin differs from the mother tongue (i.e. Bahasa Malaysia) of Malaysian learners, where this study is situated.

Mandarin written forms (汉字) have a very unique form of writing which differs from the syllabic writing, which non-native speakers are familiar with. Writing in Bahasa Malaysia is alphabetical (Lee, 2017), but writing the Mandarin written forms takes the square-shaped character as the basic unit of the Mandarin writing system (Tong, 2015). Hence, the first challenge. Secondly, Mandarin written forms are a combination of different types of strokes, and this can be different and difficult for non-native speakers to learn. Remembering the order of the strokes, is another aspect in the writing process of Mandarin written forms, which is absent in the English and Bahasa Malaysia languages. Written errors stem from the lack of understanding non-syllabic writing and coping with the strokes and the correct order in which the strokes have to be written. Previous studies have confirmed that written errors are more commonly found among learners. Thus, learning and recognising the Mandarin forms is a major hurdle for non-native learners (Wen, 2018).

It is for this reason that the researchers developed a game called 'Catch Me If You Can', to facilitate the teaching and learning process in the Mandarin language class. Games have been proven to increase students' engagement and achievement (Measles, 2015). Technology is added to the game to give the game more currency in terms of what younger learners would easily engage in. The goal of the game is to motivate and captivate students' attention to learn to recognize the Mandarin written forms. The game can be used to introduce different aspects of Mandarin written forms with technology, which can be used via smartphones or tabs. It is an effective and interesting way to learn Mandarin written forms, as the effectiveness of using technological tools on improving learning and teaching of Mandarin written forms has been reported (Wen, 2018).

The main objective of the game ‘Catch Me If You Can’, is to fill the research gap, and to help learners to recognize the Mandarin written forms (汉字), while injecting and igniting the fun element in this activity, which is present in games. It is also hoped that the overall effect would be to improve the teaching and learning process for both, the teachers and learners. A conducive learning environment, such as through the medium of game and technology, will motivate and captivate students’ attention, to learn to recognise the Mandarin written forms, in a non-threatening way. Games are also learner centered, engaging and enjoyable.

2.0 REVIEW OF RELATED LITERATURE

Mandarin written forms are considered one of the most challenging writing systems to be learnt by non-native learners because of its complex orthographic structure. Unlike alphabetic writing systems, the square - shaped character is the basic unit of the Mandarin writing system [4]. Hence, it is established that non-native learners find Mandarin a difficult language to learn, especially the written forms.

Mandarin follows a non-syllabic type of writing compared to English and Bahasa Malaysia. Mandarin is also a logographic language, which is distinct from English and other alphabetic languages (Wen, 2018). Besides that, Mandarin is also perceived to be one of the most difficult languages to learn as it has ideograms for its orthographic writing systems (Lu, 2007). Lin also (2013) posited that Mandarin is fundamentally different from the western alphabetical system. These factors contribute to the difficulty in comprehending the written forms.

A complementary way to make learning fun among learners is through the medium of language games (Chen, 2010; Metom, 2013). Matas & Natolo (Matas, 2010) explained that traditional teaching and learning methods were not successful in motivating learners to engage actively. This was confirmed by Tan (2016), whereby it was found that the learning of Mandarin as a foreign language did not achieve its objectives. Hence, other ways, such as language games, must be introduced to motivate and engage learners in the classrooms.

One of the reasons to introduce language games in classrooms apart from the fun element, is that games have an element of competitiveness. It is this element that provides valuable impetus to a purposeful reason to do something (Prasad, 2003).

Games are defined by Hadfield (1990) as ‘an activity with rules, a goal and an

element of fun'. The board game, Catch Me If You Can, has rules, a goal and the element of fun, as fulfilled by Hadfield's criteria (1990). The rules of the game dictate who starts, how the game is played and how to assess and determine the winner. The goal is to 'fish' out as many correct 'fish-cards' as possible from the 'pond', that fit the specific category (eg. numerals, time, terms of address etc.). The fun element is to act fast - to get the most correct number of 'fish-cards', based on the specific category. Within this activity is the sense of competition among learners, to be the winner. This aspect overrides the actual purpose of the game, causing learning to be incidental.

Apart from this, learners also prefer a relaxed learning atmosphere. A study by Hugen and Nga (2003) showed that the learners enjoyed the relaxed ambience of student-centred learning, unlike the traditional, teacher-based and teacher-correction mode of classroom teaching and learning.

3.0 THEORETICAL FRAMEWORK

In learning, the use of instructional cues, practice and reinforcement can be attributed to strategies recommended by behaviorists as a means to build and strengthen stimulus- response associations (Peggy & Newby, 2013). Behaviorism and its roots can be traced back to the 1880s and continues to be an ever-evolving theory that was developed by its proponents such as Watson, Pavlov and Skinner (Weeger & Pacis, 2012). Behaviorists are therefore especially concerned with how the association between the stimulus and response is established, reinforced and maintained for the same desired outcome to recur.

Language games for both traditional and digital varieties, in particular, employ positive and negative reinforcements that serve to provoke desired behaviors (Leper-Salazar, 2015). These reinforcements help learners to remain motivated and engaged in the language games that they play. Learners would look out for positive reinforcement and work towards that end.

In the present board game, Catch Me If You Can, the players are encouraged to get as many correct 'fish' cards as possible. Hence, they need to recognize the correct Mandarin written forms to get the right card for the specific category. They also need to act fast in order to get as many as possible, to be the winner. It is actions such as these that enable the players to adopt strategies, within the stimulus-response associations, that would help them to realize their objectives - to recognize the Mandarin written forms in order to pick the correct word that fits the given category within the stipulated time. Hence, this study is driven by the

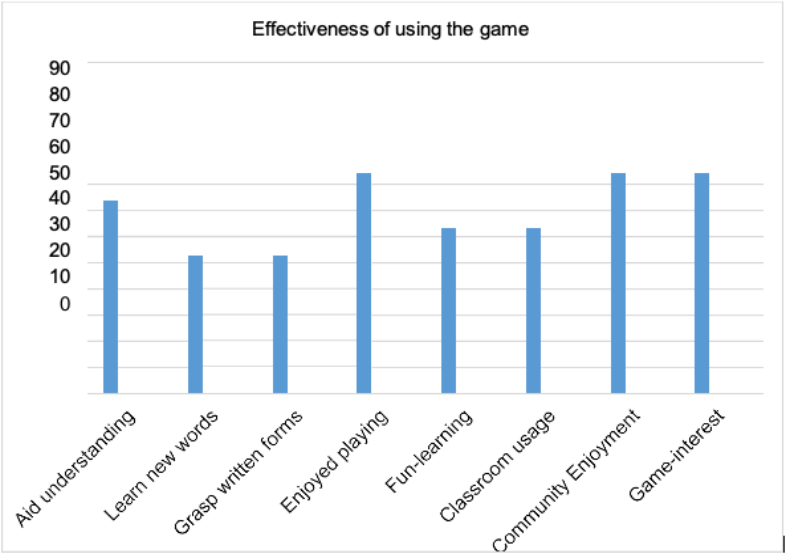


Table 1: Pre and Post Tests Results

Respondents (R)	Pre-Test	Post - Test
R1	13	17
R2	15	15
R3	14	16
R4	15	15
R5	16	18
R6	15	15
R7	15	17
R8	16	16
R9	14	17
R10	13	15
R11	15	15
R12	14	16
R13	13	15
R14	16	16
R15	15	13
R16.	14	16
R17.	15	17
R18.	15	15
R19.	13	16
R20.	17	17

Based on Table 1, 20 respondents participated in a pre and post tests. 11 respondents showed an improvement in scores from the pre test to the post test, by 0.5 – 4 marks, out of 20 marks. 8 respondents showed no changes in the scores. However, only 1 respondent showed a down trend of 2 marks. The 8 respondents reported that they were too excited and in their rush to complete the post test, made careless mistakes. These respondents also reported that should they have to do the test again, they would score better.

Table 2 : Interview Responses

Question	Responses
Q1	"Game helped me remember Mandarin Written forms"
Q2	"I enjoyed the game"
Q3	"My knowledge about the written forms has increased"
Q4	"The game is interesting, colourful, attractive and enjoyable"
Q5	"It was fun to play, I love it!"
Q6	"I love to play as it encouraged me to learn and participate"
Q7	"Enjoyed bonding with family and friends"
Q8	"Innovative – no need to carry books to class"

Figure 1 shows, 73.7% of the respondents agreed that the game helped them in understanding the usage of Mandarin written forms. This is clearly evident from Table 1, when 19 out of 20 respondents showed an improvement in their post test results. This data is further validated with the interview whereby the students said that "the game helped them to remember the Mandarin written forms with ease (Table 2).

Besides that 52.6 % of the respondents agreed that the game helped them to learn new words. This is evident where 11 respondents out of 20 showed improvement in the post test. The interview data also concurred that the respondents enjoyed the game and hence, it can be concluded that they found learning new words in Mandarin easier.

In grasping the Mandarin written forms, 52.6 % of the respondents agreed that the game helped them. This information concurs with the interview data in Table 2, that shows the total number of respondents strongly agreed that playing the game increased their knowledge. On the other hand, 42.1 % of the respondents chose to be neutral as it is highly probable that they preferred to remain 'on the fence'. This is probably due to the Asian culture of not making a stand.

As for enjoyment, 84.2 % of the respondents agreed that they enjoyed playing the game. The interview data revealed that all the 14 students who were interviewed, found the game to be interesting, colourful, attractive and enjoyable.

63.2 % of the respondents agreed that this game enabled them to learn the Mandarin written forms in a fun way. This information concurs with the interview data, as all 14 respondents agreed that the game was fun.

Furthermore 63.2% of the respondents agreed that this game should be used in the Mandarin language classroom. This information concurs with the interview data (Table 2), as all 14 respondents agreed that this game was 'lots of fun' and engaged the students to participate in the learning process.

Other than that, 84.2% of the respondents agreed that they enjoyed playing the game with their friends and family. They were happy to play the game as it created a sense of bonding and healthy competition among themselves.

Finally, 84.2% of the respondents agreed that playing the game made Mandarin language classes more interesting. Furthermore, 14 interview respondents were pleased that they did not have to carry books to class. In other words, playing this game in the language classroom, was innovative rather than the traditional chalk and talk method.

6. Conclusion

The primary aim of this study was to find out the effectiveness of using the Mandarin board game to engage learners in the comprehension of the written forms in Mandarin. The findings suggest that the board game, as a language game has potential use in the language classroom and is suitable for learners who learn Mandarin as a foreign or a third language. The game also helps non native speakers of Mandarin in writing and identifying the Chinese Characters. The game also develops learners' interest in the process of identifying and writing the correct Chinese Characters. Apart from that, learners learn in a fun and enjoyable way which help them do better and feel better about themselves.

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References

- Chen, J. M., Chen, M. C. & Yeali, S. (2010). A Novel Approach for Enhancing Student Reading Comprehension and Assisting Teacher Assessment of Literacy. *Computers and Education*.
- Ertmer, Peggy A. & Newby, Timothy J. (2013). Behaviorism, Cognitivism, Constructivism: Comparing Critical Features From an Instructional Design Perspective. *Performance Improvement Quarterly*. Retrieved from <https://onlinelibrary.wiley.com/doi/abs/10.1002/piq.21143>. on August 01, 2018.
- Hadfield, J. (1990). *A Collection of Games and Activities for Low to Mid-Intermediate students of English. Intermediate Communication Games*. Hong Kong: Thomas and Nelson and Nelson and Sons Ltd.
- Huyen, & Nga. (2003). Learning Vocabulary through Games The Effectiveness of Learning Vocabulary Through Games. *ASIAN EFL JOURNAL*, 5(4), 6th ser.
- Lee, A.C., Ng, L.L. & Ngeh, H.E. (2017). "Penggunaan Strategi Pembelajaran, Perbendaharaan Kata Mandarin oleh Pelajar Melayu Berkemahiran Tinggi dan Rendah di Universiti," *International Journal of Modern Language and Applied Linguistics*, vol. 1, June., pp. 1-18.
- Lin, Y. (2013). "A Sociocultural Approach to the Study of Motivation and Attitudes towards the Learning of Mandarin Chinese in the U.S.: Secondary School Students' Perceptions," ProQuest Dissertations & Theses database, UMI No. 3600529. Retrieved from www.proquest.com on August. 24, 2017.
- Lü, X. (2007). "Motivational Orientations in Chinese Learning – Heritage and Non-heritage College Students in the United States," ProQuest Dissertations & Theses database, UMI No. 3291581. [Online]. Retrieved from www.proquest.com on June 11, 2019.
- Matas, C.P. & Natolo, M. (2010) Love Grammar: Student-driven Grammar Learning Games. *The International Journal of learning*. Volume 17, Issue 10, pp.371-382.

- Measles, S. & Abudawood, S. (2015). "Gamification: Game –Based Methods and Strategies to Increase Engagement and Motivation within an eLearning Environment," In Proc. Society for Information Technology & Teacher Education International Conference, pp. 8319-8324.
- Metom, L., Tom, A. A. & Joe, S. (2013). "Mind Your Grammar! Learning English Grammar the Fun Way," Journal of Educational & Social Research. Special Issue, vol. 3, No. 7, October, 402-407.
- Prasad, U. (2003). Achieving communicative competence in English. India's National Newspaper. 29, July). Retrieved from <http://www.thehindu.com/thehindu/edu/2003/07/29/stories/2003072900010200.html> on August 01, 2018.
- Tan, T.G., Hairul Nizam Ismail & Hoe, F.T. (2016). "The Motivation of Undergraduates Learning Mandarin as a Foreign Language," e-Academia Journal UiTMT, vol. 5, no.1, pp. 1-11.
- Tong, X. & J. Yip H.Y. (2015). "Cracking the Chinese character: radical sensitivity in learners of Chinese as a foreign language and its relationship to Chinese word reading," Reading and Writing, vol. 28, no.2, Feb., pp. 159-181.
- Weegar, Mary Anne & Pacis, Dina. (2012). A Comparison of Two Theories of Learning - Behaviorism and Constructivism as applied to Face-to-Face and Online Learning. Proceedings E-leader Manila, Phillipines Conference.
- Wen, Y. (2018). "Chinese Character Composition Game with the Augment Paper," Educational Technology & Society, vol. 21, no. 3, pp. 132-145.

Students' Perceptions on Teaching Effectiveness among Lecturers

Normala Ismail¹, Mohamad Kamil Ariff Khalid²

Faculty of Business Management, Universiti Teknologi MARA, Pahang, Malaysia

Email: nmala391@uitm.edu.my¹, kamildk@uitm.edu.my²

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ABSTRACT

The role of lecturers in determining students' academic excellence is important. No matter how smart a student is, the knowledge gained may not be effective without the teaching of a lecturer. The effectiveness of lecturers' teaching from the perspective of students is important in producing an excellent student who is able to overcome various obstacles in life and become an asset to a country. Thus, the purpose of this study is to examine the students' perspective on the effectiveness of lecturers' teaching Economic courses. The sample of this study consists of 300 diploma students from various faculties who study at Universiti Teknologi MARA (UiTM) Pahang Raub Campus. The instrument used is a questionnaire distributed to the respondents using stratified random sampling. The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23. This study found that the effectiveness of lecturers' teaching can be seen from the aspect of the lecturers' personality, teaching methods, attitudes and lecturer student relationship. The findings also show that the main characteristics in the lecturers' personality which of students' choice are friendly, firm, caring, punctual and diligent. The Multiple Regression Analysis results show that the lecturers' knowledge and teaching experience are the dominant factors that influence their grades. Furthermore, this study did not deny that the lecturers' who are friendly, easily approachable and love to joke are also significant estimators for the students' academic achievement.

Keywords: *Effective lecturer, Effective teaching, Students' achievement, Students' perception.*

1.0 INTRODUCTION

Lecturers play an important role in the process of education, teaching and learning. Well dedicated lecturers can implement integrated education successfully to produce students whose are knowledgeable, skilled, noble, responsible, and self-confident. They are capable of supporting the harmony and prosperity of the society and nation. According to McNergney and Caldwell (2017), lecturers act as managers because they are not only managing the classroom but also implement the teaching and learning curriculum. Thus, the process of teaching and learning involves the interaction between lecturers and students. The result of this relationship will determine whether the lecturer can teach and whether the student is willing to learn. Thus, the effectiveness of lecturers' teaching depends on how one lecturer adapts and understands the problem of student learning. Robiah and Hassan (2014) categorize the nature of lecturers into two groups. First, those who are dedicated, passionate, and enthusiastic in their career. Second, those who are not passionate. They become lecturers by chance and waited for opportunities to step into other jobs. Most of the respondents fall under the second category.

Medley (2015) believes that the students' readiness to engage themselves during lectures depend on the quality of lecturer student relationship. If the relationship is positive, the students will work hard and collaborate with their lecturers because to them, the job of a lecturer is to teach. McNergney and Caldwell (2017) argued that students expect their lecturers to give a clear explanation and guidance to solve academic problems. Thus, the lecturers' leadership in the classroom has a positive impact on the students' learning outcomes in terms of their behavior, attitudes and academics achievement. Medley (2015), and McNergney and Caldwell (2017) reveal that there are seven key factors that influence the effectiveness of a lecturer's teaching, the peaceful learning atmosphere, the lectures' skills, adequate usage of time and equipment, high appreciation, tracking students' progress and effective teaching supervision. According to George (2015), an effective teaching supervision can only take place in a healthy, vibrant and democratic environment which can improve the students' achievement. Such conditions will alter the students' behavior. They will become more receptive in accepting new knowledge and beliefs. Getzels and Jackson (2018) in their study found that an effective lecturer is those who have knowledge, fair, responsible, dynamic, open, firm, dedicated, democratic and have good interpersonal relationships.

To become excellent, it is not just the responsibility of the students alone but what they gain and learn from individuals and the environment. Apart from friends, teachers and parents, lecturers play an important role in shaping the character of

the students in terms of their physical, emotional, spiritual and intellectual aspects. Undeniably, teaching is a complicated process but if the teaching is effective, it certainly can produce brilliant students to form an excellent nation. Economic courses are one of the courses not favored by students, especially at Universiti Teknologi MARA (UiTM) Pahang Raub Campus. The random interviews performed by the researchers found that eight out of ten students said they did not like studying Economic courses. They learn because they have no choice since the course has been set in their study plan by the management. The study conducted by Tay (2018) found that the effectiveness of teaching and learning was not due to the course taken by the students but who taught the course? Thus, this study is conducted to identify the effectiveness of teaching among Economic lecturers from students' views. What are the features needed to be an effective lecturer?

2.0 OBJECTIVES

The objectives of this study are:

Objective 1 : To see the students' perceptions on the lecturers' personality for effective teaching.

Objective 2 : To know the students' perceptions on the lecturer's teaching methods for effective teaching.

Objective 3 : To identify the students' perceptions on the lecturer's attitudes for effective teaching.

Objective 4: To find out the students' perceptions on the lecturer-student relationship for effective teaching.

3.0 Hypotheses

The hypotheses of this study are:

Hypothesis 1 There is no significant relationship between the students' perceptions on the lecturers' personality with the effectiveness of teaching.

Hypothesis 2 There is no significant relationship between the students' perceptions on the lecturer's teaching methods with the effectiveness of teaching.

Hypothesis 3 There is no significant relationship between the students' perceptions on the lecturers' attitudes with the effectiveness of teaching.

Hypothesis 4 A set of independent variables between the lecturer student relationship significantly do not elaborate the effectiveness of teaching.

4.0 Research Methodology

Based on the study, a model has been developed to explain the effectiveness of teaching among Economic lecturers from the students' view. Here, the students' perceptions of effective teaching are the dependent variable while the independent variables are the lecturers' personality, teaching methods, attitudes, and the lecturer student relationship as illustrated in Figure 1.

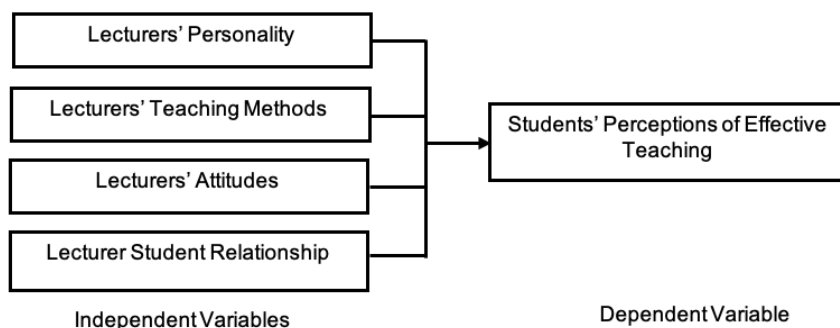


Figure 1: Theoretical Framework

The population of the study comprises of diploma students from the Faculty of Policy Studies and Administration (FPSPP), the Faculty of Management and Business (FPDP) and the Faculty of Computer Science and Mathematics (FSKM) at UiTM Pahang Raub Campus. Meanwhile, the sample of the study covers from part two (02) to part five (05) students. According to the Students' Academic Affairs Division (BHEA), the total number of students taking Economic courses from September to December 2017 study sessions is around 500. Thus, the researchers used the Krejeie and Morgan's Sampling and Population Table (Krejeie & Morgan, 1970) to determine the sample size of 300 students. Once the permission is obtained from the university administration, a total of 300 questionnaires were distributed using stratified random sampling procedure. Of this amount, only 289 (96.30%) questionnaires were suitable for further analysis and 11 (3.70%) forms were unable to be analyzed due to some unanswered questions. The questionnaire consists of five parts as illustrated in Table 1.

Table 1: The Questionnaires' Structure

Sections	Items
A	Respondents' Background
B	Lecturers' Personality
C	Lecturers' Teaching Methods
D	Lecture's Attitudes
E	Lecturer Student Relationship

The data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 23. To describe the respondents' background, a descriptive analysis in terms of frequency, percentage and mean are used. Next, factor analysis is used to measure the validity of the interval data. Through this analysis, each interrelated relationship between the variables will be studied. Here, the variables are no longer categorized as the dependent or independent variables. This analysis will reduce the number of variables associated with reasonable factor dimensions for further analysis. Then, all of these factors will be grouped and named as new variables. The Cronbach Alpha reliability technique is used to measure the reliability of these factors. According to (Hair et al., 2014), if the Cronbach Alpha value is greater than 0.70, then the reliability of these factors will be accepted. The Pearson Correlation Matrix procedure is used to test the inter-correlation between the variables. Finally, to test hypotheses 1, 2, 3 and 4, the Multiple Regression Analysis test is used by using Enter method.

4.0 Findings

4.1 Respondents' Background

Table 2 describes the respondents' background. Most of them are female (72.66%) compared to male (27.34%). The majority of them (96%) are between 19 to 20 years old. Next, 44.77% of the respondents represents FPSPP, followed by FPDP (34.13%) and FSKM (21.1%). The data shows that 68.13% of them are from part 02. Finally, majority of the respondents (40.8%) scored Cumulative Grade Point Average (CGPA) between 2.51 to 3.00.

Table 2: Respondents' Background

Items		Number of Respondents	Percentages (%)
Gender	Male	79	27.34
	Female	210	72.66
Age	Below 19 years	7	2.33
	19 to 20 years	277	96
	More than 21 year	5	1.67
Faculty	FPSP	129	44.77
	FPDP	99	34.13
	FSKM	61	21.1
Part	02	197	68.13
	03	73	25.33
	04	13	4.54
	05	6	2
Cumulative Grade Point Average (CGPA)	2.00 to 2.49	71	24.51
	2.50 to 3.00	95	33.01
	3.01 to 3.49	71	24.51
	3.50 above	52	17.97

4.2 Respondents' Background on Economic Courses

Table 3 shows the respondents' interest and basic knowledge on Economics courses. Of the 289 respondents, 78.2% stated they are interested in the current Economic course taken while 21.8% are not interested. Majority of the respondents (64.4%) stated they have no basic knowledge in Economic subjects during high school.

Table 3: Respondents' Background on Economic Courses

Items		Number of Respondents	Percentages (%)
Interested	Interested	210	78.2
	Not Interested	79	21.8
Basic knowledge	Yes	103	35.6
	No	186	64.4

4.3 Students' Choice of Lecturers' Personality

Students are also given the freedom to express the personality of the lecturers they love to create an effective teaching and learning environment without being influenced by the researcher. Table 4 lists the top five personality most liked and personality most disliked by the students. The top five personalities most liked by them are when the lecturers used their teaching time appropriately (35.2%), the lecturers are firm but not fierce (22.8%), attentive (17.17%), diligent (13.33%) and

friendly (11.5%). Meanwhile, the top five personalities that are most disliked by the students are the lecturers who take revenge on the students by down grading their marks (45.17%), the lecturers who cancel class suddenly without prior notice (23.33%), gibberish (16.05%), the lecturers who take advantage on their students knowing that their parents are an influential people in the society (9.15%) and fierce (6.30%). These of students' choices have similarities with the study conducted by Anderson et al. (2015) and Borg and Shapiro (2016).

Table 4: Students Choice of Lecturers' Personality

Liked		Disliked	
Items	Number of Respondents Percentages (%)	Items	Number of Respondents Percentages (%)
Teaching time is used appropriately	75 (35.2%)	Take revenge	103 (45.1%)
Firm	57 (22.8%)	Like to cancel class	67 (23.33%)
Attentive	28 (17.17%)	Gibberish	38 (16.05%)
Diligent	21 (13.33%)	Take advantage	19 (9.15%)
Friendly	19 (11.5%)	Fierce	18 (6.3%)

4.4 Factor Analysis

The validity of seventy-six items of the effectiveness of teaching among Economic lecturers from students' view which is coordinated from 1 = highly agreeable to 5 = highly disagreeable shows that the Bartlett's Test of Sphericity is statistically significant to measure the adequacy of the sampling size. Table 5 illustrates the Kaiser-Meyer-Ohlin (KMO) measure of sampling adequacy statistics = 0.806 with DF = 285 and $p = 0.000 < 0.05$.

Table 5: Kaiser Meyer Ohlin (KMO) and Bartlett's Test of Sphericity

Kaiser-Meyer-Ohlin Measure of Sampling Adequacy		0.806
Bartlett's Test of Sphericity	Approx. Chi-Square	408.952
	DF	285
	Sig.	0.000*

*Significant at the 0.05 level (2-tailed)

The method of Principle Axis Factoring (PAF) is used to determine the communality among the variables. The results showed that all items have communality more than 0.30. At the early stage, the total variance is explained in three stages. Here, there are five factors with eigenvalues between 11.83 to 1.13 and the percentage explained is between 42.24 to 4.79. By looking at these eigenvalues, it is estimated that there are four factors that will be extracted with eigenvalues greater than 1. Thus, if these factors were extracted, then 65.19% of the variance could be explained. The second stage shows that the total variance explained at the final stage. The eigenvalues for the four factors have been reduced between 11.45 to 0.73 with cumulative percentage variance has decreased to 57.98%. The third stage shows the eigenvalues of each factor and the total variance after each rotation. Here, the eigenvalues changed between 4.8 to 1.9 with a cumulative 57.98% of the variance remains. Next, the Varimax rotation method was used to produce the matrix that contains the coefficients which represents the correlation between the factors and variables. The results indicate that there are genuine variables that have a capacity of more than 0.30 at only one factor. The genuine variable Factor 1 consists of thirteen items with a load factor between 0.8 to 0.5, Factor 2 consists of twenty-eight items with a load factor between 0.7 to 0.5, Factor 3 is made up of six items with a load factor between 0.8 to 0.4 and Factor 4 consists of six items with factor loadings between 0.7 to 0.3. Thus, to meet the purpose of the study, these four factors are encoded with new names. Factor 1 as lecturers' personality, Factor 2 as lecturer's teaching methods, Factor 3 as lecturers' attitude and Factor 4 as lecturer student relationship.

4.5 Reliability Analysis

The Cronbach's Alpha reliability measurement technique is used in this study. The results of the reliability analysis of each dimension are lecturers' personality (0.79), lecturers' teaching methods (0.71), lecturers' attitudes (0.73) and lecturer-students relationship (0.74). Therefore, each variable achieved an acceptable value according to (Hair et al., 2014) which requires at least 0.700 and above.

4.6 Correlation Analysis

Table 6 illustrates the Pearson Correlation Matrix results, indicating that there is a significant positive correlation between the lecturers' personality with the effectiveness of teaching, $r = 0.57$ at $\text{Alpha} = 0.05$ (two-tailed test). This means that the students' perceptions of the lecturers' personality are important in influencing the effectiveness of teaching. If the lecturers' personality, namely firm, yet caring, friendly and approachable, the more likely the students are to achieve academic

success. This finding supports the study done by Durden and Ellis (2015) which indicates that the students like firm lecturers, yet not fierce.

Table 6: Pearson Correlation Results

	Teaching Effectiveness	Personality	Teaching Methods	Attitudes	Lecturer Student Relationship
Teaching Effectiveness	1.000				
Personality	0.57**	1.000			
Teaching Methods	0.72**	0.75**	1.000		
Attitudes	0.56**	0.77**	0.45**	1.000	
Lecturer Student Relationship	0.45**	0.66**	0.57**	0.58**	1.000

** Correlation is significant at Alpha = 0.05 (two-tailed test)

Next, the Pearson Correlation Matrix results also shows that there is a significant positive correlation between the lectures' teaching methods with the effectiveness of teaching, $r = 0.72$ at Alpha = 0.05 (two-tailed test). This means that if the lecturers' teaching methods, namely, well prepared, well planning, knowledgeable, experienced and sensitive and fair towards students' assessment, the more likely the students are to achieve academic success. Some of these variables are similar with the study conducted by Martin (2018) which states that students prefer lecturers whom are knowledgeable and experienced. The Pearson Correlation Matrix results also shows that there is a significant positive relationship between the lecturers' attitudes with the effectiveness of teaching, $r = 0.56$ at Alpha = 0.05 (two-tailed test). This means that if the lecturers uphold a good attitude, like being fair and not bias, always praise and not embarrass the students, conscious and making less mistakes, the more likely the students are to achieve high scores. This finding support the study done by Buckles and Mc Mahon (2016) which states that the students love a fair, considerate and hardworking lecturer, always encouraging them and lively, yet not sarcastic. Finally, the Pearson Correlation Matrix results shows that there is a significant positive correlation between the effectiveness of teaching with the lecturer student relationship, $r = 0.45$ at Alpha = 0.05 (two-tailed test). If the relationship intertwined between the lecturers and students are good, it is possible that the students are successful. Further, this finding support the studies done by Medley (2015) which show that the students' will engage themselves during lectures if the quality of lecturer student relationship is good and Martin (2018) argues that students will lose their self-esteem if lecturers like to threaten and degrade them.

4.7 Multiple Regression Analysis

The Multiple Regression Analysis takes the effectiveness of teaching as the dependent variable while the lecturers’ personality, teaching methods, attitudes and lecturer student relationship as the independent variables as illustrated in Table 7. The value of the coefficient of determination (R^2) = 0.575 with standard error of estimation = 0.397. This means that 57.5% of the variation in the effectiveness of teaching can be explained by the lecturers’ personality, teaching methods, attitudes and lecturer-students relationship.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	0.758 ^a	0.575	0.562	0.397
a = Predictors: (Constant), Personality, Teaching Methods, Attitudes, Lecturer Student Relationship				

Meanwhile, the F-ratio statistics as illustrated in Table 8 tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable where $F(4, 285) = 45.67$ and $p = 0.00 < 0.05$. This means that the model is valid at 95% confidence level in determining the change in the lectures’ personality, teaching methods, attitudes and lecture student relationship. Overall, this regression model is significant in determining the effectiveness of teaching.

Table 8: ANOVA^b

Model	Sum of Squares	DF	Mean Squares	F	Sig.
1 Regression	28.888	4	7.222	45.67	0.000 ^a
Residual	21.351	285	.158		
Total	50.239	289			

a = Predictors: (Constant), Personality, Teaching Methods, Attitudes, Lecturer Student Relationship
b = Dependent Variable: Effectiveness of teaching

Finally, Table 9 shows the results of the hypotheses testing. The t-test results for Hypothesis 1 shows that $t = 2.94$ and $p = 0.008 < 0.05$. Here, the null hypothesis is rejected. This means that there is a significant relationship between the students’ perceptions on the lecturers’ personality with the effectiveness of teaching. The students can appreciate the learning environment without fear of the lecturers. This finding supports the study conducted by Seigfried and Fels (2017) which states that the lecturers’ personality is one of the significant estimators in determining the effectiveness of teaching.

Table 9: Coefficients^a

Model	Unstandardized Coefficient		Standardized Coefficients	t	Sig.
	B	Standard Error	Beta		
1 (Constant)	1.22	0.454			0.025
Personality	0.00656	0.070	0.055	2.94	0.008
Teaching Methods	0.000675	0.001	0.549	5.92	0.000
Attitudes	0.000337	0.000	0.456	3.92	0.000
Lecturer Student Relationship	0.000235	0.001	0.243	6.45	0.001

a = Dependent Variable: Effectiveness of teaching

The t-test results for Hypothesis 2 shows that $t = 5.92$ and $p = 0.008 < 0.05$. Here, the null hypothesis is rejected. This means that there is a significant relationship between the students' perceptions on the lecturers' teaching methods with the effectiveness of teaching. The lecturers need to diversify their teaching, involve actively in the students' activities, should always encourage students to ask questions and use more teaching aids to make learning more fun. The findings of this analysis have similarities with Tay (2018) who argues that the students feel confident with senior lecturers who have many teaching experiences, knowledge and various teaching methods. Next, the t-test results for Hypothesis 3 shows that $t = 3.92$ and $p = 0.000 < 0.05$. Here, the null hypothesis is rejected. This means that there is a significant relationship between the students' perceptions on the lecturers' attitudes with the effectiveness of teaching. The students need the lecturers to be more concerned and thoughtful, especially on their academic achievement. The results of this study support the study done by Topping (2016) which states that the lecturers should be more considerate of the students' failure, yet not to neglect their own integrity and job proficiency. Finally, the t-test results for Hypothesis 4 shows that $t = 6.45$ and $p = 0.000 < 0.05$. Here, the null hypothesis is rejected. This means that there is a significant relationship between the lecturer student relationship and the effectiveness of teaching. This finding supports the study done by Wetzel (2017) which argues that lecturers who like to bully and threaten the students, even though their intentions are good, will have negative implications on the students' academic achievement. There is a chance the students might fail and give up their learning. Overall, the Multiple Regression Analysis is run to predict the effectiveness of teaching among Economic lecturers from students' view. These variables statistically significantly predicted the effectiveness of teaching, $F = 45.67$, $p = 0.00 < 0.05$, $R^2 = 0.575$. All four variables added statistically significantly to the prediction, $p < 0.05$.

5. Conclusion and Recommendations

In this study, the researchers evaluate how the students value various teaching and learning features among lecturers, especially the Economic lecturers. The study found that the most important features of an effective lecturer from students' view are the lecturers' knowledge, their ability to clarify the teaching materials clearly and to provide sufficient resources to the students. The students also appreciate if the lecturers take extra time to discuss some questions, yet they disliked lecturers wasting time talking unnecessary things. The findings of this study have significant policy implications, especially for UiTM as a focused teaching universities. The faculties and students are an important component of the teaching process. The university management can use these findings to enhance their understanding of effective teaching and thus, improve the effectiveness of faculty teaching. The researchers also want to suggest that when hiring a new faculty member, the recruitment committees must see whether the applicants have the right characteristics and whether their teaching practices involve the desired attributes. Finally, this study is based on a small sample and in particular UiTM Pahang Raub Campus. Future studies can use data from students at major universities to check the strength of current study results.

References

- Anderson G., Benjamin, D. & Fuss, M. (2015). The Determinants of Success in University Introductory Economic Courses. *The Journal of Economic Education*, 25, 99-120.
- Borg, M. & Shapiro, S. (2016). Personality Type and Student Performance in Principles of Economics. *The Journal of Economic Education*, 27, 3-25.
- Buckles, S. G. & McMahon, M. E. (2016). Further Evidence on the Value of Lecture in Elementary Economics. *The Journal of Economic Education*, 2 (2), 138-141.
- Durden, G. C. & Ellis, L. V. (2015). The Effects of Attendance on Student Learning in Principles of Economics. *The American Economic Review Papers and Proceedings*, 85 (2): 343-346.

- George, J. M. (2015). *Psychology for Effective Teaching*. Third Edition. New York: Holt and Rinehart Incorporation.
- Getzels, J. W. & Jackson, P. W. (2018). The Teachers' Personality and Their Characteristics. In *Handbook of Research and Teaching*. Chicago: Rand McNolly.
- Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R.E. (2014). *Multivariate Data Analysis*. Seventh Edition. NJ: Prentice Hall, Upper Saddle River. 90-92.
- Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Journal of Educational and Psychological Measurement*, 30, 607-610.
- Martin, M. A. (2018). Course Prerequisites and Undergraduate Student Performance in Agricultural Economics. *NACTA Journal*, 33, 38-42.
- McNergney, R. & Caldwell, M. (2017). *Guide to Classroom Teaching*. Boston: Allyn and Bacon.
- Medley, D. M. (2015). *Teacher Effectiveness*. Fifth Edition. New York: The Free Press.
- Robiah S. and Hassan L. (2014). *Towards Creating Creative Teachers*. Department of Education: Universiti Kebangsaan Malaysia.
- Seigfried, J. J. & Fels, R. (2017). Research on Teaching College Economics: A Survey. *The Journal of Economic Literature*, 17 (3), 923-969.
- Tay, R. (2018). Student's Performance in Economics: Does the Norm Hold Across Cultural and Institutional Setting? *The Journal of Economic Education*, 25, 291-302.
- Topping, E. (2016). The Effects of Absences on Performance in Principles of Macroeconomics. *Missouri Academy of Science Annual Meeting*. Missouri: Cape Girardeau.
- Wetzel, J. N. (2017). Measuring Student Scholastic Effort: An Economic Theory of Learning Approach. *The Journal of Economic Education*, 9, 34-40.

Intention to Become Entrepreneur Among Business Students: Case Study in UiTM Segamat Johor

Shahira Binti Hj Abdul Jabar¹, Mashita Binti Hj Abdul Jabar², Siti Nordiyana Binti Isahak³, Aida Rohani Binti Samsudin⁴

^{1,3,4}*Fakulti Pengurusan Dan Perniagaan, UiTM Cawangan Johor, Segamat, Malaysia, Segamat, Malaysia, ²Fakulti Pengurusan Dan Pelancongan, UiTM Cawangan Melaka, Melaka, Malaysia*

Email: shahi997@uitm.edu.my¹, mashita@uitm.edu.my², sitin486@uitm.edu.my³, sitin486@uitm.edu.my³, aidar551@uitm.edu.my⁴

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ABSTRACT

The aim of this study is to analyze the entrepreneurial intentions of UiTM Segamat business students and its main factors influencing it. The attitude, subjective norm, entrepreneurial education, and self-efficacy are the variables analyzed in this study. Samples of 171 business students were tested. The result shows there is an intention to become an entrepreneur among students and attitude is the main factor that contributes to it. Subjective norm and self-efficacy have moderate influence but entrepreneurial education does not significantly influence their entrepreneurial intention with the hope that MASMED gives attention and attempts to improve the effectiveness of the entrepreneurship program in university. This in general, encourages students to be courageous to start-up businesses and at the same time respond to our country desires.

Keywords: *Entrepreneur intention, self-efficacy, attitude, entrepreneurial education.*

1.0 INTRODUCTION

Entrepreneurship has become one of the major national agendas around the world, which makes it important to be studied. Malaysia is one of the countries that give attention to this sector. It is demonstrated by many supporting facilities, mechanisms, and policies that exist for the entrepreneurs, including funding, physical infrastructure, and business advisory services (Othman, 2014.). Researchers suggested that higher educations should instill entrepreneurial knowledge in students as this would be useful to the students in their future endeavors (Jwara, 2018). Hence, universities are the center for promoting entrepreneurship. It is to develop entrepreneurial minds from a very young age. Proper education can, therefore, enable graduates to think out of the box and generate creative and innovative ideas that can lead them to become entrepreneurs. (Kabir et al., 2017).

Although the graduates have learned entrepreneur skills, they are unfortunately less willing and likely to start their own businesses (Gamage & Henegedara, 2019). Other studies stated graduates rarely choose the entrepreneurial profession after completing university programs (Kabir et al., 2017). Deputy Minister for Entrepreneur Development Senator Datuk Dr. Mohd Hatta Md Ramli said to Sinar Harian, 8 Julai 2019, Malaysian and Bumiputeras entrepreneurs own a total of 40 percent of the nearly one million companies registered with Malaysian Companies Commission (MCC). The figure showed that Malays and Bumiputeras are still lacking in entrepreneurship.

UiTM, with cooperation and support from the Ministry of Higher Education, has developed Malaysian SME Academy of Development Entrepreneurship (MASMED), play their vital roles such as putting together entrepreneurship education in its student's curriculum, planning and organizing conferences, training programs and seminars to establish the purpose of entrepreneurship among graduates (Othman, 2014). The objectives are to build their skills and develop their entrepreneurial interest among the UiTM students.

However, students seldom choose entrepreneurship as their career after completing their academic programs. Therefore, it is believed that the academic programs and students' way of learning the subject of entrepreneurship do not develop the entrepreneurial mind. Many studies have stressed the education of entrepreneurship (Kabir et al., 2017). But there are still several issues to be answered in developing training programs at the university level to inspire the educated population in entrepreneur activities. There is a study, which discovered that majority of the students want to work in public and private sector organizations due to fear of

unemployment. (Ali et al., 2017)

This research, therefore, examined the desire to become a graduate entrepreneur and to identify the best predictor that influences the intention of business students to become entrepreneurs. This paper is structured in four sections. Firstly, the literature review on the intention to start the business and its factors contributed to this variable. Next, the aspects of research design, sampling technique, and respondents' questionnaires are discussed in section 2. Section 3 then highlights on data analysis and its subsequent findings. Section 4 will then focuses on discussions on conclusions, as well as directions for future research.

2.0 LITERATURE REVIEW

2.1 Entrepreneurial Intention

Entrepreneurship intentions can be defined as the state of mind leading and guiding the actions of an individual towards the implementation of new business ideas (Odor et al., 2019). According to Ayub et al., (2017) entrepreneur's intention means as a commitment to conduct a business that is necessary for the physical start-up of a business venture. Entrepreneur's intention can also be defined as "a state of mind that people want to create a new firm or a new value driver within existing organizations." It reflects an individual's willingness or plans to engage in a particular behavior (Jwara, 2018). Gamage & Henegedara (2019) defined as an individual's commitment or intention to start a new business. It is expected to predict the option of individuals to create their enterprises (Ajzen, 1991).

In general, the greater the intention, the more motivation there is to engage in entrepreneurial behavior. (Aladejebi, 2018) stated entrepreneurship creation, growth and development have been closely related to entrepreneurship as it encourages initiative and generates self-reliance.

2.2 Attitude

The researchers have further clarified that the positive, as well as the negative assessment of the intended behavior, is significantly affected by one attitude (Duong et al., 2020). According to Ajzen (1991) attitude has remained a critical element in understanding human intention, which concentrates on understanding human behavior. A study was done by Othman (2014), which explained there is a positive

relationship between attitudes and business start-up intention. Findings found by (Kabir et al., 2017) have shown that human beliefs have a clear and direct effect on behavioral intentions. This study concludes that the higher entrepreneurial attitude of students ultimately influences their participation in entrepreneurial activities.

2.3 Entrepreneurial Education

(Johansen et al., 2012) mentioned that the word “enterprise education” should, therefore, be applied to the entire process of giving individuals the necessary concepts and skills to find opportunities missed by others and gain experience and expertise to respond when others do not want it. (Herman, 2019) outlined some of the most important business education priorities, with the first goal of entrepreneurial education is to gain knowledge in the field of entrepreneurship. Furthermore, emphasis should also be placed on the expertise in the use of strategies, market conditions, and the synthesis of action plans. The final goal is to enhance entrepreneurial spirit, talent, and skills. A study carried out by (Odor et al., 2019) indicated a positive relationship between entrepreneurship education and intentions to become an entrepreneur with an R squared value of 0.751, p-value= 0.000. This indicates that 75 percent of the variation in intention to become an entrepreneur is explained in entrepreneur education.

Recently, higher educational institutions fostering to nurture entrepreneur skills and knowledge. Most of the university have developed entrepreneur systems. Even though students are given education on entrepreneurship, it is reported that they lack the willingness to start up their businesses (Gamage & Henegedara, 2019). An analysis was carried out by (Jwara, 2018), whereby there is no relation existed between entrepreneurial intentions and current education and university life.

2.4 Subjective norm

Subjective norm is the perceived social pressure in whether to engage in behaviour. It could be from family, friends etc. Students generally view entrepreneurship as the best option for their employment. This is mainly due to the fact that friends and family will support the start of a new venture. A recent study concluded that subjective norms play the weakest role and cannot be considered as an explanatory variable to determine student’s intentions. (Awan & Ahmad, 2017). Odor et al., (2019) stated that the results indicated that subjective norm is an insignificant predictor of entrepreneurial intention.

2.5 Self-Efficacy

The previous research acknowledged that the self-efficacy of starting a business is linked to entrepreneurial intentions. In this study, self-efficacy is one of the factors that encourage personal intention to start a business. According to Ali et al., (2017), it can be defined as a person's confidence, to strive in difficult circumstances. Krueger et al. (2013), said that self-efficacy is a key factor that makes individuals aware of entrepreneurship. It may affect entrepreneurship, personal appeal, and social standards.

In a study done by Ali et al., (2017), it found that there is a positive and significant relationship between self-efficacy and entrepreneurial intention. Linan et al. (2013) empirically confirmed the same results as a positive and significant between self-efficacy and entrepreneurial intention. In opposite to it, Owoseni (2014) strongly emphasized that there is no relationship between self- efficacy and entrepreneurship intention.

3.0 Data and Methodology

In this analysis, the researcher used descriptive research to analyse the activity under investigation, at the same time, to identify the characteristics and social relationship of the population. This study was conducted on business students in UiTM Segamat including diploma and degree students.

Rule of thumb by Roscoe mentioned a sample size greater than 30 and less than 500 was considered appropriate. Thus, a total of 171 questionnaires were filled by business students from UiTM Segamat, including both degree and diploma. For this purpose, convenience sampling has used. Likert-scale is used in each part of all questions, except for section 1, in which the items used ratio and nominal measurements. The findings were collected using Reliability Test, Descriptive Statistics, Correlation, and Regression Analyses.

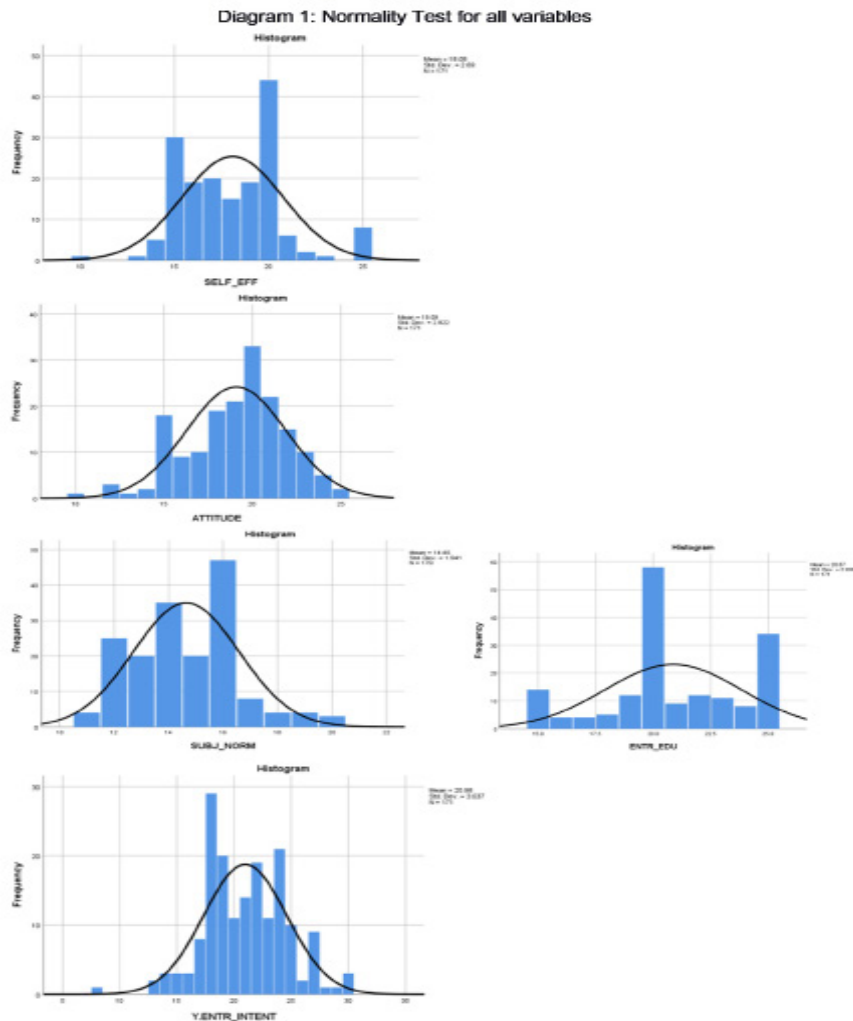
4.0 Findings

The researcher discusses the data analyzed using the Statistical Package for Social Science (SPSS) and the results of statistical analysis are presented as follow.

4.1 Normality Test

The data is distributed randomly. To ensure the data is normal and no bias, the normality test is used. The result shows each of the variables is normally distributed with no skewness to the left or right.

Diagram 1: Normality Test for all variables



4.2 Reliability Test

The reliability test is used to estimate the consistency and stability of the questions. It is important to show that the respondents thoroughly understand the questions given. It also indicates how strong the items are related to each other as a group. Table 1 shows the strong reliability of the items as the alpha is greater than 0.70.

Table 1: Reliability Test

Variables	<u>Cronch</u> Bach Alpha	Total Item
ENTR_INTENT	.863	6
ATTITUDE	.829	4
SUBJ_NORM	.727	4
ENTR_EDU	.906	5
SELF_EFF	.873	5

4.3 Descriptive analysis

Descriptive analysis is used to test whether students have the intention to do business. The result shows that most students have the intention to become an entrepreneur with an overall percentage of 47.58%, followed by neutral being 44.45%, and minority unintentional to become entrepreneur of 8%.

Table 2: Descriptive Analysis

(Entre Intent)	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
My professional goal is to become an entrepreneur	0.6	8.8	38	43.3	9.4
I prefer to be an entrepreneur rather than be employed in a company	0	5.3	44.4	36.8	13.5
I'm ready to become entrepreneur	1.8	9.9	50.9	29.8	7.6
I have very seriously thought of starting a firm	1.2	6.4	51.5	35.7	5.3
I have got firm intention to start and run my own business	0.6	10.5	47.4	32.7	8.8
I will make every effort to start my own firm	0	2.9	34.5	43.9	18.7
TOTAL	4.2	43.8	266.7	222.2	63.3
OVERALL	0.70%	7.30%	44.45%	37.03%	10.55%

Pearson Correlation and Regression test are conducted to find factors that contribute to the intention to become an entrepreneur.

4.5 Pearson Correlation

Pearson's correlation is applied to measure the relationship and impact of the independent variable over dependent variables.

Table 3: Pearson Correlation

Correlations		Y.ENTR_ INTENT	ATTIT UDE	SUBJ_N ORM	ENTR_ EDU	SELF_ EFF
Y.ENTR_IN TENT	Pearson Correlation	1	.730**	.566**	.361**	.514**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	171	171	170	171	171

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

Table 3 shows the result for Pearson Correlation and Sign. 2 tailed at 0.01 level. Based on Sign. (2tailed), dependent variable (Entrepreneurial Intention) between all other independent variables (Attitude, Subjective norm, Entrepreneurial Education, Self-Efficacy), it has a significant relation with 0.000.

Meanwhile for Pearson Correlation (r) dependent variable (Entrepreneurial Intention) indicates a positive relationship with all other independent variables.

The strongest is Attitude (0.730), followed by a moderate relationship that is Subjective Norm (0.566), Self Efficacy (0.514), and the weakest relationship is Entrepreneurial Education (0.361).

4.6 Regression Correlation

The regression correlation describes the strength of the association between variables. It means that if one variable changes, it will affect other variables.

Table 4: Regression Correlation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763 ^a	.583	.572	2.381

a. Predictors: (Constant), SELF_EFF, ENTR_EDU, SUBJ_NORM, ATTITUDE

Table 4 determines that R Square is 0.763; which means all independent variables explain 76.3 percent of the variance in intention to become an entrepreneur and it shows a strong relationship between variables.

5.0 Implication and Conclusion

Entrepreneurship plays an important role in Malaysia to grow the economy and reduce unemployment percentage. It also would lessen the dependency on a government job. It should be noted that the lack of adequate employment opportunities most often causes disappointment among graduates. These frustrations lead them to perform different anti-social and disruptive practices (e.g. drug abuses, crimes such as hijacking, robbery (Kabir et al., 2017). In identifying opportunities, generating business ideas, and developing effective business plans, entrepreneur activities and business mind have to be expanded from time to time. This will help in lessening the unemployment problem currently experiences by Malaysians. Moreover, the development of an entrepreneurial mind will motivate the graduates to practise self-employment and find the scope of exploring and showing their creativity.

The results show that there is a high level of entrepreneur intentions with overall results 47.58% among the 171 UiTM Segamat business students. The results from correlation and regression highlights that attitude strongly influence students to become an entrepreneur as this is supported by (Othman, 2014). Besides, subjective norm and self-efficacy have a moderate positive relationship. However,

these contradict with the research done by Odor et al., (2019) and Owoseni (2014), emphasized both variables cannot be explanatory variables as they presented insignificant value. However, entrepreneurship education, in researcher's study indicates that it does not significantly influence their entrepreneurial intention. It contradicts with the study done by (Odor et al., 2019) indicates a positive relationship between the dependent variable and entrepreneur education. Looking at the result, entrepreneur education is excluded as a factor to develop entrepreneur intention.

Thus, Malaysian Academy of SME & Entrepreneurship Development (MASMED), UiTM needs to pay more attention to inject an entrepreneurial culture among students. Training, seminar, or any attractive activity should be organized to develop entrepreneurship intention to a maximum level. The researcher hopes that the university can be the centre of entrepreneur education to respond to our country desires.

Suggestions for future research would include other variables such as professional attractions, locus of control, instrumental readiness, and motivation that drive students to become an entrepreneur.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211
- Aladejebi, D. O. (2018). The Effect of Entrepreneurship Education on Entrepreneurial Intention among Tertiary Institutions in Nigeria. *Journal of Small Business and Entrepreneurship Development*, 6(2). <https://doi.org/10.15640/jsbed.v6n2a1>
- Ali, B., Shah, N., & Mangi, S. (2017). Entrepreneurial Intention Among Physical and Health Education Students in Public Sector Universities of Pakistan. Vol.12.
- Ali Qalati, S., li, W., Iqbal, S., Hind, H., Wen Yuan, L., & Yassir Hussain, R. (2019). Quality of Services and Satisfaction of Customer: Mediated by Consumer Buying Decision Benchmark sensitivity in performance evaluation of funds View project SMEs Performance in Pakistan View project Quality of Services and Satisfaction of Customer: Mediated.

11(12), 183–189. <https://doi.org/10.7176/EJBM>

- Awan, N. N., & Ahmad, N. (2017). Intentions To Become An Entrepreneur: Survey From University Students Of Karachi. *International Journal of Business, Economics and Law*, 13(2). https://www.researchgate.net/profile/Nawaz_Ahmad3/publication/319755724_Intentions_to_Become_an_Entrepreneur_Survey_From_University_Students_of_Karachi/links/59bbb545a6fdcca8e56203e9/Intentions-to-Become-an-Entrepreneur-Survey-From-University-Students-of-
- AYUB, M. S., NASIP, S., FABEL, N. F., & BUNCHA, M. R. (2017). Entrepreneurial Intention Among Students: A Study In Bulungan Tarakan, Indonesia. 2017 (Ice), 345–356.
- Bernama, (2019, 8 Julai). Hanya 40 peratus syarikat dimiliki usahawan Melayu, Bumiputera. *Sinar Harian*. <https://www.sinarharian.com.my/article/36463/BERITA/Nasional/Hanya-40-peratus-syarikat-dimiliki-usahawan-Melayu-Bumiputera>
- Duong, C. D., Nguyen, H. X., Ngo, T. V. N., Nguyen, V. H., & Nguyen, T. P. L. (2020). The impact of individual and environmental characteristics on students' entrepreneurial intention. *Management Science Letters*, 10(3), 599–608. <https://doi.org/10.5267/j.msl.2019.9.020>
- Gamage, D. G. M. P. M., & Henegedara, R. H. G. W. P. K. (2019). The Entrepreneurial Intentions among the Undergraduates Involved in Business Administration and Entrepreneurship Courses in Sri Lanka. 1600–1605.
- Herman, E. (2019). Entrepreneurial Intention among Engineering Students and Its Main Determinants. *Procedia Manufacturing*, 32, 318–324. <https://doi.org/10.1016/j.promfg.2019.02.220>
- Johansen, V., Schanke, T., & Hyvarde, T. (2012). Entrepreneurship Education and Pupils' Attitudes Towards Entrepreneurs. In *Entrepreneurship - Born, Made and Educated*. InTech. <https://doi.org/10.5772/35756>
- Jwara, N. (2018). Entrepreneurial Intentions Among University Students: A Case Study Of Durban University Of Technology. In *Academy of Entrepreneurship Journal* (Vol. 24, Issue 3).

- Kabir, S. M., Haque, A., & Sarwar, A. (2017). International Journal of Engineering and Information Systems(IJEAIS) Factors Affecting the Intention to Become an Entrepreneur: A Study from Bangladeshi Business Graduates Perspective (Vol. 1). www.ijeaais.org
- Odor, H. O., Martins-Emesom, J. N., & Bakwuye, C. O. (2019). Entrepreneurship Education and Entrepreneurial Intention Among Students of Delta State Polytechnic, Ogwashi Uku, Delta State of Nigeria. 11. <https://doi.org/10.7176/EJBM>
- Othman, M. Z. (2014). Entrepreneurial Intention To Business Start-Up Among New Intake Students. <https://doi.org/10.13140/2.1.2406.8809>
- Owoseni, O. O. (2014). The influence of some personality factors on entrepreneurial intentions. *International Journal of Business and Social Science*, 5(1), 278–284.

Ethical issues on tax evasion from the students' perception

Ida suriya ismail¹, Siti Aida Suman², Puteri Adlina Noor Hasnizam³, Nurul Najihah Shaharin⁴ and Hanis Aqilah Rusnipa⁵

^{1,2,3,4,5}Faculty of Accountancy, Universiti Teknologi MARA
Puncak Alam, Selangor, Malaysia

Email: idasu634@uitm.edu.my¹, sitiaidasuman88@gmail.com²,
puteriadlina96@gmail.com³, nurulnajihah0801@gmail.com⁴, hanis.rsnip@gmail.com⁵,

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ABSTRACT

Paying taxes is not a favorable choice; even it is a compulsory financial obligation to each taxpayer towards its government. However, the evasion of tax is immoral since it is illegal and unethical. This paper examines university students' perception in Malaysia on the ethics of tax evasion. A survey method consisting of 18 statements was distributed to 120 students from Diploma to Postgraduate students in three higher learning institutions. This study used descriptive analysis to examine the overall mean responses and followed by additional analysis to compare the mean responses according to the respondent's age and level of educations. The results of this study indicated that respondents agreed that tax evasion was unethical. However, tax evasion becomes ethical under some circumstances when the tax system is unfair and the government or political party is involved in corruption. In terms of age, the youngest group (18 – 25 years old) tends to believe that tax evasion was ethical compared to medium age and older age groups. Besides, the diploma students felt that tax evasion was ethical when they had the highest score than students with degree and masters level. The findings show an early indicator of future taxpayers who believe that tax evasion is ethical depending on the government's governance, taxpayer's experience, and the level of tax knowledge. Therefore, this study recommends universities to educate their students on tax evasion areas through the formal syllabus or informal programs in ensuring their students to become good taxpayers.

Keywords: Tax evasion, ethics, perceptions, students. education.

1.0 INTRODUCTION

Tax evasion is referring to deliberate acts of non-compliance resulting in non-payment of tax liability (Kasipillai, Aripin, & Amran, 2003). There are two groups of tax evaders, which are tax protesters and tax resisters. Tax resisters are those who oppose the tax laws and government policies in the illegal condition whereas tax protesters attempt to evade the payment of taxes by manipulating the interpretations of the tax laws (Palil, Malik, & Jaguli, 2016). In other words, any evasion of tax is immoral as it is illegal (Brown, Keim, Kleidon, & Marsh, 1983).

Tax evasion can be viewed as ethical or unethical based on the circumstances that influence the attitudes of the taxpayers. A taxpayer with positive attitudes is expected to be less compliant than a taxpayer with negative attitudes (Alm and El-Ganainy, 2013). According to Chan and Lan Mo (2000) as well as Reckers, Sanders, and Roark (1994), persons who perceive tax evasion as unethical are less likely to evade tax regardless of the situation than persons who do not because it is a moral obligation to follow tax laws. A survey done among Malaysian individual taxpayers found that taxpayer's morale directly reflects their actual attitudes (Yee, Moorthy & Soon, 2017). Therefore, taxpayers that have higher tax morale, tend not to refuse or refrain from tax evasion behavior. Nevertheless, McGee and Tyler (2006) argued that tax evasion is ethical in certain circumstances such as when the government involved in corruption and the tax system is perceived as unfairness. Furthermore, Karlinsky, Burton, and Blanthorne (2004) indicated that perception of tax evasion as a non-serious crime has led to an environment where taxpayers may not be afraid of evading tax. This view also influences the individuals to not having any responsibility in paying taxes as they think that the government does not have the right to take anything from anyone in their state (Bagus, Block, Eabrasu, Howden, & Rostan, 2011).

In the Malaysian context, the issue of tax evasion has still become a major concern of the government (Gilbert, 2020). The Chief Executive Officer of the Inland Revenue Board of Malaysia (IRBM) declared in *The Edge Markets* dated February 18, 2020, that the tax collection in 2019 has increased to RM145.11 billion or 5.89 percent due to the special voluntary disclosure program (SVDP). SVDP is a program that is designed to attract taxpayers who are not complying with the tax laws to voluntarily declare the misreported income and deductions with minimal tax penalties. IRBM also claimed that more initiatives would be conducted to combat tax evasion especially for the local shadow economy that worth 21 percent of Malaysian's gross domestic products. Currently, the IRBM has issued a new Tax Investigation Framework 2020 to replace the previous framework to show its

proactive strategies in eliminating tax evasion. Despite public listed companies, small and medium enterprises are also involved in tax evasion when Ngah, Ismail, and Hamid (2020) found that there was an increase in the number of companies being penalized due to tax evasion issues from 180 companies to 217 companies in 2016 and 2017 respectively. Not only that, a substantial amount of tax evasion has also been reported by IRBM during their tax audit cases in both years amounted to RM92.906 billion from 397 companies.

It seems that the issue of tax evasion is still exists. In academician perspective, it is essential to curb tax evasion issue earlier that is from the students' life before they become the real taxpayers. There would therefore seem to be a definite need for this study to examine the public university student's perception on the ethical issue of tax evasion to provide insights for the government's agency to plan possible strategies in creating good taxpayers.

2.0 LITERATURE REVIEW

2.1 Ethical perspective on tax evasion

Over the centuries, there are three views that have been arisen on the ethics of tax evasion. The first view takes the objective of tax evasion that is always unethical in every circumstance. Thus, there are three relevant opinions for individuals. The first opinion is individuals have the responsibility to pay whatever taxes as required by the government (Cohn, 1988) as there is a strong belief that individuals need to follow the rules, especially for prevailing in democracies. The second opinion is that an individual has a responsibility to other members of the association (McGee, Basic, & Tyler, 2008). This view is more dominant since individuals should be contributing to the payment of services that they got from the government, as they are not taking advantage of those services. While, the third relevant opinion is an individual has the responsibility in paying taxes and obligates individuals to perform charges based on their religions (McGee & Tyler, 2006). This view has currently grasped firmly on a religious basis.

The second view can be classified as an agitator view. The agitator is defined as the individuals who oppose the idea of government and laws. This view influences the individuals to not having any responsibility in paying taxes as they think that the government does not have the right to take anything from anyone in this state (Bagus et. al., 2011). The ethics of tax evasion from the previous researchers do not discuss in depth about agitator views directly, but it addresses the relationship

of the individual and the ethics of tax evasion (McGee, 2006b). Agitator's view stated that all taxation involvement is necessarily being forced to individual in order for them to pay their taxes without their willingness. Individuals refuse to pay taxes as they think that the government does not have rights at their wealth.

The third view holds that there are both the ethical of tax evasion under some circumstances and unethical under other circumstances. According to McGee (2006a), the survey found that tax evasion is ethical when there is the circumstance of government corruption and the system is perceived as unfairness. This result stated that respondents preferred to do tax evasion when the government involved in crimes and other unfairness activities throughout the system. Furthermore, McGee and Shopovski (2018) claimed that the students choose tax evasion as ethical decisions when the government is involved with corruption. This finding stated that respondents had considered tax evasion as an ethical action to be done when the government had manipulated the human rights.

2.2 Tax evasion

Tax evasion is defined as 'the attempt to reduce tax liability by illegal means' while tax avoidance is defined as 'reducing taxation by legal means' (Palil et al., 2016). The difference between tax avoidance and evasion is tax avoidance as a legal measure to use the tax regime or regulations to find a way to pay the lowest tax rates, while tax evasion uses illegal ways to avoid paying taxes to the regulators such as over claim deductible expenses (Pettinger, 2013). This study will focus on tax evasion because it has been labeled as an increasingly global disease, which has had a devastating impact on all sectors of society (McGee, & Shopovski, 2018). This is a matter of great concern, as it will determine the level of tax evasion and have a better understanding of why it will help in the process of finding mechanisms to prevent it or reduce its intensity. Normally, tax evasion schemes involved an individual or company misrepresents their income to the tax authority like unreported earnings, over-claimed deductions, or concealing money for the benefit of self or company in offshore accounts (Sumartaya & Hafidiah, 2014).

Tax evasion has negative impacts towards the countries' economy as well as to the society. Prior researchers such as Purwanto and Indrawan (2020), Kafkalas, Kalaitzidakis and Tzouvelekas (2014), Oberholzer (2008) as well as Crane and Nourzad (1986) have highlighted the impacts of tax evasion to the country. One of the impacts of tax evasion is it will decrease the government's revenue since tax is the main source of government's revenue. Recently, a study done by Purwanto

and Indrawan (2020) claimed that tax evasion practices such as incomplete and incorrect report on tax matter will have negative impacts on the state revenues as taxpayers did not pay the correct amount of tax. A study in Zimbabwe also shows that a country could be potentially losing millions or billions of dollars due to tax evasion (Cobham, 2005). This is because the main perpetrators such as small and medium companies, professionals, traders, and other self-employed individuals may have a tendency to under-report their income or they do not file their tax returns (Cobham, 2005). Due to a reduction in Zimbabwe's government revenue collection, the government has to cut down their expenditure that leads to a low level of economic activities and economic growth. In Malaysia, Ngah et al. (2020) also stated that the levels of tax evasion activities have increased across all industries particularly amongst communication and information industries. It is even worse when the small and medium companies are located in a suburban environment and has no tax agent (Mohamad, Zakari, & Hamid 2016).

Besides, Crane and Nourzad (1986) claimed that inflation has a positive relationship with tax evasion, as the real value of the income of individuals would decline due to inflation. This is because inflation indicates a decrease in the purchasing power of a nation's currency. Therefore, tax evasion would be very flagrant for a country that is in hyperinflation situation (Tanzi, 1977). Apart from the economic perspective, tax evasion also has a negative impact on the moral behavior of the society since complying or not complying to pay tax will depend on the culture and the moral behavior of an individual (Oberholzer, 2008). According to Oberholzer (2008), the taxpayers will be imposed as having immoral behavior towards the government when the tax evasion's issues exist in the countries.

However, previous researchers also highlighted the positive side of tax evasion. For example, Embaye (2007) found that a positive relationship between tax evasion and the gross domestic product (GDP) per capita in South Africa. The researcher argued that in South Africa from the year 2000 to 2002, the real GDP per capita has increased and the caused of this rise was the presence of tax evasion. According to Embaye (2007), individuals who did not pay their taxes will have more incomes to spend in which will boost the growth of the economic. In other words, when tax evasion increases, the GDP per capita will also increase. These findings suggested that the impact of tax evasion on the GDP per capita growth of South Africa is favorable. Nevertheless, Kafkalas et al. (2014) studied among 35 OECD and 110 non-OECD countries for 2011 found a contrary finding when the results showed a negative impact between the real GDP per capita and the tax evasion.

3.0 RESEARCH METHODOLOGY

A survey instrument was used and data collection procedures was discussed thoroughly in this study. This survey adapted a paper by Crowe (1944) which focusing on fifteen arguments favoring tax evasion while three arguments dealing with human rights issues. The questionnaire is divided into two sections (referred to as sections A and B). Section A of the questionnaire is designed to obtain demographic characteristics of the respondents that include age, gender, and level of study.

While, Section B consists of eighteen (18) statements. Using a five-point likert scale, respondents were asked to indicate their agreement or disagreement with each statement (1 as strongly disagree to 5 as strongly agree). The survey was distributed to accounting students at University Teknologi MARA Shah Alam (UiTM), University of Malaya (UM) and University of Kuala Lumpur (UniKL). This study has selected three universities in Klang Valley only. The survey was distributed using convenience-sampling approach by email and Google Form. In more detail, the results of the data collection were elaborated and presented in Table 1. This study distributed the questionnaires among accounting students since they have at least basic knowledge of tax policy in Malaysia.

4.0 RESULTS AND FINDINGS

4.1 Respondents Profile

A total of 71 questionnaires were gathered from the survey. As shown in Table 2, the majorities of the respondents were female that consists of 67.6 percent while only 32.4 percent were male. The largest group, in terms of age, as those aged between 18 to 25 years old (84.5%). In addition, it was shown that the level of education of the respondents with the largest percentage (64.8%) is Bachelor's Degree, followed by (23.9%) with a diploma, and the least (11.3%) was postgraduates.

4.2 Findings and discussions

4.2.1 Overall mean scores

Table 3 presents the list of the 18 statements with the mean scores and standard deviation for each statement. The mean score for all 18 statements is 2.87,

which on a scale of 1 to 5 represents strongly disagree to strongly agree. This result indicates that tax evasion is generally unethical. Also, the table shows that some scores are higher than others with some arguments to support that tax evasion is ethical and stronger than others. The range of the mean score for all statements is 2.39 to 3.79. These ranges suggest that there is a different support or opinion for each statement on the ethics of tax evasion among the respondents.

Based on the table, the highest mean with 3.79 suggests the strongest agreement that tax evasion is never ethical. This finding shows that respondents understand that tax evasion is illegal and unethical to be done. The results show that the perception of respondent fall under the unethical view of tax evasion. It is consistent with the prior studies which claimed that there was a strong belief with individuals who need to follow the rules since it was a moral obligation to pay taxes (Chan & Lan Mo, 2000; Reckers et al., 1994).

The second highest mean amounted to 3.34 indicated that respondents supported tax evasion as ethical if the tax system was unfair. In line with the arguments made by McGee (2006a) that tax evasion was ethical to be performed when the government involved in corruption and the tax system was perceived as unfairness. The third highest mean (3.20) of the 18 statements is when the respondents believed that tax evasion was ethical if a significant portion of money that had been collected winds up in the pockets of corrupt politicians or their families and friends. The second and third highest mean showed that tax evasion is ethical when the perceptions of tax are unfair due to corruption (McGee & Shopovski, 2018). Most of the respondents also agreed that tax evasion was ethical if there was discrimination made by the government due to religion, race, or ethnic background. The result was in line with Shapiro and Slemrod (2003), when they found respondents who were willing to pay higher taxes if they trust the government. It shows that the respondents may not evade tax if the government is serving the people well.

The lowest mean scored was 2.37 where the respondents believed that tax evasion was ethical if the probability of getting caught is low. The result suggested that tax evasion would always be unethical even if the taxpayers have a very low probability of getting caught and the tax authority unable to detect them.

4.2.2 Means score differentiated by age

Table 4 shows the mean score for three groups' age. This is important to examine whether age will change the perceptions of students towards the ethics of tax evasion. This study found that the youngest and eldest group had viewed tax evasion as ethical activities. The youngest group (18 – 25 years old) had an average

mean score of 2.95 while the eldest group (36 – 45 years old) had an average mean score of 2.81. A little bit lower mean represented the medium age group (26 – 35 years old) when the average mean score is 2.7. It shows that the youngest group is more likely to have a perception of tax evasion being ethical while the medium age group tends to avoid tax evasion. Nevertheless, the eldest group has two different opinions where they have opposed and support of the tax evasion depending on the situation. These results support the literature that tax evasion could be view as ethical or unethical based on the circumstances.

For the older people that opposed to tax evasion tend to avoid tax evasion. This result is in line with the arguments made by McGee et al. (2008) where individuals have the responsibility to disclose all the information and support the economic growth as well as helping the poor citizens through paying taxes. Based on McGee and Gupta (2008), older people are more respectful to their government by being ethical in order to show good behavior to younger generations. However, there are groups of older people that support tax evasion as ethical in certain circumstances. These results supported that older people are more likely to have perceptions of ethics on tax evasion (McGee & Shopovski, 2018) since respondents choose to be ethical on tax evasion according to some circumstances. Based on the survey, older people think that tax evasion has become ethical when corruption exists in the government by manipulating money among politicians' families and friends.

4.2.2 Means score differentiated by level of educations

Table 5 shows comparison of ethical perception towards tax evasion according to level of educational qualification. As mentioned earlier, the higher the mean, the more supportive the students are towards tax evasion and vice versa. From Table 5, it can be concluded that most of the degree and master's students have disagreed that tax evasion is ethical in their opinion, with the average mean for 18 questions for degree and master students with 2.87 and 2.47. In contrast, diploma students felt that tax evasion is ethical when they showed the highest score around 3.07. The results in the student status category seemed to indicate that master students were more opposed to tax evasion than undergraduate students. However, the reason for the difference in opinion was unclear. One possible explanation is that master students generally are older and have job experience than undergraduate students. Since older people tend to be more opposed to breaking the rules in general, and are more opposed to tax evasion in particular, it would be reasonable to expect that master students might be more opposed to tax evasion than undergraduate students (Ross & McGee, 2012).

Moreover, these results are aligned with the study done by McGee, Aljaaidi, and Musaibah (2012) when they found that senior students were most likely to agree that tax evasion is unethical at all compared to freshmen. Similar results were found in New Zealand when McGee and Gupta (2008) claimed that graduate students opposed to tax evasion is ethical than the undergraduate students.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This study was conducted to examine the perceptions of the university students in Malaysia on the ethics of tax evasion. The results of this study showed that most of the respondents agreed with tax evasion is unethical. However, tax evasion is ethical under some circumstances when the tax system is unfair and the government or political parties involved in corruption. The age and education have also been the contributions to the perceptions of students towards the ethics of tax evasion when the older group prefers to avoid tax evasion, as it is never ethical. A possible explanation is that the older group attempt to show their respects to the government (McGee & Gupta, 2008). The older group was also probably more concerned with the impacts of tax evasion towards the economy when it will reduce the government revenues and detain the development of the country (Jaidi, Raman, & Kassim, 2013). It will be more critical when it will decrease the purchasing power of a nation's currency, which brings to inflation (Crane & Nourzad, 1986). Not only that, but immoral behavior has also increased for that reason (Oberholzer, 2008).

The younger group shows the highest mean value that indicated the supportive students towards tax evasion. These findings lead to a possible recommendation to avoid the youngsters from being involved in illegal or criminal practices. Firstly, university students should be given an earlier awareness of the tax evasion issues by introducing the related syllabus in their education line. It is vital to make sure university students have enough knowledge of the tax evasion issues as well as its' impact on the country, nation, and taxpayer itself. Secondly, the government and political officers need to show their appropriate ethical behavior to the public and become the role models. On that remark, an ethical culture can be formed which consequently leads to establish trust among the younger group.

From this study, it can be concluded that the perception of university students towards tax evasion can be viewed as ethical or unethical highly depending on the fairness of the tax system and corruption. This view will influence the attitude of the taxpayer, therefore, educating the students earlier in tax evasion areas either through the formal syllabus or based on informal programs by the university is

highly recommended.

One of the limitations of this study is to collect more respondents from various universities to get more feedback. This is due to the difficulties to get responses from the public. Besides, this study could not also control the ability of the respondents to fill out the questionnaire in an honest way or not. Therefore, there are several areas for further development and applications for the undertaken work in this study. Since the respondents of the study were limited, future studies can conduct their collection of data with more respondents from various public and private universities in Malaysia. Therefore, future studies will be able to look upon whether there is a difference in the perception between public and private university students in Malaysia on the ethics of tax evasion. Future studies can improvise the data collection method by using other platforms to have better control over the honesty of respondents on answering the questionnaire given. Other than that, future studies can also include the ethnicity and the level of household income of the respondents that could give a better impression on whether different groups had different views on tax evasion since the current study only looking at gender, age, and level of education.

References

- Alm, J., & El-Ganainy, A. (2013). Value-added taxation and consumption. *International Tax and Public Finance*, 20(1), 105-128.
- Bagus, P., Block, W., Eabrasu, M., Howden, D., & Rostan, J. (2011). The ethics of tax evasion. *Business and Society Review*, 116(3), 375-401.
- Brown, P., Keim, D. B., Kleidon, A. W., & Marsh, T. A. (1983). Stock return seasonalities and the tax-loss selling hypothesis: Analysis of the arguments and Australian evidence. *Journal of Financial Economics*, 12(1), 105-127.
- Chan, K. H., & Lan Mo, P. L. (2000). Tax holidays and tax noncompliance: An empirical study of corporate tax audits in China's developing economy. *The Accounting Review*, 75(4), 469-484.
- Cobham, A. (2005). Tax evasion, tax avoidance and development finance. Queen Elizabeth House, *Série documents de travail*, 129, 1-20.
- Cohn, G. (1988). The Jewish View on Paying Taxes. *Journal of Accounting, Ethics & Public Policy*, 1, 109-120.

- Crane, S. E., & Nourzad, F. (1986). Inflation and tax evasion: An empirical analysis. *The Review of Economics and Statistics*, 68(2), 217-223.
- Crowe, M. (1944). *The moral obligation of paying just taxes*. Catholic University of America Press.
- Embaye, A. B. (2007). *Essays on tax evasion and government spending in developing countries* (Doctoral Thesis, Georgia State University). Retrieved from https://scholarworks.gsu.edu/econ_diss/31
- Gilbert, J. (2020, June 7). Time is ripe for reform of Malaysia's tax revenue. *The New Straits Times*. Retrieved from <https://www.nst.com.my/business/2020/06/598684/time-ripe-reform-malysias-tax-revenue>.
- Jaidi, J., Raman, N., & Kassim, A. W. M. (2013). Individual Taxpayers' Perception Towards Self-Assessment System : A Case Of Sabah. *Journal Of The Asian Academy Of Applied Business*, 2, 71-83.
- Kafkalas S, Kalaitzidakis P, Tzouvelekas V (2014). Tax evasion and public expenditures on tax revenue services in an endogenous growth model. *European Economic Review*. 70(C), 438-453.
- Karlinsky, S., Burton, H., & Blanthorne, C. (2004). Perceptions of tax evasion as a crime. *eJournal of Tax Research*, 2(2), 226.
- Kasipillai, J., Aripin, N. & Amran, N. A. (2003). The influence of education on tax avoidance and tax evasion. *eJournal of Tax*. 1(2), 134-146.
- McGee, R.W. (2006a). Teaching Ethics Using Tax Evasion Survey Data as a Case Study. *Proceedings of the Fifth Annual College of Education Research Conference, Section on Urban and International Education, Florida International University, Miami*, pp. 70-75.
- McGee, R.W. (2006b). Three views on the ethics of tax evasion. *Journal of Business Ethics*, 67(1), 15-35.
- McGee, R.W. (2008). *Opinions on Tax Evasion in Thailand*. In *Taxation and Public Finance in Transition and Developing Economies* (pp. 609-620). Springer, Boston, MA.

- McGee, R. W., Aljaaidi, K. S., & Musaibah, A. S. (2012). The Ethics of Tax Evasion: A Survey of Administrative Sciences' Students in Yemen. *International Journal of Business and Management*, 7(16), 1-16. <https://doi.org/10.5539/ijbm.v7n16p1>
- Mcgee, R.W., Basic, M., & Tyler, M. (2008). *Taxation and Public Finance in Transition and Developing Economies*. e-Book, Springer, 167-183. <https://doi.org/10.1007/978-0-387-25712->
- McGee, R. W., & Gupta, R. (2008). *The Ethics of Tax Evasion: An Empirical Study of New Zealand Opinion*. Florida University working Paper.
- McGee, R.W., & Tyler, M. (2006). *Tax Evasion and Ethics: A Demographic Study of 33 Countries*. Andreas School of Business Working Paper.
- McGee, R.W. & Shopovski, J. (2018). The Ethics of Tax Evasion: a Survey of Law and Economics Students in the Republic of Macedonia. *International Journal of Economic Sciences*, 7(2), 57-69.
- Mohamad, A., Zakaria, M.H. and Hamid, Z. (2016) Cash economy: tax evasion amongst SMEs in Malaysia. *Journal of Financial Crime*, 23(4), 974-986. <https://doi.org/10.1108/JFC-05-2015-0025>
- Ngah, Z. A., Ismail, N., & Abd Hamid, N. (2020). Tax evasion through fraudulent financial reporting amongst SMEs in Malaysia. *Journal of Financial Crime*.
- Oberholzer, R. (2008). Attitudes of South African taxpayers towards taxation: A pilot study. *Accountancy Business and the Pbulic Interest*. 7(1), 44-69.
- Palil, M. R., Malek, M. M., & Jaguli, A. R. (2016). Issues, challenges and problems with tax evasion: The institutional factors approach. *Gadjah Mada International Journal of Business*, 18(2), 187–206. <https://doi.org/10.22146/gamaijb.12573>
- Purwanto, P., & Indrawan, R. (2020, March). The Determinants of Tax Evasion in Directorate General of Customs and Excise Jakarta. In *Annual International Conference on Accounting Research (AICAR 2019)* (pp. 187-190). Atlantis Press.

- Pettinger, T. (2013). Difference between tax avoidance and tax evasion. Retrieved from Economics Help website: <https://www.economicshelp.org/blog/glossary/tax-avoidance/>
- Reckers, P. M., Sanders, D. L., & Roark, S. J. (1994). The influence of ethical attitudes on taxpayer compliance. *National Tax Journal*, 47(4), 825–836.
- Ross, A. M., & McGee, R. W. (2012). Education level and ethical attitude toward tax evasion: A six-country study. *Journal of Legal, Ethical and Regulatory Issues*, 15(2), 93–138. <https://doi.org/10.2139/ssrn.2410582>
- Shapiro, M.D. and Slemrod, J. (2003). Consumer response to tax rebates. *American Economic Review*, 93(1), 381–396.
- Sumartaya, D., & Hafidiah, A. (2014). The Influence Of Taxpayer's Awareness And Tax Morale Toward Tax Evasion. *International Journal of Business, Economics and Law*, 5(1), 60-68.
- Tanzi, V., & Howell, H. Z. (2000). Tax policy for emerging markets-developing countries. *International Monetary Fund Working Paper*.
- Yee, C. P., Moorthy, K., & Soon, W. C. K. (2017). Taxpayers' perceptions on tax evasion behaviour: an empirical study in Malaysia. *International Journal of Law and Management*. 59(3), 413-429. <https://doi.org/10.1108/IJLMA-02-2016-0022>.

A Study on Affordable Housing Issues Among Middle-Income Groups (M40) in Malaysia

Muhammad Azwan Sulaiman¹, Adilah Binti Yusof², Muhammad Nazim Alias³ and Mohamad Isa Abdullah⁴

^{1,2,3,4} Faculty of Architecture, Planning & Survey,
Universiti Teknologi MARA

Email: azwan@uitm.edu.my¹, adilahyusof@yahoo.com²,
nazim@uitm.edu.my³, isa006@uitm.edu.my⁴

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ABSTRACT

Owning a house is an essential part of a human's fundamental needs. The establishment of affordable housing that is adequate in number and fulfils liveable home standards is the major challenge in housing issues. Previous studies have found that the current interventions are insufficient in allowing average Malaysians to buy a home. The affordable housing-related issues that arise in Malaysia are not about the number of affordable houses in the market; however, it is about the availability of these houses for the middle-income groups. This study aims to investigate the issues and challenges faced by the middle-income group in dealing with affordable housing issues. This study is based on data from a survey questionnaire adapted from a past research which was similar in terms of affordable housing issues among middle-income earners. The data were analyzed and evaluated to rank the issues and provide recommendations. The findings suggest the establishment of an affordable housing agency to track and process affordable housing applications and approvals. The study results also suggest revising and improving the current affordable housing systems to help the middle-income groups to eventually own their first home. It is anticipated that the study can unravel the problems with affordable housing in this country.

Keywords: Affordable housing, housing among middle-income group, housing issues.

1.0 INTRODUCTION

Owning a house is an essential part of a human's fundamental needs. Houses act as a shelter providing security and protection for the inhabitants. A house is a place where people gather, connect, cherish, and communicate that then creates a positive surrounding. There is a wide range of residential properties in the property market today with various unique designs that could cater to consumer's preferences and lifestyle. Buyers could choose from the simplest of design to the most luxurious houses there is. However, the issues with average Malaysians not being able to afford buying properties is very disturbing, even though when the properties are categorized as "affordable".

This study focuses on the Middle 40% or M40 of the Malaysian population income group. The M40 group is the middle 40% with household income from RM4,360 to RM9,619 a month (Khazanah Research Institute, 2018). The middle-income people are caught in what is called the middle-income community trap. This is because they are not eligible for low-cost housing and are unable to afford the medium-cost projects which are claimed to be 'affordable' (Wai, 2019). Despite the numerous government initiatives in terms of housing programmes and schemes that have been introduced to support home buyers for the first time, most ordinary Malaysians still could not afford to buy such homes. Problems arise when most of the houses under this programme are priced skewing towards the higher end of the price range.

1.2 Problem Statement

Housing matters are deeply rooted and strongly related to a country's economic, political and social sphere, which makes it difficult to discuss without being linked to the broader governance and policies (Samad, Zainon, Rahim, & Luo, 2017). Despite its significance, the establishment of affordable housing that is adequate in number and has liveable home standards are the major challenge in housing issues (Baqutaya et al., 2016). Housing is fast becoming unachievable for the middle-income group, especially in urban areas, due to rising costs from the global economic crisis (PR1MA, 2012). Khazanah Research Institute (2014) stated that the current interventions are insufficient in allowing average Malaysians to buy a home. Lots of factors could be the reasons why this income group relentlessly face the housing affordability issues. One is largely due to slower income growth, where household income growth has failed to keep up with the rise in the prices of houses, as according to Ling et al. (2017) in BNM Quarterly Bulletin 2017.

1.3 Research Objectives

The first objective of the study is to identify the issues and challenges related to housing affordability faced by middle-income groups. Secondly, it is to analyze the housing affordability issues within the existing implementation of affordable housing programmes, and third to propose enhancements in the existing affordable housing programmes.

1.4 Research Scope

The research focuses only on the middle-income groups within the Putrajaya Federal Territory (WP Putrajaya) as it was only carried out in WP Putrajaya. The limitation of this study is that it only focuses on middle-income groups in WP Putrajaya, instead of the whole middle-income group population in the nation. Thus, the generalization and findings made from this study are only based on the middle-income groups of WP Putrajaya.

2.0 LITERATURE REVIEW

2.1 Middle-Income Group

Nationally, the M40 group is the middle 40% of Malaysian population with household income from RM4,360 to RM9,619 a month (Khazanah Research Institute, 2018). In 2016, the median household income for the M40 group in Malaysia was RM6,275 and the average household income was RM6,502 making all groups in Malaysia own an income share of 37.4 percent of total income in the M40 group (Department of Statistics Malaysia, 2016). The middle-income earners usually have more diverse earnings profiles compared to the low-income group, hence faced with different affordability issues (PRIMA, 2012).

This income group faces various problems with the increasing cost of living. This is because most of the government's initiatives are directed at the low-income community so that the middle-income community is not given adequate attention (Suhaida, Tawil, Hamzah, Che Ani, & Tahir, 2010). The middle-income people are caught in what is called the middle-income community trap. This is because they are not eligible for low-cost housing and are unable to afford the medium-cost housing that is so-called 'affordable.' Many in the M40 community who are young families are often unable to afford a 'middle-class' home near and close to their place of work (Wai, 2019).

2.2 Housing Affordability

Housing affordability is characterized as a household's decision between housing and non-housing expenditure which would also reflect a household balancing act (Suhaida et al., 2010). Housing affordability is commonly seen as the relation between the cost of housing and income (Nwuba, Kalu, & Umeh, 2015). This, however, has become a problem and an issue where most people could not afford to buy their first homes. The existing housing market does not meet middle-income housing needs (PR1MA, 2012). Housing affordability is the function of both income and house prices (Khazanah Research Institute, 2015) and also one of the key factors that describe the development and socioeconomic stability of a country (Suhaida et al., 2010). Khazanah Research Institute (2014) stated that affordable housing should cost three times the annual median income, and in the median income term, Malaysian houses are more expensive than those in Singapore and Ireland. Higher-income levels are needed among the nation to decrease the median multiple at such housing prices (PR1MA, 2012).

The disparity between housing supply and demand is also one of the main factors that contribute to housing unaffordability. The supply-demand imbalances worsened during the 2012-2014 period (Ling & Almeida, 2017). One explanation why most of the new properties in Kuala Lumpur remain affordable is the lack of responsiveness of housing supply to significant demand (Khazanah Research Institute, 2015).

2.3 Government Intervention

The 11th Malaysia Plan by Economic Planning Unit (EPU) (2015) outlined the targeted total unit of 63,000 affordable housing to be constructed during the period of the Plan (2016-2020). That means an average of 130,000 units per year of the Plan period. Economic Planning Unit (EPU) (2015), also outlined in the 11th Malaysia Plan, there is a need in continuing the Government's position in addressing the housing needs of the target groups by the implementation of ongoing programmes.

Government interventions in the housing industry could resolve the mismatch in housing demand and supply (PR1MA, 2012). These programmes include Perumahan Rakyat 1Malaysia (PR1MA) or 1Malaysia People's Housing Programme, Rumah Wilayah Persekutuan (RUMAWIP) or Federal Territories Housing Scheme, and Perumahan Penjawat Awam Malaysia (PPAM) or Civil Servant Housing Development, as well as financing schemes such as Skim Rumah

Pertamaku (SRP) or My First Home Scheme, MyHome and Special PR1MA End Financing (SPEF).

Housing sector interventions were more on the demand side by making housing financing cheaper or by providing incentives to home buyers, and on the supply side by subsidizing housing costs (Khazanah Research Institute, 2015). The solutions offered by the government through government interventions need to cater to the vagaries in the market segments within the middle-income group by targeting the initiatives towards different areas of problems (PR1MA, 2012).

3.0 RESEARCH METHODOLOGY

3.1 Research Approach

This study adopted the quantitative approach in gathering quantifiable data and performing statistical techniques. Information was collected from random respondents using sampling methods and questionnaires were sent out. A survey was conducted to identify the current issues of affordable housing among middle-income groups.

3.2 Location of Data Collection

The questionnaire survey of this study was only distributed online due to the recent pandemic of COVID-19 and the order from the Government on the enforcement of the Movement Control Order (MCO). Thus, the researcher opted to distribute the questionnaires to a sample of respondents from a few companies' WhatsApp group including the Public Sector Home Financing Board (LPPSA), Malaysia Rail Link Sdn Bhd (MRL), and Malaysian Administrative Modernizations and Management Planning Unit (MAMPU).

3.3 Sampling Design

The sampling method used in this study was the probability sampling method which is random sampling. The population for this study was estimated to be 320 individuals. The sample size of respondents for this study was 175. It is determined using the Krejcie and Morgan (1970) sample size determination table.

3.4 Pilot Test

For the pilot test, ten subjects were asked to answer the questionnaire survey to ensure the questionnaire items were accurately addressing the research questions. Data collected from these 10 subjects were directly entered into the SPSS software for a descriptive analysis. The reliability of the instrument was measured using Cronbach’s Alpha as it tests the reliability of multiple-questions Likert scale surveys. A value of 0.84 and 0.56 was obtained based on the two groups of items in the questionnaire survey.

4.0 DATA ANALYSIS AND FINDINGS

The questionnaire survey forms were distributed to a sample of 175 persons with a total of 171 responses received during the period of data collection which was approximately 4 weeks. From the 171 responses received, only 86 responses were valid and acceptable for analysis using the Social Science Statistical Package (SPSS). This is because only 86 respondents were in the M40 group as defined by Khazanah Research Institute (2018).

Part A: Respondents’ Profile

Table 4.1: Items of respondents’ profile

Item	Mode	Percentage
Age	35-44 years old	45.3
Gender	Female	51.2
Ethnic	Malay	84.9
Marital Status	Married	75.6
Education Level	Bachelor's Degree	47.7

Based on Table 4.1, the majority of the respondents were aged between 35 to 44 years old (45.3%), females (51.2%), of Malay ethnicity (84.9%), married (75.6%) and had bachelor’s degree (47.7%).

Part B: Employment Background

Table 4.2: Items of respondents' employment background

Item	Mode	Percentage
Occupation	Public sector	68.6
	RM3,000-RM4,000	18.6
Gross Salary		
Working Experience	11-15 years	24.4

Based on Table 4.2, the majority of the respondents were from the public sector (68.6%), earning gross monthly salary of RM3,000-RM4,000 (18.6%) and 24.4% have had working experience for 11-15 years.

Part C: Household Income – Spouses

Table 4.3: Items of respondents' spouses

Item	Mode	Percentage
Working Spouse	Yes	78.9
	Bachelor's Degree	45.1
Education Level		
Occupation	Public Sector	35.7
Gross Salary	RM2,000-RM3,000	22.1

From the total 86 respondents, 71 were married. Table 4.3 shows 78.9% of the respondents' spouse worked, 45.1% had bachelor's degree, 35.7% were working in the public sector and 22.1% earned gross monthly salary of RM2,000-RM3,000.

Part D: Issues and challenges of affordable housing

Table 4.4: Items on housing affordability

Housing Affordability	Mean
The current house prices are expensive for me to purchase [HA3]	4.57
I believe urbanization is attributable to the rising house price [HA5]	4.27
The current housing industry does not provide for the housing needs of the M40 group [HA6]	4.19
Houses are not affordable if I pay more than 30% of my income to purchase a house [HA7]	4.19
My problem in purchasing a house is inadequate income [HA1]	4.10
Houses are not affordable because of my financial commitments [HA8]	4.05

There are limited number of affordable housing choices in the housing market [HA2]	4.02
Houses are unaffordable because of the high initial upfront payment [HA4]	3.95
I have difficulties to purchase a house because of my insufficient income to secure a housing loan [HA9]	3.88

Table 4.4 shows the descriptive analysis on items related to housing affordability. The result of the analysis is the mean value. The most frequent or hardest challenge of affordable housing are represented by the highest mean value. Item HA3 is ranked number one with the highest mean of 4.57. Ranked at number two is item HA5 with a mean value of 4.27. This is followed by item HA6 in number three and HA7 in number four, both with a mean value of 4.19. Item HA1 is in number five with a mean of 4.10. In number six to eight respectively are item HA8 with a mean of 4.05, item HA2 with 4.02 mean value, and item HA4 with a mean value of 3.95. Lastly, ranked at number nine is item HA9 with a mean value of 3.88.

Table 4.5: Items on government interventions

Government Intervention [GI]	Mean
There should be a national housing body/corporation on affordable housing [GI7]	4.31
I am fully aware of housing schemes such as PR1MA, RUMAWIP, PPAM [GI1]	4.22
I am fully aware of financing schemes such as My First Home Scheme, MyHome, SPEF [GI2]	4.07
Affordable housing schemes are affordable for me in accordance to my income [GI5]	3.45
Affordable housing schemes have helped the M40 group to purchase a house [GI4]	3.22
Affordable housing schemes offer high-quality affordable housing for the M40 group [GI6]	3.21
I agree that government initiatives for affordable housing have been successful [GI3]	3.07

Table 4.5 shows the descriptive analysis on items related to government interventions. Item GI7 is ranked number one with the highest mean value of 4.31, followed by item GI1 with a mean value of 4.22. Item GI2 is in number three with a mean value of 4.07, item GI5 is ranked at number four with 3.45 a mean value, item GI4 is in number five with a mean value of 3.22, item GI6 is in number six with a mean value of 3.21, and lastly item GI3 is ranked at number seven with a mean value of 3.07.

5.0 CONCLUSION AND RECOMMENDATION

Objectives achieved are elaborated further based on the data analysis. Lastly, the recommendations on the study on affordable housing challenges among the M40 groups are also discussed.

5.1 Objectives Achievement

5.1.1 To identify the issues and challenges related to housing affordability faced by middle-income groups

Based on table 4.4, item HA3 “the current house prices are expensive for me to purchase” is ranked as the first problem faced by the middle-income groups. This issue has been the façade of all affordable housing issues in many countries and as for Malaysia, the house prices are seriously unaffordable (Ling et al., 2017). A survey conducted by Star Property (2018) also revealed that overpriced properties being the biggest challenge faced by home buyers. Item HA5 “I believe urbanization is attributable to the rising house price” is ranked at number two. This specific challenge is related to developing countries like Malaysia where rapid urbanization has pressured urban housing thus pushing up the cost (Nwuba et al., 2015).

HA6 “the current housing industry does not provide for the housing needs of the M40 groups” is ranked at number three as a challenge for the middle-income groups to own a house. Housing needs that are being discussed include the type, size, location, design, and especially price that suits the income of the M40 groups. Most developers tend to neglect to respond to the supply and demand of the current housing industry (Inn, 2016). Ranked in number four is item HA7 “houses are not affordable if I pay more than 30% of income to purchase a house”. This statement is based on the Median Multiple (MM) methodology where a house is considered affordable if it can be financed by less than three times the household’s median annual income (Ling et al., 2017). Malaysia’s current median multiple is at a level

of serious unaffordability.

Item HA1 “my problem in purchasing a house is inadequate income” is ranked at number five. This problem occurs among the middle-income groups due to the growth of household income has not kept up with the rise in house prices, with lower increase in household income over the years compared to the increase in house prices (Ling et al., 2017). Item HA8 “houses are not affordable because of my financial commitments” is ranked at number six. The middle-income groups or M40 consist mostly of newly-weds, small families or fresh graduates who are just starting their adult and working phase. These groups have the tendencies to spend their monthly income on cars rather than a house. Thus, the additional commitments that are not suitable for their level of income make it difficult for them to commit to owning a house.

Ranked at number seven is item HA2 “there are the limited number of affordable housing choices in the housing market”. Although certain developers claimed to have developed affordable housing projects, the prices of these developments are still skewed towards the unaffordable range. For the middle-income groups, they have limited choices due to the factor of pricing of houses in the market. Ranked at number eight is item HA4 “houses are unaffordable because of the high initial upfront payment”. With properties being overpriced in the market, the challenge with high initial upfront payment follows (PR1MA, 2012). The normal practice in Malaysia is 10% upfront payment as a deposit for securing the property and the middle-income groups struggle to pay for this. HA9 “I have difficulties to purchase a house because of my insufficient income to secure a housing loan” is ranked last at number 9. The problem with house financing is the least worried about as it is continued to be available for eligible borrowers with about 70% of housing loans approved are for first-time homebuyers (Ling & Almeida, 2017).

Based on table 4.5, item GI7 “there should be a national housing body/corporation on affordable housing” is ranked first among all the items that relates to government interventions of affordable housing. Malaysia should have already come up with affordable housing special body or corporation that houses all applications and data of eligible people. Through this standardized system, middle-income earners will have better chance at owning a house as well as become more informed on affordable housing matters. Item GI1 “I am fully aware of housing schemes such as PR1MA, RUMAWIP and PPAM” is ranked at number two. This shows that most of the respondents are aware of the affordable housing schemes and programmes initiated by the government. This is also because these affordable housing programmes are available in every state in Malaysia especially in urban

areas. Rank at number three is item GI2 “I am fully aware of financing schemes such as My First Home Scheme, MyHome, SPEF”. The majority of the respondents of this research acknowledge the availability of financing schemes for affordable housing. These financing schemes are created to help eligible applicants in owning a house in several ways such as through zero down payments.

Next in rank number four is item GI5 “affordable housing schemes are affordable for me in accordance to my income”. Most PR1MA houses are in the price range of RM100,000 to RM400,000 (PR1MA) which are within the threshold of housing affordability for middle-income earners. Item GI4 “affordable housing schemes have helped the M40 groups to purchase a house” is ranked at number five. This item is ranked in the lower level among the other items because some of the respondents still feel that the affordable housing schemes have not effectively helped the M40 groups to own a house. Item GI6 “affordable housing schemes offer high-quality affordable housing for the M40” is ranked at number six. This item is also at the lower level of the ranks because most respondents are still skeptical on the quality of affordable housing available today. The last item in the rankings is item GI3 “government initiatives for affordable housing have been successful”. Item GI3 being ranked last proves that government initiatives in handling and controlling affordable housing have been inadequate. Better initiatives need to be figured out in the future, especially by the government.

5.1.3 To propose enhancements in the existing affordable housing programmes

Table 5.1: Recommendations to assist M40 groups to own a house

Recommendations to assist M40 groups to own a house	Percent
Government	58.7
Developer	23.9
Financial Institutions	13.0
M40	4.3

Table 5.1 shows the categorized responses from Part E of the questionnaire for question number 29. More than half of the respondents or 58.7% of them recommended actions to be taken by the government. The recommendations made by the respondents vary from all kinds of perspectives and some recommended that the government control the price of houses. Respondent 034 recommended that, “Government should strive to lower the housing developers’ costs in

terms of compliance costs so that the cost-saving can be passed to the buyers”. Some also suggested for the government to come up with specific policy made for first home buyers and the M40 groups. By doing so, the affordable price of housing can be reviewed. Respondent 069 stated, “To slow down private housing development”, and to develop more PR1MA projects. One of the respondents had suggested affordable housing schemes to be made through rental schemes. Respondent 093 suggested, “Improvement on the economy as a whole so it could provide dominoes effects towards strengthening the household income”. Second is recommendations for the developers (23.9%) in assisting the M40 groups to own a house. Recommendations made for the developers are all suggesting that the developers reduce the price of houses to suit the M40 groups. Respondent 074 stated, “Developer should focus on building the affordable house, not on luxury condo and bungalow”.

Third is recommendations made for the financial institutions. About 13% of the respondents suggested that this includes more rent-to-own schemes. Respondent 108 suggested, “Introduce the concept of “rent to own” that currently apply to B40 so that more M40 will be able to own a house”. Some also pleaded for lower financing rates and better financing schemes. Lastly are recommendations for the M40 groups to assist themselves in owning a house. The recommendations by only 4.3% of the respondents includes suggestion that the M40 start saving and move to suburban areas.

Table 5.2: Views on the effectiveness of government’s intervention in affordable housing

Views on the effectiveness of government's intervention in affordable housing	Percent
Needs improvement	78.6
Satisfactory	14.3
Moderate	7.1

Table 5.2 shows the categorized responses from Part E of the questionnaire for question number 30. Most of the respondents or 78.6% are of the opinion that government intervention in affordable housing as “needs improvement”. This is due to the problems of affordable housing among the middle-income groups still being unsolved and Respondent 085 stated, “Low enforcement”. Respondent 034 felt that “Presently, the government is seen as not effective in providing affordable housing” and supported by “Have not met its targeted intention” from Respondent 040. Respondent 126 stated that affordable housing schemes “Should be made accessible to all”. About 14.3% of the respondents are at “satisfactory” level

towards the effectiveness of the government's intervention in affordable housing. Respondent 069 stated, "Very good. But most of the applicants are trying to take advantage of it. Applicants usually buy that affordable house and rent it to others (mostly foreigners)", while Respondent 041 viewed the effectiveness as "Aggressive". The remaining 7.1% of the respondents viewed it as "moderate". Respondent 138 stated, "Pre GE 14 is effective, but during PH gov is more towards helping developers. New PN gov? Still early to speculate...".

Table 5.3: Enhancements to be made to current affordable housing programmes

Enhancements to be made to current affordable housing programmes	Percent
Incentives	41.0
Programmes	28.2
Pricing	23.1
Setting up organization	7.7

Table 5.3 shows the categorized responses from Part E of the questionnaire for question number 31. 41% of the respondents suggested enhancements to be made in forms of incentives and initiatives especially by the government. Most of the suggestions are on building more houses in urban areas with lower prices. Respondent 031 suggested, "Lower the price without compromising on the quality, offer more incentives for the first-time buyer", and Respondent 138 stated, "Control the price of building material, but at least 50 percent of penalty for unsold properties apartment/house, higher percent penalty for RPGT below 5years and monitor the property speculators".

Respondent 033 also suggested that the government "Upgrade the public transport surround the housing area as most of the affordable house are far from the city" and to "Revisit the term affordable housing and put a strong deal with the developer to check back the cost of housing development" by Respondent 093. Respondent 069 called for the government to "Must strictly the rules and regulations for the applicant/buyers. Must have a regular checking on the occupancy at the houses". Next is enhancements to be made towards the affordable housing programmes with 28.2% of the respondents responded to this category. Respondent 101 suggested, "The implementation mechanism, whether to give rebate or to fund some of the interest rates or lower the house price". "Reduce the income qualification for all types of applicants" as stated by Respondent 110, so that more people can buy the house. Respondent 061 recommended enhancement through "Gov should regulate the whole property ecosystem including the developers, property agent, and provide more scheme such as rent and own program".

About 23% of the respondents suggested enhancements towards the pricing of

the properties since this aspect is one of the biggest challenges faced by middle-income groups. While most of the responses were suggestions towards a reduction in property prices, Respondents 085 suggested, “Ceiling price should be established for development”. Respondent 099 and Respondent 100 suggested for, “Lower upfront payment”.

The last recommendation for the enhancements to be made to the current affordable housing programmes is setting up an organization. Only 7.7% of the respondents recommended this. The setting up of an organization is as stated by Respondent 034 where the government is to, “Create one national body to plan and implement affordable housing programmes”. This huge initiative can be adapted by taking Singapore’s Housing Development Board (HDB) as a benchmark. This is further supported by Respondent 012, “Proper planning by single Agency such as Housing Development Board in Singapore”.

5.2 Recommendations

The researcher of this study suggests that future studies to be done on the topics of affordable housing to cover more geographical areas in Malaysia as it is a growing concern in every part of the country. New researches can study on topics of affordable housing level that relate to other related housing problems that could be newly discovered. As more initiatives are being done by the government in assisting the middle-income groups, frequent updates should be made in future research to achieve more accurate results. Thus, it will also help the middle-income groups, the government, and developers to get a better insight into what is really happening in the housing industry. Perspectives from property gurus and analysts could also be included in the study. The future studies can also look at the rental affordability among the middle-income groups instead of just focusing on purchase affordability.

The government is also called upon to initiate more affordable housing schemes that include new housing programmes and new financing schemes to assist the middle-income groups in owning a house. The idea of setting up an organization similar to Singapore’s Housing Development Board (HDB) which is made specifically to handle all the applications and approval for affordable housing should be realized. This would not just help the middle-income groups to have better chances at owning a house, but also serves as a database for the government to monitor and control what is currently happening within the affordable housing industry. By setting up an affordable housing organization, better responsiveness towards the supply and demand of affordable housing in specific areas can be figured out

and thus, resources can be developed into providing housing for the middle-income groups. Developers are also encouraged to build and develop more affordable housing within the affordable range to assist the M40 groups to own a house. The developer can collaborate with the government to adopt certain housing schemes and programmes that would benefit all parties involved including the developer itself.

5.3 CONCLUSION

Housing affordability has been discussed for quite some time now and it is proven that there are obvious challenges faced by the middle-income groups regarding this issue. Housing is being priced way over the affordability threshold of most middle-income groups. The findings of this study have proven that properties are being overpriced, especially in urban areas. From the literature reviews, it is found that the median multiple of housing in Malaysia is at 5.0 which are seriously unaffordable even by international standards (Ling & Almeida, 2017). This clearly indicates that the middle-income groups struggle to own a house with their current income levels. The M40 groups are further pressured by being trapped in what called the middle-income group trap where they are not qualified for low-cost housing, yet also cannot afford to buy medium-cost housing. This group is very likely affected by the unsteady growth in household incomes compared to the growth of property prices over the years. This study has contributed to examining the issues and challenges faced by middle-income groups and further extend the reoccurring issues to benefit many parties including the government and developers. Housing affordability problems identified in this study can also be used by policymakers in conceptualizing and formulating new policies regarding affordable housing in the future. The framework of this study can also be applied by other researchers in studying in-depth the problems examined. This study also emphasized the recommendation on setting up an affordable housing organization such as the one in Singapore. From the recommendations of this study, the government should play a more proactive role in handling the affordable housing issues. The government has to be more serious in assisting the middle-income groups to own a house because it is a serious matter. Through the suggested enhancements to be made on the current affordable housing programmes, the government and all other key players of the industry are hoped to formulate better policies in order to provide for the M40 groups.

REFERENCES

- Baqutaya, S., Ariffin, A. S., & Raji, F. (2016). Affordable Housing Policy: Issues and Challenges among Middle-Income Groups. *International Journal of Social Science and Humanity*, 6(6), 433-436. doi:10.7763/IJSSH.2016.V6.686
- Department of Statistics Malaysia. (2016). Household Income and Basic Amenities Survey Report by State and Administrative District.
- Economic Planning Unit (EPU). (2015). Eleventh Malaysia Plan. Percetakan Nasional Malaysia Berhad.
- Inn, T. K. (2016). Supply 'mismatch' in housing market. *The Star*. Retrieved from <https://www.thestar.com.my/business/business-news/2016/03/25/supply-mismatch-in-housing-market/>
- Khazanah Research Institute. (2014). The State of Households. Khazanah Research Institute.
- Khazanah Research Institute. (2015). Making Housing Affordable
- Khazanah Research Institute. (2018). The State of Households 2018: Different Realities. Retrieved from Kuala Lumpur:
- Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size For Research Activities. *EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT*, 30, 607-610.
- Ling, C. S., & Almeida, S. J. (2017). Demystifying the Affordable Housing Issue in Malaysia. *Annual Report 2016*, 90-98.
- Ling, C. S., Almeida, S. J., & Wei, H. S. (2017). Affordable Housing: Challenges and Way Forward. *BNM Quarterly Bulletin*, 19-26.
- National Property Information Centre (NAPIC). (2019a). Median House Trend 2010-2019.

- National Property Information Centre (NAPIC). (2019b). The Residential Prices Quarterly Update Q1 2019. Retrieved from http://napic.jp-ph.gov.my/portal/main-page?p_p_id=ViewPublishings_WAR_ViewPublishingsportlet&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column_2&p_p_col_pos=1&p_p_col_count=2&_ViewPublishings_WAR_ViewPublishingsportlet_action=renderReportPeriodScreen&publishingId=444&pageno=1&language=
- Nwuba, C. C., Kalu, I. U., & Umeh, J. A. (2015). Determinants of homeownership affordability in Nigeria's urban housing markets. *International Journal of Housing Markets and Analysis*, 8(2), 189-206. doi:10.1108/IJHMA-06-2014-0020
- PR1MA. Eligibility. Retrieved from <https://www.pr1ma.my/register.php?lang=en>
- PR1MA. Skim Pembiayaan Fleksibel (SPEF). Retrieved from <https://www.pr1ma.my/spef.php?lang=en>
- PR1MA. (2012). A single agency for affordable quality housing and integrated communities in Malaysia: Study on the formation of PR1MA. Roland Berger Strategy Consultants.
- RUMAWIP. Info RUMAWIP. Retrieved from <https://rumawip.kwp.gov.my/>
- Samad, D., Zainon, N., Rahim, F., & Luo, E. (2017). Malaysian Affordability Housing Policies Revisited. *Open House International*, 42(1), 8.
- Star Property. (2018). What our survey says about first-time purchasers. Retrieved from <http://www.starproperty.my/index.php/articles/property-news/what-our-survey-says-about-first-time-purchasers/>
- Suhaida, M. S., Tawil, N. M., Hamzah, N., Che Ani, A. I., & Tahir, M. M. (2010). A Conceptual Overview of Housing Affordability in Selangor, Malaysia. *World Academy of Science, Engineering and Technology* 72, 3.

Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education*, 2, 53-55. doi:10.5116/ijme.4dfb.8dfd

Wai, W. C. (2019). Middle class malady. *The Star*. Retrieved from <https://www.thestar.com.my/opinion/columnists/on-the-beat/2019/04/07/middle-class-malady>

Zyed, Z. A. S. (2014). *Assessment Of Housing Affordability Problems Among Younger Working Households In Greater Kuala Lumpur*. (Doctor Of Philosophy), Universiti Malaya.

Postgraduates' Perceptions in Completion of Their Study

Teoh Sian Hoon¹, Geethanjali Narayanan², Raja Normi Raja Mohamad³, Gurnam Kaur Sidhu⁴

^{1,2}Faculty of Education, Universiti Teknologi MARA Selangor, 42300 Bandar Puncak Alam, Selangor, Malaysia, ³SMK Sultan Salahuddin Abdul Aziz Shah, Seksyen 2 Shah Alam, Selangor, Malaysia, ⁴Faculty of Education, SEGi University, Kota Damansara, 47810 Petaling Jaya, Selangor, Malaysia

Email: teohsian@uitm.edu.my¹, geetha@uitm.edu.my², ranurriz@yahoo.com³, ranurriz@yahoo.com⁴

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ABSTRACT

This study was conducted to investigate the postgraduate students' perceptions towards their experiences of completion of their studies. The population of this study consisted of postgraduate students in a public university in Selangor. The sample comprised 104 randomly selected postgraduate students from the university. A 5-point Likert scale questionnaire was administered to the samples. The questionnaire consisted of four domains, namely student factor; supervisor factor; institutional factor and challenges faced by the students. This study discovered that (1) the postgraduate students perceived supervisors as a determinant factor that contributes toward conducting research. (2) they perceived their academic competencies in research writing as moderate and (3) the supervisor factor has a significant and inverse relationship on challenges faced by the postgraduate students, i.e. the efforts and competencies of supervisors reduced challenges of the postgraduate students to complete their research. Based on the findings, it was suggested that higher learning institutions should highlight on the construction of knowledge through active interaction between lecturers and students. This type of assistance has become a platform for the students to cope up with the learning challenges they were facing in higher education.

Keywords: Challenges, institutional factor, supervisor factor, student factor

1.0 INTRODUCTION

Developing graduate education is essential as it can contribute to national economic development. Under the 11th Malaysian Plan, Malaysia is focusing on enhancing research skills to achieve the objectives featured in the plan (Outlook, 2016). All the efforts reflect the need to boost university research culture. Hence, universities need to focus on postgraduate students' development in research as a key indicator of innovation and development of human capital. According to Chapman and Chien (2014), global graduate enrolment has increased tremendously over the last decade. This reflects that the government has high priority in offering graduate education. In the Malaysia Higher Learning Institutions, students who pursue Master's Degree or Ph.D. programs in mixed mode program have to complete and pass all the prescribed core courses and the most vital focus is to proceed to the research phase of the program (Ishak & Alias, 2005). The academic thesis is the most symbolic example of a research project conducted by students (Nieminen, Takkinen, Renko & Risteli, 2007; Maxwell, 2011). The academic thesis can be considered as the first systematic empirical step of research, introduced to most of the postgraduate students (De Kleijn et al. 2012). The development of postgraduate (PG) programs has offered vast opportunity to young academicians to further their studies. Several studies have found that many of the graduate education programs worldwide have attracted mature professional-based and non-residential student studying on a part-time basis (Humphrey & McCarthy, 1999). Nevertheless, these students have to struggle to cope with challenges in their academic and professional workloads. Sometimes, they have experienced a lack of assistance and support from their supervisors; rigid program organization and structures; and a feeling of isolation (Mackinnon, 2004). Having said that, literature has found that postgraduate supervision has become a problematic context. To some extent, due to this problematic context, the attrition and completion rates of postgraduate students are becoming a vital concern to many universities (Lessing & Schulze, 2002). Hence, it is significantly important to observe students' experiences in conducting research and its' relation to challenges faced by them. The challenges have connection with students' individual factors, supervisors' factors as well as institutional factors. For example, Lessing and Schulze (2002) have reviewed a literature text and found that PG students were having difficulty in their research design; collecting and processing information; and writing a thesis report. Sidhu et al. (2013) have also stated that postgraduate students are also lacking academic literacy and research skills. In another study, Sidhu et al. (2014) have stated that postgraduate students and the relationship with their supervisors can also be a problem. Zuber-Skerritt and Roche (2004) have affirmed that in a supervision context, the roles of supervisors are to provide resources and information; feedback

and guideline of thesis writing, giving emotional support, and encouragement. Lessing and Schulze (2002) have also distinguished between the support needs of Master's Degree and PhD students, where the Master's Degree students need to methodologically master the research process and the doctoral candidates are expected to produce more original work and may, therefore, need more input in developing depth, synthesis, and critical ability. All the findings and suggestions have signified that PG students need more motivation as discovered by Teoh, Geethanjali, & Gurnam (2019). In the nature, supervisors play very important role directly and indirectly to guide and monitor students' progress, so that students are motivated to graduate on time. Besides, challenges remain exists since many other factors are in the concerns. Consequently, according to Philips and Pugh (2000), in order to complete PG research, students need determination and perseverance in facing their challenges. In this sense, Phillips and Pugh (2000) further remind that postgraduate students should take responsibility for their studies and to ascertain what is needed for their research. Conversely, Mackinnon (2004) cautions that the faculty or universities and the graduate school office need to address and acknowledge the intellectual and psychological conditions of their students. They need to provide conducive macro and micro-environment as well as individual resources to enhance graduate completion and performance (Lovitts, 2005). Therefore, postgraduate students' perceptions towards contributing factors from the three aspects (namely students, supervisors and institution) are important in conducting research and its relationship with challenges that they have faced is pertinent in this study. Hence, this study provides an insight to improve further the quality of PG students and to elevate good research while improving the completion rates of the students.

2.0 BACKGROUND OF THE STUDY

One of the requirements of the postgraduate studies is to conduct a research and write a thesis. PG students should be able to demonstrate their knowledge, attitude, initiative, confidence, and perseverance along with their own research spirit into their academic thesis (Radafshar et al, 2010). Nonetheless, Stuart et al. (2008) have asserted that one of the basic principles in the completion of any study is the researchers' beliefs about research. Their beliefs will strongly motivate them to undertake a study and later successfully complete their study. On the contrary, previous studies have shown that PG students take a longer time to complete their studies (Ismail, Abiddin, & Hassan, 2011). In addition, it was reported that attrition rate among Malaysia postgraduate students was high. In this case, there are some factors that need to be explored with regards to their beliefs since the focus of

beliefs had shown a strong factor in the completion of study. Many researchers such as Moskvicheva, Bordovskaia, Darinskaya (2015) emphasised that students' and supervisors' responsibilities within an institution play a major role to ensure the flow of the students' progress in writing. Hence the factors related to students, supervisors and institution pose as challenges for students to complete their studies. Malaysia in general aims to produce as many PG scholars as possible, particularly among Ph.D. graduates by 2023. Wang and Li (2008) have reported that the quality of research theses and dissertations were low. Given the role of research in a higher learning institution, it is critical to understand what are the determinant factors that contribute to the success or failure in pursuing PG studies.

To address this issue, one of the overriding questions is "What are the postgraduate students' reasons behind the inability to complete their studies?". Previous studies showed that there were contributing factors that postgraduate students encountered in the process of doing research and thesis activities (Duze, 2010). Such factors include, firstly, students themselves (such as students' knowledge, experience, commitment, socioeconomic condition, communication skill, stress and time management as described by Bocar, 2009), secondly, the institution (such as cooperation, guidance, fund and physical facilities as described by Safari et al., 2015), and thirdly, supervision (such as student supervisor relationship, supervisor knowledge and interest, regular contact between supervisor and student and timely feedback as described by Yousefi, Bazrafkan & Yamani, 2015). Some studies have also noted that factors in the categories of attitude, knowledge, and barriers toward research (Soe et al., 2018; Khan, Khan & Iqbal, 2009). Hence, in relation to such factors, Lovitts (2005) found that graduate students are often not prepared to face the challenges that have been set on them by the school of graduate studies. Malfroy (2005) noted that some of the graduate students had anxiety due to the uncertain expectations. Given this point, most of the studies conducted worldwide on postgraduate training have focused on issues of supervision (Åkerlind & McAlpine, 2017; Mapolisa & Mafa, 2011). However, there were limited studies on challenges of writing theses or dissertations (Wang & Li, 2008; Bitchener & Basturkmen, 2006; Lessing & Schulze, 2002). Besides, studies pertaining to PG students' perception of determinant factors on conducting research and its' association to challenges are still scanty, particularly in a local context. Therefore, this study intends to investigate determinant factors and its relationship with challenges in conducting research studies among PG students in a higher learning institution.

The major objectives of this study are:

- 1) To examine the PG students' perceptions on their experiences (in terms of student factor, supervisor factor, institutional factor) of conducting research in a university in Selangor.
- 2) To identify challenges faced in conducting research among PG students in a university in Selangor.
- 3) To investigate the relationship between the students' experiences and challenges in conducting research among postgraduate students in a university in Selangor.

This study provides an important insight to the stakeholders such as universities, graduate school offices, deans and head of programs as a guide to reduce attrition rates among PG students. The finding may enable stakeholders, especially faculty and graduate school office, to understand students' perceptions of guidance, self-assessed strengths, and areas for improvement, which will help them meet their students' needs and provide the necessary support services. More importantly, the findings of this study can provide information in reducing some of the challenges faced by the graduate students in terms of the emotional state, self-management, as well as academic competency. Therefore, it is apparent for the universities to design and consolidate research culture, reduce research-related emotional state and create a conducive and comfortable environment for postgraduate students. Apart from that, creating a research culture is an important factor to educate and encourage a close relationship between supervisors and supervisees. In this sense, the graduate students are exposed to research scientifically and thus increase their academic competency and reduce their research anxiety.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study employed the descriptive survey research design to examine the postgraduate students' perceptions on their studies. The perceptions focus on the PG's experiences on their studies. Their sharing of experiences articulates some beliefs towards the challenges and direction to complete PG studies. The beliefs based on perceptions are usually captured via a survey research as prescribed by Babbie (1990).

3.2 Sampling

Population is the total number of units found in a study site whether the human or the object being studied. The population of this study consisted of PG students undertaking Master and Doctoral degree in a public university. A random sampling technique was conducted. A total of 183 PG students from the university were randomly selected, based on sample size recommended by Krejcie and Morgan (1970). However, out of 183 respondents, only 104 responded to the questionnaire.

3.3 Instrument

The questionnaire was adopted and adapted from Sidhu et. al., (2014). In this study, self-rating questionnaire was used as the research instrument to assess PG students’ perception towards those variables. This questionnaire consisted of four domains, namely student factor, supervisor factor, institutional factor, and challenges. The sections involve section A consists of respondents’ demographic profile, meanwhile Section B, C and D consist of the 61 items measuring determinant factors (student factor, supervisor factor, institutional factor, and challenges) which comprised three dimensions. On the other hand, Section E consists of challenges faced by postgraduate students in conducting research which consist of 24 items. Description of the items of this instrument were categorized into the four dimensions as shown in Table 1.

Table 1: Experiences, challenges and its dimensions

Section	Dimension
B	Students' factors (32 items) Critical Reading Skills Writing skills Research skills Conceptual skills Personal skills
C	Supervision's factor (18 items) Supervisors Roles and Responsibilities Supervisory Practices Supervisors' Competency
D	Institutional factors (11 items) Institutional facilities Institutional support
E	Challenges (24 items) Emotional state Self-management Academic competence

Table 2 presents some sample items of the questionnaire. The items for the domain of challenges consist of items which carry negative values. Hence, the negative correlation between the domain of challenges to the domain of other factor indicates more challenges for less input of the factor, for example if the correlation between supervision's factor and challenges is negative, indicates that high challenges incur with less input from supervisor. Alternatively, it shows that less challenges incur with more input from supervisor.

Table 2: Sample Items

Dimension	Item
Challenges	Emotional State
	I suffer from stress doing a postgraduate degree.
	I lack interest in my postgraduate study.
	Self-management
	I have problems strategizing from my failures.
	I have poor time management skills.
	Academic Competence
	I have limited access to research subjects and contacts.
	I lack in-depth reading in the area of my investigation.

Validity and Reliability

Validity is a test to measure what is supposed to be measured (Fraenkel, Wallen & Hyun, 2012). Conducting the validity of the instruments used is important so that the items to be measured are valid and the findings are based on facts that can provide justification. Apart from validity, it is important to conduct a reliability test of the instrument. As such, to determine the validity of the instrument, the instrument was given to a few experts to make certain of the face and content validity. The experts were selected from the field of educational management and leadership with vast experience in research work.

Reliability is the consistency of instrument in producing the same score each time it is used (Fraenkel, Wallen & Hyun, 2012). It is a measurement procedure that can be defined as the stability or consistency of a measure (Fraenkel, Wallen & Hyun, 2012). In order to ascertain the reliability of the instrument a pilot test was conducted to a group of 30 postgraduates who were not involved in this study. The result of the pilot test was reported as below in Table 3.

Table 3: Cronbach's Alpha Value

	Cronbach Alpha value
Experiences/Determinant factors	0.947
Students	0.964
Supervisors	0.964
Institutional	0.906
Challenges faced	0.950
Emotional state	0.875
Self-management	0.901
Academic competency	0.874
Overall	0.911

The Cronbach’s Alpha value (Table 3) of section determinant factors was 0.947 while the challenges faced by postgraduate students was 0.950 where it exceeded the minimum acceptable value of 0.7 as suggested by Nunnally and Bernstein (1994). The reliability estimate for the whole set of questions was very high (0.911) and it demonstrates a very good scaling of the instrument.

4.0 FINDINGS

The following are the findings according to the research questions:

4.1 Research Question 1: What are the students’ experiences in conducting research?

The postgraduate students’ experiences in conducting research were identified in terms of three main factors, students, supervisors, and institutional factors (Table 4).

Table 4: Experiences in Conducting Research

Determinant factor toward conducting research	Mean	Std dev
Students’ Factors		
Student Critical Reading	3.56	0.59
Student Writing Skill	3.43	0.72
Student Research Skill	3.39	0.67
Student Conceptual Skills	3.40	0.69
Student Personal Skills	3.64	0.65
Total	3.48	0.66
Supervisors’ Factors		
Supervisors’ Roles	3.93	0.79
Supervisors’ Practice	4.08	0.78
Supervisors’ Competency	4.10	0.79
Total	4.03	0.78
Institutional Factors		
Institutional Facilities	3.50	0.66
Institutional Support	3.39	0.78
Total	3.44	0.72

Mean indicator Low<1.66; Moderate= 1.67- 3.33; High= > 3.34

Table 4 indicates the mean and standard deviation scores of respondents' perception towards the determinant factors in conducting research. The mean of the students' factor is 3.48 (SD=0.56). Specifically, the breakdown are critical reading skills, mean= 3.56, standard deviation SD=0.56, followed by writing skills, mean=3.43, standard deviation SD=0.72, then conceptual skills, mean= 3.40, standard deviation SD=0.65 and lastly research skills, mean=3.39, standard deviation SD=0.67. The finding shows that the postgraduate students rated their skills descriptively above average high. This is reflected in the result where the highest mean score was students' personal skill with mean=3.64, standard deviation SD=0.65.

Comparatively, students rated supervisors' factors higher compared to the other two factors (students and institution factors). In terms of supervisor's factors, the total mean scores of supervisor's factors is = 4.03 with standard deviation SD=0.78. It was the highest determinant factor for the postgraduate students to conduct the research. Specifically, the respondents rated with mean 4.10 standard deviation (SD=0.79) for item supervisors' competency, followed by supervisors' practices with mean 4.08 with standard deviation (SD=0.78) and lastly, respondents rated the item of supervisors' roles with mean 3.93 with standard deviation (SD=0.79).

In terms of institutional factors, the total mean is 3.44 (SD=0.72). Specifically, the respondents rated with mean 3.50 (SD=0.66) for institutional facilities and mean 3.39, (SD= 0.7) for institutional support. The result depicts that institutional facilities is accounted as the highest mean score.

The finding indicates that overall, the students perceived that all the determinant factors namely, students, supervisors and institutional factors were high. Hence, this study suggests that all the determinant factors play important roles in the life of the postgraduate student in the process of their learning and conducting research. Nevertheless, the result of the study depicts that supervisor's factor is the most important determinant factors that the postgraduate students are involved in conducting research.

This finding supports the research done by Alam, Alam and Rasul. (2013). Supervisor's role, practices and competency are important factors in making sure these students could complete their theses. In this sense, Lessing and Schulze (2002) concurred that a varied pattern of supervisory involvement in the research process can produce the excellent results. Hence, this pattern involves a significant initial investment in time and effort in formulating the research question, followed by less interaction and more monitoring during the implementation phase, and finally increased input during the eventual writing of the research report. Besides,

Alam et al (2013) reviewed past studies and found that the successful completion of a thesis was mainly due to the abilities of the students and supervisor relationships. On the same note, failing to complete student’s thesis is due to problems related to inadequate supervision, research support and research environment.

4.2 Research Question 2: What are the challenges faced toward conducting research among postgraduate students?

The postgraduate students’ challenges were investigated in terms of emotional state, self-management and academic competence as illustrated in Table 5.

Table 5: Challenges faced toward conducting research

Challenges toward conducting research	Mean	Std Dev
Emotional state	2.54	0.81
Self-Management	2.36	0.81
Academic Competence	2.58	0.93
Total mean score	2.49	0.85

Mean indicator Low= <1.66; Moderate= 1.67- 3.33; High= > 3.34

Table 5 reports the mean and standard deviation scores of respondents’ perceptions towards challenges in conducting research. On the whole, the finding showed that perceived a moderate challenges in conducting research where the mean of challenges faced toward conducting research is 2.49, (SD= 0.85).

The mean scores for each component in challenges factors was arranged in descending order to rank the levels of challenges faced by the postgraduate. The results show that the respondents perceived a moderate challenges related to academic competence with mean= 2.58 with SD=0.93. The second challenges is related to emotional state where mean= 2.54 with standard deviation SD= 0.81 and the least challenges was self-management, mean= 2.36 with standard deviation SD= 0.81.

The finding showed that the challenges related emotional state, self-management, and academic competence toward conducting research among the post graduate students were moderate. In this study, the challenges in emotional state is referred to students’ feeling of pleasure or displeasure which occur with achievement goals. Therefore, in this context, the respondents’ feeling of pleasure or displeasure toward conducting research is moderate. According to Morrison-Saunders, Moore, Hughes and Newsome (2010) emotions experienced in the doctoral process may relate to student success with respect to completion rates. In details, students who

are having emotional state of feeling displeasure in any environment may lead to behaviours such as boredom, disenchantment, laziness (Eastwood, Frischen, Fenske & Smilek,, 2012).

4.3 Research Question 3: Is there a relationship between determinant factors and challenges toward conducting research among postgraduate students?

H_0 : There is no relationship between determinant factors and challenges toward conducting research among postgraduate students

H_1 : There is a relationship between determinant factors and challenges toward conducting research among postgraduate students

Table 6 shows the correlation matrix analysis of perceived experiences in conducting research and challenges in conducting research among postgraduate students.

Table 6: Correlation of experiences and challenges in conducting research

		Determinant Factors R value		
Challenges research	inducting	Students -0.299 p=0.00	Supervisors -0.413 p=0.05	Institutional -0.09 p= 0.40

In this study, the relationship between experiences and challenges faced in conducting research were examined using the Pearson's Product Moment correlation. Based on Table 6 above, supervisors' factors and challenges faced in conducting research showed a negative and moderate ($r=-0.413$, $p=0.05$) linear relationship. On the other hand, students' factors and challenges faced in conducting research showed a weak and negative ($r=-0.299$, $p=0.00$) linear relationship. However, the result depicts that there was no significant relationship between institutional factors and challenges faced in conducting research where $r= -0.09$, $p=0.40$.

The study reveals that the students' and supervisors' factors do influence challenges in conducting research but in inversely manner. In other words, the challenges faced by the students and supervisors could be reduced if student determinant factor is increased. In this study, students' factor in conducting research is referred to the students' ability in acquiring critical reading, writing, research and conceptual skills. Phakiti and Li, (2011) also discovered that was a positive relationship between general academic problems with challenges of academic writing. Besides,

it was also found that English language achievement, experiences and academic adjustment had an impact on their academic writing difficulties. Therefore, this study suggests that the challenges in conducting research could be reduced if the student's academic skills particularly in academic writing and perhaps, language are enhanced through proper guidance from the university faculties and supervisors.

The finding also reveals there is a moderate and inverse relationship between supervisors' factors and challenges faced by the students in conducting research. This study is in line with the research done by Ezebillo (2012) and Sidhu et al (2013). The relationship between supervisor and student plays a crucial role in completion of research studies. Deductively, if these students have a poor relationship with their supervisors, there is a tendency in a delay in completing their theses.

4.0 CONCLUSION

All in all, this study aims to find the relationship with challenges in conducting research studies among postgraduate students, this quantitative study managed to highlight a few factors namely students, supervisors, and institutional factors. Based on the findings, students rated supervisors' factors more compared to the other two factors (student and institutional factors) which spell the importance of maintaining a good relationship with supervisors. The results revealed that postgraduate students perceived conducting research as a challenge. Academic competence was rated most challenging compared to the emotional state and the least challenging was self-management. The correlation results in this study shows that supervisors' factors and challenges faced in conducting research showed a negative and moderate linear relationship. On the other hand, students' factors and challenges faced in conducting research showed a weak and negative linear relationship. However, the result depicts that there was no significant relationship between institutional factors and challenges faced in conducting research. Consequently, knowing the relationship among student, supervisor and institutional factors can be helpful to minimize the challenges faced by postgraduate students to complete their studies successfully on time.

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REFERENCES

- Åkerlind, G., & McAlpine, L. (2017). Supervising doctoral students: variation in purpose and pedagogy. *Studies in Higher Education*, 42(9), 1686-1698. doi.org/10.1080/03075079.2015.1118031
- Alam, F., Alam, Q., & Rasul, M. G. (2013). A pilot study on postgraduate supervision. *Procedia Engineering*, 56, 875-881.
- Alam, F., Alam, Q., Chowdhury, H., & Steiner, T. (2013). Transnational education: benefits, threats and challenges. *Procedia Engineering*, 56, 870-874.
- Babbie, E. R. (1990). *Survey research methods* Wadsworth Pub. Co Belmont, Calif, 3(9).
- Bitchener, J., & Basturkmen, H. (2006). Perceptions of the difficulties of postgraduate L2 thesis students writing the discussion section. *Journal of English for Academic Purposes*, 5(1), 4-18. dx.doi.org/10.1016/j.jeap.2005.10.002
- Bocar, A. (2013). Difficulties encountered by the student-researchers and the effects on their research output. *Proceeding of the Global Summit on Education 2013*, 61-67. doi: 10.2139/ssrn.1612050.
- Chapman, D., & Chien, C. L. (2014). *Higher education in Asia: Expanding out, expanding up*. Montreal: UNESCO Institute for Statistics.
- De Kleijn, R. A., Mainhard, M. T., Meijer, P. C., Pilot, A., Brekelmans, M. (2012). Master's thesis supervision: Relations between perceptions of the supervisor-student relationship, final grade, perceived supervisor contribution to learning and student satisfaction. *Studies in Higher Education*. 37(8), 925-939. doi.org/10.1080/03075079.2011.556717
- Eastwood, J. D., Frischen, A., Fenske, M. J., & Smilek, D. (2012). The unengaged mind: Defining boredom in terms of attention. *Perspectives on Psychological Science*, 7(5), 482-495.

- Ezebillo, E.E. (2012). Challenges in postgraduate studies: Assessments by doctoral students in a Swedish University. *Higher Education Studies*, 2(4), 49-57. doi:10.5539/hes.v2n4p49.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: Mc Graw Hill.
- Humphrey, R., and McCarthy, P. (1999). Recognising difference: providing for graduate students. *Studies in Higher Education*, 24(3), 371-386. doi.org/10.1080/03075079912331379955
- Ishak, I.S and Alias, R.A(2005). Designing a strategic information systems planning methodology for Malaysian Institutes of Higher Learning (isp-ipta), *Issues in information system*, 6(1). doi.org/10.1080/03075079912331379955
- Ismail, A., Abiddin, N. Z., & Hassan, A. (2011). Improving the development of postgraduates' research and supervision. *International Education Studies*, 4(1), 78-89. 10.5539/ies.v4n1p78
- Khan H., Khan S. & Iqbal A. Knowledge, attitudes and practices around health research: The perspective of physicians-in-training in Pakistan. *BMC Med Educ.* 2009, 9(46). doi: 10.1186/1472-6920-9-46. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2719622> .
- Krejcie, R.V. & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*. 30(3), 607-610. doi.org/10.1177/001316447003000308
- Lessing, A. C. and Schulze, S. (2002). Graduate supervision and academic support: students' perceptions. *South African Journal of Higher Education*, 16(2), 139-149. DOI: 10.4314/sajhe.v16i2.25253
- Lovitts, B. E. (2005). Being a good course-taker is not enough: a theoretical perspective on the transition to independent research. *Studies in Higher Education*, 30(2): 137-154. doi.org/10.1080/03075070500043093
- Mackinnon, J. (2004). Academic supervision: seeking metaphors and models for quality. *Journal of Further and Higher Education*, 28(4), 395-405. doi.org/10.1080/0309877042000298876

- Malfroy, J. (2005). Doctoral supervision, a workplace research and changing pedagogic practices. *Higher Education Research and Development*, 24(2), 165-178. doi.org/10.1080/07294360500062961
- Mapolisa T. & Mafa O. (2012). Challenges being experienced by undergraduate students in conducting research in open and distance learning undergraduate students. *International Journal of Asian Social Science*, 2(210). Corpus ID: 142842397
- Maxwell T. W. & Smyth, R. (2011). Higher degree research supervision: from practice toward theory. *Higher Education Research & Development*, 30(2), 219-31. doi.org/10.1080/07294360.2010.509762
- Morrison-Saunders, A., Moore, S.A., Hughes, M. & Newsome, D. (2010). Coming to terms with research practice - Riding the emotional rollercoaster of doctoral research studies. In: Thomson, P. and Walker, M., (eds.) *The Routledge doctoral student's companion: getting to grips with research in education and the social sciences*. Routledge: New York.
- Moskvicheva, N., Bordovskaia, N., & Darinskaya, L. (2015). Role of Students and Supervisors' Interaction in Research Projects: Expectations and Evaluations. *Procedia - Social and Behavioral Sciences*, 171, 576-583. doi.org/10.1016/j.sbspro.2015.01.163
- Nieminen P, S. K., Takkinen H. M., Renko, M. & Risteli, L. (2007). Medical theses as part of the scientific training in basic medical and dental education: experiences from Finland. *BMC Medical Education*, Dec 5, 7(45). doi.org/10.1186/1472-6920-7-51
- Nunnally J, & Bernstein L. (1994). *Psychometric Theory*. New York: McGraw-Hill Higher, INC.
- Outlook, O. E. (2016). 2016 OECD Economic Surveys: Malaysia 2016 Economic Assessment This 2016 OECD Economic Survey of Malaysia examines recent economic developments, policies and prospects. The special chapters cover: Productivity and Inclusive Growth. English.

- Phakiti, A. & Li, L. (2011). General academic difficulties and reading and writing difficulties among Asian ESL postgraduate students in TESOL at an Australian university. *REL C Journal*, 42(3), 227-264. dx.doi.org/10.1177/0033688211421417
- Phillips, E. M. & Pugh, D. S. (2000). *How to Get a Ph.D.- A Handbook for students and their supervisors*. Buckingham: Open University Press.
- Radafshar, G., Sobhani, A. & Sadegh F. (2010). Survey the Attitudes towards Thesis Writing. Process among Students of Guilan University of Medical Sciences. *Journal of Guilan University of Medical Sciences*, 19(74), 86-97. Retrieved from <http://journal.gums.ac.ir/article-1-204-en.html>
- Rauf, F.A. (2016). Challenges of thesis work: towards minimizing the non-completion rate in the postgraduate degree program. *Eur J. Bus. Manag.* 8(7), 113-124. Retrieved from <https://www.iiste.org/Journals/index.php/EJBM/article/view/29456/30246>
- Safari, B., Mahdi Mortazavian, S. M., Sadat-Noori, S. A., & Foghi, B. (2015). Effect of water stress on yield and yield components of cumin (*Cuminum cyminum* L.) ecotypes. *Journal of Plant Physiology & Breeding*, 5(2), 51-61.
- Sidhu, G.K., Kaur, S., Fook, C.Y. & Yunus, F.W. (2013). Postgraduate supervision: Exploring Malaysian students' experiences. *Procedia – Social and Behavioural Sciences* 90, 133–141. doi.org/10.1016/j.sbspro.2013.07.074
- Sidhu, G.K., Kaur, S., Fook, C.Y. & Yunus, F.W., (2014), Postgraduate supervision: Comparing student perspectives from Malaysia and the United Kingdom. *Procedia – Social and Behavioural Sciences* 123, 151–159. doi.org/10.1016/j.sbspro.2014.01.1409
- Soe, H.H.K., Than, N.N.T., Win, H.L., Htay, M.N.N.N., Phyu, K.L., & Abas, A.L. (2018). Knowledge, attitudes and barriers toward research: the perspectives of undergraduate medical and dental students. *Journal Education Health Promotion*, 7(23). doi: 10.4103/jehp.jehp_61_17

- Stuart, M., Lido, C., Morgan, S., Solomon, L. & Akroyd, K. (2008). Widening participation to postgraduate study: decision, deterrents and creating success. Retrieved from <https://www.advance-he.ac.uk/knowledge-hub/widening-participation-postgraduate-study-decisions-deterrents-and-creating-success>
- Teoh, S.H., Geethanjali, N. & Gurnam, K.S.(2019). Motivation to graduate on time: A case study in Malaysia. *Pertanika J. Soc. Sci. & Hum.*27 (4), 2417 – 2439. Retrieved from [http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2027%20\(4\)%20Dec.%202019/15%20JSSH-4221-2019.pdf](http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2027%20(4)%20Dec.%202019/15%20JSSH-4221-2019.pdf)
- Wang, T., & Li, L.Y., (2008). Understanding international postgraduate research students' challenges and pedagogical needs in thesis writing. *International Journal of Pedagogies and Learning*, 4(3), 88-96. [dx.doi.org/10.5172/ijpl.4.3.88](https://doi.org/10.5172/ijpl.4.3.88)
- Yousefi, A., Bazrafkan, L. and Yamani, N. (2015). A qualitative inquiry into the challenges and complexities of research supervision: Viewpoints of postgraduate students and faculty members. *Journal of Advances in Medical Education & Professionalism*, 3(3), 91. Corpus ID: 382673.
- Zuber, Skertritt, O. & Roche, V. (2004). A constructivist model for evaluating postgraduate supervision: a case study. *Quality Assurance in Education*, 12(2) 82-93. doi.org/10.1108/09684880410536459

Impacts of El Nino and La Nina on Palm Oil Production: Evidence from Selected Palm Oil Producing Countries

Athirah Suhailah Jalil¹, Yan-Ling Tan²

^{1,2}*Faculty of Business and Management,
Universiti Teknologi MARA Cawangan Johor, Kampus Segamat, Johor, Malaysia*

Email: tanya163@uitm.edu.my²

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ABSTRACT

Palm oil is one of the most important edible oils commercialized in world oils and fats market. However, agriculture is highly vulnerable to climate change. For instance, El Nino is the warm phase of El Nino Southern Oscillation (ENSO) while La Nina is the opposite of El Nino, the cold phase of ENSO. Strong El Nino and La Nina events cause global changes especially in temperature and rainfall, subsequently affect agricultural areas and causing considerable economic losses. Therefore, the objective of this study is to explore the impacts of El Nino and La Nina on palm oil production in selected palm oil producing countries namely Indonesia, Malaysia and Thailand from 1980 to 2019 using the Ordinary Least Square (OLS) multiple regression analysis. The results revealed that area harvested and palm oil price affect palm oil production significantly in all palm oil producing countries. Nevertheless, the ENSO effects are not apparent. Only the El Nino dummy coefficients are negative and statistically significant in Thailand, suggesting that the occurrence of El Nino events is more pronounced than the La Nina events on palm oil production in Thailand. Hence, this study suggests that a good water management system is needed to allow the palm oil to achieve optimum production.

Keywords: *Palm oil production, El Nino, La Nina, Climate change, OLS*

1.0 INTRODUCTION

Palm oil is the most widely used edible oil on earth. The growth in palm oil production can be credited to the local demand and to the price that is affordable to purchase. The palm oil is used widely in a number of applications (including food, cosmetics and other industries) as well as biofuels, along with a lower selling price relative to its rivals, making it a more attractive commodity (Chuangchid, Wiboonpongse & Sriboonchitta, 2012). Moreover, palm oil contributed a significant amount of revenue to the economy (Wiebe et al., 2015). According to Malaysian Department of Statistics, in 2018, agriculture, forestry and fishing sectors accounted for 12.81% (Indonesia) and 7.48% (Thailand) of GDP; roughly 7.3% of GDP (RM99.5 billion) was generated by agriculture sector in Malaysia. Table 1 presents the world’s top ten of palm oil producing countries in 2019. Indonesia and its neighbouring countries (Malaysia and Thailand) rank among the top three global palm oil producers, with the total production of 42500 (1000MT), 19800 (1000MT) and 3000 (1000MT), respectively. Malaysia was once largest palm oil producer but starting from 2007, Indonesia appeared to be the largest producer of crude palm oil (CPO) worldwide resulting from a steady increase of palm oil plantation growth between 2000 and 2005 (Sulistyanto & Akyuwen, 2009).

Table 1: World’s Top Ten of Palm Oil Producing Countries in 2019

No	Country	Production (1000MT)
1	Indonesia	42500
2	Malaysia	19800
3	Thailand	3000
4	Colombia	1680
5	Nigeria	1015
6	Guatemala	852
7	Ecuador	630
8	Honduras	580
9	Brazil	540
10	Cote D'ivoire	515

Sources: Index Mundi

However, agricultural sector is strongly influenced by climatic condition includes El Nino and La Nina phenomenon or El-Nino Southern Oscillation (ENSO) (Paterson & Lima, 2018). According to Rahman et al. (2013), El Nino event is linked to warming of the Central and Eastern tropical waters of the Pacific Ocean and an exceptionally warm ocean temperature in the Equatorial Pacific. On the other hand, La Nina is characterized in the Equatorial Pacific as extremely cold ocean temperatures (Limsakul, 2019; Rahman et al., 2013). These two events are caused by global warming and subsequently affect the palm oil productivity

(Kamil & Omar, 2017).

Palm oil is a tropical plant that demands a regularly distributed annual rainfall between 1500mm and 2000mm or minimum 5 hours per day of sun exposure (Abdullah, 2012; Casey et al., 2019). Shortage of rain or too much rainfall will affect palm oil productivity. Best palm oil yield can be obtained in the areas where the highest average temperature ranges 29oC - 33oC and the minimum average temperature ranges 22oC - 24oC (Zainal et al., 2012). Hence, the El Nino (prolonged hot and dry weather) or the La Nina (cooler temperature and associated with heavy rainfall) events will affect palm oil production in a country. During El Nino, high weather conditions and fewer rainfalls may lead to a poor yield of fresh fruit bunches output in future (Rahman et al., 2013). According to Rahman et al. (2012), heavy rains during La Nina cause flooding in certain planted areas and disrupt the harvesting and collecting activities of fresh fruit bunches (FFB). Therefore, the objective of this paper is to examine the effects of El Nino and La Nina on palm oil production in selected palm oil producing countries namely Indonesia, Malaysia and Thailand using Ordinary Least Square multiple regression models from 1980 to 2019. The rest of paper is outlined as follows: Section two provides the literature review while the next section presents the data and methodology. Section four discusses the empirical findings and the final part includes conclusions.

2.0 LITERATURE REVIEW

According to Whelan and Forrester (1996), supply is the amount of product and services that the suppliers are both willing and able to supply over a given period of time at a specific price. There exists a direct relationship between price and quantity supplied (Dormady, Henriquez, & Rose, 2019). Subsequently, producers will more likely to increase the production in order to generate more profits. As pointed by Braekkan (2014), factors that affect production between periods includes weather conditions on agricultural yields, input prices and productivity growth.

Rahman et al. (2012) found that planted area has a significant impact on palm oil production. The larger the oil palm planted area, the higher the production of crude palm oil (Noor, Simeh, Ismail & Latif, 2004). Moreover, Talib and Darawi (2002) examined the connection among palm oil production and planted area, export, import and CPO price. Sulistyanto and Akyuwen (2009) and Talib and Darawi (2002) reported that total planted area of palm oil has a direct influence on the production of crude palm oil.

Alternatively, Rahman et al. (2012) and Basiron (2002) reported that crude palm oil fluctuation is determined by market forces, both demand and supply factors. Abdullah, Abas and Ayatollah (2007) indicated that palm oil price plays a significant role in affecting the palm oil production. The increase in palm oil price is mainly due to palm oil demand continues to grow (Abdullah et al., 2007). This could potentially push the production upward as producers want to increase profit from the increase in prices and to meet the rising demand of palm oil.

Aside from the planted area and price factors, changing climate such as strong El Nino and La Nina events are additional influencing factors that cause drought and floods, leading to a decline in palm oil production (Rahman et al., 2012). Kamil and Omar (2016) noted that climate variability has a major effect on the trend of palm oil production. Nevertheless, the influence of extreme weather patterns on crop productivity is subjected to the severity of the El Nino and La Nina events (Deng et al., 2010). A mild or weak El Nino and La Nina does not matter much for a country and its economy. According to Kamil and Omar (2017), the El Nino occurrence has been shown to influence weather patterns through the distribution of precipitation, which later affects the palm oil production significantly in Malaysia. They further highlighted that a strong El Nino will cause rainfall to be lower than normal and therefore affect oil palm trend.

On a similar note, Rahman et al. (2012) found an inverse connection between La Nina and palm oil production. Heavy rainfall during La Nina triggers floods to impact oil palm planted areas and subsequently leads to the disruption in cultivation and process of FFB. Ezechi and Muda (2019) also claimed that the decline in CPO production in 2010, 2012 and 2016 was attributed to adverse weather conditions induced by El Nino and La Nina. As reported by Rahman et al. (2013), CPO production in a certain year declined by about 3.37% during El Nino and La Nina events.

3.0 DATA AND METHODOLOGY

This study utilized annual time series data for three palm oil producing countries namely Indonesia, Malaysian and Thailand spanning from 1980 to 2019. Table 2 presents the variables description. Data for palm oil production, area harvested and CPO price were obtained from Index Mundi while El Nino and La Nina were collected from the Australian Government Bureau of Meteorology.

Table 2 : Variables Description

Variables		Units
Palm oil production	PO	MT
Area harvested	AREA	HA
CPO price	P	USD/T
El Nino	NINO	
La Nina	NINA	

According to supply determinants, other factors that affect supply are cost of production, technology and the number of sellers aside from its own price. The present study augments the effects of El Nino and La Nina on the palm oil production. The inclusion of these climate change variables can be specified in the following OLS regression models :

$$\ln PO_t = \beta_0 + \beta_1 \ln AREA_t + \beta_2 \ln P_t + \beta_3 NINO_t + e_t \quad (1)$$

$$\ln PO_t = \alpha_0 + \alpha_1 \ln AREA_t + \alpha_2 \ln P_t + \alpha_3 NINA_t + e_t \quad (2)$$

$$\ln PO_t = \theta_0 + \theta_1 \ln AREA_t + \theta_2 NINO_t + \theta_3 NINA_t + e_t \quad (3)$$

where t is time period, PO is the palm oil production, $AREA$ is the area harvested, P is the CPO price, $NINO$ and $NINA$ are El Nino and La Nina, respectively, and e is the error term. β_0 to β_3 , α_0 to α_3 and θ_0 to θ_3 are the parameter estimates. β_1 , α_1 and θ_1 are expected to have a positive effect on palm oil production. Similarly, β_2 and α_2 are expected to have a significant and direct effect on palm oil, signifying that the price level will affect the production of palm oil. β_3 , α_3 , θ_2 and θ_3 are expected to have a negative sign, reflecting that the palm oil production will be lowered during El Nino or La Nina events. This is because agriculture is among the most vulnerable to uncertain weather conditions. Extreme weather condition may affect the growth of fresh fruit bunches yield.

4.0 EMPIRICAL FINDINGS AND DISCUSSION

Table 3 provides the summary statistics. Indonesia was the largest palm oil producer with an average of 13429.47 (1000MT), followed by Malaysia 11610.95 (1000MT) and Thailand with 920.80 (1000MT). The largest planted area of palm oil located in Indonesia about 4058 (1000HA), Malaysia with 2913.6750 (1000HA) and Thailand, 308.0750 (1000HA). The average value crude palm oil price was 547.4852 (USD/T). The correlation coefficient is shown in Table 4. There exists a strong and positive correlation between $AREA$ and P in Thailand with 0.7238. The correlation of 0.6945 and 0.6620 shows a moderate and positive correlation between $AREA$ and P in Indonesia and Malaysia.

Table 3 : Descriptive Statistics

INDONESIA	PO	AREA	P
Mean	13429.4700	4058.0000	547.4852
Maximum	42500.0000	11750.0000	1125.4200
Minimum	752.0000	230.0000	212.3800
Std. Dev.	13245.1600	3788.6230	206.7608
MALAYSIA	PO	AREA	P
Mean	11610.9500	2913.6750	547.4852
Maximum	20800.0000	5350.0000	1125.4200
Minimum	2692.0000	777.0000	212.3800
Std. Dev.	6092.3780	1410.2180	223.1874
THAILAND	PO	AREA	P
Mean	920.8000	308.0750	547.4852
Maximum	3000.0000	810.0000	1125.4200
Minimum	19.0000	11.0000	212.3800
Std. Dev.	904.8445	260.6228	223.1874

Notes: PO – palm oil production, AREA - area harvested, P - Crude palm oil price.

Table 4 : Correlation Coefficient

	INDONESIA			MALAYSIA			THAILAND		
	lnPO	lnAREA	lnP	lnPO	lnAREA	lnP	lnPO	lnAREA	lnP
lnPO	1.0000	0.9963	0.6833	1.0000	0.9864	0.7045	1.0000	0.9813	0.6927
lnAREA	0.9963	1.0000	0.6945	0.9864	1.0000	0.6620	0.9813	1.0000	0.7238
lnP	0.6833	0.6945	1.0000	0.7045	0.6620	1.0000	0.6927	0.7238	1.0000

Notes: PO – palm oil production, AREA - area harvested, P - Crude palm oil price, NINO - El Nino and NINA - La Nina.

Table 5 presents the OLS multiple regression results. Three regression models (model1, model 2 and model 3) were estimated with different independent variables for each country. The findings can be split into following parts. First, the bottom panel of Table 5 reports various diagnostic for the estimated models used in this study. These diagnostic checks include, Durbin-Watson test for serial correlation, White’s test for heteroscedasticity, Jarque-Bera (JB) test for errors normality and lastly RESET test for model specification. Most regression models in Indonesia suffered from the serial correlation, residuals are not normally distributed and model misspecification; while regression models in Malaysia and Thailand satisfied the classical assumptions except serial correlation in Malaysia.

Second, the *F*-statistics are statistically significant in all regression models, showing that the models are well fit in this study. The R2 values of around 0.9881 to 0.9933 for all countries. This suggests that the around 99.88% to 99.33% of variance explained by the regression models.

Third, area harvested (AREA) has a positive and significant influence on palm oil production in all countries. The coefficients of AREA ranged from a low of 0.9724 (model 1) in Indonesia to a high of 1.2298 (model 1) in Thailand. This implies that a one percent rise in AREA was associated with an increase between 0.9724%

and 1.2298% in the PO. This in line with Sulistyanto and Akyuwen (2009) and Talib and Darawi (2002) where they found a positive relationship between total oil palm planted area and palm oil production. As pointed by Rahman et al. (2012), production of palm oil is found to be significantly affected by area harvested. Several studies evidenced that expansion in oil palm planted area has attributed to the increase in palm oil production in Indonesia and Malaysia (Basiron, 2002; Ezechi & Muda, 2019). Additionally, Rahman et al. (2012) also supported that CPO production in 2013 is expected to increase moderately due to the increase in oil palm mature areas in Malaysia.

Fourth, the coefficients of crude palm oil price (P) follow the expected sign, implying that P has a positive and significant impact on PO in Indonesia and Malaysia. Model 2 in Malaysia has the lowest coefficient value of 0.0614 while the highest value is 0.1159 (model 2) in Indonesia. This suggest that as P increases by one percent, on average, palm oil production is expected to increase of about 0.0614% and 0.1159% in Indonesia and Malaysia. Rahman (2012) noted that palm oil price is one of the important factors in influencing the palm oil production.

Lastly, the ENSO effects are not apparent. The coefficients of El Nino (NINO) and La Nina (NINA) are negative but statistically insignificant in most regression models in Indonesia and Malaysia. Interestingly, the NINO dummies are statistically significant in Thailand. The NINO coefficients are -0.1021 (model 1) and -0.0977 (model 3), suggesting that the average palm oil production is lower by about 9.7061% (model 1) and 9.3079% (model 3) during El Nino¹. This suggests that the El Nino events has more pronounce effect on palm oil production than La Nina events in Thailand. Palm oil production in the current year tends to be affected by the previous El Nino event (Rahman et al., 2012; Kamil & Omar, 2016). Hassan and Balu (2016) also evidenced that hot weather and less rainfall (El Nino) will cause a lower yield of palm oil production. In fact, palm oil needs to have at least 100mm rainfall per month. Rainfall below this level would interrupt the growth of the fresh fruit bunches and reduce the palm oil production (Harun et al., 2010; Kamil & Omar, 2017). On the contrary, the impact arising from extreme weather conditions on palm oil productivity is depending on the intensity of El Nino and La Nina events.

¹To obtain a correct percentage change, we should take the antilog of the dummy coefficient, subtract 1 from it and multiply the difference by 100 (Gujarati & Porter, 2009).

Table 5: OLS Multiple Regression Results

		INDONESIA					
		Model 1		Model 2		Model 3	
C	Coefficient	0.7115		0.6364		1.9118	
	t-stat	2.4658	**	2.2227	**	10.2391	***
lnAREA	Coefficient	0.9724		0.9784		1.0014	
	t-stat	53.5513	***	53.4611	***	65.0539	***
lnP	Coefficient	0.1098		0.1159			
	t-stat	1.9186	*	2.0609	**		
NINO	Coefficient	-0.0188				-0.0229	
	t-stat	-0.5313				-0.6239	
NINA	Coefficient			-0.0531		-0.0492	
	t-stat			-1.3581		-1.1925	
R-Sq		0.9930		0.9933		0.9926	
Adjusted R-Sq		0.9924		0.9927		0.9920	
F-stat		1700.6850	***	1774.4290	***	1603.1900	***
Diagnostic tests							
BG		18.3396	***	17.3529	***	22.5404	***
P-value (Chi-Sq)		0.0000		0.0000		0.0000	
White		8.6733		5.5713		8.9674	
P-value (Chi-Sq)		0.3706		0.6951		0.2550	
JB		8.1376	**	12.4228	***	3.5998	
P-value		0.0170		0.0020		0.1653	
RESET		11.3550	***	10.4151	***	14.4953	***
P-value (F-Stat)		0.0018		0.0027		0.0005	
		MALAYSIA					
		Model 1		Model 2		Model 3	
C	Coefficient	0.3932		0.4595		0.6521	
	t-stat	2.1466	**	2.3518	**	3.9046	***
lnAREA	Coefficient	1.0725		1.0637		1.0900	
	t-stat	44.0296	***	41.7934	***	50.2987	***
lnP	Coefficient	0.0657		0.0614			
	t-stat	1.9387	*	1.7800	*		
NINO	Coefficient	-0.0362				-0.0330	
	t-stat	-1.6425				-1.4478	
NINA	Coefficient			0.0336		0.0338	
	t-stat			1.3309		1.3205	
R-Sq		0.9887		0.9884		0.9881	
Adjusted R-Sq		0.9877		0.9874		0.9871	
F-stat		1047.9730	***	1022.5900	***	994.2613	***
Diagnostic tests							
BG		7.7309	***	9.6973	***	8.1644	***
P-value (Chi-Sq)		0.0054		0.0018		0.0043	
White		9.7040		10.1335		6.3138	
P-value (Chi-Sq)		0.2864		0.2558		0.5036	
JB		1.0665		1.6122		1.1892	
P-value		0.5867		0.4466		0.5518	
RESET		0.5674		0.0334		0.1713	
P-value (F-Stat)		0.4564		0.8561		0.6815	

		THAILAND					
		Model 1		Model 2		Model 3	
C	Coefficient	-0.0342		-0.0433		-0.2073	
	t-stat	-0.0965		-0.1140		-1.9752	*
InAREA	Coefficient	1.2298		1.2208		1.2169	
	t-stat	51.8187	***	46.9288	***	59.6145	***
InP	Coefficient	-0.0365		-0.0384			
	t-stat	-0.5502		-0.5429			
NINO	Coefficient	-0.1021				-0.0977	
	t-stat	-2.3834	**			-2.2678	**
NINA	Coefficient			0.0492		0.0324	
	t-stat			0.9567		0.6686	
R-Sq		0.9914		0.9903		0.9914	
Adjusted R-Sq		0.9907		0.9895		0.9907	
F-stat		1381.7870	***	1222.4330	***	1387.3310	***
Diagnostic tests							
BG		0.1375		0.0031		0.1437	
P-value (Chi-Sq)		0.7108		0.9556		0.7047	
White		7.9103		12.7577		5.6254	
P-value (Chi-Sq)		0.4423		0.1205		0.5841	
JB		0.3813		0.0800		0.3483	
P-value		0.8264		0.9608		0.8402	
RESET		0.1487		0.9394		0.0002	
P-value (F-Stat)		0.7021		0.3391		0.9887	

Notes: AREA - area harvested, P - Crude palm oil price, NINO - El Nino and NINA - La Nina. BG - The Breusch-Godfrey Lagrange Multiplier test for serial correlation, White - The White's test for heteroscedasticity, JB - The Jarque-Bera test for normality and RESET - The Ramsey RESET test. ***, ** and * denote significant at 1%, 5% and 10% levels

5.0 CONCLUSIONS

The objective of this study is to examine the effects of El Nino and La Nina on palm oil production in selected palm oil producing countries namely Indonesia, Malaysia and Thailand using Ordinary Least Square multiple regression models from 1980 to 2019. The results suggested that oil palm planted area and price play a significant role in influencing the palm oil production. The ENSO effects are not apparent. The coefficients for El Nino are negative and statistically significant in Thailand only. This implies that the El Nino events has more pronounce effect on palm oil production than La Nina events in Thailand

Hence, better adaptation approaches need to be developed by relevant authorities to reduce the effects of El Nino in Thailand. To mitigate the impact of drought causing from El Nino, activities such as replanting need to be postponed as lack of rainfall will influence the formation and growth of seedlings. As the seeds should be moist and cool at all time, very hot and dry weather trigger seed damage. Apart from that, water conservation in the field should be strongly encouraged as oil palm yield requires a lot of water. To conclude, effective water management is

important as it allows the palm to achieve optimum production.

REFERENCES

- Ab Rahman, A. K., Abdullah, R., & Mohd Shariff, F. (2012). The Economic Impact of the North-east Monsoon and La Niña on Oil Palm Production in Malaysia. *Oil Palm Industry Economic*, 12(september), 22–35.
- Abdullah, R. (2012). An Analysis of Crude Palm Oil Production in Malaysia. 12(September), 36–43.
- Abdullah, R., Abas, R., & Ayatollah, K. (2007). Impact of palm oil-based biodiesel demand on palm oil price. *Oil Palm Industry Economic Journal*, (2007) 7(2), 19–27.
- Basiron, Y. (2002). Palm Oil and Its Global Supply and Demand Prospects. *Oil Palm Industry Economic Journal*, (2002) 2(1), 1–10.
- Braekkan, E. H. (2014). Why do Prices Change? An Analysis of Supply and Demand Shifts and Price Impacts in the Farmed Salmon Market. (July). <https://doi.org/10.13140/RG.2.1.2928.6884>
- Casey, G., Shayegh, S., Moreno-Cruz, J., Bunzl, M., Galor, O., & Caldeira, K. (2019). The impact of climate change on fertility. *Environmental Research Letters*, 14(5). <https://doi.org/10.1088/1748-9326/ab0843>
- Chuangchid, Wiboonpongse, Sriboonchitta, C. (2012). Factors Affecting Palm Oil Price Based on Extremes Value Approach. *International Journal of Marketing Studies*, 4(6). <https://doi.org/10.5539/ijms.v4n6p54>
- Deng, X., Huang, J., Qiao, F., Naylor, R. L., Falcon, W. P., Burke, M., ... Battisti, D. (2010). Impacts of El Nino-Southern Oscillation events on China's rice production. *Journal of Geographical Sciences*, 20(1), 3–16. <https://doi.org/10.1007/s11442-010-0003-6>
- Dormady, N., Roa-Henriquez, A., & Rose, A. (2019). Economic resilience of the firm: A production theory approach. *International Journal of Production Economics*, 208(July), 446–460. <https://doi.org/10.1016/j.ijpe.2018.07.017>

- Ezechi, E. H., & Muda, K. (2019). Overview of trends in crude palm oil production and economic impact in Malaysia. *Sriwijaya Journal of Environment*, 4(1), 19–26. <https://doi.org/10.22135/sje.2019.4.1.19>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics* (Fifth). McGraw-Hill Irwin. <https://doi.org/10.2307/2230043>
- Harun, M. H., Mohammad, A. T., Mohd Roslan, M. D. N., Din, A. K., Latiff, J., Abdul Rahim, A. S., & Abdullah, R. (2010). Impact of El Niño occurrence on oil palm yield in Malaysia. *Planter*, 86(1017), 837–852.
- Hassan, A., & Balu, N. (2016). Examining the Long-term Relationships between the Prices of Palm Oil and Soyabean Oil , Palm Oil Production and Export : Cointegration and Causality. *Oil Palm Industry Economic Journal*, 16(1), 31–37.
- Kamil, & Omar. (2016). Climate Variability and its Impact on the Palm Oil Industry. *Oil Palm Industry Economic Journal*.
- Kamil, & Omar, S. F. (2017). The Impact of El Niño and La Niña on Malaysian Palm Oil Industry. *Oil Palm Bulletin*, 74(May 2017), 1–6.
- Limsakul, A. (2019). Impacts of el niño-southern oscillation (ENSO) on rice production in Thailand during 1961-2016. *Environment and Natural Resources Journal*, 17 (4), 30–42. <https://doi.org/10.32526/ennrj.17.4.2019.29>
- Noor, M. M., Simeh, M. A., Ismail, A., & Latif, J. (2004). Analysis of palm oil cost of production survey , 2002. *Oil Palm Industry Economic Journal*, 4(1), 32–40.
- Paterson, R. R. M., & Lima, N. (2018). Climate change affecting oil palm agronomy, and oil palm cultivation increasing climate change, require amelioration. *Ecology and Evolution*, 8(1), 452–461. <https://doi.org/10.1002/ece3.3610>
- Rahman, A. K. A., Abdullah, R., Balu, N., & M. Shariff, F. (2013). The Impact of La Niña and El Niño Events on Crude Palm Oil Prices : An Econometric Analysis. *Oil Palm Industry Economic Journal*, 13(2), 38–51.

- Sulistyanto, A., & Akyuwen, R. (2009). Factors affecting the performance of Indonesia's crude palm oil export. Development, 2009.
- Talib, B. A., & Darawi, Z. (2002). An economic analysis of the Malaysian palm oil market. Oil Palm Industry Economic Journal, 2(1), 19–27.
- Whelan, J., & Forrester. (1996). Economic Supply and Demand. MIT System Dynamics in Education Project, (1996), 35.
- Wiebe, H., Sands, Tabeau, M., Biewald, A., Bodirsky, B., Islam, S., ... Willenbockel, D. (2015). Climate change impacts on agriculture in 2050 under a range of plausible socioeconomic and emissions scenarios. Environmental Research Letters, 10(8). <https://doi.org/10.1088/1748-9326/10/8/085010>
- Zainal, Z., Shamsudin, M. N., Mohamed, Z. A., & Adam, S. U. (2012). Economic Impact of Climate Change on the Malaysian Palm Oil Production. Trends in Applied Sciences Research, 7(10), 872–880. <https://doi.org/10.3923/tasr.2012.872.880>

Sustainable Quality of Life Criteria for Ledang National Park Community: Fuzzy Approach

Zamali Tarmudi¹, Shamsatun Nahar Ahmad², Nurul ‘Aini Harun³ and Nor Siti Khadijah Arunah⁴

^{1,2,3,4}*Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Johor Branch (Segamat Campus), Johor, Malaysia*

Email: zamalihj@uitm.edu.my¹, shams551@uitm.edu.my², ainiharun@uitm.edu.my³, norsi830@uitm.edu.my⁴

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ABSTRACT

Recently, there is a rising concern among researchers regarding the issue of sustainable criteria for quality of life (QoL). As it gains more interest, the issue becomes highly debated worldwide especially with regards to the national park community area. The aim of this study is to assess the identified sustainable criteria for QoL, particularly for the surrounding community of Ledang National Park (LNP) using the fuzzy Analytical Network Process (ANP). The fuzzy ANP was employed based on graded mean integration of representation and canonical representation of multiple operations to derive both local and global weights. To show the feasibility of the proposed method, three decision makers (DMs) were identified from the relevant agencies to assess three main criteria using linguistic evaluation via pairwise comparison process. In addition, nine sub-criteria were also investigated and analysed thoroughly using six steps of the fuzzy ANP towards achieving the sustainable criteria for QoL assessment. Based on the numerical analysis, it was found that the sub-criterion health(c32) has the highest global weight with a score of 0.184, which indicates that this sub-criterion is the biggest contributor to achieve the sustainability of QoL. The results also revealed the overall total score of 73.14%, thus placing LNP in the ‘moderately sustainable’ category. In the future, the entire investigated sub-criteria are suggested to be maintained and used to measure the sustainability of QoL. The findings from this study can be used to guide and assist the relevant authorities for future development planning in studied areas.

Keywords: Fuzzy analytical network process, national park community, quality of life (QoL), sustainable criteria

1.0 INTRODUCTION

According to World Health Organizations (WHO) Malaysia in 2002, quality of life is defined by social and environmental relationships, but sustaining and enhancing it involve health, economic and social developments. The government, non-profit organizations, researchers and the community are aggressively undertaking various effort to develop sustainable quality of life (QoL) in certain areas. Abdullah, Othman, Tarmudi and Low (2018) define sustainable development as a process to satisfy human development needs by fulfilling the natural resources and ecosystem services. The conducted study also stated that the definition of sustainable development somehow may differ according to different perspectives and constraints that come together with the concern of the study.

There were several studies pertaining to human QoL in various types of community. Ietto, Salvo and Cantasano (2014) studied the QoL condition with regards to environmental management specifically in the coastal area of Calabria, South Italy. They analysed how human QoL had been affected by the environmental condition. There were six criteria selected for this assessment: location, position, typology, economy, finance, and institution. Next, Boncinelli, Pagnotta, Riccioli and Casini (2015) conducted a study in rural areas with the focus on evaluating the heterogeneity of the QoL determinants. The criteria of assessment were narrowed to the opportunities addressed to rural populations, which are the availability of healthcare, education, economic opportunities, environmental conditions, human pressure, and accessibility of areas. In the study, the method used for data analysis was simultaneous quantile regression. In the following year, Hartter et al. (2016) did a research on perceptions of risk in communities near national parks in Africa. Three national parks were selected for the case study. The first is in Albertine Rift of Uganda: Kibale National Park, the second in Murchison Falls National Park, and the last one in Queen Elizabeth National Park. The objective of the study was to understand the nature of the local residents' perceived risks in order to allow conservation managers to devise suitable risk mitigation strategies in case the residents threaten the protected wildlife. While the paper did not specifically relate to QoL, the content of the assessment did measure the effect of several factors on the life of the communities around national park, which inadvertently relate to QoL. The three main criteria for evaluation were protected area, climate and health. Since the study was specifically on perceived risk, the employed method for data analysis was participatory risk mapping. In the same year, Gigović, Pamučar, Lukić and Marković, (2016) used the fuzzy approach to develop an evaluation model to assess the suitability of ecotourism of an area. The study was centred on Dunavski ključ, an attractive region of Serbia known for its natural

and anthropogenic tourist factors. It is also located in the border area between Serbia and Romania and is a zone of border cooperation between two national parks. A total of 16 ecotourism criteria were identified and further categorized into four main clusters (topographic, natural, environmental and socio-economic clusters). Another study related to communities around national park was done by Acquah, Rollins, Dearden and Murray (2016) to assess the concerns and benefits of communities living near Mole National Park, Ghana. Their research focused on the perception of the surrounding communities towards the national park which was determined by analysing how conditions originating from the national park influence the life of the community members. In another study, Grinde, Nes, MacDonald and Wilson (2017) had a concern about improving the society in order to achieve a better QoL in selected areas in United States and Canada. The study aimed to investigate the level of wellbeing among communities and decided that the important criteria to measure QoL of the communities are education, income of resident and tenure of living. In the same year, two other studies (Qing & Abdullah, 2017; Martin & Vinan, 2017) found that the main criteria in sustaining the QoL in their studied areas are social, economic and physical factors whereas the main concern was to find the indicator of satisfaction of the resident. The studies focused on the coastal area of Setiu Wetland, Terengganu and the

Region of Ecuador respectively. Recently, Muresan et. al. (2019) stated that to sustain rural development, the residents' QoL is important and the main concern in sustaining the QoL is the tourism development in that area. Based on the concern, the researcher stated a few criteria that may help in determining the quality of life, which include facilities, transportation, economy and safety.

Most of the aforementioned studies employed statistical tools to analyse the collected data. In recent years, some researchers started to favour fuzzy approach for measuring QoL. Gigović et al. (2016) stated that the weight of each criterion found above were analysed by using the Fuzzy Decision-Making Trial and Evaluation Laboratory (FDEMATEL) method. The study indicated that the FDEMATEL method is more flexible towards comparability and combination of network in decision-making process. Qing and Abdullah (2017), meanwhile, felt that the fuzzy approach dealt better with uncertainty in decision making problem along with the judgement process. Therefore, in determining the weight of QoL criteria for a coastal community in Setiu Wetlands Terengganu, the fuzzy analytic network process (Fuzzy ANP) was suggested. Martin and Vinan (2017) proposed to measure the QoL using Techniques for Order Preference by Similarity to Ideal Solution (TOPSIS) and highlighted that this method helps in better development of uncertain perceptions of the criteria. According to Lee, Chuang and Wu (2013),

TOPSIS will help in finding the best results of all practical alternatives.

Based on these previous works (Hartter et al., 2016; Gigović et al., 2016; Acquah et al., 2016; Grinde et al., 2017; Qing & Abdullah, 2017; Martin & Vinan, 2017; Muresan et. al., 2019), the three common standards for evaluating QoL of a community in a certain area are locational, economic and social criteria, each with the following sub-criteria; a) facilities, accessibility and environment (location); b) income, tourism and location (economy); c) safety, health and security (society). The aim of this paper is to utilize the fuzzy approach namely fuzzy ANP based on the identified sustainable QoL criteria at LNP by equipping both operator tools which are the so-called graded mean integration of representation and canonical representation of multiple operations. It is believed that by equipping these operator tools in fuzzy ANP, the evaluation process can be performed more efficiently and is able to reduce the time consumed significantly without losing any information. To do so, this paper is structured as follows; Section 1 begins with a brief discussion in the introduction, followed by a review of the relevant literature. The significance of this research work is highlighted in section 2. Next, Section 3 presents a brief definition related to the proposed method and the fuzzy ANP and provides the step-by-step procedures to perform the proposed method. Section 4 focuses on the feasibility aspect by applying the method via a numerical example and lastly, the discussion and conclusion are presented in Section 5.

2.0 PROBLEM STATEMENT

The area of focus in this study is the zone around Ledang National Park, which is a known tourist spot for recreational activities such as hiking and camping. Based on the researchers' observation, the communities around the zone do not experience much development. Therefore, this leads to some residents relocating to nearby towns like Tangkak and Jasin. While research on socio-economy, tourism and ecosystem had been made by many local researchers such as Abdul et. al (2014), Onrizal, Ismail and Mansor (2019) and Wahab et. al (2019) none has addressed ways to curb this problem.

One of the key steps to addressing this issue is to understand the main concerns of the community members relating to their QoL and sustainable development. From there, one can start devising the suitable approach to be taken to improve the life of said community.

The determinants or criteria that lead towards sustainable QoL in a community

may differ according to factors like location, climate and social factors. In order to decide on which criteria are relevant to the matter at hand, one would need to employ decision-making tools capable of evaluating the qualitative or quantitative information of multi-criteria decision making (MCDM) problems. There are two renowned fuzzy methods for tackling MCDM problems; the analytic hierarchy process (AHP) and the analytic network process (ANP). The AHP approach handles the multiplicity of choices of the decision problems through hierarchical structuring. However, this method is not entirely applicable as many decision problems cannot be analysed hierarchically due to their interaction and dependencies of higher-level elements in a hierarchy on lower-level elements. In contrast, the ANP method is a multi-criteria decision-making method where interdependencies amongst many diverse criteria are represented and analysed via a network. This method involves the utilization of pair-wise comparison matrices and constructing interdependencies among decision levels thus giving more reliable solutions. By employing ANP with fuzzy approach for the problem of Ledang community members relocating to nearby towns, one would be able to assess the importance of each studied QoL criteria along with their interdependency with each other.

3.0 MATERIALS AND METHOD

3.1 Preliminaries

For reference purposes, a brief explanation of the fuzzy set theory and TFNs are presented.

Definition 1 A fuzzy set \tilde{A} in a universe of discourse X is characterized by a membership function $\mu_{\tilde{A}}(x)$ which associates with each element x in X that takes the value in the real number in the interval $[0, 1]$. The function $\mu_{\tilde{A}}(x)$ is termed the grade of membership of x in \tilde{A} .

Definition 2 A Triangular Fuzzy Number (TFN) \tilde{A} can be defined by a triplet (l, m, u) ,

where l , m , and u are left, middle and right foot of TFNs, respectively. The membership function $\mu_{\tilde{A}}(x)$ is defined as:

$$\mu_{\tilde{A}}(x) = \begin{cases} 0, & x < l, \\ \frac{x-l}{m-l}, & l \leq x \leq m, \\ \frac{m-u}{x-u}, & m < x \leq u, \\ 0, & x > u \end{cases} \quad (1)$$

Definition 3 (Chou, 2003): Let $\tilde{A} = (a', a'', a''')$ and $\tilde{B} = (b', b'', b''')$ be two triangular fuzzy numbers. The *graded mean integration representation* between \tilde{A} and \tilde{B} as.

$$G_{\tilde{A}} = \frac{1}{6} (a' + 4a'' + a''') \quad \text{and} \quad G_{\tilde{B}} = \frac{1}{6} (b' + 4b'' + b''') \quad (2)$$

Meanwhile, the *canonical representation of multiple operation* on TFNs between \tilde{A} and \tilde{B} are defined as

$$\begin{aligned} G(\tilde{A} \otimes \tilde{B}) &= G(\tilde{A}) \times G(\tilde{B}) \\ &= \frac{1}{6} (a' + 4a'' + a''') \times \frac{1}{6} (b' + 4b'' + b''') \end{aligned} \quad (3)$$

For simplicity purposes, the mean of fuzzy numbers is used for scale values (SV) based on five linguistic variables as shown in Table 1 while the three definitions of sustainability category (Rashid, 2015) are given in Table 2.

Table 1: The five means of fuzzy numbers

Linguistic variables	Mean of fuzzy numbers
Very high (VH)	1
High (H)	0.75
Medium (M)	0.50
Low (L)	0.25
Very low (VL)	0

Table 2: The sustainability category

Total Score (TS), (%)	Sustainability category
$TS \geq 80$	Sustainable
$80 > TS \geq 50$	Moderately sustainable
$50 > TS$	Less sustainable

Source: (Rashid, 2015)

3.2 Fuzzy-Analytic Network Process (F-ANP)

Fuzzy approach has been recognised as one of the proven and successful methods in various applications. One of the popular methods is fuzzy ANP for solving multiple decision-making problems in uncertain environment. Some recent examples of applications that utilize this method quite successfully includes market value (Chang et al., 2016), supplier selection (Vinodh et al., 2011 & Babihabib et al., 2016), machine selection (Kumru & Kumru, 2015), outsourcing provider selection (Uygun et al., 2015), land-use planning (Najafinasab et al., 2015) etc.

Since Saaty in 1980 introduced the Analytic Hierarchy Process (AHP), this idea has then been extended and improved with a new method, referred to as the Analytic Network Process (ANP). This method has the added value which emphasises the network interrelationships and is able to handle the evaluation process with easy and efficient manner. Moreover, ANP has been found to have the ability to accommodate the interrelationships amongst the different tiers of functional activities (Abdullah, et al., 2018). Therefore, based on this advantage, this technique is then further extended by combining it with the fuzzy sets theory to suit the fuzzy decision-making environment. This effort gives a significant implication in terms of the evaluation process since most decision-making problems deal with uncertainty or ambiguity of information.

Thus, in this paper, the crisp scales from 0 – 5 were predetermined based on Saaty's recommendation scales and the experts' need to evaluate using the triangular fuzzy numbers (TFNs) to cope with the fuzzy environment (see Definition 2 as given in Table 3).

Table 3: The five degrees of importance and TFNs

Degree of importance	Crisp scale	TFNs	Reciprocal of TFNs
Just equal	0	(1, 1, 1)	(1, 1, 1)
Equally important (<i>EI</i>)	1	(1/2, 1, 3/2)	(2/3, 1, 2)
Weakly more important (<i>WMI</i>)	2	(1, 3/2, 2)	(1/2, 2/3, 1)
Strongly more important (<i>SMI</i>)	3	(3/2, 2, 5/2)	(2/5, 1/2, 2/3)
Very strongly more important (<i>VSMI</i>)	4	(2, 5/2, 3)	(1/3, 2/5, 1/2)
Absolutely more important (<i>AMI</i>)	5	(5/2, 3, 7/2)	(2/7, 1/3, 2/5)

3.3 Procedure of Analysis

In this sub-section, the fuzzy ANP procedure (Wang et al., 2015) assessment of the sustainable criteria is given as follows:

Step 1: Identify the expected sustainable criteria and sub-criteria related to the National Park in Malaysia.

Step 2: Design and construct the ANP structure in different tiers consisting the goal, criteria and sub-criteria as first, second and third tier, respectively.

Step 3: Calculate the local weights of criteria and sub-criteria, respectively. The pairwise comparison was used to evaluate the entire criteria and sub-criteria by the experts / DMs. The general structure of the matrices is given as follows:

$$M = \begin{bmatrix} (1, 1, 1) & (l_{12}, m_{12}, u_{12}) & \dots & (l_{1n}, m_{1n}, u_{1n}) \\ (l_{21}, m_{21}, u_{12}) & (1, 1, 1) & \dots & (l_{2n}, m_{2n}, u_{2n}) \\ \vdots & \vdots & \dots & \vdots \\ (l_{n1}, m_{n1}, u_{n1}) & (l_{n2}, m_{n2}, u_{n2}) & \dots & (1, 1, 1) \end{bmatrix} \tag{4}$$

where

$$l_{\hat{u}} = \frac{1}{u}, \quad m_{\hat{u}} = \frac{1}{m}, \quad u_{\hat{u}} = \frac{1}{l}$$

In this step, Chang’s extent technique (1996) was employed to calculate the local weights of entire of criteria and sub-criteria.

Step 4: Calculate the inner dependence matrix of the criteria

The inner dependence matrix of the criteria can be determined by multiplying the local weights of the criteria (from Step 3) and the dependence of local weights in the inner matrix. Thus, the inner dependence matrix of criteria ($W_{criteria}$) is given as

$$W_{criteria} = \frac{1}{2} \left(\text{relative importance weights of criteria} \right) \times \left(\text{local weights of criteria} \right) \quad (5)$$

Step 5: Calculate the global weights each of the sub-criteria

The global weights can be calculated by multiplying local weights of sub-criteria with inner dependence weights that are related to the criteria as

$$G_{sc}^w = (L_{sc}^w) \times (IN_{dep}^{wc}) \quad (6)$$

where

L_{sc}^w = local weights of sub-criteria, and IN_{dep}^{wc} = inner dependence weights of criteria

Step 6: Determine the total score weights which contribute to the QoL sustainability.

According to Yüksel and Dagdeviren (2010), the total score weights (TS_w) can be derived as

$$TS_w = (G_{sc}^w) \times (SV) \times 100\% \quad (7)$$

where SV is scale values

Here, the score weights for entire of the sub-criteria can be determined and the highest score weights indicate the biggest contributor to the sustainability of the National Park community. Thus, the sustainability category can easily be determined based on the total score weights and sustainability category (see Table 2).

4.0 NUMERICAL EXAMPLE

Based on our best knowledge and investigations, there are no specific criteria and sub-criteria that have been agreed upon by researchers worldwide to measure the QoL in national park areas. Thus, this section used the most common criteria and

sub-criteria based on the LRs which are believed to suit our LNP community area. Suppose three committee members of DMs from different relevant agencies were involved (d_i ; $i = 1,2,3$), namely district officer (DO), (d^1), LNP senior manager (d^2), and national park expert from Department of Forestry of Malaysia (d^3), to evaluate sustainability QoL criteria for the LNP community. There are 3 main criteria considered namely location (C_1), economy (C_2), and society (C_3), whereas 9 sub-criteria (c_{ij} ; $i = 1, 2, 3$; $j = 1, 2, 3$) are facilities (c_{11}), accessibility (c_{12}), environment (c_{13}) for location criteria and income (c_{21}), tourism (c_{22}), location (c_{23}) and safety (c_{31}), health (c_{32}), security (c_{33}) under economic and social criteria, respectively. Here, the step-by-step procedures that were proposed in the previous section are given as:

Step 1 & 2: Identify the sustainable criteria and sub-criteria of LNP community
Here, the three tiers have been structured for the identified criteria and sub-criteria. The three different tiers are goal, criteria and sub-criteria for first, second and third tier, respectively. Fig. 1 shows the complete three tiers of the structure.

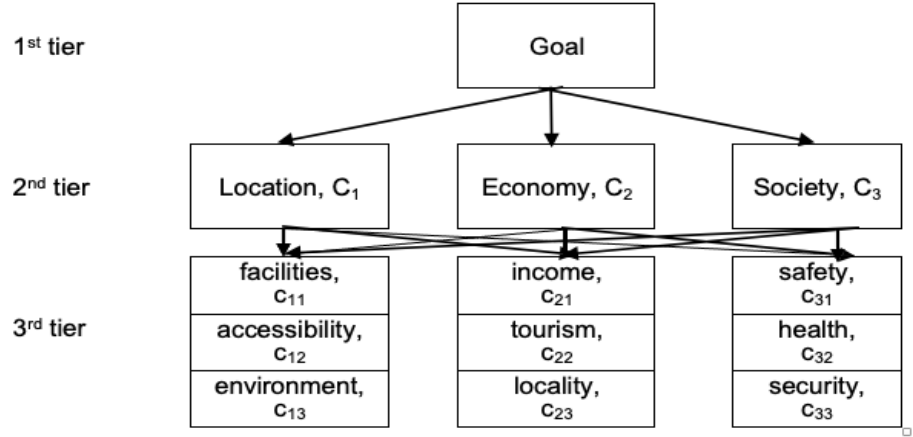


Figure 1: The three tiers of the structure

Step 3: Calculate the local weights of criteria and sub-criteria
Based on the measurement score in Table 3, a group of DMs evaluate the 2 different criteria using the pairwise comparison technique given as

Table 4: The DMs evaluation using pairwise comparison

	C ₁			C ₂			C ₃		
	d ¹	d ²	d ³	d ¹	d ²	d ³	d ¹	d ²	d ³
C ₁		(1,1,1)		(2/3, 1, 3/2)	(2/5, 1/2, 2/3)	(3/2, 2, 5/2)	(2/3, 1, 3/2)	(1/3, 2/5, 1/2)	(1/3, 2/5, 1/2)
C ₂	(2/3, 1, 3/2)	(3/2, 2, 5/2)	(2/5, 1/2, 3/2)		(1,1,1)		(5/2, 3, 7/2)	(5/2, 3, 7/2)	(1/3, 2/5, 1/2)
C ₃	(2/3, 1, 3/2)	(2, 5/2, 3)	(2, 5/2, 3)	(2/7, 1/3, 2/5)	(2/7, 1/3, 2/5)	(2, 5/2, 3)		(1,1,1)	

Table 5: The average evaluation derived from Table 4

	C ₁	C ₂	C ₃
C ₁	(1,1,1)	(0.856, 1.167, 1.556)	(0.444, 0.600, 0.833)
C ₂	(0.856, 1.167, 1.833)	(1,1,1)	(1.778, 2.133, 2.500)
C ₃	(1.556, 2.000, 2.500)	(0.857, 1.055, 1.267)	(1,1,1)

The local weights of criteria were calculated using Chang's extent technique (1996) and the results are presented in Table 6.

Table 6: Local weights of each criteria

Criteria	Local weights
C ₁	0.174
C ₂	0.431
C ₃	0.395

Similarly, the entirety of the 9 sub-criteria with respect to each criterion can be obtained as shown in Table 7.

Table 7: Local weights of each sub-criteria with respect to each criterion

Criteria, C _i (i=1,2,3)	C ₁	C ₂	C ₃
Sub-criteria,	0.427	0.387	0.277
C _{ij} (i=1,2,3; j=1,2,3)	0.354	0.165	0.498
	0.219	0.448	0.225

Step 4: Calculate the inner dependence matrix of the criteria

In this step, the concept of graded mean integration of representation and canonical representation of multiple operations (see Definition 3) were utilized to calculate the local weights of each criteria. Thus, Table 8 – 10 show the relative importance weights (RIW) of each criterion.

Table 8: The relative importance weights with respect to location(C₁)

Location, C ₁	C ₂	C ₃	RIW
C ₂	(1,1,1)	(1.778, 2.133, 2.500)	0.669
C ₃	(0.857, 1.055, 1.267)	(1,1,1)	0.331

Table 9: The relative importance weights with respect to economic(C₂)

Economic, C ₂	C ₁	C ₃	RIW
C ₁	(1,1,1)	(0.444, 0.600, 0.833)	0.339
C ₃	(1.556, 2.000, 2.500)	(1,1,1)	0.661

Table 10: The relative importance weights with respect to social(C₃)

Social, C ₃	C ₁	C ₂	RW
C ₁	(1,1,1)	(0.856, 1.167, 1.556)	0.490
C ₂	(0.856, 1.167, 1.833)	(1,1,1)	0.510

Next, the inner dependence matrix of criteria ($W_{criteria}$) was calculated as

$$\begin{aligned} W_{criteria} &= \frac{1}{3} \begin{bmatrix} 1 & 0.339 & 0.490 \\ 0.669 & 1 & 0.510 \\ 0.331 & 0.661 & 1 \end{bmatrix} \times \begin{bmatrix} 0.174 \\ 0.431 \\ 0.395 \end{bmatrix} \\ &= \frac{1}{3} \begin{bmatrix} 0.514 \\ 0.749 \\ 0.737 \end{bmatrix} = \begin{bmatrix} 0.257 \\ 0.375 \\ 0.369 \end{bmatrix} \end{aligned}$$

Step 5: Calculate the global weights of the sub-criteria
The global weights can be calculated using Equation (6) obtained as shown in Table 11.

Table 11: Global weights of each criteria

Criteria	Independent weights of criteria	Local weights of sub-criteria	Global weights
C_1	0.257	c_{11} , 0.427	0.110
		c_{12} , 0.354	0.091
		c_{13} , 0.219	0.056
		c_{21} , 0.387	0.145
C_2	0.375	c_{22} , 0.165	0.062
		c_{23} , 0.448	0.168
		c_{31} , 0.277	0.102
		c_{32} , 0.498	0.184
C_3	0.369	c_{33} , 0.225	0.083

Step 6: Calculate the total score weights to determine the LNP sustainability. Thus, the total score weights (TSw) for each sub-criterion can be calculated using Equation (7) and the sustainability category easily identified as shown in Table 12.

Table 12: The total scores and the sustainability category

Sub-criteria	Global weights	DMs evaluation (d^1, d^2, d^3)	Average SV	Total scores (%), (TS_{ij})
Facilities, c_{11}	0.110	(<u>VH</u> , <u>H</u> , <u>M</u>)	0.750	0.0825
Accessibility, c_{12}	0.091	(<u>H</u> , <u>M</u> , <u>VH</u>)	0.750	0.0683
Environment, c_{13}	0.056	(<u>VH</u> , <u>VH</u> , <u>H</u>)	0.916	0.0513
Income, c_{21}	0.145	(<u>H</u> , <u>M</u> , <u>H</u>)	0.667	0.0967
Tourism, c_{22}	0.062	(<u>H</u> , <u>H</u> , <u>H</u>)	0.750	0.0465
Location, c_{23}	0.168	(<u>L</u> , <u>M</u> , <u>H</u>)	0.500	0.0840
Safety, c_{31}	0.102	(<u>VH</u> , <u>H</u> , <u>VH</u>)	0.916	0.0934
Health, c_{32}	0.184	(<u>VH</u> , <u>VH</u> , <u>M</u>)	0.833	0.1533
Security, c_{33}	0.083	(<u>M</u> , <u>M</u> , <u>VH</u>)	0.667	0.0554
Sustainability of total scores (%)				73.14%

At this stage (see Table 11) it was observed that the economic(C_2) factor shows the most significant criteria to achieve the sustainability of LNP with score weight of 0.375 as compared to other criteria. Also, the highest three sub-criteria can be easily identified which are health(c_{32}), income (c_{21}), and accessibility (c_{12}) with the global weights score of 0.184, 0.145, and 0.091, respectively. Meanwhile, from Table 12 (see last column), we can identify the three highest total scores of sub-criteria which are health (c_{32}) and safety (c_{31}) for social criterion and income (c_{21}) for economic criterion.

5.0 DISCUSSION AND CONCLUSION

This study employed a fuzzy ANP approach to assess the sustainable criteria on the problem of the LNP community residents who choose to relocate to nearby towns. The measure taken to curb this problem is by following the steps given by Wang et al. (2015), which is equipping operator tools known as the graded mean integration of representation and canonical representation of multiple operations (see Definition 3) in the evaluation process. It is clear that by equipping this tool in fuzzy ANP, the pairwise comparison evaluation process performs more efficiently and has significant reduction in the time consumption involved for the decision-making process without losing any information.

The LNP quality of life (QoL) and sustainable development criteria have been studied specifically on the most common criteria and sub-criteria which are believed to give extra information and are beneficial to them. Based on the proposed concept, the highest total score weights indicate the biggest contributor to achieve the sustainability of national park community in the Ledang area. The method of approach also provides a systematic procedure in structuring the criteria and sub-criteria so that it is possible to rank them from the most influential to the least significant factor of sustainable development around the research area. Three main criteria for promoting sustainability in the Ledang area were identified and weighted according to their importance as shown in Table 11. From there, it is clear that economy (c2) has the highest independence weight, thus indicating the biggest contributor to the QoL sustainability, followed closely by society (c3) and lastly location (c1). In addition, it was found that the sub-criterion health (c32) is the most influential factor, while tourism (c22) is identified as the least influential with total scores of 15.33% and 4.65%, respectively. This is somewhat in line with results from the study by Boncinelli et al. (2015) where health factor significantly affects the population availability in the area of study. On the other hand, Acquah et al. (2016) noted that communities involved in tourism perceived great economic benefits from tourism activities, implying that proper management in this area may improve economic opportunities for the community, thus increasing its sustainability.

Overall, the LNP community have achieved the ‘moderately sustainable’ category (see Table 2) for the entire investigated criteria assessment with average total score 73.14%. These results can provide an initial guideline and assist the relevant authority for a future development planning without damaging the sustainability development components. Although the application in this paper was meant specifically to identify the sustainable criteria and assess the QoL at LNP area,

other applications are also expected to be capable of utilizing this approach. The next direction of this research will focus on how the fuzzy approach can develop the SD model towards achieving QoL with more comprehensive results in the national park community area. This is open to future research works.

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References

- Abdullah, L., Othman, M., Tarmudi, Z., & Low, W.J. (2018). Fuzzy analytic network process for determining weights of sustainable development criteria. *International Journal of Ecological Economics and Statistics*, 9(3).
- Abdul R. A., Bakar, A. N., Yusof F. Z. M., Harinder, R. S., & Tokiman, T. *Gunung Ledang: Geology, Biodiversity and Socio-economic Environment*, University Publication Centre (UiTM Press), UiTM 2014.
- Acquah, E., Rollins, R., Dearden, P., & Murray, G. (2016). Concerns and benefits of park-adjacent communities in Northern Ghana: the case of Mole National Park. *International Journal of Sustainable Development & World Ecology*, 24(4), 316-327.
- Babihabib, M.E., Hashem, F., & Shabestari, M. H. (2016). A framework for sustainable strategic planning of water demand and supply in and region, *Sust. Dev.*, 1099 – 1719.
- Boncinelli, F., Pagnotta, G., Riccioli, F., & Casini, L. (2015). The determinants of quality of life in rural areas from a geographic perspective: The case of Tuscany. *Review of Urban & Regional Development Studies*, 27(2), 104-117.
- Chang, D. Y.(1996). Applications of extent analysis method on fuzzy ANP. *Euro., J. Oper. Res.*, 95(3), 649 – 655.

- Chang S.C., Lin, C. F., & Wu, W. M. (2016). The feature and the marketability of certificates for occupational safety and healthy management in Taiwan, *Safety Sci.*, 85, 77-87.
- Chou, Ch. Ch. (2003). The canonical representation of multiplication operation on triangular fuzzy numbers. *Computers and Mathematics with Applications* 45, 1601 – 2610.
- Gigović, L., Pamučar, D., Lukić, D., & Marković, S. (2016). GIS-Fuzzy DEMATEL MCDA model for the evaluation of the sites for ecotourism development: A case study of “Dunavski ključ” region, Serbia. *Land Use Policy*, 58, 348-365.
- Grinde, B., Nes, R.B., MacDonald, I.F., & Wilson, D.S. (2017). Quality of life in intentional communities. *Social Indicator Research*, Volume 137, Issue 2, pp 625- 640.
- Hartter, J., Dowhaniuk, N., MacKenzie, C. A., Ryan, S. J., Diem, J. E., Palace, M. W., & Chapman, C. A. (2016). Perceptions of risk in communities near parks in an African biodiversity hotspot. *Ambio*, 45(6), 692-705.
- Ietto, F., Salvo, F., & Cantasano, N. (2014). The quality of life conditioning with reference to the local environmental management: A pattern in Bivona country (Calabria, Southern Italy). *Ocean & coastal management*, 102, 340-349.
- Kumru, M. & Kumru, P. Y. (2015). A fuzzy ANP model for the selection of 3D coordinate- measuring machine. *J. Intel., Manuf.*, 26(5), 999-1010.
- Lee, Y.H., Chuang, C.C., & Wu, F.Y. (2013). The optimal cooperative relationship evaluation obtained using TOPSIS method. *International Journal of Applied Mathematics and Statistics*, Vol. 41; Issue No. 11
- Martin, J.C., & Vinan, C.S. (2017). Fuzzy Logic Methods to Evaluate the Quality of Life in the Regions of Ecuador. *Quality Innovation Prosperity* 21/1.
- Muresan, J. C., Harun, R., Arion, F.H., & Oroian, C.F., (2019). Residents' Perception of Destination Quality: Key Factor for Sustainable Rural Development. *Sustainability* 2019, 11, 2594.

- Najafinasab, F. Karbassi, A. R., & Ghoddousi, J. (2015). Fuzzy analytic network process approach to evaluate land and sea criteria for land use planning in coastal areas, *Ocean Coasta manag.*, 116, 368-381.
- Onrizal, O., Ismail, S. N., & Mansor, M. (2019). Diversity of plant community at Gunung Ledang, Malaysia, *IOP Conf. Series: Earth and Environmental Science* 260. 012068.
- Qing, S.X., & Abdullah, L. (2017). A case study of coastal community on application of fuzzy analytic network process for determining weights of quality of life. *Journal of Sustainability Science and Management Special Issue Number 3: Improving the Health of Setiu Wetland Ecosystems and Productivity of Crustacean Resources for Livelihood Enhancement 2017*: 153-164.
- Rashid, A. A. (2015). Measuring sustainability cities and community wellbeing through the Malaysian urban rural national indicators network (MURNInets). Retrieved on October 27, 2019 from https://www.academia.edu/3369337/MALAYSIAN_URBAN_RURAL_NATIONAL_INDICATORS_NETWORK_ON_SUSTAINABLE_DEVELOPMENT_MURNInets_
- Uygun, O., Kacamak, H., & Kahraman U.A. (2015). An integrated DEMATEL and Fuzzy ANP techniques for evaluation and selection of outsourcing provider for a telecommunication company. *Compt. Ind. Eng.*, 86, 137-146.
- Vinodh, S., Ramiya, R. A., & Gautham, S. G. (2011). Application of fuzzy network process for supplier selection in a manufacturing organisation, *Expert System Applications*, 38(1), 272- 280.
- Wahab, S. A. K. & Ya'cob, M. R. (2019). Perception and satisfaction of ecotourism resource development in Gunung Ledang Johor National Legendary Park: Ecotourists perspective, *Australian Journal of Basic and Applied Sciences*, 13(6): pp. 82-92.
- Wang, X. Liu, Z., & Cai, Y. (2015). A rating based fuzzy analytic network process (F- ANP) model for evaluation of ship maneuverability. *Ocean Eng.*, 106, 39-46.

World Health Organization (WHO). (2002). Malaysia Country Cooperation Strategy. Malaysia CCS 7.

Yuksel, I. & Dagdeviren, M. (2010). Using the fuzzy analytic network process (ANP) for Balanced Scorecard (BSC). A case study for a manufacturing firm. *Expert. Sys. Appl.*, 37(2), 1270-1278.

Transfer Pricing: The Role of Tax Income and Tunneling Incentive

Vidiyanna Rizal Putri¹, Husnizam Hosin²

¹STIE Indonesia Banking School, Indonesia

²Faculty of Business Management, Universiti Teknologi MARA Johor, 85000, Segamat, Johor, Malaysia

Email: vidiputri@ibs.ac.id¹, husni455@uitm.edu.my²

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ABSTRACT

The purpose for this investigation is to examine the impact of income tax, bonus mechanism, motivating force burrowing to tunneling incentive. The sample choice utilizing purposive examining technique and examined 23 manufacturing companies recorded in Indonesian Stock Exchange (IDX). The samples are chosen by using purposive sampling method and the companies chosen are the among top 30 companies LQ 30 Index in Indonesia Stock Exchange. The information are obtained from optional information of yearly report of fundamental and manufacturing companies recorded in Indonesia Stock Exchange from 2012-2016. The investigation method utilized in this exploration is binary logistic regression analysis. The result of this investigation demonstrates that the income tax is significant and noteworthy to the transfer pricing, tunneling incentives powerful and critical to transfer pricing, while the bonus mechanism does not influence the transfer pricing.

Keywords: *transfer pricing, tax planning, tunneling incentive, bonus mechanism and IDX*

1.0 INTRODUCTION

The rapid growth of international economic activity has contributed to the growth of global companies (Global Economics Outlook, 2017). In the corporate, conglomeration and divisionalization environment occurs various transactions involving the sale of goods and services, rights and other intangible property rights, the provision of loans and others to be used in the pricing to be transferred

(Marfuah & Azizah, 2014).

Transfer pricing is a transaction of goods and services between several divisions in a business group at an unreasonable price, either by raising (markup) or lowering the price (mark down). There are several objectives of Indonesian companies to transfer pricing, first, to outsmart the amount of corporate profits so that tax payments and dividend payouts are low. Second, inflates profit for window-dressing of financial statements. The State loses trillions of rupiahs due to the practice of transfer pricing of foreign companies in Indonesia, all the way through selling prices, purchase prices, overhead costs, interest-shareholder loans, royalty payments, service fees, sales through third parties with no effort. Transfer pricing determined by determining the amount of income earned by each company involved and income tax receipts in exporting and importing countries and mostly by multinational companies (Noviastika, et al., 2016). The phenomenon associated with transfer pricing in Indonesia that 60% of taxpayers in Indonesia to practice transfer pricing.

Almost all exporters in Indonesia transfer pricing so that the state losses reach 25% of the value of the expansion to avoid royalties paid to the country of the republic of Indonesia.

There are several reasons or factors of multinational companies doing transfer pricing, one of which is tax (Noviastika, et al., 2016). Tax on income earned or received by a business entity located in Indonesia. The amount of income depends on the amount before tax (Ranawati & Hernawati 2015). And do so by transferring the income and expenses of a company that has a special relationship to companies in other countries whose tax rates are different (Hartati et al., 2015). This is supported by research (Rahayu 2010), he found that the mode of transfer pricing is done by manipulating the price of intercompany transactions with related parties. With the aim to minimize the overall tax burden. The tax phenomenon that occurred in Indonesia conducted by PT Adaro Indonesia in 2008 where in his case allegedly sold under the market price of coal to its affiliated companies in Singapore in 2005 and 2006. But then sold again to the market according to market prices. This is intended to avoid royalties paid to the republic of Indonesia.

In addition, the bonus mechanism is also one of the factors affecting transfer pricing. Bonus is a one-time payment given for meeting the company's performance goals (Mispiyanti, 2015). This bonus system effected the management in engineering industry. They will received the net profit in maximizing the bonus including transfer pricing (Hartati et al., 2015).

As a company that aims to obtain maximum profit, the company will try to minimize the tax burden, one of them by utilizing the transfer pricing mechanism. Maximum profit will reflect the performance of the company and it will increase the bonus that will be accepted by the management company. This will provide a high profit to the company; high profits can increase the value in bonuses to the company management for the results of the act of transfer pricing.

Tunneling also affects transfer pricing. Tunneling incentives is a behavior of a majority shareholder who transfers company assets and profits for their own benefit, but minority shareholders share the costs they incur (Hartati et al., 2015). Tunneling can be a transfer to the parent company through a related party transaction or dividend distribution. Related party transactions are more commonly used for that purpose than dividend payments because companies listed on the Exchange must distribute dividend to the parent company and other minority shareholders (Yuniasih, et al., 2012).

As for the phenomenon that occurred in Indonesia in 2011, the dividend value of Rp 39.8, with the composition of ownership of PT Central Agromina about 55.53%, the rest by local and foreign public with ownership of less than 5% each. Although the case in Indonesia share ownership of the company Tbk. above 50% on average owned by other companies but does not rule out the possibility that ownership on behalf of other companies is actually owned by certain private individuals behind it for their own benefit (Halim & Wardhani 2015).

2.0 LITERATURE REVIEW

2.1 Agency Theory

The agency theory explains the contract between principals, i.e. the party that employs another party called the agent that involves the decision-making delegation (Jensen & Meckling, 1976). The principal-agent problem is also an essential element of the incomplete contracts view of the firm developed by Coase (1937), Jensen and Meckling (1976), Fama and Jensen (1983 a,b), Williamson (1975,1985), Aghion and Bolton (1992), Hart (1995) and Shubhi (2020). Agency theory is also an economic theory underlying differences in conflict of interest in the company or organization (Lestari & Wirawati, 2016). In certain situations, both the principal and the agent will maximize their personal interests and there is no reason for the principal to believe that the agent will always act in the interests of the principal (Scott, 2012). The divergence of interest between the owners and the managers, due to the separation of ownership from control, results in the

agency costs (Rohit, 2019). Management as an agent prioritizes its interests over the interests of shareholders and because management is authorized to manage the assets of the company so that management has an incentive to transfer pricing in order to lower the tax to be paid (Yuniasih et al., 2012).

2.2 Transfer Pricing

There are various definitions of transfer pricing as suggested by Suandy (2006) transfer pricing is the act of allocating profits from corporate entities in order to minimize and even avoid taxes. Furthermore, according to Fuadah (2008) transfer pricing can also be called intercompany pricing, intercompany pricing, interdivisional or internal pricing which is the price calculated for management control of goods and services transfers between members (group companies). As per Terzioglu, and Inglis, (2019) characterized that “move cost as a charge by one division (moving division) to another division (getting division) inside a similar association”

2.3 Income Tax

According to the Law of the Republic of Indonesia Number 16 Year 2009 article 1, it is explained that, “tax is a compulsory contribution to a country that is owed by an individual or a coercive body under the Act, by not obtaining direct remuneration and being used for state purposes for the great prosperity of the people”.

Income tax (PPH) of the entity is tax on income earned or received business entity located in Indonesia. The amount of income is dependent on the amount before tax (Ranawati and Hernawati 2015). Aditama and Purwaningsih (2014) Taxes are an important source of state revenues for the financing of state development. One of the largest tax sectors gained by the state is income tax. James and Alley (2018), defined tax compliance as “the willingness of the taxpayer to act in accordance with both the ‘spirit’ and the ‘letter’ of the tax law and administration without the application of enforcement activity”.

2.4 Bonus Mechanism

In order for motivated managers to work better and harder than the owner promises a number of bonuses that will be given if the performance is above the average of the previous period (Sulistyanto, 2008). The bonus mechanism is one of the popular accounting policies to improve the performance of the board of directors in

improving corporate profits and this maximizes the rewards of bonus compensation to the board of directors for a good performance result of the company, as it concerns the welfare of executives in the company's internal (Gayatrie 2014).

2.5 Tunneling incentive

Tunneling incentives is a behavior of the majority shareholder transferring assets and profits to the company for their own benefit, but minority shareholders share the costs they pay (Hartati et al., 2015). Mutamimah (2019) claims that tunneling opportunity is the action of majority shareholders who move business assets and income for their own benefit, but minority shareholders still bear the burden of moving assets and income to majority shareholders. Transfer of assets and profits can be done in various ways, one of which is through transfer pricing (Noviastika et al., 2016) This transaction is used for the purpose of increasing profit majority shareholders. According to Wafiroh and Hapsari (2015).

3.0 HYPOTHESIS STATEMENTS

3.1 The Effect of income tax on transfer pricing

In Indonesia, multinational companies do not escape engineering transfer pricing, the reason is to reduce the burden of taxes is greater because in business practices, entrepreneurs generally identify tax payments as an expense so that it will always try to minimize the tax burden (Mispiyanti , 2015). If the tax can be reduced, it can reduce the company's cost (Marfuah & Azizah, 2014).

Increasing tax burden prompted the company to transfer pricing in the hope of minimizing the corporate tax burden that must be paid to the destination country to optimize the increase in corporate profits. Based on the above formulation, the hypothesis in this study is as follows.

Ho1: Taxes have no effect on transfer pricing

Ha1: Taxes affect the transfer pricing.

3.3 The effect of tunneling incentive on transfer pricing

If the majority shareholder owns a large shareholding, in other words they have invested heavily in the company. It means that they want a great return or dividend. Therefore, when the dividends distributed by the company must be shared with the minority shareholders, the majority shareholder prefers to transfer pricing by

transferring the company's wealth to its own interests rather than dividing the dividends to minority shareholders. Therefore, the greater shareholder ownership will further trigger the practice of transfer pricing (Hartati et al., 2015)

Based on the above formulation, the hypothesis in this study is as follows.

Ho3: Tunneling incentive has no effect on transfer pricing

Ha3: Tunneling incentive affects the transfer pricing

4.0 RESEARCH METHODOLOGY

The population in this study is manufacturing companies. Previous study were from manufacturing companies in 2011-2013, so in this study researchers were used manufacturing companies in 2012-2016 to distinguish from the previous research sample. Sampling technique used was purposive sampling method. Purposive sampling is a technique of determining the sample with certain considerations (Sugiyono, 2012).

The sample criteria are as follows:

1. This research uses a manufacturing company listing on the Indonesia Stock Exchange in 2012-2016.
2. The sample company is controlled by a foreign company with ownership interest of 20% or more. This is in accordance with SFAS No. 15 stating that the controlling shareholder is a party owning equity shares or securities of 20% or more.
3. The sample company did not experience any losses during the observation period. This is because companies that suffer losses have no tax obligations at the corporate level so that tax motivation becomes irrelevant. Therefore, companies that suffer losses are excluded from the sample.

4.1 Operationalization of Research Variables

Dependent Variable

The dependent variable studied in this research is Transfer Pricing. Transfer pricing is a price transaction contained in any product or service from one division to another within the same company or between related companies. Transfer

pricing is calculated by dichotomous approach, by looking at the existence of the sale to a related party. Companies that make a sale to a related party are rated 1 and not rated 0. (Hartati et al., 2015).

Independent Variables

Income Taxes

The taxes in this study constitute a corporate pension tax constituting a compulsory contribution to the state and are of a statutory nature, with no direct reward and used for state purposes for the greatest possible prosperity of the people. The tax in this study is proxy by effective tax rate which is the ratio of tax expense less deferred tax expense divided by taxable income (Yuniasih et al., 2012).

Income Taxes = (tax expense-deferred tax expense)/ (taxable income)

Bonus Mechanism

Bonus is a one-time payment provided for meeting company performance goals. Bonuses provided by a company can be in the form of allowances, commissions, sales incentives, or employee benefits. Bonus compensation is measured by dummy, where a value of 1 is awarded to a company with foreign ownership giving bonus, anthem, commission, or sales incentive to management, while the other is 0.

Tunneling Incentive

Tunneling Incentive is a behavior of the majority shareholder transferring assets and profits to the company for their own benefit, but minority shareholders share the costs they pay (Hartati et al., 2015). Tunneling can be a transfer to the parent company through a related party transaction or dividend distribution. Related party transactions are more commonly used for that purpose than dividend payments because companies listed on the Exchange, the company distribute dividends to the parent company and other minority shareholders (Yuniasih, et al., (2012). This variable is measured using the percentage of ownership of shares above 20% as a controlling shareholder by a foreign company.

4.2 Regression Model

So, the regression model used in this research is as follows:

$$\text{Log}(Y) = \ln[Y/(1-Y)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Information:

Y = Transfer pricing

- β_0 = Constant
- β_1 - β_3 = Regression coefficient
- X1 = Tax
- X2 = Bonus mechanism
- X3 = Tunneling incentive
- e = Error term

This study used annual data of tax, bonus mechanism and tunneling incentive covering period 2012 – 2016. The choice of the period was governed by the availability of data. In this research binary logistic regression analysis was used to determine the significant determinants in affecting the income tax. All p-values were rounded by three decimal places and all statistical tests and confidence interval were performed at significance level 0.05.

Last but not least is the use of Hosmer and Lemeshow Goodness of fit and Nagelkerke R- squared. The use of this method is to provide an indication of the amount of variation in the response variable explained by the model. The value of this R² must be positive and less than 1.

5.0 RESULTS AND DISCUSSION

5.1 Test Multicollinearity

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. FOR EXP(B)	
Step 1 ^a	X1	-27.909	13.830	4.072	1	.044	.000	.000	.448
	X2	-.602	.600	1.006	1	.316	.548	.169	1.775
	X3	-2.215	1.096	4.084	1	.043	.109	.013	.935
	Constant	9.247	3.400	7.396	1	.007	10373.457		

a. Variable(s) entered on step 1: X1, X2, X3.

The test results using SPSS is no multicollinearity problem, so the test results are said to be reliable or reliable. Then the value of the partial regression coefficient is said to be reliable and robust or immune to changes that occur in other variables in multiple regression models.

5.2 Test Overall Test 1

Iteration		-2 Log likelihood	Coefficients			
			Constant	X1	X2	X3
Step 1	1	90.037	3.784	-8.033	-.336	-1.334
	2	86.351	6.671	-17.723	-.506	-2.043
	3	85.683	8.629	-25.396	-.583	-2.201
	4	85.646	9.209	-27.755	-.601	-2.215
	5	85.646	9.247	-27.908	-.602	-2.215
	6	85.646	9.247	-27.909	-.602	-2.215

a. Method: Enter

b. Constant is included in the model.

c. Initial -2 Log Likelihood: 97.308

d. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

It shows a comparison of values between the initial -2 log likelihood blocks with -2 log likelihood final block. From the calculation value of log-2 likelihood seen that the value of the initial block (Block Number = 0) is 97.308 and the log-2 likelihood value in the final block (Block Number = 1) is 85.646, it shows -2 log likelihood decreased by 11.662. Given this decline, the overall logistic regression model used is a good model or a hypothesized fit model with data (Ghozali, 2013).

5.3 Goodness of Fit

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	13.492	8	.096

Hosmer and Lemeshow Goodness of fit statistics of 13.492 with probability significance 0.096 greater than 0.05 so H_0 cannot be rejected or accepted because the regression model is able to explain the data. Based on this explanation, it can be concluded that the model is able to explain the effect of income tax, bonus mechanism and Tunneling Incentive to Transfer Pricing.

5.4 Nagelkerke R Square

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	85.646 ^a	.117	.181

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

To see the ability of independent variables in explaining the dependent variable, the values of Cox & Snell R Square and Nagelkerke R Square are used. These values are also called Pseudo R-Square or if in linear regression (OLS) better known by the term R-Square. Nagelkerke R Square value of 0.179 which indicates that the ability of independent variables in explaining the dependent variable is equal to 0.181 or 18.1 % and there are

100% - 18.1% = 81.9% other factors outside the model that explain the dependent variable.

5.5 Classification Plot

Observed		Predicted		
		Y		Percentage Correct
		.00	1.00	
Step 1	Y .00	0	20	.0
	1.00	2	72	97.3
Overall Percentage				76.6

a. The cut value is .500

The data obtained by the overall percentage value of 76.6% which then the value indicates that the overall percentage value close to 100% which means that the results show the model used fit to the data.

5.6 Model Logistic Regression

The logistic regression model that is formed is as follows:

$$\ln [Y/(1-Y)] = 9.247 - 27.909X1 - 0.602X2 - 2.215X3 + e$$

Odds ratio in this study is used to measure the tendency of independent variables to the company’s switching audit the value of odds ratio was interpreted as follows:

5.6.1 income tax

The regression coefficient for income tax variable is 27,909. This shows the value of odds ratio (probability) in this study is 0.000, meaning if the income tax coefficient decreased one unit, then the tendency of the company to transfer pricing will increase 0,000 times assuming the condition of other variables constant.

5.6.2 The bonus mechanism

The regression coefficient for bonus mechanism is 0.602. This shows that the odds ratio in this research is 0.548, meaning that if the coefficient of one-unit bonus mechanism, then the tendency of the company to transfer pricing will increase by 0.548 times with the assumption that other variable condition is constant.

5.6.3 Incentive tunneling

The regression coefficient for incentive tunneling is 2,215. This shows the odds ratio (odds ratio) in this research is 0.109, it means that if the coefficient of incentive tunneling decreases one unit, then the tendency of the company to transfer pricing will increase by 0.109 times assuming other variable condition constant.

6.0 ANALYSIS OF RESULTS

6.1 Effect of Income Tax on Transfer pricing

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 ^a X1	-27.909	13.830	4.072	1	.044	.000	.000	.448
X2	-.602	.600	1.006	1	.316	.548	.169	1.775
X3	-2.215	1.096	4.084	1	.043	.109	.013	.935
Constant	9.247	3.400	7.396	1	.007	10373.457		

a. Variable(s) entered on step 1: X1, X2, X3.

Based on the above partial test, the results of income tax variables in this study showed a negative and significant influence on indications of transfer pricing at manufacturing companies listed on the stock exchange of Indonesia it is shown with regression coefficient of -27.909 and probability of 0.044 is smaller than a significance level of 0.05. This means that the amount or the amount of tax burden

affects the manufacturing company to perform transfer pricing action. This result is in accordance with research of Marfuah and Winda Hartati, Desmiyawati, Julita (2014) which states that taxes influence transfer pricing and Ni Wayan Yuniasih, Ni Ketut Rasmini and Made Gede Wirakusuma (2012).

The income tax is also reinforced in the grand theory described in the agency that the agent will do the best in the company especially by increasing the company's profit, one way by transfer pricing in the hope that it can minimize the corporate tax burden to be paid, the goal to be able to optimize increase in corporate profits so that agents can show good performance to the owners of the company.

6.2 Effect of bonus mechanism on Transfer pricing

Based on the above partial test, the variable results The bonus mechanism in this study showed no significant and negatively affect the indication of transfer pricing at the manufacturing company listed on the Indonesian stock exchange it is shown with the regression coefficient of - 0.602 and the probability of 0.316 is greater from a significance level of 0.05. That is, if only because the motive to get a bonus, should not directors dare to conduct transfer pricing transactions to increase corporate profits but the directors can do a good corporate management that can affect the achievement of maximum profit, considering this is very unethical because company management must maintain company value in the eyes of society. The results of this study in accordance with Mispiyanti 2015 and Novi Lailiyul Wafiroh and Niken Nindya Hapsari (2015) which states the bonus mechanism has no effect on transfer pricing.

6.3 Effect of incentive Tunneling on Transfer pricing

Based on the above partial test, the results of variable incentive tunneling in this study showed a negative and significant influence on the indication of transfer pricing at manufacturing companies listed on the stock exchange of Indonesia it is shown with regression coefficient of -2.215 and probability of 0.043 is smaller than a significance level of 0.05. This means that one of the purposes of transfer pricing transactions is to conduct tunneling to minority shareholders resulting in a loss to minority shareholders. And the results of this study in accordance with Mispiyanti (2015) which states tunneling incentive effect on transfer pricing.

The income tax return is also corroborated in the grand theory described in the agency that agents will be controlled by the majority shareholders for their own benefit by practice tunneling rather than paying dividend to minority shareholders.

7.0 MANAGERIAL IMPLICATIONS

Income tax has significant effect on transfer pricing. This identifies that the greater tax burden triggers the management of the company to transfer pricing through transactions between divisions or related parties outside of Indonesia so that profits are reduced, and tax expectations are paid less. Incentive tunneling has a significant effect on transfer pricing, it identifies that the controlling shareholder or called the majority shareholder can more control the company for the benefit and enrich them by transferring the company's assets and the company's profit to their own company, rather than paying the dividend to the holder minority shares.

8.0 CONCLUSION

Based on the results of the above analysis it can be concluded that: Income tax has a negative and significant effect on transfer pricing. The bonus mechanism has no negative and significant effect on transfer pricing. Incentive tunneling has a negative and significant effect on transfer pricing.

As for preparing this research is still very many limitations experienced by researchers. Because of that limitation, it is hoped that the next researcher will pay attention to the following matters which become the suggestion for the next researcher. Researchers interested in conducting studies in the same field may try to analyze the effect of tax on the implementation of transfer pricing by adding other independent variables, such as firm size, exchange rate, good corporate governance (GCG). Further research is suggested to enlarge the sample of research not only in the manufacturing company, but also in companies running in the mining, plantation, and other sectors.

REFERENCES

- Aditama, Ferry dan Purwaningsih, Anna (2014). Pengaruh Perencanaan Pajak Terhadap Manajemen Laba Pada Perusahaan Non Manufaktur Yang Terdaftar Di Bursa Efek Indonesia. *Journal of Modus*, Vol.26 (1), 78-84.
- Agnes W. Y. Lo, Raymond M. K. Wong, and Michael Firth (2010). Tax, Financial Reporting, and Tunneling Incentives for Income Shifting: An Empirical Analysis of the Transfer Pricing Behavior of Chinese-Listed Companies. *Journal of American Taxation Association*, Vol. 32 (2), 143-148.

- Banyu Ageng Wahyu Utomo, 2011. Pengaruh Sikap, Kesadaran Wajib Pajak, dan Pengetahuan Perpajakan Terhadap Kepatuhan Wajib Pajak Dalam Membayar Pajak Bumi dan Bangunan di Kecamatan Pamulang Kota Tangerang Selatan. *Journal Akuntansi, Ekonomi dan Bisnis*. 1-150
- Praktek Penerapan Akuntansi Pajak dalam transaksi Bisnis (2017). Berita Ditjen Pajak Perketat Aksi Transfer Pricing. Retrieved May 1, 2018 from <http://www.ortax.org>.
- Budiasih, I. G. (2011). Peranan Konservatisme pada Information Assymetry: Suatu Tinjauan Teoritis. *Jurnal Ilmiah Akuntansi dan Bisnis*, Vol.6 (2), 1-16.
- Gujarati, D. (2007). *Dasar-dasar Ekonometrika* (3rd ed). Erlangga, Jakarta.
- Ghozali, I. (2013). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21 Update PLS Regresi*. Badan Penerbit Universitas Diponegoro, Jakarta.
- Fuadah, I. (2016). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 23*. Badan Penerbit Universitas Diponegoro, Jakarta.
- Halim, M. L., Wardhani R., (2011). Analisis Pengaruh Konflik Keagenan Terhadap Kebijakan Dividen. Program Studi Akuntansi, Fakultas Ekonomi Universitas Indonesia.
- Hartati, Winda., Desmiyawati, dan Julita (2014). Tax Minimization, Tunneling Incentive dan Mekanisme Bonus Terhadap Keputusan Transfer Pricing Seluruh Perusahaan yang Listing di Bursa Efek Indonesia. *Jurnal Simposium Nasional*. Vol.3 (4), 65-74.
- Jensen , M., & Meckling, W. (1976). Theory of The Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3. Vol.3 (4), 350-365.
- Kiswanto, N. And Purwaningsih, A. (2014). Pengaruh Pajak, Kepemilikan Asing, Dan Ukuran Perusahaan Terhadap Transfer Pricing Pada Perusahaan Manufaktur Di BEI Tahun 2010-2013. *Jurnal Universitas Atma Jaya*. 1-15.
- Lestari, S. D., & Wirawati, N. G. (2016). Good Corporate Governance sebagai Pemoderasi Pengaruh Asimetri Informasi pada Manajemen Laba. *E-Jurnal Akuntansi Universitas Udayana*, Vol.16 (1), 156-182.

- Marfuah And Azizah, A. P. N. (2014). Pengaruh Pajak, Tunneling Incentive, Dan Exchange Rate Pada Keputusan Transfer Pricing Perusahaan. *Jurnal Akuntansi dan Auditing Indonesia*, Vol 18 (2), 156-165.
- Mutamimah. (2009). Tunneling atau Value Added dalam Strategi Merger dan Akuisisi di Indonesia. *Jurnal Manajemen Dan Terapan*, Vol.2 (2), 161–182.
- Misipiyanti, (2015). Pengaruh Pajak, Tunneling Incentive dan Mekanisme Bonus Terhadap Keputusan Transfer Pricing Program Studi Akuntansi, STIE Putra Bangsa, *Journal of Accounting and Investment*. Vol.3 (2) 45-56.
- Nataharisma, Vyakana dan Sumadi, I.Kadek. (2014). Analisis Tax Planning Dalam Meningkatkan Optimalisasi Pembayaran Pajak Penghasilan Pada PT. Chidehafu. *Jurnal Akuntansi* , Vol.8 (2), 324-339.
- Ratnawati, Juli, And Retno Indah Hernawati (2016). *Dasar-Dasar Perpajakan*. Deepublish, Jakarta.
- Rahayu, Ning. (2010). Evaluasi Regulasi Atas Praktik Penghindaran Pajak Penanaman Modal Asing. *Jurnal Akuntansi dan Keuangan Indonesia*, Vol. 7 (1), 1-12.
- Saraswati, Medianti Jipi. (2014), Evaluasi Kewajaran Harga Dan Kesesuaian Metode Transfer Pricing Dengan Perdirjen Pajak Nomor Per-32/Pj/2011 (Studi Kasus Pada Pt. Mertex Indonesia). *Jurnal Mahasiswa Perpajakan*, Vol.3 (1) 1-10.
- Scott, W. R. (2012). *Financial Accounting Theory* (6th ed.). Pearson Prentice Hall, United States of America:
- Suandy, Erly. (2006). *Perencanaan Pajak*, Salemba Empat, Jakarta.
- Sulistyanto, (2008), *Manajemen Laba: Teori dan Model Empiris*.l. Jakarta: PT Gramedia Widiasarana, Indonesia.
- Sugiyono. (2012). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Alfabeta, Bandung.
- Winarno, W. W. (2011). *Analisis Ekonometrika dan Statistika dengan EViews*. Unit Penerbit dan Percetakan STM YKPN, Jakarta.

- Wafiroh, N. L., Hapsari N.N, 2015. Pengaruh Pajak, Tunneling Incentive, Dan Mekanisme Bonus Pada Keputusan Transfer Pricing Perusahaan Manufaktur Yang Listing Di BEI Periode 2011-2013. Jurnal Universitas Islam Negeri, Malang. Vol.4 (2), 125-134.
- Yuniasih, N. W., Rasmini, N. K. Dan Wirakusuma, M. G. 2012. Pengaruh Pajak Dan Tunneling Incentive Pada Keputusan Transfer Pricing Perusahaan Manufaktur Yang Listing Di BEI. Jurnal Universitas Udayana. Vol.5 (2), 1-14.
- Zain, Mohammad (2003). Manajemen Perpajakan, Penerbit Salemba Empat, Jakarta.

Needs Analysis for Designing a Specific English Language Course for the Undergraduate Accounting Students in UPM

Nur Hazura Mat Rahim¹, Assoc. Prof. Dr. Siti Maftuhah Damio², Zarith Sofia Zaid³

^{1,3}Student, Faculty of Education, Puncak Alam, Universiti Teknologi MARA, MALAYSIA

²Lecturer, Faculty of Education, Puncak Alam, Universiti Teknologi MARA, MALAYSIA

Email: wehahi@gmail.com¹, maftuhah@uitm.edu.my², zarith.sofia.zaid@gmail.com³

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ABSTRACT

Today's international business scholars treat language as an issue at the heart of their subject area (Mughan 2015), as English language's irreplaceable position as means of communication is considered essential for international businesses. Nevertheless, one of the main concerns of educational specialists is the relevance of their programmes to the graduates' success in today's highly competitive labour market. With that, a needs analysis study was sought to explore the English language needs of undergraduate accounting students at Universiti Putra Malaysia. A survey method was employed to 20 undergraduate accounting students for the purpose of this study. The data collected from the survey were analysed quantitatively using SPSS 22 programme. As the findings of this study pointed out, the participants prefer to be taught more in listening, speaking and writing skills as the needs for their study and future career. Henceforth, a highly structured ESP course for accounting students with integration of language skills, subject or field-special skills, derived from their needs should be designed.

Keywords: ESP, needs analysis, accounting, English language skills

1.0 INTRODUCTION

It is observed that sometimes educators do not teach English academic ESP courses in universities. They provide students with general English courses such as language structures, lexis and tense usage, which is mainly general English. However, the courses conducted are not created according to the students' job

specification. Therefore, the outcome of their study will be lessened. According to Bayyurt and Karatas (2015), a needs analysis should be the first step in designing a language program. Hence, this study aims to implement a needs analysis to design an ESP course suitable for the Accounting students by looking at their most needed language skills, the common problems encountered and their preferred learning styles.

Hutchinson and Waters (1987), claim that Target-Situation Analysis (TSA) involves asking questions about the target situation of the various participants in the learning process. As for this study, the accounting students' English language needs will be identified and should be covered during the course; (i) the reason for learning English, (ii) the medium, channel and types of texts used, (iii) the audiences or the clients and the places where they use the language and (iv) the frequency of English usage. On the other hand, Present-Situation Analysis (PSA) seeks to establish what the students are like at the start of their language course, investigating their strengths and weaknesses (Robinson, 1991). Therefore, the accounting students' history in learning English would also be included in the needs analysis. Finally, the Strategy Analysis (SA) is concerned with students' attitude towards learning (Alwright, 1982). Hence, these items would also be included to identify learning needs to ensure the course created would be effective and suitable for the accounting students; (i) mode of the course, (ii) methodology, (iii) resources and (iv) preferred learning styles. Hopefully, the needs analysis would help in designing an effective ESP course for them.

2.0 LITERATURE REVIEW

2.1 Language Needs for Accounting Students

The students accounting program need to learn English to help their basic knowledge in accountancy such as knowing how to operate the conceptual framework of accounting, to know the procedures of basic accounting, to do the journal as a report, to do ledger report, bank reconciliation statement and how the capital and revenue transactions should be done (Suyadi, 2016). All the basic knowledge of accountancies should be mixed with English language skills in order to meet the English performance of accounting.

Many studies have concluded that ESP courses focus mainly on reading skills (Labassi, 2009; Rais, 2007). On the other hand, Basturkmen (1998) reports that writing skills were not crucial for ESP students. This is in contrast with Xhaferi and Xheferi (2011) who demonstrate that in term of language skills, speaking

and writing are the most important skills when it comes to ESP. Another study by Alsamadani (2017) revealed that receptive skills (reading and listening) were mostly focused on in ESP classes while writing and reading, along with speaking skills, were needed more than others. Swales (1981) points out that reading and writing have a reciprocal relationship.

It is thought that grammar should not be a part of the ESP syllabus but the course should focus a lot more on specific terminology related to the field (Xhaferi & Xhaferi, 2011). Specific terminology is considered an obstacle to effective communication in English. Hence, there should be a bigger focus on learning vocabulary, particularly accounting register. Paltridge and Starfield (2013) posts a straightforward question “What vocabulary do ESP learners need?” (p.114) to clearly conceptualise vocabulary in ESP and moving beyond single words to lexical patterning in ESP.

2.2 Challenges Faced by The Accounting Students

According to Suyadi (2014), a few problematic areas in the accounting field that cause difficulties for students are consolidations, leases, mergers, research and development, price level changes, and taxation charges. General English cannot help them solve the problems. Hence, the ESP course teacher should improve their knowledge of the study program in order to make it useful for the students.

In terms of language skills, there are some challenges faced by accounting students. In listening and speaking skills, students lack practice in class because they spend most of their time learning grammar, vocabulary and reading text documents (Hoa & Mai, 2016). The study also mentions that sometimes teachers do not pay attention to listening and speaking activities, and often give students dual-language lectures (native language and English). Consequently, students only remember individual words and unable to express their opinions well in ESP. In terms of reading skill, Rezaei, Rahimi and Talepasan (2012) state that most learners have difficulties in identifying syntaxes of sentences. This causes reading English to be more difficult and cause misunderstanding in the sentence meaning. In writing skills, Lam (2011) claims that most students were facing problem-related to vocabulary, organising ideas, grammar and spelling. They often impatient to outline, organise ideas logically, connect them together in their writing making their ESP texts unsteady, sketchy and unclear.

2.3 Preferred Learning Styles

Various activities should be implemented to make an ESP course effective and engaging. Baron (2013) conducted and implemented reading comprehension workshop for the accounting students, and it is proven to improve vocabulary and reading comprehension among the students. Students who read specialised material and participated in discussions in English have reported to have increased their oral fluency (Rodriguez, 2014). The research is similar with the findings by Simonova (2016) who suggest that accounting students preferred oral or written presentation because they felt free in creating the content of the presentation and the required layout and structure helped them express their ideas.

Razak, Ahmad & Shah (2007) found that students' most preferred teaching style is Facilitator style in contrast to Formal Authority style which is the least preferred. A more recent study by Lee (2017) suggests that students have a marked preference for visual learning styles, and they also prefer the student-centered teaching approach. Specifically, accounting students need their own materials in learning English to support their future profession (Suyadi, 2016). Choosing course-books, arranging syllabus, and any moves need to adapt authentic resources before ESP teaching and learning procedures can be carried out (Suyadi, 2014). To conclude, all the preferred learning styles should be taken into consideration to make the ESP course more engaging and personalised to cater to the needs of the students.

3.0 METHODOLOGY

3.1 Research Design

This research is a small-scale, quantitative survey of the needs analysis of the undergraduate accounting students in Universiti Putra Malaysia (UPM). It seeks to design a tailored English language course for current and future needs, based on their everyday use of the language. It is considered a small-scale investigation as it involves a limited number of participants from two cohort groups in only one public university in Malaysia. The quantitative method encompasses data collection in such a way that information is derived from numbers and subjected to statistical treatment to explain a phenomenon investigated (Aliaga & Gunderson, 2000; Creswell, 2005). Following that, it is decided that the commonly used survey research is the most appropriate method to be employed in this study. The reason behind this is due to the fact that survey research is useful to determine the degree to which a desired objective of the researchers is attained as a result of the planned

strategy. The study is based on purposive sampling under the non-probability sampling strategy. The data collection includes a questionnaire, which is designed by the researchers as a needs assessment's instrument. The methodology underlying this research is guided by Hutchinson and Waters' (1987) model of needs analysis, which is performed using a 72-item survey.

3.2 Population and Sampling

The population of the study consists of undergraduate students at Universiti Putra Malaysia, and in the study, the researchers did not take the whole population to be the sample. From the population, the study sample is selected purposively from the 3rd and 4th year students of the accounting faculty in the year 2019. They are undergraduates' students, consist of 20 (6 males, 14 females) with the age range from 21- 22 years old. The rationale is that these students of accounting have been exposed to the academic programme for at least two years, and they might identify the English language needs for educational and career purposes. Therefore, they are able to provide feedback on which aspects of language they need for academic and career purpose. Furthermore, their wishes and wants are supremely important in this needs analysis study. The mother tongue of the participants is Malay, and they enter the university right after finishing their secondary school years. In terms of their academic background, all participants receive formal pre-education at the age of 6 and primary education in public schools with Malay as a medium of instruction.

As English is currently the global language of business, it is clear that accountants should be well versed in the language to effectively navigate the business world where their services are most needed. In meeting the demands, the participants are currently enrolled in specialised English course per semester and are placed in specific classes based on their MUET bands and TOEFL/ IELTS scores they have taken before entering universities. A specific group of students receive at least 3 hours of instruction in English each week, depending on the course and requirements. The lecturers from English department are held responsible for coaching their classes such as Reading for Academic Purposes, Academic Interaction and Presentation, and Academic Writing. The courses, on the whole, pays more attention to listening, reading, writing and grammar as compared to other skill such as speaking, considering that speaking is a vital skill for participants' career development. Indeed, accountants who have a better grasp of the language tend to be promoted quicker and to a higher position due to their ability to communicate clearly and precisely, be it reports and presentations to superior or clients. Moreover, due to the global nature of the profession, accountants that have

a better grasp of the English language are more likely to be headhunted by foreign companies that might provide better pay and higher audit fees.

3.3 Instrumentation

To match with the objectives of this study and in order to explore the participants' perceived needs and preferences, a questionnaire is used as a data-gathering instrument. Questionnaire is chosen to gather data because it is an efficient tool for collecting information on a large scale and require little time or extended writing from the participants (Brown, 1995; Oppenheim, 1993). Questions on the questionnaire are developed in order to give them an opportunity to list their expectations of the course and to answer the research questions of this study. A structured questionnaire is prepared in this research and is adopted from Bell and Waters (2014), O'Leary (2014) and Yokshida and Naganuma (2003).

The questionnaire is composed of four parts. The first part covers the demographic background of the participants, including their gender, age and their current status. The second part analyses learners' future domains of language use and questions about their needs of English language skills for their career and study. It is made up of 14 close response sections of five-point Likert-scale questions arranged from 'not important' to 'very important' (1: not important, 2: slightly important, 3: moderately important, 4: important and 5: very important). The third part solicits the learners' present domain of language use, inclusive of their ability in each English language skill. This section is made up of 28 closed-response sections of four-point Likert-scale with anchors arranged from 'I can't do this at all' to 'I can do this on my own' (1: I can't do this at all, 2: I can do this with a lot of effort, 3: I can do this with a little help, and 4: I can do this on my own). The last part is to investigate the strategy for the course to be executed. There are 28 questions closed-response sections of five-point Likert-scale. The five options include 'not interested at all', 'not interested', 'somewhat interested', 'interested', and 'very interested'. The items include their learning preferences in term of the preferred activities and method of learning, the class interaction, the number of credit hour preferred, and the materials preferred for the course.

3.4 Data Collection and Data Analysis Procedure

The data of the study are collected through the distribution of the questionnaire. The data from the questionnaire is likely yield a number of suggestions or areas worth considering for the future of the course. The survey is administered during the 5th week of the new academic year when students start

to settle down from the beginning of the semester chaos and adjust to the new environment. All the participants are given a brief overview of the objectives of the study, the way of answering and the length of time given for answering the questionnaire. The participants are assured that their answers will be kept confidential, and their grades will not be affected by their answers in any way. Furthermore, they are informed that they are not compelled to participate in the research or to declare their names. It takes about one week for the questionnaire to be administered among the participants, and the response rate is 100%. According to the participants, they do not find any difficulty in responding to the questions. The questions are clear and to the point. After the administration of the questionnaire, participants responses are collected and analysed using descriptive methods of analysis (mean and standard deviation) by using the Statistical Packages for Social Sciences (SPSS 22) in order to report on the participants' need preferences and attitude. Prior to analysis, the data undergo a screening process, and it is seen that there is none outlier found among the data; thus, no participants are excluded for further analysis.

4.0 FINDINGS AND DISCUSSION

This section presents the statistical analysis of the data gathered through the study. It begins with the participants' demographic background, followed by the results of the first three research questions.

4.1 Participants' Demographic Background 5.5 Classification Plot

Table 1: Demographic Data of the Participants

	Aspect	Frequency	Percentage
Gender	Male	6	30 %
	Female	14	70 %
Age	21 years old	9	45%
	22 years old	11	55%
Status	Students	20	100%

A total of 20 participants, 6 males (30%) and 14 females (70%) were chosen through purposive sampling and participated in the study. 9 of the participants are 21 years old (45%), and 11 of them are 22 years old (55%). Pertaining to the current status of the participants, all of them (100%) are students. To maintain the anonymity, the names of the participants were off record as this was deemed

essential to protect their personal identity.

R.Q. 1: What are the most needed English language skill for the accounting undergraduate students at UPM?

Table 2: Descriptive Statistics of Needs for English

	N	Mean	Std. Deviation
English is important for my study	20	4.60	0.50
English is important for my career	20	4.80	0.41
English is important for everyday use	20	4.05	0.76
English is important for socialising	20	3.60	0.75
Valid N (listwise)	20		

Table 2 displays the descriptive statistics of participants’ need for English. The highest mean score from all the 4 items is the item ‘English is important for my career’ (4.80) with the standard deviation of 0.41, followed by the mean score of 4.60 (SD 0.50) acquired from the item ‘English is important for my study’. The lowest mean score is 3.60 (SD 0.75) of item ‘English is important for socialising’. Thus, it is shown that English is highly demanded for the participants’ career and study.

Table 3: Descriptive Statistics of English Skills for Study

	N	Mean	Std. Deviation
Listening skill is important for my study	20	4.45	0.60
Speaking skill is important for my study	20	4.75	0.55
Reading skill is important for my study	20	4.70	0.47
Writing skill is important for my study	20	4.85	0.37
Grammar is important for my study	20	4.30	0.66
Valid N (listwise)	20		

Table 3 shows the descriptive statistics of participants’ inclination towards English skills for study. The item with the highest mean score of 4.85 (SD 0.37) is ‘writing skill is important for my study’, followed by the mean score of 4.75 (SD 0.55) from the item ‘speaking skill is important for my study’. The lowest mean score is of the item ‘grammar is important for my study’ with the mean score of 4.30 (SD 0.66). All in all, it is obviously shown that writing and speaking skills are needed for the participants’ study

Table 4: Descriptive Statistics of English Skills for Career

	N	Mean	Std. Deviation
Listening skill is important for my career	20	4.80	0.41
Speaking skill is important for my career	20	4.80	0.52
Reading skill is important for my career	20	4.60	0.68
Writing skill is important for my career	20	4.60	0.60
Valid N (listwise)	20		

Table 4 shows the descriptive statistics of participants' inclination towards English skills for career. The item 'listening is important for my career' and 'speaking is important for my career' have the highest mean score of 4.80 (SD 0.41), while the items 'reading is important for my career' and 'writing is important for my career' have the lowest mean score of 4.60 (SD 0.68). As demonstrated, the participants agree that listening and speaking skills are vital for their career. Thus, among the four skills, it is considered that listening, speaking and writing are more important for the participants' study and career, as compared to reading skill.

R.Q. 2: What are the problems faced by UPM's accounting undergraduate students?

Research question 2 is aimed at finding out participants' self-assessment towards their language skills and knowledge in learning English. The following table is shown to give a summary of participants' responses dealing with language skills which are presented in terms of their means and standard deviations.

Table 5: Descriptive Statistics of Participants' Mastery of English Skills

	N	Mean	Std. Deviation
Listening	20	3.26	0.52
Speaking	20	3.36	0.49
Reading	20	3.37	0.40
Writing	20	3.26	0.40
Valid N (listwise)	20		

Table 5 shows the descriptive statistics of participants' mastery of English skills. Reading skill has the highest mean score of 3.37, with the standard deviation of

0.40, followed by speaking, which has a mean score of 3.36 (SD 0.49). However, the participants are still facing some difficulties concerning other skills as both listening and writing skills have the lowest mean score of 3.26 (SD 0.52), which explain the results of the questionnaires, showing their inability to complete the indicated tasks on their own. Thus, the participants have problems with listening and writing skills.

Table 6: Descriptive Statistics of Participants' Mastery of Listening Skills

	N	Mean	Std. Deviation
Listening to lectures related to the field	20	3.40	0.50
Listening and understanding English lectures on accounting	20	3.15	0.81
Participating in international events	20	2.65	0.75
Receiving spoken instructions/advice	20	3.40	0.60
Listening to presentations and discussions in international meetings/seminars/conferences	20	3.20	0.77
Listening to radio or television programmes and other English media	20	3.35	0.88
Listening to my friends	20	3.65	0.75
Valid N (listwise)	20		

As indicated from Table 5, listening skill is placed the least position of skills participants self-assessed by means of 3.26 (SD 0.52). Based on the data in Table 6, most of the participants have a problem in ‘participating in international events’, with the lowest mean score of 2.65 (SD 0.75), followed by ‘listening and understanding English lectures on accounting’, with the mean score of 3.15 and standard deviation of 0.81. It can be concluded that the participants need more facilitation to support them in enhancing their listening skill.

Table 7: Descriptive Statistics of Participants' Mastery of Writing Skills

	N	Mean	Std. Deviation
Writing research papers, articles, and reviews for journals	20	2.60	0.68
Writing homework and assignments an English	20	3.25	0.72
Answering examination in English	20	3.60	0.68
Writing summary of a text	20	3.15	0.67
Preparing English presentation slides	20	3.60	0.50
Writing emails	20	3.50	0.51
Writing grammatically correct sentences	20	3.10	0.64
Valid N (listwise)	20		

Table 7 portrays the participants mastery of writing skill and it is shown in the table that the participants have low confidence in ‘writing research papers, articles, and reviews for journals’, with the lowest mean score of 2.60 (SD 0.68), followed by ‘writing grammatically correct sentences’, with the mean score of 3.10 (SD 0.64). So, the participants find it tough to get the hang of writing skill. This is in line with the listening issue aforementioned.

5.0 DISCUSSION

R.Q. 1: What are the most needed English language skill for the undergraduates accounting students at UPM?

This study has found that English is highly demanded for the participants’ career and study, particularly listening, speaking and writing skills have the highest demand among the five language skills (listening, speaking, reading, writing and grammar). The findings are in line with Xheferi and Xhaferi (2011), whose research emphasised the vitality of speaking and writing skills when it comes to ESP. Although reading and writing are thought to have a reciprocal relationship (Swales, 1981), the accounting students claim they do not need reading skills as much as they need listening, speaking and writing skills. However, the finding is in contrast with Basturkmen (1998) who disregards the importance of writing skills in ESP and Alsamadani (2017) who found out though listening skills were focused on in ESP class, it is not really needed.

The participants often close their eyes to the importance of grammar and rank the skill as the least necessary language ability. This finding is similar to the claim that grammar should not be a part of the ESP syllabus, but it should focus a lot more on specific terminology related to the field (Xhaferi & Xhaferi, 2011). Accounting registers could be embedded while teaching the three prominent and highly needed skills (listening, speaking and writing) since specific terminology could make or break effective communication in English for these accounting students as supported by Suyadi (2016) who claims on the need for accounting students to learn English to help their basic knowledge in accountancy such as knowing how to operate the conceptual framework of accounting, knowing the procedures of basic accounting, how to do the journal as a report, how to do ledger report, bank reconciliation statement and how the capital and revenue transactions should be done. Evidently, emphasis on accounting register is required.

R.Q. 2: What are the problems faced by UPM’s undergraduate accounting students?

From the needs analysis, it was found that the participants agree that they have problems mostly with listening and writing skills. For listening skills, participating in international events and listening and understanding English lectures on accounting are the two most challenging areas for them. When it comes to international events, most probably the speaker would be an international speaker with a heavy accent style of speech, causing participants to hardly understand the content of the speech. Listening skill is evidently affected by native pronunciation and different accent of English (Zarin, 2013). Participants are found to only remember individual words and cannot express their opinions well in ESP when the teachers do not pay attention to listening and speaking activities, and give them dual-language lectures; native language and English (Hoa & Mai, 2016). These problems should be considered while designing suitable listening skills activity for the participants.

The participants' mastery of writing skill is also challenged, especially when they are needed to write research papers or articles and reviewing journals. In a research done on the Southeast Asian writers, it is observed that lexicogrammatical, discourse and cultural differences are the challenging areas for them to write their research article (Suryani, Petra, Rodziah & Hamidun, 2015). The participants also claim to have difficulties in writing grammatically correct sentences. This is similar to Lam (2011) who suggested the vocabulary use, organising ideas, grammar and spelling are the most prominent problems when it comes to writing activities. Hence, a writing skill workshop should be considered to focus on how to write grammatically correct sentences, organising ideas as well as the use of suitable vocabulary related to accounting register.

6.0 CONCLUSION

In conclusion, this study looks at the needs analysis for accounting undergraduates students at UPM. The students' language needs encountered problems, and preferred learning styles are scrutinised as the first step in creating a suitable ESP course for the accounting students. Students seem to prefer to be taught more skills in listening, speaking and writing as the requirements for their studies and future careers. They also want to be exposed to the related accounting register to help equip them with the basic knowledge in accountancy.

Students may have trouble listening to the international conference due to the heavily accented speech and listening to English accounting lectures that include dual language, because they can be confusing. In terms of writing skills, they do

not enjoy essay writing activity even though they faced the most difficulties in writing a research paper and reviewing journal articles. Therefore, fun learning activities involving games and group discussion should lower the language anxiety they feel when dealing with a difficult topic.

In terms of the students' preferred learning style, they favoured a shorter session for each workshop, a student-centered approach with possibilities for self-regulated learning, flipped classroom and multiple-choice embedded activity, integration of ICT and audio-visual aids to make the course more engaging and authentic materials suitable for accounting fields should be used. Henceforth, based on the result of the findings of the study, highly structured ESP course for accounting students with the integration of language skills, subject or field-special skills, derived from the learners' needs should be designed. Such course that is based on a prevalent and comprehensive needs analysis is expected to facilitate the process of mastering both academic and subject-matter specific aspects of the target language as well as motivate students to become actively involved in the process of learning.

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REFERENCES

- Aliaga, M., & Gunderson, B. (2000). Interactive Statistics. Saddle River , p3-15
- Al-Khayyat, A.S.J. (2016). The impact of audio-visual aids (AVA) and computerize materials (CM) on university ESP students' progress in English Language: International Journal of Education and Research. 4(1). 273-282.
- Alsamadani, H.A. (2017). Needs Analysis in ESP Context: Saudi Engineering Students as a Case Study: Advances in Language and Literary Studies. 8(6). 58-68.
- Alwright, R. L. (1982). What do we want teaching materials for? ELT Journal. 36/1:5-18.
- Baron, M.B. (2013). Building ESP content-based materials to promote strategic reading. PROFILE Issues In Teachers' Professional Development. 15(1), 139-169.

- Basturkmen, H. (1998). A Needs Analysis Project at Kuwait University. *English Teaching Forum*, 36(4).
- Bayyurt, Y & Karatas, N.B. (2015). Needs-Analysis: The First Step in Content Development for Mobile Learning. *Bogazici University Journal of Education*. 28(1). 13-23.
- Bell, J., Waters, S., & Ebooks Corporation. (2014). *Doing your research project: A guide for first-time researchers* (Sixth ed.). Maidenhead, Berkshire: Open University Press.
- Brown, J. D. (1995). *The elements of language curriculum: A systematic approach to program development*. Boston, MA: Heinle & Heinle Publishers.
- Brown, J. D. (2001). *Using surveys in language programs*. Cambridge, England: Cambridge University Press.
- Brown, P., Roediger, H., & vMcDaniel, M. (2014). *Make it stick: The science of successful learning*. Cambridge, MA, USA: Belknap Press of Harvard University Press.
- Burrus, S.W., Lynne, C. & Shaw, M. (2014). Course length recommendation in online higher education: *Journal of Online Higher Education*. 5(2). 1-12.
- Creswell, J.W. (2005) *Qualitative, Quantitative, and mixed methods approaches*. 2nd Edition. London: SAGE Publications.
- Du, S.C., Fu, Z.T. & Wang, Y. (2014). The Flipped Classroom-Advantages and Challenges. *International Conference on Economic Management and Trade Cooperation (EMTC 2014)*. Atlanta Press. 17-20.
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis* (6th ed.). Uppersaddle River, N.J.: Pearson Prentice Hall.
- Hoa, N.T. & Mai, P.T. (2016). Difficulties in Teaching English for Specific Purposes: Empirical Study at Vietnam Universities: *Canadian Center of Science and Education*. 6(2). 154- 161.

- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge: Cambridge University Press.
- Hutchison, T. and Waters, A. (1987) *A Learner-Centred Approach, English for Specific Purposes*, Cambridge: Cambridge University Press.
- Johns, A. & Dudley-Evans, T. (1991) 'English for Specific Purposes: International in Scope, Specific in Purpose' *TESOL Quarterly*, 25(2): 297-314.
- Kavaliauskiene, G. & Kaminskiene, L. (2010). *Using ICT in English for Specific Purposes Classroom*. *ESP World Issue* 1. 27(9). 1-8. [http://www.esp-world.info/](http://www.esp-world.info/Labassi, T. (2009). Reading Titles of Empirical Research Papers. Reading Matrix, 9, 166-174) Labassi, T. (2009). *Reading Titles of Empirical Research Papers*. *Reading Matrix*, 9, 166-174.
- Lam, Q.D. (2011). *English for specific purposes: problems of teaching contents: Bao Ngon ngir va doi song so-Language and Life*. 11(193).
- O'Leary, Z. (2014). *The essential guide to doing your research project* (2nd ed.). London: SAGE.
- Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement*. New York: Printer Publishers Ltd.
- Paltridge, B. & Starfield, S. (2013). *The Handbook of English for Specific Purposes*, 1st Edition. John Wiley & Sons, Inc.
- Rais, N. (2007). *Needs Analysis for a Business English Course at the Institut Supérieur de Gestion* (Unpublished master's dissertation). Institut Supérieur des Langues de Tunis.
- Razak, N.A., Ahmad, F. & Shah, P.M. (2007). *Perceived and Preferred Teaching Styles (Methods) of English for Specific Purposes (ESP) Students: Journals of Universiti Kebangsaan Malaysia*. 2(2). 1-20.
- Rezai, A., Rahimi, M.A. & Talepaskan, S. (2012). *A critical review of the current situation of teaching ESP in the Iranian higher education institutions*. *The Iranian EFL Journal*. 7(6). 179-204

- Robinson, P. C. (1991). *ESP today: A practitioner's guide*. Great Britain. Prentice Hall International (UK) Ltd.
- Rodriguez, G. A. (2014). Reading through ESP in an undergraduate law program. *PROFILE Issues In Teachers' Professional Development*. 16(1). 105-118. Doi:10.15446/provfile.v16n1.36823
- Simonova, I. (2016). Assessment preferences and learning styles in ESP: *Journal of Language and Cultural Education*. 4(3). 142-153.
- Suriyana, I., Petra, D.F., Rodziah, W. & Hamidun, N. (2015). Challenges in Research Article Writing among the Southeast Asian Writers in *Proceedings of Symposium of International Languages and Knowledge 2015*, p.123-125, 12th -13th June, Thailand.
- Suyadi, M.A. (2014). *Teaching English for Specific Purposes for Accounting Department of Jambi State University*. (Unpublished Dissertation) English Education Program, Batanghari University, Jambi-Indonesia
- Suyadi, M.A. (2016). English for Specific Purposes for Accounting Students: *International Journal of Innovation and Research in Educational Sciences*. 3(2). 144-148
- Swales. J.M. (1981). *Aspects of article Introductions*. Aston ESP Research Reports 1. Birmingham. Republished University of Michigan Press (2011).
- Vahid, Z.Z.(2011). A review of the effectiveness of using authentic materials in ESP courses: *English for Specific Purposes World*. 31(10). 1-15.
- Xhaferi, B. & Xhaferi, G. (2011). The English language skills in ESP for law course: *Revista de Linguas para Fines Especificos*. 17. 431-448.
- Yoshida, K., & Naganuma, K. (2003). Eigo can-do anketo chousabunnseki houkokusho: Bassuibann. [English can-do survey report: A summary.] Retrieved April 15, 2004, from <http://benesse.jp/berd/center/open/kokusai/report/2003/07/rep0716.html>.
- Zarin, I. (2013). The effect of accent(s) and pronunciation(s) of English on Bangladeshi English language learners' listening skill acquisition process. *TESOL Journal*. 4(2). 30-37.

Customer Satisfaction towards Hotel Industry in Malaysia: A Systematic Review of Pre-Covid19 Era

Norliza Aminudin¹, Nita Abdul Hassan², Nurul Fatiah Aishah Shaukani³ and
Salamiah A Jamal⁴

Tourism Department, Universiti Teknologi MARA Cawangan Selangor, Malaysia

Email: norliza@uitm.edu.my¹, nitahassan0728@gmail.com²,
nurulfatiahaisah@gmail.com³, drsalamiah@uitm.edu.my⁴

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ABSTRACT

Customer satisfaction is a significant segment in the tourism and hospitality sector which resulted in increased attention to studies being conducted in all pillars of tourism including in the accommodation sector. This study aims to present the state of academic research in customer satisfaction attributes in the Malaysian hotel during the pre-Covid era. To achieve this aim, the objectives of this study are to provide a systematic review of the literature published on consumer satisfaction towards the hotel industry in Malaysia. A systematic literature review is conducted, and in a total of 17 key journal articles in the Scopus database up from 2000 until 2019, 20-years period taken into consideration, in which the review protocol proposed in this study makes use of specific techniques such as PRISMA, applied thematic analysis and bibliographic documentary review. The findings reveal that the staff prompt and courtesy of front desk attributes are frequently examined by researchers, followed by comfort and value for room attributes, accessibility of the facilities at the hotel and a variety of food and beverages were the important attributes for the customer satisfaction towards Malaysian hotel industry. The theoretical contribution of this study includes the presentation of a systematic review of the literature, different research approaches and perspectives on customer satisfaction towards the hotel industry, through which it helps to enrich knowledge in the area of hotel attributes on customer satisfaction in the hotel business.

Keywords: *Customer satisfaction, Hotel industry, attributes, Malaysia, Systematic Literature Review*

1.0 INTRODUCTION

The hospitality and tourism industry worldwide have developed into a truly global industry in which both consumers and producers are spread worldwide (Lahap, Ramli, Said, Radzi & Zain, 2016). Cheng, Gan, Imrie, and Mansori (2019) added that over six decades, tourism continues to expand and diversify, becoming one of the fastest growing and largest economic sectors in the world. This is in line with what was mentioned by Swarbrooke (1999), there are five different sectors in tourism which are a tourist destination, visitor attractions, tour operations, transport, and hospitality. In addition, the hotel industry is one of the tourism sectors that has been exponentially growing and is one of the most significant contributors to the advancement of the tourism industry (Cheng, et al., 2019). In 2017, The Malaysian Association of Hotels (MAH) recorded a total of 900 hotels with a total of 155,287 hotels rooms to cater to the inflow of international tourist and domestic consumption. The hotel industry in Malaysia has undergone a process of transformation that brought phenomenal economic expansion towards the Malaysian economy (Lahap, Said, Rose, Sumarjan & Mohi, 2014). Xie and Chaipoo Pirutana (2014) pointed out that the key to the hotel's success is tourists' satisfaction.

Customer satisfaction can be seen as a customer's perspectives in which his or her needs, wants, and expectations throughout the product or service life cycle have been met or surpassed, bringing about ensuring repurchase and delay unwaveringness. Customer satisfaction needs to be reviewed from time to time in every hospitality industry as stated by Poon and Low (2005) that customer satisfaction is the most important criterion in determining the quality of service delivered to customers through the products or services and other supplementary services. An increase in the number of visitors can lead to an increase in business revenues. Amirreza et al., (2013) agreed that customer satisfaction leads to various effects and it was known to be an indicator of a company's future income and profit. However, Dominici and Guzzo (2010) stressed that as the cost of attracting new customers is higher than the cost of retaining existing ones, therefore, managers must focus on retaining existing customers by improving policies and procedures in managing customer satisfaction and customer loyalty. Furthermore, tourists who are satisfied are more likely to have the intention of revisiting and repurchasing if the service provider achieves or exceeds their expectations (Shah Alam & Mohd Yasin, 2010). This also can be proved by Angelova and Zekiri (2011) that a satisfied customer has a positive effect on an organization in terms of profitability, repeat purchases, brand loyalty and positive word of mouth.

Given its importance as a marketing construct, it is not surprising that some of the reviews of the literature on customer satisfaction have appeared across many disciplines over the years (Prayag, Hassibi & Nunkoo, 2019). As an example, Malaysian researchers are not excluded in this field of studies, and Poon and Lock (2005) recorded the highest citation to 285 times thus far. Their article was titled, “Are travelers satisfied with Malaysian hotels?” with a few criteria established. From the outset, the terms “consumer satisfaction”, “customer satisfaction” and simply “satisfaction” is used interchangeably without any justification for the use of any term (Giese & Cote, 2000). A systematic review is a rigorous and transparent approach that ensures the selection of the most pertinent publications (Kitchenham 2004; Staples & Niazi, 2007), which is essential for the analysis of sometimes contradicting results. Systematic reviews are widely used as an aid to evidence-based decision making (Petticrew, 2001) outside of the field of tourism and hospitality.

This can be proved by Scopus (2019) that studies systematic literature review of the hotel industry in Malaysia under a low average. In fact, there are existing studies in tourism and hospitality field that merge with the concept of systematic literature reviews by Ladeira, Branda, and Costa (2016) that satisfaction correlates with several antecedents such as service quality, destination image, and perceived value among others as well as outcomes such as loyalty and word-of-mouth. However, these studies did not meet a standard in the definition of customer satisfaction towards the hotel industry in Malaysia and not being able to further the studies in the future. In addition, there has not been any systematic literature review done on Malaysian hotel customer satisfaction that leads to a gap existing of systematic literature review in customer satisfaction towards the hotel industry in Malaysia.

The aim of this paper is, therefore, to present the state of systematic literature review in customer satisfaction attributes in the Malaysian hotel. This study decided to perform the literature search on a manuscript published from 2000 until 2019 in line with the studies of Cohen et al. (2014) and Oh and Kim (2017) that reviewed published articles from the year 2000, the present study covers all articles published on consumer satisfaction between 2000 and 2016 in the five leading hospitality journals as stated by Mulrow 1994; Chalmers, Hedges & Cooper, 2002) that a single study should not be considered in isolation, but positioned within the ‘totality’ of research in a field to give a more complete picture. A summary of the listed reviewed studies (see Table 1) is provided in this study.

2.0 METHOD

A systematic literature review is an examination of a formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research and to collect and analyze data from studies that are included in the review. Not just that, it was highlighted that via a systematic literature review, the author’s claims of rigor in their research can be justified, allowing for identification of gaps, and needed directions for future research. Many studies were conducted using systematic literature reviews such as in health and medical (Griffiths, Saville, Ball, Jones, Pattison & Monks, 2020), science and technology (Qi, Yang, Newcombe, Peng, Yang & Zhao, 2020), Law (Mauerhofer, 2019), tourism and hospitality (Bore, Rutherford, Glasgow, Taheri & Antony, 2017) religious tourism (Rashid, 2018) and hotel industry (Leite-Pereira, Brandao & Costa, 2019). This study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart (Moher, Liberati, Tetzlaff & Altman., 2010) in conducting the review.

This study has relied on Scopus journal databases and the keywords for the search terms were constructed from main databases using the following term: (Customer), (Consumer), (Satisfaction), (Hotel), (Hotel Industry) and (Malaysia); the time period considered from 2000 to 2019, including studies that were available by December 2019. A total of 17 out of 48 studies were identified after excluding the studies that did not meet the standard of inclusive criteria: unstated customer satisfaction was carried out rather than in Malaysia and in the Hotel Industry. The remaining 17 studies were screened to ensure the content was related to customer satisfaction towards the hotel industry in Malaysia. A total of 17 studies were retained for the systematic literature review.

Table1: List of Reviewed Studies

No	Author	Year	Titles	Journal	Method	Sample Size
1	Poon and Lock-Teng Low	2005	Are travelers satisfied with Malaysian hotels?	International Journal of Contemporary Hospitality Management	Mixed	200
2	Rashid et al.,	2011	Influence of relationship quality on hotel guests' loyalty: a case study of a Malaysian budget hotel	Canadian Journal on Scientific and Industrial Research	Quant	200
3	Ariffin, Nameghhi, & Zakaria	2013	The effect of hospitableness and servicescape on guest satisfaction in the hotel industry	Canadian Journal of Administrative Sciences	Quant	500
4	Hassan, Hussain, & Rahman	2013	Exploring the usefulness of CRM and it in the Malaysian hotel industry: a qualitative approach	Journal of ICT	Qual	33

5	Amirreza, Zadeh & Gilani	2013	Customer Satisfaction in the Hospitality Industry: Middle East Tourists at 3star Hotels in Malaysia	Research Journal of Applied Sciences, Engineering, and Technology International Business School	Quant	200
6	Amin, Yahya, Ismayatim, Nasharuddin, & Kassim	2013	Service quality dimensions and customer satisfaction: an empirical study in the Malaysian hotel industry	Global Illuminators	Quant	250
7	Sobihah, Mohamad, Salim, & Ismail	2014	Relationship Between E-Commerce Service Quality, Satisfaction, Trust, and Customer Loyalty in the Hotel Industry in the East Coast of Peninsular Malaysia	Journal of Hospitality Marketing & Management	Mixed	300
8	Liat., Mansori, & Huei	2014	The Associations Between Service Quality, Corporate Image, Customer Satisfaction, and Loyalty: Evidence From the Malaysian Hotel Industry	Tourism and Hospitality Research	Quant	200
9	Khoo-Lattimore & Ekiz	2014	Power in praise: Exploring online compliments on luxury hotels in Malaysia	Mediterranean Journal of Social Sciences	Qual	220
10	Sobihah, Mohamad, Mat Ali & Ismail	2015	E-commerce service quality on customer satisfaction, belief and loyalty: A proposal	Asian Social Science	Quant	100
11	Goh	2015	Investigating revisit intentions for the boutique hotels of Penang- Unesco world heritage sites	Mediterranean Journal of Social Sciences	Mixed	300
12	Keshavarz & Ali	2015	The Service Quality Evaluation on Tourist Loyalty in Malaysian Hotels by the Mediating Role of Tourist Satisfaction	European Journal of Tourism Research	Quant	500
13	Ali, Hussain, & Omar	2016	Diagnosing customers experience, emotions, and satisfaction in Malaysian Resort hotels	International Journal of Quality and Service Sciences	Mixed	600
14	Cheng, Gan, Imrie, & Mansori	2018	Service recovery, customer satisfaction, and customer loyalty: evidence from Malaysia's hotel industry	International Journal of Hospitality Management	Quant	500
15	Padma & Ahn	2019	Guest satisfaction & dissatisfaction in luxury hotels: An application of big data	Tourism and Hospitality Management	Quant	800
16	Padlee, Cheong and Zulkifli	2019	The relationship between service quality, customer satisfaction and behavioral intentions in the hospitality industry	Journal of Tourism Futures	Qual	300
17	Shafiq, Mostafiz, and Taniguchi	2019	Using SERVQUAL to determine Generation Y's satisfaction towards hoteling industry in Malaysia		Quant	400

Note:

1. (n=17)

2. (Quant=Quantitative method, Qual=Qualitative method and Mixed).

3.0 FINDINGS

3.1 General Trends of Data

General studies that did not specify the location and categories of the hotel in Malaysia received the highest citation including studies by Shafiq et al., (2019), Padlee et al., (2019), Cheng et al., (2019), Liat, Mansori, and Huei, (2014), Sobihah, Mohamad, Salim, and Ismail, (2015), Amin, et al., (2013), Ariffin, Nameghi, and Zakaria, (2013), and Poon and Lock, (2005). Meanwhile, 'Others' that covered 29% as the first highest citation, the second-highest would be 24% for Kuala Lumpur and the third highest will be Penang that represents 20% in the location of studies. There are the main group of respondents which 'Malaysian Gen Y', 'Malaysian', 'International', 'Both' and 'Others' were discovered. It was found that 'Both' are the first highest percentage that included Malaysian and International respondents in 17 studies. In addition, there are 12 studies that fall in different type of an accommodation and location such as Padlee et al., (2019), Padma and Ahn, (2020), Cheng et al., (2019), Ali et al., (2016), Goh, (2015), amin et al., (2015), Khoo and Ekiz, (2014), Amirreza et al., (2013), Ariffin et al., (2013), Rashid et al., (2011), and Poon and Lock, (2005).

Temporal data collection is also very important to define a result from the customer whether 'Pre-Post', 'During', and 'Post'. It was discovered that all the studies used the cross-sectional data approach with 'Post' represent 82% as the first highest value percentage which the data for 14 studies are collected. Some of the previous researchers did distribute their questionnaires to guests at different times of the day by using face to face interaction (Ali et al., 2016) and placed the questionnaires in the guest rooms every evening from about 7.00 p.m. to 8.30 p.m. with the assistance of the housekeeper and under the supervision of the research team (Rashid et al., 2011).

3.2 Rank Attributes among Hotels in Malaysia

The review has resulted among hotels in Malaysia that presented four main categories in rank attributes which are 'Food and Beverages', 'Front Desk', 'Room', and 'Facilities'. Additionally, there are subcategories: Price, Fresh Food, Variety of Food, Services, Staff, Efficient, Friendly and Communicative, Appearance, Prompt and Courtesy, Well Maintenance, Cleanliness, Comfort and Values, Amenities, Accessibility, Technology, Equipment, and Quality. As a result, the most cited attributes are 'Prompt and Courtesy' were the most cited attributes on Front desk as an important reason when it comes to the satisfaction of the

customer as supported by (Liat et al., 2014) that hotel operators should understand the needs of the customer in order to reinforce the customers' satisfaction (see Table 2). The scenario reveals that customers will be satisfied with the hotel if they feel that benefits from the hotel services have been restored to them in a rightful and fair manner and he added this demonstrates that customer satisfaction is directly influenced by the means of interaction; i.e. the degree of performance and behavior of the firm's staff to provide service recovery for customers (Cheng et al., 2019). 'Comfort and Value' were the second-highest cited attributes under Room attributes and Rashid et al., (2011) agreed that the advantage of this kind of relationship will result in more cost reduction and will be profitable to the organization through customized service and comfort rendered to the customer (see Table 2).

'Efficiency' and 'Well maintained' shares the same rank of attributes as the third most cited as highlighted on the Front desk and Room (see Table 2). Guests should experience enjoyable service encounters if the servicescape is impressive and hotel hospitality should be able to increase the level of guest satisfaction substantially (Ariffin et al., 2013). 'Accessibility' under facilities also leads to a good result in gathering customer satisfaction because Hassan et al., (2013) stated that information technology has helped the entire industry to prevent the wastage of resources and time by fulfilling optimum customer needs and demands. 'Services', 'fresh food' and 'price' under food and beverages as well as Amin et al., (2013) stressed that to further enhance their hotel service quality, other critical factors are the need for improvement in staff presentation and knowledge, food and beverage product and service quality, as well as reservation services. However, 'variety of food and beverages' also gained attention as requested by Al-Tit (2015) who found that the food quality also has a great influence on customer satisfaction. 'Equipment' and 'Quality' under Facilities can be concluded that Padlee et al., (2019) explained that in the context of the study, room amenities refer to comfortableness; room size; and quality room furnishings and facilities. Shafiq et al., (2019) exposed that Malaysian Gen Y is more concerned about the equipment and the facilities in the hotel.

Table 2: Most Citations among Attributes of Hotels in Malaysia

Theme	Subtheme	Total
Food & Beverage Attributes	Price of the Food	2
	Variety of Food and Beverages	6
	Availability of Fresh Food	3
	Services provided	4
	Staff Efficient	6
Front Desk Attributes	Staff friendly and communicative	6
	The appearance of the staff	1
	Staff prompt and courtesy	10
	Well Maintained	6
	Cleanliness	1
Room attributes	Price	1
	Comforts & Value	8
	Amenities	3
Facilities Attributes	Accessibility	4
	Technology	3
	Equipment	1
	Quality	2

4.0 IMPLICATION AND LIMITATION

4.1 Practical Implication

The results obtained from the data provide a valuable implication in helping hoteliers to identify which attributes that become important that influencing satisfaction among customers toward the hotel industry in Malaysia is discovered. This implication is important for the managers as a decision-maker which reinforces the need to view customer satisfaction from a strategic point of view. This action can encourage the positive staff behavior of firms and of tourism destinations, managers may need to facilitate the successful implementation of satisfaction processes. Other than that, to foster the satisfaction factors among customers at the hotel level, the need for clusters and network development was identified. Sharing and using knowledge is the key dimension for the hotel to identify the attributes that get the highest level for satisfaction among customers towards the hotel industry in Malaysia activities. The hotel industry can improve the hotel policy and management more efficiently by focusing on the most important factors which have shown in this research result that leads to customer satisfaction.

4.2 Theoretical Implication

There is the significance of studies which presented a systematic review of the literature, different research approaches and perspectives on customer satisfaction towards the hotel industry, through which it helps to enrich knowledge in the area of hotel attributes on customer satisfaction in the hotel business. There was research done on customer satisfaction of the hotel industry previously, but limited numbers of research done on customer satisfaction towards the hotel industry in Malaysia using a systematic review method. In addition, this study was grouping of existing papers according to five criteria: (1) the location in which the study was performed, (2) the methods used to collect data, (3) how the data were obtained, (4) levels of analysis and (5) type of hotel in Malaysia and categorization was followed by a detailed analysis of the reviewed studies, which were divided into five theme: (1) papers analyzing pricing for customer provided by hotel (2) papers dealing with staff at front desk related performance and (3) papers focusing on food and beverage attributes factors that can contribute to customer satisfaction in Malaysian hotel industry.

4.3 Limitation of the Study

Despite enhancing the researchers' understanding of customer satisfaction

towards the hotel in Malaysia, some of the limitations were discovered which Some of it might be criticisms of systematics reviews for others author with different background especially in Malaysia as mentioned by Pirrie (2001), there have been a number of attacks on the rationale of systematic reviews such as the methodology of systematic reviews has been criticized because it is founded on ‘questionable’ premises about the nature of reviewing and ideas about research. However, Gough, Oliver, and Thomas, (2012) argued that this range of methods is useful, but they realize that this diversity raises many complex issues, particularly in relation to mixing results from different research traditions. None of the systematics reviews paper is being done in the social sciences field in Malaysia as the researchers already screening all the papers in the electronic databases and also there will be critics as stressed by Gough et al (2012) which critics use those numbers of discarded studies to argue that studies are being ignored. He added that what is being ignored here, however, is that electronic searching is imprecise and captures many studies that employ the same terms without sharing the same focus.

5.0 CONCLUSIONS

The hotel industry needs to play its roles as accommodation components need to meet customer expectations that need to exceed their satisfaction. In these studies, an organization can figure out several important attributes that can contribute profits and repetition to their hotels. Throughout all the literature it has been proven that several attributes play their roles very well in every type of accommodation. During the 15 years period, five main themes emerged (in order of frequency): service quality, staff-related attributes, hotel-related attributes, food, and beverage attributes and room- related attributes. To achieve the objectives of this study, the researcher used the method called PRISMA, which includes reviewing articles from resources (Scopus).

Thus, this study emphasizes ‘Prompt and Courtesy’ under the front desk are the most valuable and relevant attributes that contribute by screening all the literature. The results revealed on these factors are precious not only to the customer but also hotel organization. With all of this commitment towards review of customer satisfaction, it totally can strengthen any hotel organization from different views and learn it from their weaknesses as adding by Cheng et al., (2019) that customer satisfaction positively affects customer loyalty in hotel services, indicating that service recovery is important for not only restoring customer satisfaction but also improving customer loyalty. Future studies in this area need to be addressed as a new concept due to lacking customer satisfaction in the hotel industry in Malaysia. The author also highlighted this action can expand the studies of customer satisfaction

towards any tourism component that getting involved in Malaysia because of the great quality of systematic review can lead to advance a field of inquiry regardless of disciplines.

REFERENCES

- Ali, F., Hussain, K., & Omar, R. (2016). Diagnosing customers experience, emotions and satisfaction in Malaysian resort hotels. *European Journal of Tourism Research*, 12, 25 - 40.
- Al-Tit, A. A. (2015). The effect of service and food quality on customer satisfaction and hence customer retention. *Asian Social Science*, 11(23), 129.
- Amin, M., Yahya, Z., Ismayatim, W., Nasharuddin, S., & Kassim, E. (2013). Service quality dimension and customer satisfaction: An empirical study in the Malaysian hotel industry. *Services Marketing Quarterly*, 115-125.
- Amirreza, F., Mohammad, S. Z., & Gilani, M. H. N. (2013). Customer satisfaction in hospitality industry: Middle East tourists at 3star hotels in Malaysia. *Research Journal of Applied Sciences, Engineering and Technology*, 5(17), 4329-4335.
- Angelova, B., & Zekiri, J. (2011). Measuring customer satisfaction with service quality using American Customer Satisfaction Model (ACSI Model). *International journal of academic research in business and social sciences*, 1(3), 232.
- Ariffin, A., Nameghi, E., & Zakaria, N. (2013). The effect of hospitableness and servicescape on guest satisfaction in the hotel industry. *Canadian Journal of Administrative Sciences*, 127-137.
- Bore, I., Rutherford, C., Glasgow, S., Taheri, B., & Antony, J. (2017). A systematic literature review on eWOM in the hotel industry: Current trends and suggestions for future research. *Hospitality & Society*, 7(1), 63-85.
- Cheng, B. L., Gan, C. C., Imrie, B. C., & Mansori, S. (2019). Service recovery, customer satisfaction and customer loyalty: Evidence from Malaysia's hotel industry. *International Journal of Quality and Service Sciences*.
- Dominici, G., & Guzzo, R. (2010). Customer satisfaction in the hotel industry: A case study from Sicily. *International Journal of Marketing Studies*, 2(2), 3-12.
- Gough, D., Thomas, J., & Oliver, S. (2012). Clarifying differences between review designs and methods. *Systematic reviews*, 1(1), 28.
- Leite-Pereira, F., Brandao, F., & Costa, R. (2019). Role of breakfast in hotel selection: systematic review. *International Journal of Culture, Tourism and Hospitality Research*.

- Giese, J. L., & Cote, J. A. (2000). Defining consumer satisfaction. *Academy of marketing science review*, 1(1), 1-22.
- Goh, Y. (2015). Investigating revisit intentions for the boutique hotels of penang-A UNESCO world heritage site. *Asian Social Science*, 126-134.
- Griffiths, P., Saville, C., Ball, J. E., Chable, R., Dimech, A., Jones, J., & Monks, T. (2019). Identifying nurse-staffing requirements using the Safer Nursing Care Tool. Modelling the costs and consequences of real world application to address variation in patient need on hospital wards. *Health Services and Delivery Research*.
- Hassan, M. G., Hussain, F., & Rahman, M. B. S. (2013). Exploring usefulness of CRM and IT in Malaysian hotel industry: A qualitative approach. *Journal of Information and Communication Technology*, 12, 21-37.
- Lahap, J., Said, N. M., Rose, K. H. C., Sumarjan, N., & Mohi, Z. (2014). Internal market orientation framework as a source of improving service quality within the Malaysian hotel industry. In *SHS Web of Conferences* (Vol. 12, p. 01004). EDP Sciences.
- Liat, C. B., Mansori, S., & Huei, C. T. (2014). The associations between service quality, corporate image, customer satisfaction, and loyalty: Evidence from the Malaysian hotel industry. *Journal of hospitality marketing & management*, 23(3), 314-326.
- Khoo-Lattimore, C., & Ekiz, E. (2014). Power in praise: Exploring online compliments on luxury hotels in Malaysia. *Tourism and Hospitality Research*, 152-159.
- Keshavarz, Y., & Ali, M. (2015). The service quality evaluation on tourist loyalty in Malaysian hotels by the mediating role of tourist satisfaction. *Mediterranean Journal of Social Sciences*, 680-686.
- Kitchenham, B. (2004). © Kitchenham, 2004 Procedures for Performing Systematic Reviews.
- Lahap, J., Ramli, N. S., Said, N. M., Radzi, S. M., & Zain, R. A. (2016). A study of brand image towards customer's satisfaction in the Malaysian hotel industry. *Procedia-Social and Behavioral Sciences*, 224(2016), 149-157.
- Malaysia Association of Hotels. (2019). Retrieved from August 21, 2019, <http://www.hotels.org.my/>
- Mauerhofer, V. (2019). An introduction and overview on law, politics and governance: Institutions, organizations and procedures for Ecological Economics. *Ecological Economics*, 165, 106396.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2010). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Int J Surg*, 8(5), 336-341.
- Oh, H., & Kim, K. (2017). Customer satisfaction, service quality, and customer

- value: Years 2000-2015. *International Journal of Contemporary Hospitality Management*, 29(1), 2–29. Doi: 10.1108/IJCHM-10-2015-0594.
- Padma, P., & Ahn, J. (2020). Guest satisfaction & dissatisfaction in luxury hotels: An application of big data. *International Journal of Hospitality Management*, 84, 102318.
- Padlee, S. F., Thaw, C. Y., & Zulkiffli, S. N. A. (2019). The relationship between service quality, customer satisfaction and behavioural intentions. *Tourism and hospitality management*, 25(1), 121-139.
- Petticrew, M. (2001). Systematic reviews from astronomy to zoology: Myths and misconceptions. *British Medical Journal*, 322(7278), 98–101.
- Pirrie, A. (2001). Evidence-based practice in education: the best medicine?. *British journal of educational studies*, 49(2), 124-136.
- Poon, W. C., & Low, K. L. T. (2005). Are travellers satisfied with Malaysian hotels?. *International Journal of Contemporary Hospitality Management*.
- Prayag, G., Hassibi, S., & Nunkoo, R. (2019). A systematic review of consumer satisfaction studies in hospitality journals: conceptual development, research approaches and future prospects. *Journal of Hospitality Marketing & Management*, 28(1), 51-80.
- Qi, J., Yang, P., Newcombe, L., Peng, X., Yang, Y., & Zhao, Z. (2020). An overview of data fusion techniques for Internet of Things enabled physical activity recognition and measure. *Information Fusion*, 55, 269-280.
- Rashid, A. G. (2018). Religious tourism—a review of the literature. *Journal of Hospitality and Tourism Insights*.
- Rashid, S., Abu, N. K., & Ahmad, R. H. R. (2011). Influence of Relationship Quality on Hotel Guests ‘loyalty: A Case Study of a Malaysian Budget Hotel. *Journal on Scientific and Industrial Research Vol*, 2(6).
- Sobihah, M., Mohamad, M., Ali, N., & Wan Ismail, W. (2015). E-commerce service quality on customer satisfaction, belief and loyalty: A proposal. *Mediterranean Journal of Social Sciences*, 260-266.
- Shafiq, A., Mostafiz, M., & Taniguchi, M. (2019). Using SERVQUAL to determine generation Y’s satisfaction towards the hoteling industry in Malaysia. *Journal of Tourism Futures*, 62-74.
- Shah Alam, S., & Mohd Yasin, N. (2010). What factors influence online brand trust: evidence from online tickets buyers in Malaysia. *Journal of theoretical and applied electronic commerce research*, 5(3), 78-89.
- Swarbrooke, J. (1999). Sustainable tourism management. CABI. *The Three Dimensions of Sustainable Tourism*, 47-69.
- Xie, J., & Chaipoo Pirutana, S. (2014). An examination of the influencing factors toward customer satisfaction: Case study of a Five Star Hotel in Bangkok, Thailand. In *International Conference on Business, Law and Corporate Social Responsibility (ICBLCSR’14)* Oct 1-2.

An Investigation of Factors Affecting Financial Distress: Analysis Among PN17 Companies in Bursa Malaysia

Suhaily Maizan Abdul Manaf¹, Nor Farah Hanim Amzah², Wan Anisabanum Salleh³

Universiti Teknologi MARA Cawangan Terengganu, Malaysia

Email: suhailymaizan@uitm.edu.my¹

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ABSTRACT

Financial distress is a condition of problems in corporate financing, in which there is a means of inability to pay to a creditor and is at risk of bankruptcy in the future. Those publicly listed companies having financial problems and any related issues will fall under Practice Note 17 (PN17). To have a better understanding, this study has aimed to examine the factors affecting financial distress among the PN17 companies in Bursa Malaysia for ten years of analysis, using data from 2008 to 2017. A total of 154 observations have been taken from 17 companies by using the Pooled Ordinary Least Square (POLS) and Random Effect Model (Breusch and Pagan Lagrangian Multiplier Test). Profitability, size of firm, sales growth, liquidity, and leverage have been chosen as independent variables, while total debt acts as a dependent variable for this investigation. Findings suggest that liquidity, size of firm, and leverage have a significant impact on financial distress, while profitability and growth sales have it in the other direction. A further implication is that it is beneficial for those companies and investors to make wise decisions on short- and long-term investments towards their shareholdings.

Keywords: *Financial distress, Random Effect Model, PN17 companies.*

1.0 INTRODUCTION

Financial distress is a situation under which a corporation or person is unable to produce profit or revenue because it/he or she is unable to fulfil its/his or her financial obligations or cannot pay them. It is usually attributed to high labour

costs, illiquid assets, or economic-downturn sensitive sales. The estimation of financial distress has been popular in the area of finance research around the world in terms of the potential of the current ratio and stock market. Financial distress can be identified as dynamic because it uses historical data as the evidence of the potential financial situation of a company, for instance, the financial ratio used to make a prediction of the company's failure (Md Zeni & Ameer, 2010). Looking back on the Asian financial crisis in 1997, it has caused an example of financial distress and massive restrictions faced by most of countries, such as Malaysia, Indonesia, Korea, Thailand, and others (Choy et al., 2011). In addition, Waqas and Md-Rus (2018) have also claimed that the situation of financial distress would make firms financially fail in a long term due to the fact that the cash inflow of the firms is not sufficient to bear their expenses. The ultimate case is that those companies are in a high risk of bankruptcy, which may lead to a negative impact on their shareholders as well.

In Malaysia, companies that have fallen under financial distress are classified as Practice Note 17 (or known as PN17) companies, which are under the protection of Section 276 of the Company Act 1965 and monitored by the regulatory body to address financial distress and predict bankruptcy. For that reason, those PN17 companies need to issue their reports to the Board of Approval to restructure and maintain their statuses in the list. The forecasting of the PN17 companies' financial distress has attracted the attention of financial economics as it can provide a signal to the companies' financial conditions. In order to measure the financial-distress conditions, several methods have been extensively used by many researchers, such as the Altman Model, Logit Model, Regression Model, Survival Analysis, and Probit Model (Low et al., 2001; Sulaiman et al., 2001; Aghaei et al., 2013).

The prediction of financial distress has been one of the most challenging issues in financial sciences in recent decades and many studies have been conducted to design appropriate models to predict the bankruptcy of companies. Mohammad et al. (2003) have stated that many researchers have attempted to identify and predict variables used to appropriate the models for the prediction of bankruptcy; however, they have still not reached the same final results, therefore, the researchers have continued to increase the accuracy of the variables and models. Besides, inappropriate management in terms of qualities and skills, corporate policy, and poor strategies may also affect the bankruptcy of companies (Ooghe & Prijcker, 2008). By investigating this issue, it is expected to reduce the impacts of the sudden announcement of bankruptcy by using appropriate measures and restructuring plans, so that financial distress and bankruptcy of companies are able to be prevented (Aghaei et al., 2013).

The basic studies of financial distress are important to determine whether the companies are in a financially healthy or unhealthy condition. Therefore, this study has gathered some related financial ratios to analyse corporate failure of the 17 listed PN17 companies in Malaysia from 2008 to 2017. The investigation has further discussed the factors that may affect financial distress experienced by the PN17 companies in Bursa Malaysia.

2.0 LITERATURE REVIEW

According to Gruszczynski (2004), total debt is one of the best predictors to analyse financial distress. It is because higher debt will easily predict the performance of a company's financial distress in a few years. Gruszczynski (2004) has also stated that total debt is significantly related to financial distress as it measures the real debt of a company's performance.

Meanwhile, profitability is one of the factors which contributes to a firm's financial distress. It refers to an entity's ability to generate profit in its business (Jaafar et al., 2018). To measure a financial condition, profitability ratios have always been chosen as they represent a measure of return on companies' investment and the financial health of the companies. High profitability ratios show that the companies are profitable and vice versa. However, Waqas and Md-Rus (2018) and Alifiah et al. (2013) have discovered a negative relationship between profitability ratios as represented by net income to total assets ratio and financial distress. This is supported by Thim et al. (2011) that have stated that profitability has an inverse or negative relationship with financial distress. Moreover, Yadiati (2017) has also come out with a result that there is no significant relationship between profitability and financial distress because it does not influence the financial distress of companies. Though, Gruszczynski (2004), Rafatnia et al. (2020), and Dirman (2020) have argued that profitability is positively related with financial distress as higher profitability will result in higher probability in order to stay in a good financial state. Therefore, it can be concluded that profitability is an important financial ratio to determine financial distress as it is linked to a fewer chances of financial distress.

A study conducted by Rahmat et al. (2009) has found that there is a positive relationship between firm size and financial distress. The evidence shows that the size of a company is able to directly influence the amount of its debt. Lower debt will be cheaper for big firms and vice versa. However, there is a different result stating that the size of a company has a significant finding in financial risks.

Nonetheless, Timmermans (2014) has concluded that the recalibrated model has found that size becomes a less important factor in predicting bankruptcy. In opposite, Dirman (2020) has found that firm size has a negative relationship with total debt due to the fact that the greater total of assets owned by a company will have an impact on the increasing ability to pay off its corporate obligations in the future, which means that the company can avoid financial problems.

In a study conducted by Platt and Platt (2008), it is found that sales growth is significant to financial distress in Asian and European countries. They have concluded that, when there is a larger growth in sales, a financial-distress possibility will be at a lower rate. In other words, a larger growth of sales will lead to lower financial distress. Meanwhile, findings taken from Bei and Wijewardana (2012) have discovered that there is a positive relationship between firms' sales growth and financial distress as there is a higher profit growth in companies in Sri Lanka. This shows that the growth of the companies implies the expansion of sales, profits, and assets, which is important for the companies' performance. Therefore, the growth of the companies will help to increase shareholder's equity and the size of the companies. However, Roslan (2015) has found that there is no significant relationship between sales growth and companies' financial distress.

Liquidity ratios represent a firm's ability to pay its debt when due. High liquidity ratios demonstrate that, when it comes due, the company will pay its debt, and vice versa. Hence, Alifiah et al. (2013) and Platt and Platt (2008) have expected that there is a negative relationship between liquidity ratios as represented by a current ratio, quick ratio, working capital ratio, and financial distress as these factors can help firms to pay off their debts. In the interim, Pranowo et al. (2010) have also found that a debt service ratio for liquidity has a negative relationship with financial distress. This study has provided some evidence on the use of accounting information (financial ratios) that is used as an indicator of the present, past, and future performance. Compared to different results yielded by Rafatnia et al. (2020) and Md Zeni and Ameer (2010), it is stated that liquidity is a positive and significant predictor to financial distress, showing that the liquidity position of companies is the main cause of financial distress. Yet, Dirman (2020) has discovered that liquidity has no effect towards financial distress. This situation may be due to any amounts of a company's liquidity that will not affect the possibility of it experiencing financial distress.

Meanwhile, leverage ratios are the proportion of a company's capital raised through fixed interest borrowings. Generally, a company that has a high borrowing level is considered highly geared, which means that it has to generate more income in

order to pay its obligations, and vice versa. On the other hand, a company that is mainly financed by equity capital is said to be lowly geared. Therefore, this study has expected that there is a positive and significant relationship between leverage ratios as represented by debt ratio and financial distress (Alifiah et al., 2013; Platt & Platt, 2008; Pranowo et al., 2010; Rafatnia et al., 2020). Another perspective has been brought by Waqas and Md-Rus (2018) who have argued that there is a negative relationship between leverage and financial distress, revealing that a firm has an ability to service its payments, which can reduce the probability of its financial performance. Nevertheless, Dirman (2020) has found that leverage brings no effect to financial distress. Taking into account that a company has high total liabilities, given the total assets owned by the company are also high, hence, it is able to pay the liabilities with the assets owned.

3.0 METHODS

3.1 Research Design

The functional equation model below has been constructed. It has been used to examine the relationship between total debt and the selected independent variables, as follows:

$$TD = f(\text{PROF}, \text{SIZE}, \text{GROWTH}, \text{LIQ}, \text{LEV})$$

The estimated equation model can be formulated as follows:

$$TD_{i,t} = \alpha + \beta_1 \text{PROF}_{i,t} + \beta_2 \text{SIZE}_{i,t} + \beta_3 \text{GROWTH}_{i,t} + \beta_4 \text{LIQ}_{i,t} + \beta_5 \text{LEV}_{i,t} + \varepsilon_{i,t} \quad [1]$$

The equation descriptions are as follows:

α	: Constant
TD	: Total debt (percentage)
SIZE	: Size of firm (percentage)
GROWTH	: Sales growth (percentage)
LIQ	: Liquidity (percentage)
LEV	: Leverage (percentage)
ε	: Error term
i	: Sample unit of panel

t : Time of period

The data have been analysed by using descriptive statistics, correlation analysis, and panel-data regression analysis that have been carried out to examine the factors affecting financial distress on the selected PN17 companies in Bursa Malaysia. For the estimation purpose, the most common models, such as the Pooled Ordinary Least Square (POLS) regression, Fixed Effects Model (FEM), and Random Effects Model (REM), have been used. Therefore, Hausman test has been conducted to see whether REM or FEM is more appropriate.

3.2 Research Framework

Figure 1 below illustrates the research framework for this study.

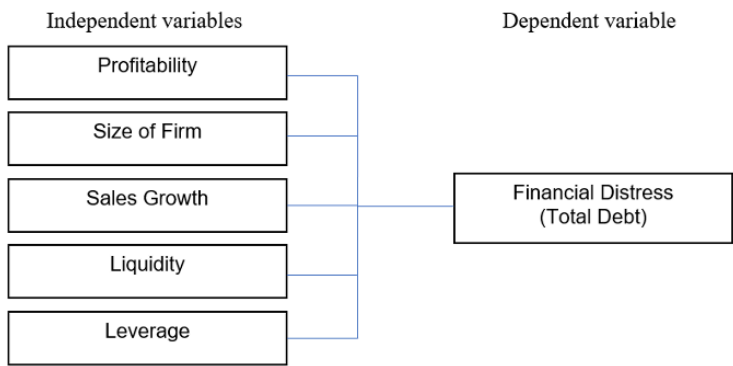


Figure 1: Research Framework

3.3 Hypotheses

Based on the theoretical framework displayed above, the following hypotheses have been generated:

3.3.1 Financial Distress and Profitability

H0: There is an insignificant relationship between profitability and financial distress of the PN17 companies in Bursa Malaysia.

H1: There is a significant relationship between profitability and financial distress of the PN17 companies in Bursa Malaysia.

3.3.2 Financial Distress and Size of Firm

H0: There is an insignificant relationship between size of firm and financial distress of the PN17 companies in Bursa Malaysia.

H1: There is a significant relationship between size of firm and financial distress of the PN17 companies in Bursa Malaysia.

3.3.3 Financial Distress and Sales Growth

H0: There is an insignificant relationship between sales growth and financial distress of the PN17 companies in Bursa Malaysia.

H1: There is a significant relationship between sales growth and financial distress of the PN17 companies in Bursa Malaysia.

3.3.4 Financial Distress and Liquidity

H0: There is an insignificant relationship between liquidity and financial distress of the PN17 companies in Bursa Malaysia.

H1: There is a significant relationship between liquidity and financial distress of the PN17 companies in Bursa Malaysia.

3.3.5 Financial Distress and Leverage

H0: There is an insignificant relationship between leverage and financial distress of the PN17 companies in Bursa Malaysia.

H1: There is a significant relationship between leverage and financial distress of the PN17 companies in Bursa Malaysia.

3.4 Variable Description

3.4.1 Financial Distress (Total Debt)

Financial distress can be determined as total debt. It can be short-term or long-term debt. The data have been collected from the Thomson Reuters Eikon database for the 17 PN17 companies in Bursa Malaysia.

3.4.2 Profitability

Profitability has been measured by net income or earnings after tax of the companies in the Thomson Reuters Eikon database from 2008 to 2017.

3.4.3 Size of firm

Size of company refers to the log total assets. The data have been obtained from the Thomson Reuters Eikon database.

3.4.4 Liquidity

Liquidity has been measured by dividing total current assets with total current liability. The data have been obtained from the Thomson Reuters Eikon database.

3.4.5 Growth

Sales growth has been measured based on the revenue in the income statement of each company from 2008 to 2017.

3.4.6 Leverage

Leverage is a technique used to purchase an asset. It has been calculated by total debt to total equity based on the database of the Thomson Reuters Eikon from 2008 to 2017.

3.5 Data Analysis

3.5.1 Descriptive Statistics

Descriptive analysis has assisted the study to reveal the data's characteristics. It has been used to describe the basic variables of the study, which are the dependent and independent variables of the sample. Besides, the descriptive statistics has also been used to analyse the mean, maximum, minimum, and standard deviation, which are described in the simple summary of the study.

3.5.2 Pearson's Correlation

Pearson's correlation has been used to indicate the positive and negative relationships and measure the strength of the relationships between the dependent variable and independent variables. It has also been used to verify whether the model involves a multicollinearity problem or vice versa.

3.5.3 Pooled Ordinary Least Square (POLS) Multiple Regression Model

This study has used the pooled ordinary least square regression model where the data have been pooled together to determine the dependent and

independent variables. The pooled ordinary least square method has been used to run the panel-data model. The regression result has revealed to the researchers the coefficient and T-statistics of the independent variables. In addition, it has also been used to determine the significance of the independent variables by investigating the probability value of the result. There are three levels of significance, which are the 1%, 5%, and 10% significance levels.

3.5.4 Random Effect Model (REM)

This model is a factor of which its levels are considered a random sample from the same population. It has been used in the analysis of hierarchical or panel data when one assumes no fixed effects. The random effect model is an unobserved variable assumed to be uncorrelated with all the observed variables. The random effect model may still be desirable under the circumstances even though the assumption will often be wrong. However, this model can be estimated by using the Generalised Least Square method.

3.5.5 Breusch and Pagan Test or Lagrangian Multiplier (LM) Test

Breusch Pagan has been used to test heteroskedascity in the regression model. It has also been used to choose the POLS method or REM. The hypothesis for this study is as follows:

H0: Choosing the Pooled Ordinary Least Square

H1: Choosing the Random Effect Model/Panel data

3.6 Results Analysis

This section illustrates the results and interpretation of the relationships between total debt and the five indicators employed in this study and discusses the output of the results.

3.6.1 Descriptive Statistics

Table 1: Descriptive Statistics

	TD	PROF	GROWTH	LIQ	LEV	SIZE
Mean	189.11	-18.57	251.83	1.61	1.58	5.62
Maximum	1947.80	560.40	2457.90	10.09	35.06	7.83
Minimum	0.00	-906.70	0.00	0.00	0.00	2.11
Std. Dev.	381.467	128.42	391.27	1.62	3.82	1.06
Obs	154					

Table 1 shows the summary of the descriptive statistics that comprises the measures of central tendency. The highest standard deviation is recorded by sales growth, which indicates that it has the highest variability of the data since the standard deviation is higher than the mean. A lower profitability (as in the mean) can lead to higher debt or financial distress. This is because lower profitability means that the companies' performance is in the unhealthy financial condition (Alifiah et al., 2013). Moreover, sales growth has the highest mean and standard deviation, suggesting that a higher sales growth will lead to higher financial distress (Bei & Wijewardana, 2012; Platt & Platt, 2008). The average in liquidity is 0 minimum to 10.09% maximum. The result shows that there is a high risk in the PN17 companies because there is insufficient liquidity.

3.6.2 Pearson's Correlation

Based on the correlation results presented above, it is found that there are no serious multicollinearity problems existing since the numerical data of the correlation coefficient between the two independent variables for all the independent variables are lesser than 0.8. Meanwhile, profitability has a negative relationship with total debt, giving a direction of higher financial distress in the companies (Alifiah et al., 2013; Thim et al., 2011; Waqas & Md-Rus, 2018). In the interim, sales growth (Bei & Wijewardana, 2012) and size of firm (Rahmat et al., 2009) display a positive relationship with financial distress, indicating that the sales in the companies can be affected by debt, while size of firm affects the size of the companies. Likewise, leverage also demonstrates a positive relationship with financial distress, which is similar to the result generated by Alifiah et al. (2013), Platt & Platt (2008), Pranowo et al. (2010), and Rafatnia et al. (2020). Nonetheless, liquidity has a negative relationship with financial distress (Alifiah et al., 2013; Platt & Platt, 2008; Pranowo et al., 2010). In order to confirm that there is no presence of the multicollinearity problems, the variance inflation factor (VIF) test has been carried out.

Table 2: Pearson's Correlation

	TD	PROF	GROWTH	LIQ	LEV	SIZE
TD	1.000					
PROF	-0.198	1.000				
GROWTH	0.023	0.219	1.000			
LIQ	-0.268	0.271	0.416	1.000		
LEV	0.487	-0.034	0.033	-0.200	1.000	
SIZE	0.534	-0.040	0.430	0.153	0.173	1.000

3.6.3 Variation Inflation Factor (VIF)

Multicollinearity can exist when variables reflect similar factors. This can be traced when the mean value of the variance inflation factor (VIF) is more than 5. Based on the result shown in Table 3, it is found that the mean of the VIF is 1.27, which is lower than 5.00. This means that there is no multicollinearity problem existing in this study.

Table 3: Variation Inflation Factor

Variable	VIF	1/VIF
saleofgrowth	1.50	0.668315
liquidity	1.34	0.748799
lgsize	1.30	0.771464
profitability	1.12	0.891418
leverage	1.09	0.913972
Mean VIF	1.27	

3.6.4 Pooled Ordinary Least Square (POLS) Regression Analysis

Table 4: Pooled Ordinary Least Square Regression Analysis

Source	SS	df	MS	Number of obs = 154		
Model	3609177.06	5	721835.413	F(5, 148) =	34.25	
Residual	3119118.19	148	21075.1229	Prob > F =	0.0000	
				R-squared =	0.5364	
				Adj R-squared =	0.5208	
Total	6728295.25	153	43975.786	Root MSE =	145.17	

totaldebt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
profitability	-.1656349	.1225452	-1.35	0.179	-.4077991	.0765294
saleofgrowth	-.133427	.0747094	-1.79	0.076	-.2810619	.014208
liquidity	-26.84912	8.247001	-3.26	0.001	-43.14621	-10.55204
leverage	19.95646	3.341863	5.97	0.000	13.35253	26.56039
lgsize	110.2241	12.64666	8.72	0.000	85.23276	135.2154
_cons	-457.6959	66.84244	-6.85	0.000	-589.7847	-325.607

Note: The dependent variable is financial distress (DEBT), while the independent variables are profitability (PROF), size of firm (SIZE), sale of growth (GROWTH), liquidity (LIQ), and leverage (LEV).

Table 4 above shows the result of the POLS regression. The overall R-squared shows that 52.08% of the variation changes in total debt can be explained by all the independent variables (profitability, size of firm, sales growth, liquidity, and leverage), while the remaining 47.92% is unexplained. Looking at the p-value of F-statistic, it is shown that liquidity, size of firm, and leverage are the significant variables towards financial distress.

Profitability presents a negatively insignificant result due to its value of probability at 0.0100 at the 5% level of significance. Despite this, T-statistic shows the profitability value of 1.35, which is lesser than 2, indicating that it is insignificant based on the rule of thumb. Therefore, the null hypothesis (H0) from the proposed sign of profitability is accepted and the alternate hypothesis (H1) is rejected. On the other hand, a positively significant association between leverage and total debt is parallel with the result generated by the majority of the previous researchers, such as Alifiah et al. (2013) and Pranowo et al. (2010). The researchers have implied that, when the level of debt to equity is higher, the creditors will have difficulties to repay their debts. Furthermore, Platt and Platt (2008) have also established the idea that a rise in debt services will affect the income of the companies and increase their debt burdens.

Meanwhile, size of firm has a positive and the most significant relationship with financial distress. Conflictingly, the previous researchers have argued that a smaller firm may not affect financial distress. However, liquidity is found to have a negative and significant relationship with financial distress, which indicates that the failure to have enough liquidity leads to poor financial health, therefore, the companies are unable to fulfil their financial obligations. Based on Alifiah et al. (2013) and Pranowo et al. (2010), it is recommended that those companies need to maintain sufficient liquidity to prevent bankruptcy or financial distress. This is because the negative relationship will lower the probability of bankruptcy in the companies.

Even though sales growth is not a significant factor that influences financial distress, the relationship of the independent variables tallies with the result generated by Platt and Platt (2008). Thus, the null hypothesis (H0) from the proposed sign of profitability is accepted and the alternate hypothesis (H1) is rejected.

3.6.5 Breusch and Pagan Multiplier Test

Table 5: Breusch and Pagan Multiplier Test

Test:	$\text{Var}(u) = 0$	
	$\chi^2(1) =$	54.75
	$\text{Prob} > \chi^2 =$	0.0000

Table 5 explains that Prob > χ^2 is below 0.05, therefore, the alternate hypothesis is accepted while the null hypothesis is rejected.

H0: Choosing the Pooled OLS Model

H1: Choosing the Random Effect Model

3.6.6 Random Effect Model

Table 6: Random Effect Results

TD	Coefficient	Std error	Z	P> z	95% Conf	Interval
PROF	-0.2031	0.1033	-1.97	0.049	-0.4058	-0.0006
GROWTH	0.0592	0.0986	0.60	0.548	-0.1340	0.2523
LIQ	-29.4873	8.8367	-3.34	0.001*	-46.8068	-12.1677
LEV	17.6155	2.9226	6.03	0.000*	11.8873	23.3437
SIZE	112.4234	20.2637	5.55	0.000*	72.7073	152.1396
_Cons	-498.0955	109.8153	-4.54	0.000	-713.3296	-282.8614
No of obs		154				
Prob (F-stats)		0.0000				
R-squared		0.5079				

Note: The dependent variable is financial distress (DEBT), while the independent variables are profitability (PROF), size of firm (SIZE), sale of growth (GROWTH), liquidity (LIQ), and leverage (LEV).

The Random Effect Model (REM) determines the significant relationship between the dependent variable and independent variables. Based on the table shown above, 50.79% of the total debt can be explained by all the independent variables. For determining the significant variables, liquidity is recorded to be a negatively significant relationship with financial distress (Alifiah et al., 2013; Platt & Platt, 2008; Pranowo et al., 2010), which confirms that lower liquidity will lead to higher debt in the companies, thus, makes them difficult to pay off their debts.

The study has discovered that every 1% increase of leverage will increase financial distress or total debt by 17.616%. Thus, the result of leverage shows that there is a significantly positive relationship with financial distress, which is consistent with the result yielded by Alifiah et al. (2013), Pranowo et al. (2010), Platt and Platt (2008), and Rafatnia et al. (2020). Another positively significant result is size of firm (Rahmat et al., 2009). However, sales growth shows a positive correlation (Bei & Wijewardana, 2012) but no significant relationship with financial distress (Roslan, 2015). Even though profitability is the insignificant variable that affects financial distress, it shows a negative relationship with the latter. The result is in line with Alifiah et al. (2013), Thim et al. (2011), and Waqas and Md-Rus (2018).

3.6.7 Summary of Results

Table 7: Summary of Analysis

Independent Variable	Finding	Supported by	Hypothesis Accepted or Rejected
Profitability (PROF)	Negative and insignificant	Alifiah et al. (2013), Waqas & Md-Rus (2018), Thim et al. (2011)	H ₁ Rejected
Size of firm (SIZE)	Positive and significant	Rahmat et al. (2009)	H ₁ Accepted
Sales growth (GROWTH)	Positive and insignificant	Bei & Wijewardana (2012)	H ₁ Rejected
Liquidity (LIQ)	Negative and significant	Thim et al. (2011), Pranowo et al. (2010), Platt & Platt (2008)	H ₁ Accepted
Leverage (LEV)	Positive and significant	Alifiah et al. (2013), Pranowo et al. (2010), Platt & Platt (2008), Rafatnia et al. (2020)	H ₁ Accepted

4.0 CONCLUSION

This study has been conducted based on the main purpose, which is examining the factors and significant relationship between financial distress among the PN17 listed companies in Bursa Malaysia. There are many previous studies conducted in their own industries and countries. However, this study has been undertaken to provide a deeper understanding on determining financial distress that could lead to bankruptcy if nothing or less alternative is done to solve those financial issues by the PN17 listed companies. The companies heading towards bankruptcy should conduct restructuring plans. This may help to achieve the good performance of the companies and raise their profits, as well as reducing the debt of such companies. Furthermore, based on the results obtained by this study, the Random Effect Model has been selected as the final result. Referring to the outcome obtained, the objectives of this study have been achieved, thus, the research questions and research objectives have been properly answered based on the result attained.

There are a few recommendations to offer as there are a number of gaps in knowledge, based on these findings, which would benefit future research. Since this study has only been conducted in Malaysia, future researchers that have better resources and are able to obtain more data are highly advisable to conduct their studies in other countries with more independent variables in order to improve the effectiveness of total-debt determination. Hence, it is more favourable if analysis

tests are done individually within a greater period of analysis to indicate better suggested improvements on sampled companies.

On top of that, the researchers can also obtain different perspectives from different countries to find out more about financial distress faced by companies with different situations occurring in those countries. Besides, the future researchers can add more periods of years to get better results. This is one of the ways to obtain better outcomes and make the analyses of the companies in the different countries more interesting. Moreover, the data findings could also be contrasting with this study as the number of years are increased.

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REFERENCES

- Aghaei, M., Kazemi, A., Moezzi, A. D., Rajabian, M., Beigi, M., & Asadollahi, A. (2013). Financial distress and bankruptcy prediction in subsidiaries of the largest business holding in Iran using the model of Altman. *Research Journal of Recent Sciences*, 2(8), 40–46.
- Alifah, M. N., Salamudin, N., & Ahmad, I. (2013). Prediction of financial distress companies in the consumer products sector in Malaysia. *Jurnal Teknologi*, 64(1), 85–91.
- Bei, Z., & Wijewardana, W. P. (2012). Financial leverage, firm growth and financial strength in the listed companies in Sri Lanka. *Procedia-Social and Behavioral Sciences*, 40, 709–715. <https://doi.org/10.1016/j.sbspro.2012.03.253>
- Choy, S. L. W., Munusamy, J., Chelliah, S., & Mandari, A. (2011). Effects of financial distress condition on the company performance: A Malaysian perspective. *Review of Economics & Finance*, 1, 85–99.
- Dirman, A. (2020). Financial distress: The impacts of profitability, liquidity, leverage, firm size, and free cash flow. *International Journal of Business, Economics and Law*, 22(1), 17–25.

- Gruszczynski, M. (2004). Financial distress of companies in Poland (No. 1–04). Poland. <https://doi.org/10.2139/ssrn.902256>
- Jaafar, M. N., Muhamat, A. A., Syed Faigah, S., Alwi, Abdul Karim, N., & A. Rahman, S. (2018). Determinants of financial distress among the companies Practise Note 17 listed in Bursa Malaysia. *International Journal of Academic Research in Business & Social Sciences*, 8(11), 800–811. <https://doi.org/10.6007/IJARBSS/v8-i11/4956>
- Low, S.-W., Mat Nor, F., & Yatim, P. (2001). Predicting corporate financial distress using the Logit model: The case of Malaysia. *Asian Academy of Management Journal*, 6(1), 49–61.
- Md Zeni, S., & Ameer, R. (2010). Turnaround prediction of distressed companies: Evidence from Malaysia. *Journal of Financial Reporting and Accounting*, 8(2), 143–159. <https://doi.org/10.1108/19852511011088398>
- Ooghe, H., & Prijcker, S. De. (2008). Failure processes and causes of company bankruptcy: A typology. *Management Decision*, 46(2), 223–242. <https://doi.org/10.1108/00251740810854131>
- Platt, H. D., & Platt, M. B. (2008). Financial distress comparison across three global regions. *Journal of Risk and Financial Management FINANCIAL*, 1(1), 129–162. <https://doi.org/https://doi.org/10.3390/jrfm1010129>
- Pranowo, K., Achsani, N. A., Manurung, A. H., & Nuryartono, N. (2010). The dynamics of corporate financial distress in emerging market economy: Empirical evidence from the Indonesian Stock Exchange 2004-2008. *European Journal of Social Sciences*, 16(1), 138–149.
- Rafatnia, A. A., Ramakrishnan, S., Abdullah, D. F., Nodeh, F. M., & Farajnezhad, M. (2020). Financial distress prediction across firms. *Journal of Environmental Treatment Techniques*, 8(2), 646–651.
- Rahmat, M. M., Mohd Iskandar, T., & Mohd Saleh, N. (2009). Audit committee characteristics in financially distressed and non-distressed companies. *Managerial Auditing Journal*, 24(7), 624–638. <https://doi.org/10.1108/02686900910975350>

- Roslan, N. H. (2015). Determinants of financial distress among manufacturing companies in Malaysia. Universiti Utara Malaysia.
- Sulaiman, M., Jili, A., & Sanda, A. U. (2001). Predicting corporate failure in Malaysia: An applicatiopn of the Logit Model to financial ratio analysis. *Asian Academy of Management Journal*, 6(1), 99–118.
- Thim, C. K., Choong, Y. V., & Nee, C. S. (2011). Factors affecting financial distress: The case of Malaysian public listed firms. *Corporate Ownership & Control*, 8(4), 345–351.
- Timmermans, M. (2014). U.S. corporate bankruptcy predicting models. Tilburg University.
- Waqas, H., & Md-Rus, R. (2018). Predicting financial distress: Importance of accounting and firm-specific market variables for Pakistan's listed firms. *Cogent Economics & Finance*, 6, 1–16. <https://doi.org/10.1080/23322039.2018.1545739>
- Yadiati, W. (2017). The influence of profitability on financial distress: A research on agricultural companies listed in Indonesia Stock Exchange. *International Journal of Scientific & Tecknology Research*, 6(11), 233–237.

The Antecedents of Digital Marketing Application by Malaysian Micro, Small and Medium Enterprises (MSMEs)

Abdul Khaliq Abdul Hamid¹ and Nor Khasimah Aliman²

¹MBA Student, Open University Malaysia, Ipoh Campus, Perak, Malaysia

²Associate Professor, Faculty of Business Management,
Universiti Teknologi MARA Cawangan Perak, Malaysia

Email: khalique82@gmail.com¹, nka980@uitm.edu.my²,

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ABSTRACT

This research focuses primarily on Micro, Small and Medium Enterprises (MSMEs) in Malaysia, with special reference to Perak State. It is widely recognised that the adoption and use of digital marketing applications change the ways in which organizations conduct their activities and represent a critical business opportunity for MSMEs. This opportunity will only be realised by MSMEs if, and when, digital marketing is applied to their organizations. This, therefore, creates a requirement to understand the factors that influence MSMEs in making the adoption decision. The research related to such factors is scarce, not least because the technologies are relatively new. By using the Technology-Organization-Environment (TOE) framework, this study, therefore, attempted to understand the predictors/factors influencing the decision making by MSMEs to adopt digital marketing applications. It employed a quantitative approach to meet the research objectives. A survey involving 369 MSMEs in Perak State was conducted to examine empirically the preliminary model. The survey data were analysed using Logistic Regression (LR) technique. Of the factors examined, technological and organizational contexts were found to have a significant influence on MSMEs' decisions to adopt digital marketing applications. These findings have important implications and value for the research community, MSMEs and policymakers in terms of formulating improved strategies for digital marketing adoption and applications. The resulting research model proposed in this paper/article can improve these stakeholders'

understandings on why some MSMEs have chosen to adopt digital marketing technologies, while other MSMEs which face similar market conditions have not.

Keywords: *MSME, digital marketing, adopters, non-adopters, technology, business environment.*

1.0 INTRODUCTION

Various studies have shown that by strategically harnessing the power of the Internet, business organizations may able to increase profit maximization through strategic online marketing approach which covers a broad spectrum of applications that enable businesses to form virtual relationships with its customers, potential buyers, resellers, suppliers and business partners around the world. Hongyu and Dongmei (2011) suggested that the advent of the Internet has changed global business and marketing landscape especially on how they distribute product's information among customers and how they interact with supply and demand as well as buy and sell. Internet usage started mainly as a means of communication via electronic mails (E-mail) and for providing information via online news and homepages on the Web (Drew, 2003). According to International Telecommunication Union (ITU) (2018), as of June 2017, 54.4 per cent of the world's population has Internet access, with Asia has the most Internet users representing 48.7 per cent from that population.

Despite the efforts of the Government and various support schemes, only 30 per cent of the local MSMEs have their own websites as revealed by the Malaysian Small and Medium Industry Association in 2013. Some are still at the initial stage, and or not progressing much beyond E-mail and simple information-based webpages. Ang, Tahar and Murat (2013), mentioned that although Malaysian MSMEs have a company website, most of the functions are limited for corporate image purposes only and neglected the importance of a website for communication and promoting the products and services. In fact, MSMEs owners or managers still do not know and understand the strategic value of digital marketing on their businesses (Lim, Baharudin & Low, 2017). The number of MSMEs achieving advanced stages of digital marketing is very low as compared to larger corporations (Omar et al., 2011). Therefore, in view of the low adoption of digital marketing applications among MSMEs and lag of digital marketing research being done in Malaysia within the context of MSMEs, there is a need and worth to investigate the antecedents of digital marketing application among Malaysian MSMEs. Thus, this paper was written to answer two research questions:

- i) What are the antecedents of digital marketing application among Malaysian MSMEs?
- ii) Which antecedent is the most important in influencing the digital marketing application?

2.0 PAST STUDIES

There are limited literatures on digital marketing adoption among MSMEs, especially in the Malaysian context. Hence, it is critical to review on a wider concept of Information and Communication Technology (ICT) innovation literatures in relation to the factors that have influenced the decision to adopt ICT innovations that may include digital marketing tools and components such as E-commerce, websites and social media in business organizational settings.

2.1 Digital Marketing and ICT adoption in MSMEs

The term digital marketing may be perceived as the new and latest ICT innovation to support business marketing processes that are based on the Internet through the use of digital information and online media, with a view to create, disseminate and transfer of business value in order to achieve marketing objectives and to support the transactions of marketing activities processes such as building customer relationships and enhancing service quality delivery.

MSMEs have unique features that can help them to compete with larger corporations especially when comes to adopt new technologies in their business operations. They are often seen as dynamic organizations and thus are expected to easily adapt to modern ICT technologies (Abdullah, Wahab & Shamsuddin, 2013). MSMEs are more flexible, adapt to changes, and are better placed to develop and accept new ideas as compared to larger corporations (Subrahmanya, Mathirajan & Krishnaswamy, 2010). Yeboah-Boateng and Essandoh (2014) also agreed that MSMEs are easily to adapt ICT because of their size and nature. They are more flexible and simpler organizational structures compared to larger corporations, which allows them to be more innovative in their response to rapid technological changes in a globalization environment.

Owing to the above characteristics, there are substantial evidences that MSMEs has engaged with many technological innovations. Subrahmanya et al. (2010) has found that MSMEs has witnessed the introduction of a range of digital marketing applications, ranging from basic technologies to more complex and advanced

IT capabilities, such as Web 2.0. Other studies have also examined the adoption of different ICT applications over recent decades. For example, Kuan and Chau (2001) investigated the adoption of Electronic Data Interchange (EDI) by MSMEs in Hong Kong while in another study by Rahayu and Day (2015) have studied E-commerce adoption in MSMEs in Indonesia. In a similar vein, a recent study by Ramayah, Ling, Taghizadeh and Rahman (2016) have also identified determinants for website usage intention among Malaysian MSMEs, reflecting an interest in understanding the adoption of Internet technology in this country.

2.2 Malaysian MSMEs

Since Malaysia is well-positioned and strategically located in the Asia region which has been regarded as the most populated Internet users in the world by ITU, Malaysian MSMEs should take this advantage by adopting digital marketing in their businesses to help them grow and participate in new opportunities both locally and globally. The benefits associated with digital marketing among MSMEs have received empirical attention in the past such as Melewar and Smith (2003) who found that the Internet may enhance the ability of MSMEs to identify and evaluate international competitors apart from developing networks of contacts and partners in foreign markets. With the ability to enter international markets at minimal costs, digital marketing may provide wider opportunities for the Malaysian MSMEs to reach new potential customers around the world. According to SME Corporation (2015), Malaysian MSMEs contributed 36 per cent to the national GDP in 2014, and this is expected to grow at around 10 per cent annually to reach 49 per cent by 2020. This is also supported by Malaysia Digital Economy Corporation (MDEC) (2017) that stated, Malaysia has a large segment of the population that is well-versed in technology and most Malaysians who use the Internet spend more than 16 hours online each week. Consistently, more than 67 per cent of the population currently are considered as Internet users or netizens, and 80 per cent of these netizens are estimated to have made online purchases before, a rate that is comparable to other countries such as Thailand, Singapore, India, and China. Malaysia has about 12 per cent of people using credit card, the second highest in ASEAN, behind Singapore's 37 per cent but well ahead of Thailand's 5 per cent and Indonesia's 1 per cent. Malaysia also has solid e-Commerce platforms, including online marketplaces such as Lelong and Mudah, and big international companies such as Zalora and Lazada have entered the market. The Internet business infrastructure is also supported by well- developed regulations, including the Electronic Commerce Act (ECA) and the Personal Data Protection Act (PDPA).

2.3 Research Theoretical Framework for ICT Adoption Model

This study employed the Technology-Organisation-Environment (TOE) framework to determine the antecedents of digital marketing application among Malaysian MSMEs (Figure 1). Srivastava and Teo (2010), Oliveira and Martins (2011) as well as Ramdani, Chevers and Williams (2013) are all recommended that the TOE framework is a widely-accepted model for studying ICT adoption in various business organisations, including MSMEs. The TOE framework is best described as an organisational-level theory that consists of three contexts of antecedents: technological (T), organisational (O) and environmental (E) (Baker, 2012). Recently, it has been viewed as an ideal theoretical framework for predicting and explaining the adoption of any given technology (Ndekwa & Katunzi, 2016).

The technological context describes existing technologies in the organization as well as the pool of technologies available in the market. A consideration of existing literature on ICT adoption using TOE shows that the impact of characteristics of the technology has long been recognised. Rogers (2010) have identified four elements to measure the technological context that may have an influence on the decision to adopt or reject a given technology in any organization. They are relative advantage, simplicity, security and trialability. Many empirical studies such as Consoli (2012), Luo and Bu (2016) as well Rahbi and Abdullah (2017) on ICT adoption in MSMEs have provided evidence of a significant link between technology applications that are providing positive business impacts, safe and friendly to use are more likely to be applied. Hence, this study proposes;

H1: Technological context influences Malaysian MSMEs' decision to adopt digital marketing

The second context of antecedents in the TOE framework, organizational has through a considerable number of studies such as Srivastava and Teo (2010), Tan, Eze and Chong (2012) as well as Tehrani and Shirazi (2014) have been found to impact the adoption of new technologies. With respect to MSMEs, there are many published studies such as Oliveira and Martins (2011), Chang, Hung, Yen and Lee (2012) as well as Oliveira, Thomas and Espadanal (2014) describing the role of top management support, which is considered a key driver in the adoption decision for technological innovations in MSMEs. According to all these literatures, there are three internal elements of organizational context that have been examined in relation to the adoption of new technologies among MSMEs. The three organizational elements are top management support, CEOs' innovativeness and past IS experience. Given this, we propose

H2: Internal organizational context influences Malaysian MSMEs' decision to adopt digital marketing

The environment context represents the third antecedents in the TOE framework that has been identified to impact the adoption of technology in MSMEs. The ICT adoption literature by Kannabiran and Dharmalingam (2012) suggested to look into the external environment context in which MSMEs are operating should help to understand ICT uptake within these types of businesses. In fact, a more recent study by Ainin, Parveen, Moghavvemi, Jaafar and Shuib (2015) believed that the arena in which an enterprise operates represents a primary stimulus for the adoption of innovations as organisations respond to changes in the external environment. The four environmental elements that have been identified to affect an organization's decision to adopt new technology are competitive pressure, customer pressure, government support and external IS support. Therefore, this study proposes

H3: External environmental context influences Malaysian MSMEs' decision to adopt digital marketing

3.0 METHODOLOGY

A survey questionnaire based on a comprehensive literature review and pilot test in 25 business organizations were utilized in this study. Upon finalizing the survey, a larger study was conducted using a simple random sampling technique. Out of the 400 randomly selected MSMEs, 31 respondents rejected the invitation to participate during the pre-notified stage. Hence, 369 responses were given the survey. Data collected shows that there were seven (7) non-usable responses with five (5) from postage and two (2) from e-mail respectively while one (1) response received via postage after the deadline which is considered as no response. Thus, the response rate was 99.7 per cent and 361 responses were valid for analysis, representing 98.1 per cent of completed rate respectively. The survey was conducted in Perak state because the data for the total population of MSMEs was available and considered accurate to perform simple random sampling technique. The questionnaires were emailed or posted to the respondents according to owner-managers' preferences.

4. RESULTS

4.1 Owner-managers' Profiles

In respect of gender characteristics of the owner-managers of the MSMEs who participated in this survey, the majority of the respondents were male representing 80.1 per cent or 289 respondents. The survey data also show a comparable number from a recent study by Ahmad, Suseno, Seet, Susomrith and Rashid (2018) which revealed that only 20.6 per cent of Malaysian MSMEs are owned or managed by females. This might be due to the characteristics of the Malaysian's cultural setting and traditions associated with the concept of women at work (refer to Table 1).

Table 1: Malaysian MSMEs owner-managers' demographic characteristics (n=361)

Table 1: Malaysian MSMEs owner-managers' demographic characteristics (n=361)

Demographics	Frequency	Percentage
<i>Gender</i>		
Male	289	80.1
Female	72	19.9
<i>Age</i>		
Less than 25	8	2.2
25 to 34	85	23.5
35 to 44	161	44.6
45 to 54	80	22.2
55 to 64	26	7.2
65 and over	1	0.3
<i>Highest education level</i>		
No formal qualification	16	4.4
Primary school	0	0.0
Secondary school	25	6.9
Pre-university or diploma	72	19.9
Degree	198	54.8
Postgraduate - Master/PhD	50	13.9

In terms of age group, the result shows that respondents aged 35 to 44 years old comprised nearly half of the total respondents (44.6%) while owner-managers between the aged of 25 and 34 years was the second largest group followed by 45 to 54 years with 23.5 per cent and 22.2 per cent respectively. However, 7.5 per cent of the population is represented by the older generation aged above 55 years old compared to just 2.2 per cent of the younger generation aged below than 25 years old. These results are not surprising as recent statistics released by the SME Corporation Malaysia have indicated that the 35 to 44 age group is the dominant decision-makers in the country, suggesting a relatively mature-entrepreneurs population in this country (SME Corporation, 2015).

On the question of educational attainment, it is worthy to note that there is still a small portion of Malaysians did not have any formal educational qualification (4.4%) and secondary school leavers (6.9%), indicating a low educational background of decision-makers in the region. Gratefully, the data also shows that the educational level of those sampled is generally high. More than half (54.8%) of the respondents' highest qualification was at degree level and 13.9 per cent having Master or PhD while owner-managers with pre-university of diploma represents the second-highest group accounting 19.9 per cent of the population, indicating a well-educated decision-makers population in the Perak state.

4.2 Business Profiles

Among the participant enterprises, less than a year enterprise accounted for only a small proportion (6.7%) of the total sampled enterprises, while those which had been in business for one to three years and four to six years made up 16.6 per cent and 20.2 per cent of the sample, respectively. The vast majority were businesses that had been in business for more than six years (56.5%), indicating that MSMEs in the region is well-established. Table 2 below presents the relevant summary data.

Table 2: Malaysian MSMEs demographic characteristics (n=361)

Demographics	Frequency	Percentage
<i>Age of business organization</i>		
Less than a year	24	6.7
1 to 3 years	60	16.6
4 to 6 years	73	20.2
More than 6 years	204	56.5
<i>Total number of employees</i>		
Less than 5	130	36.0
5 to 29	171	47.4
30 to 74	24	6.6
75 to 200	36	10.0
<i>Approximate annual sales</i>		
Less than RM300,000	82	22.7
RM300,000 and less than RM3 million	177	49.0
RM 3 million and less than 15 million	66	18.3
RM15 million and less than RM20 million	20	5.5
RM20 million and less than RM50 million	16	4.5
<i>Main business sector</i>		
Manufacturing	89	24.6
Services	206	57.1
Others	66	18.3
<i>Market area</i>		
Urban market	108	29.9
Rural market	20	5.5
National market	156	43.3
International market	77	21.3

Given the definition of Malaysian MSMEs based on a number of employees, the highest proportion (54%) of the sampled enterprises fell into the small-enterprises category with a number of employees between 5 to 74 staffs, while the other two categories, micro-enterprises (less than 5 employees) represent 36 per cent and medium-enterprises (75 to 200 employees) accounts for 10 per cent of the sample. This indicates that the sampled MSMEs in the region is led by small-size companies compared to the previous study by Aman et al. (2011) who revealed that micro-enterprises are the majority for Malaysian MSMEs if based on number of full-time employees.

As referred to the other definition of Malaysian MSMEs based on approximate annual sales, the highest proportion (67.3%) of the sampled enterprises fell into the small-enterprises category with an approximate annual income of between RM300,000 and less than RM15 million, while the other two categories, micro-enterprises (less than RM300,000) and medium enterprises (between RM15 millions and less than RM50 million) account for 22.7 per cent and 10.0 per cent of the sample, respectively. Similarly, these results also indicate that the sampled MSMEs in the region is led by small-size companies if based on approximate annual sales income.

As far as the make-up of the sample by industry sector is concerned, the survey results indicate that the sample comprised MSMEs from manufacturing (24.6%), services (57.1%) and others (18.3%), demonstrating a similar proportional record by SME Corporation (2015).

Which regards to the market area, the survey data reveals that 78.7 per cent of the surveyed MSMEs focused their business activities inside the country, with 29.9 per cent having an urban scope, 5.5 per cent at rural areas and the balance 43.3 per cent are reachable nationwide. It can be also observed that the percentage of enterprises catered on global markets accounted only 21.3 per cent, suggesting that Malaysian MSMEs are more likely to cater on domestic and national markets than to expand activities in globally. This may imply that MSMEs in Malaysia are highly dependent on local and national markets.

4.3 Reliability Test

Table 3: Reliability test results

Table 3: Reliability test results

TOE Constructs	No. of Items	Cronbach's alpha
Technological	15	0.942
Organizational	7	0.918
Environmental	8	0.837

From Table 3, the Cronbach’s alpha coefficients for all the constructs exceeded 0.70, with the coefficients’ score ranging between 0.837 to 0.942 indicating good internal consistency and hence reliable constructs (Palant 2013).

4.4 Hypotheses Testing

Binary Logistic Regression (LR) was performed to assess the impact of the three TOE antecedents that influence the adoption of digital marketing by Malaysian MSMEs. Table 4 below presents the findings related to each independent variable included in the analysis and explains its contribution to the overall model results by calculating the effect of changes to each independent variable.

The full model containing all predictors was statistically significant, (3, n = 361) = 126.934, $p = 0.000 < 0.001$, indicating that the model was able to distinguish between respondents who adopted and did not adopt digital marketing in their businesses. The model as a whole explained between 29.6 per cent (Cox and Snell R square) and 39.5 per cent (Nagelkerke R squared) of the variance in digital marketing adoption, and correctly classified 71.5 per cent of cases. Similarly, the Hosmer-Lemeshow Goodness of fit test is less than 0.05 indicated a good fit of the model. Out of the three variables tested, only technological and organizational of the independent variables were statistically significant towards the contribution of the model on the adoption of digital marketing applications among the surveyed MSMEs, as both yielded a p-value of less than 0.05.

Table 4: Results of LR Analysis (n=361)

Table 4: Results of LR Analysis (n=361)

Independent variables	β	S.E	Wald	Sig. (p-value)
Technological	1.504	0.382	15.496	0.000
Organisational	0.778	0.244	10.155	0.001
Environmental	-0.052	0.240	0.048	0.827
Constant	-8.092	0.991	66.659	0.000
Notes: Omnibus = 0.000; Hosmer & Lemeshow = 0.000; Cox & Snell = 0.296; Nagelkerke = 0.395; Dependent variable: 0 = Non-adopter; 1 = Adopter (Dummy)				

Technological context ($\beta = 1.504$, $p = 0.000 < 0.05$) emerged as the strongest predictor that influences the adoption of digital marketing by Malaysian MSMEs. As expected, it was positively related, with a positive sign coefficient, suggesting that technological advancement plays a key role in the lack of adoption of digital marketing by MSMEs in Malaysia. This result accepts that hypothesis (H1) is corresponding to this factor.

For organizational context, the results suggest that it is also statistically significant ($\beta = 0.778$, $p = 0.001 < 0.05$) and provide a positive relationship towards adopting digital marketing. This indicates that the internal organisational factor plays an important role in the decision of MSMEs on adopting digital marketing, suggesting that its corresponding hypothesis (H2) was therefore supported.

Surprisingly, the result shows that environmental context ($\beta = -0.052$, $p = 0.827 > 0.05$) was found to be statistically insignificant in relation to the adoption decision. Meaning that this variable has no role in the model and no effect on the dependent variable. Thus, the findings lend no support for hypothesis (H3).

Table 5: Summary of hypotheses test

Table 5: Summary of hypotheses test

Antecedents	Hypotheses	Hypotheses Statements	Results
Technological Context	H1	Technological context influences Malaysian MSMEs' decision to adopt digital marketing.	Supported
Organizational Context	H2	Internal organizational context influences Malaysian MSMEs' decision to adopt digital marketing.	Supported
Environmental Context	H3	External environmental context influences Malaysian MSMEs' decision to adopt digital marketing.	Rejected

4.0 DISCUSSION

Building on the research findings and data analysis, the study has identified and determined two statistically significant antecedents which are technological and internal organizational contexts that influence the application of digital marketing by Malaysian MSMEs, demonstrating the applicability and usefulness of the TOE framework model for studying the adoption of digital marketing applications among micro, small and medium enterprises in Malaysian. However, the study has examined and found a non-significance relationship between external environmental context towards the decision to adopt digital marketing applications by MSMEs in Malaysia.

The finding of the present study has confirmed that the technological context was found to be the strongest antecedent ($Wald = 15.496$) to influence Malaysian MSMEs to adopt digital marketing applications in their businesses. In fact, the findings from this research agree to prior literatures such as Ramdani et al. (2013), Alshamaila (2013) as well as He et al. (2017) which have found technological context to be a positive predictor across a range of technology application among MSMEs in developed Western countries. From a developing country point of view, this position is further supported by the findings of a study by Parveen et al. (2015) on the factors influencing Facebook adoption among MSMEs in Malaysia, which showed that advancement of Information System (IS) technology plays a significant role in the decision to adopt Facebook among the sampled MSMEs.

However, the examined positive significance of technological context contradicts with that of Shaharudin, Omar, Elias, Ismail, Ali and Fadzil (2012) investigation of factors influencing ICT adoption among Malaysian MSMEs. This may be related to differences in the technology contexts of the two groups of studies. For the present study, for example, the finding can be attributed to the fact that the latest digital marketing innovations such as social media platforms are one where the tools and applications are simplified with user-friendly designs that can be easily managed with no need of sophisticated technical skillsets and experiences. This has been found to be the case in the past with different digital marketing and IS innovations but similar in functionality, such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) as reported by Kannabiran and Dharmalingam (2012) as well as Cesaroni and Consoli (2015).

As expected, the internal organizational context was found to be a significant antecedent between adopters and non-adopters of digital marketing among Malaysian MSMEs. This finding reflects the recent study by Ramayah et al. (2016) that explained for the positive significance of internal organizational context that,

Malaysian MSME owner-managers may provide additional attention and strong commitment from their side to adopt digital marketing applications. The finding is also in line with other literatures such as Chang et al. (2012), Oliveira et al. (2014) as well as Ndekwa and Katunzi (2016). Which stress that top management and CEO's innovativeness within the organizational context is key for ICT adoption. Top management support generally comes in the form of committing financial and organizational resources and engaging in the adoption decision process. This may have been associated with the affordable amount of initial investment required to adopt non-complex digital marketing applications such as social media platforms, given that this type of digital marketing innovation is cheaper and does not require additional skill sets to begin with.

However, a remarkable disagreement also exists between the finding of this study and those of many previous studies, such as Kuan and Chau (2001), Lee et al. (2007), Lin and Lin (2008) as well as Alshamaila (2013). The main difference in the finding from the present study and those mentioned above may be attributed to the fact that previous ICT tools such as ERP and CRM are more complex and expensive technologies for smaller businesses to partake during that particular time. This is important as MSMEs have limited financial and technical resources that inhibit the uptake of more sophisticated technologies. Hence, many smaller enterprises at that time therefore face difficulties in dedicating the resources required for the adoption and use of more complex technologies.

Despite being essential for the adoption of various innovations in the MSME setting, unexpectedly, in this study, external environmental context such as competitive pressure, customer pressure, government and external IS support were found to be insignificance to influence the decision of Malaysian MSMEs to apply and adopt digital marketing. This result does not reflect the findings of Saffu et al. (2008) and Talukber et al. (2013), who identified external environmental context is the significance for the adoption of IS innovations in MSMEs. This finding also did not provide support for the recent observation by Rahbi and Abdullah (2017) that MSMEs' owner-managers are lack of strong IT backgrounds to assess the significance of ICT investment for their businesses and therefore require external support such as ICT service providers and digital marketing firms. It is possible, therefore, that present sampled MSME owner-managers do not require to seek ICT related advice and support as over 90% of the adopters were using social media platforms that are simple, easy to use and to learn.

These findings also reject those obtained by many researchers such as Lippert and Govindarajulu (2006), Rahayu and Day (2015) as well as the recent study

by Lim et al. (2017) indicating that MSMEs are likely to adopt new technologies with conducive business surroundings. The study's finding also contradicts those of Ongori and Migiro (2010) as well as Omar et al. (2011) which reported that appropriate access to basic ICT facilities such as the Internet and high-speed broadband was associated with the adoption of ICT. One possible explanation for the insignificance of external environmental context in this study is that over 78 per cent of the sampled MSMEs just focussed their business activities inside the country, with 29.9 per cent having an urban scope, 5.54 per cent at rural areas and the balance 43.2 per cent are reachable nationwide indicating that over 51 per cent of Malaysian MSMEs who are non-adopters are still running their business via the conventional brick and mortar concept and yet to explore the competitive global markets. Nevertheless, since over 51% of the investigated MSMEs were non-adopters, this result should be interpreted with caution. It is felt that further research is needed to confirm these findings.

5.0 CONCLUSION

The findings of the research have validated that technological and internal organizational contexts may influence the adoption decision among Malaysian MSMEs while external business environment does not have any influence on it. This study has also contributed to a better understanding of the relationship between technological, organizational and environmental factors towards digital marketing application in the Malaysian MSMEs context. The resulting model could be used to guide Malaysian MSMEs in their application of digital marketing tools and technologies by helping them to identify and understand the most significant TOE factors that influence the decision to adopt and apply these emerging technologies. From a model or research-findings perspective, this study has highlighted the importance of assessing technological, organizational and environmental contexts regarding the adoption decision of new and innovative technologies by MSMEs such as digital marketing applications. This is, thereby encouraging academics, particularly those interested to study the adoption of new technologies in MSMEs, to pay attention to the potential impacts of the three contexts of the TOE framework. Lastly, the study has also produced a model, which assists in understanding the adoption of digital marketing technologies in the Malaysian MSMEs based on the three contexts of the TOE framework. In this respect, the study reaffirms that applicability of TOE framework to study the IS innovations adoption in an organizational setting in developing countries.

REFERENCES

- Abdullah, N. H., Wahab, E. & Shamsuddin, A. (2013). Exploring the Common Technology Adoption Enablers among Malaysian SMEs: Qualitative Findings. *Journal of Management & Sustainability*, 3(4), 78–91.
- Ahmad, N.H., Suseno, Y., Seet, P.S., Susomrith, P., & Rashid, Z. (2018). Entrepreneurial Competencies and Firm Performance in Emerging Economies: A Study of Women Entrepreneurs in Malaysia. In *Knowledge, Learning and Innovation*. (pp. 5–26). Springer, Cham.
- Ahmed, A., Scheepers, H., & Stockdale, R. (2014). Social Media Research: A Review of Academic Research and Future Research Direction. *Pacific Asia Journal of the Association for Information Systems*, 6(1), 120–125.
- Ahmad, S. Z., Abu Bakar, A. R., Faziharudean, T. M & Mohamad Zaki, K. A. (2015). An Empirical Study of Factors Affecting e-Commerce Adoption among Small- and Medium-Sized Enterprises in a Developing Country: Evidence from Malaysia, *Information Technology for Development*, 21(4), 555–572.
- Ajay, K. G. & Thobeng C. (2015). The Adoption of Electronic Commerce by Small and Medium Enterprises in Pretoria. *The Electronic Journal of Information Systems in Developing Countries*, 68(7), 1–23.
- Alam, S. S., Ali, M. Y., & Jani, M. F. M. (2011). An Empirical Study of Factors Affecting Electronic Commerce Adoption among SMEs in Malaysia. *Journal of Business Economics and Management*, 12(2), 375–399.
- Aman, O., Tahir, M. N. H., Majid, I. A., Aziz, N. A. A. & Rahmiati, F. (2011). The Success Factors of Food Small Medium Entrepreneurs under the One District One Industry Programme: A Case on Food Manufacturing Entrepreneurs in Melaka. *Journal of Global Entrepreneurship*, 1(1), 44–64.
- Ang, C. L., Tahar, R. M., & Murat, R. (2003). An Empirical Study on Electronic Commerce Diffusion in the Malaysian Shipping Industry. *The Electronic Journal of Information Systems in Developing Countries*, 14(1), 1–9.

- Araújo, J. B. & Zilber, S. N. (2016). What Factors Lead Companies to Adopt Social Media in their Processes: Proposal and Test of a Measurement Model, *Brazilian Business Review*, 13(6), 260–290. <http://dx.doi.org/10.15728/bbr.2016.13.6.5>
- Bala Subrahmanya, M. H. & Mathirajan, M. & Krishnaswamy, K. N. (2010). Importance of Technological Innovation for SME Growth - Evidence from India, MERIT Working Papers 007, United Nations University - Maastricht Economic and Social Research Institute on Innovation and Technology (MERIT).
- Chiliya, N., Chikandiwa, C., & Afolabi, B. (2011). Factors Affecting Small Micro Medium Enterprises' (SMMEs) Adoption of E-Commerce in the Eastern Cape Province of South Africa. *International Journal of Business and Management*, 6(10), 28–36.
- Daniel, E. Wilson, H. & Myer, A. (2002). Adoption of E-Commerce by SMEs in the UK: Towards a Stage Model. *International Small Business Journal: Researching Entrepreneurship*, 20(3), 253–270. <https://doi.org/10.1177/0266242602203002>.
- Daniel, E., & Wilson, H. (2002). Adoption Intentions and Benefits Realised: A Study of E-Commerce in UK SME. *Journal of Small Business and Enterprise Development*, 9(4), 331–348. doi: 10.1108/14626000210450522.
- Drew, S. (2003). Strategic Uses of E-Commerce by SMEs in the East of England. *European Management Journal*, 21(1), 79–88.
- Govindaraju, R., Wiratmadja, I. I., & Rivana, R. (2015). Analysis of Drivers for E-Commerce Adoption by SMEs in Indonesia. Paper presented at the Interdisciplinary Behavior and Social Sciences: Proceedings of the International Congress on Interdisciplinary Behaviour and Social Sciences 2014.
- Hongyu, W. & Dongmei, Z. (2011). Internet Technology's Development and Its Positive Role in Promoting E-Marketing. *Energy Procedia*, 5, 6504–6507.
- International Telecommunication Union (2018). Retrieved June 12, 2018, from <http://www.w3.org/Graphics/JPEG/itu-t81.pdf>

- Kuan, K. K. & Chau, P. Y. (2001). A Perception-based Model for EDI Adoption in Small Businesses Using a Technology–Organization–Environment Framework. *Information & Management*, 38(8), 507–521.
- Lim, S. C., Baharudin, A. S. & Low, R. Q. (2017). Factors Influence SMEs in Malaysia to Adopt E-commerce: Moderating Roles of Perceived Strategic Value. *Journal of Engineering and Applied Sciences*, 12(6), 1566–1574.
- Malaysia Digital Economy Corporation (MDEC) (2017). Retrieved June 12, 2018, from <https://www.mdec.my/>
- Melewar, T. C. & Smith, N. (2003). The Internet Revolution, Some Global Marketing Implications. *Marketing Intelligence Planning*, 21(6), 363–369.
- Omar, A., Ramayah, T., Lin, L. B., Mohamad, O., & Marimuthu, M. (2011). Determining Factors of the Usage of Web-based Marketing Applications by Small and Medium Enterprises (SMEs) in Malaysia. *Journal of Marketing Development and Competitiveness*, 5(2), 70–86. <http://www.nabusinesspress.com/jmdcopen.html>
- Ozdemir, S., Trott, P. & Hoecht, A. (2008). Segmenting Internet Banking Adopter and Non-adopters in the Turkish Retail Banking Sector. *International Journal of Bank Marketing*, 26(4), 212–236. <https://doi.org/10.1108/02652320810884777>
- Palant, J. (2013). *SPSS Survival Manual*, Mc-Graw Hill Education, UK.
- Patrick, M. & Elaine, R. (2005). A Profile of Adopters and Non-adopters of eCommerce in SME Professional Service Firms. *Australasian Marketing Journal*, 13(1), 36–48.
- Pearson, J. M. & Grandon, E. E. (2005). An Empirical Study of Factors that Influence E-Commerce Adoption / Non-Adoption in Small and Medium Sized Businesses, *Journal of Internet Commerce*, 4 (4), 1–21.
- Rahayu, R. & Day, J. (2015). Determinant Factors of E-Commerce Adoption by SMEs in Developing Country: Evidence from Indonesia. *Procedia-Social and Behavioural Sciences*, 195, 142–150.

- Rahayu, R. & J. Day (2017). E-commerce Adoption by SMEs in Developing Countries: Evidence from Indonesia. *Eurasian Business Review*, 7(1), 25–41.
- Ramayah, T., Ling, N. S., Taghizadeh, S. K. & Rahman, S. A. (2016). Factors Influencing SMEs Website Continuance Intention in Malaysia. *Telematics and Informatics*, 33(1), 150–164.
- Sawyers, R. (2011). The Impact of New Social Media on Intercultural Adaptation: Honors Program at the University of Rhode Island.
- SME Corporation (2015). Definitions of SME by Group. Retrieved July 3, 2018, from <http://www.smecorp.gov.my/index.php/en/policies/2015-12-21-09-09-49/smedefinition>
- Yeboah-Boateng, E. O. & Essandoh, K. A. (2014). Factors Influencing the Adoption of Cloud Computing by Small and Medium Enterprises in Developing Economies. *International Journal of Emerging Science and Engineering*, 2(4), 13–20.2

Attribution of Illegitimate Child's Nasb to the Biological Father: Analysis from the Perspective of Malaysian Law, Muzakarah Fatwa Committee, State Fatwas and Maqasid Al-Shariah

Siti Noor Ain Aziz¹, Mohamad Zaki Razaly², Norizan Othman³,
Mahasin Saja@Mearaj⁴, Ahmad Nawawi Yaakob⁵, Sofwah Md Nawi⁶

*Lecturer, Academy of Contemporary Islamic Studies, UiTM Cawangan Johor;
Kampus Segamat, Malaysia*

Email: sitin308@uitm.edu.my¹, moham694@uitm.edu.my², noriz127@uitm.edu.my³,
mahas220@uitm.edu.my⁴, ahmad414@uitm.edu.my⁵, sofwah@uitm.edu.my⁶

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ABSTRACT

A ruling by Malaysia's Court of Appeal in 2017 that Muslim children conceived out of wedlock can carry their father's name has sparked a debate over the civil court's jurisdiction to set aside a fatwa. But this decision was overruled by Federal Court in 2019. This study aims to analyse the constitutional issues between statutory law and fatwa, followed by the analysis of whether the denial of the right to carry biological father's name is in line with the Maqasid al-Shariah. This study was carried out using qualitative research method. The collection of data is derived from an unstructured interview with two experts in the field of constitutional law and fatwa. Secondary data analysis was obtained from National and state fatwas, legal documents, court cases, articles from the journal, book, and newspaper. This study concludes that whether the judgment is constitutional or unconstitutional depends on the interpretation made by the learned judges of the provisions in the Statutes. From the Maqasid al-Shariah point of view, Muslim scholars who disallow the ascription of paternity to the illegitimate children's biological father, uphold to preserve the purity of lineage (hifz nasb), while the group who allows it chose to prevent harms and preserve dignity (hifz al-irdh). This study contributes by providing insights on the relevancy of illegitimate children's attribution in the constitution and Maqasid al-Shariah point of view.

Keywords: *Illegitimate child, constitution, nasb, Maqasid al-Shariah*

1.0 INTRODUCTION

The issue of illegitimate children's status is not new in Malaysian law. From a religious and legal standpoint, illegitimate children must be protected from any harm. Thus, this matter should be seriously prioritized by the government to safeguard their welfare. Unfortunately, negative perception and prejudice by the community towards illegitimate children still prevail. Regarding this matter, among the significant contributors is the legal ban to attribute the paternity of illegitimate children towards their biological father. This legal prohibition is well supported by Malaysia Muzakarah Fatwa Committee and the majority state fatwas. Few studies had suggested that Muslim scholars should consider the reality and allow the attribution to neutralize the social stigma. Prophet SAW as narrated by al-Bukhari had reminded us to 'fear God and treat your child fairly'. Explicitly, al-Quran explains 'no bearer of burden will bear the burden of another' (Isa, Azizah & Norlia, 2019). However, to set aside the fatwa solely based on the stigma and psychological impact to the illegitimate child is unjustifiably and seems inappropriate. Hence, this study aims to analyse legal issues between statutory law and fatwa, and whether it is in line with the Maqasid al-Shariah.

2.0 LITERATURE REVIEW

The Muzakarah Fatwa Committee and the majority of the State fatwa council had decided that illegitimate children shall be attributed to Abdullah or any from 99 names of Allah. Only Perlis State Fatwa Council allows children born out of wedlock to carry their fathers' name even if the birth is less than six months and two lahzahs from the date of marriage on a condition that the father does not deny his association with the child. In an unusual Malaysian case of Zafrin Zuhilmi bin Pauzi vs Noor Aini binti Nasron, case no: 11300-006-0033-2020, the grounds of judgment which had been decided by Terengganu Syariah High Court, the Terengganu Chief Syariah Judge had permitted an illegitimate child to carry her biological father's name that married her mother based on conventional laws and worldly norms, with the provision that the man does not declare the child from his fornication (Irwan, Zulkifli & Lukman, 2015).

According to the Moroccan State Law, a legitimate father is considered as the paternity of the child. Consequently, this will affect the naming, maintenance, and guardianship of the child. Moroccan law tends to uphold this policy to protect the lineage and the child's right of nationality (Schlumpf, 2016). On the other hand, Egyptian State Law stands by the concept of al-walad lilfirash. Any paternity claims will not be heard by the court if there was no marriage relationship or if a

child was born one year after the divorce of parents or the father's death. The other means of establishing nasab is acknowledgment (iqrar) and evidence. Similarly, the United Arab Republic has set up legal marriage as a condition to establish the lineage of the father. Birth beyond human nature is a form of crime (Büchler & Kayasseh, 2018). The laws of Morocco, Egypt, and the UAE strongly uphold the sanctity of lineage, as well as securing the welfare and rights of a child. Besides, the Kafalah system for orphans or illegitimate children has been well-practiced, providing them a form of social security.

On the other hand, Republic of Indonesia Law, No. 1 of 1974 Regarding Marriage of clause 43 states that a child born out of wedlock only has a civil relationship with his mother and his mother's family. Similarly, Mufti of Brunei also decided that an unknown son of his father could not be allowed to any man except Abdullah or Abdul Rahman or any from 99 names of Allah and should be ascribed to his mother (al.Ahkam.net). Few studies indicate that the lineage of children born out of wedlock can be attributed to their biological mother and father as long as his or her relationship can be proved by scientific and technological evidence that they have blood relation, including his or her father's families, using deoxyribonucleic acid (DNA) test to prove their paternity (Zaenul, 2018). However, several rights remain limited such as guardianship or prohibited such as inheritance. From Maqasid al-Shariah perspective, the father should be considerate by giving his property to his illegitimate child through a will (wasiyah) or gift (hibah) (Mzee Mustafa, 2016).

Generally, there are numbers of research that have been carried out related to the right of an illegitimate child from fiqh and law perspectives. But, little is known about the Maqasid al-Shariah and its relationship towards maslahah for an illegitimate child. Not to mention the negative implications as a result of the prohibition of carrying the biological father's name for an illegitimate child. There are differences of opinion from various aspects related to the problem of naming the child. Based on the particular issues on illegitimate child previous studies, it was found that there is no research has been conducted regarding whether the nasab of the illegitimate child can be attributed to biological father's name in connecting from the Malaysian Law, Muzakarah Fatwa Committee, State Fatwas, and Maqasid Al-Shariah perspectives under one roof.

3.0 RESEARCH METHODOLOGY

This study takes a socio-legal form, which is a research method that unites two key areas of study, namely social science and law. Based on the problem of the study, the method used is qualitative. It involves both primary and secondary data. These

two methods are chosen after sorting the best possible method that can answer the research question and research objective. The primary data is derived from unstructured interviews to probe the additional information from the journal entry. The unstructured interview allows the research to use inductive analysis because there are no set predetermined questions or hypotheses during the interview. The interview was conducted at a different time with informants who are experts in the field of constitutional law and fatwa. The information of the interview emphasized the justice for illegitimate child cases due to the contradiction between Islamic law and federal.

In this study, sources of secondary data are obtained from official National and state fatwa, legal documents, court cases, journal articles, books, and news articles sources that are related to the research. Content analysis was used to examine and clarify the interpretation of the documents. Therefore, the collected data analysed in detail, taking into account all relevant proofs, facts, and supporting material. The analysis of this data was done using a descriptive and thematic approach.

4.0 DISCUSSION OF FINDINGS

4.1 Interpretation of Illegitimate Child in Malaysian Law

The Federal Constitution in Article 74 (2) and the Ninth Schedule of the Second List of States have given the Legislative Assembly absolute authority to legislate laws relating to Islam for Muslims including personal and family law matters, such as inheritance, zakat, and waqf. The provisions relating to the legitimacy of a child are subject to the State Islamic Family Law Enactment and the powers of the states in relation to Islamic law. Among the provisions herein are Section 2, Interpretation of illegitimate children, Section 81, Duty to maintain illegitimate children, Section 86, Custody of illegitimate children, Section 111, Ascription of paternity, and Section 112, Birth more than four years after the dissolution of marriage (Islamic Family Law (State of Johore) Enactment, 2003). Enactment 17, section 2, Islamic Family Law (State of Johore) Enactment 2003 defines an illegitimate child as a child born out of wedlock but not because of syubhah intercourse. The same provisions and definitions are similar to Section 2 (Interpretation) of Islamic Family Law in other states such as Kelantan, Selangor, Federal Territory, Malacca, Perlis, Perak, Penang, Kedah, Sabah, and Sarawak.

Regarding the ascription of paternity for an illegitimate child, Section 111 of the Islamic Family Law (State of Johore) Enactment 2003 states that the nasb or paternity of the child can be established if the child is born to a woman who is

married to a man more than six qamariah months from the date of the marriage or within four qamariah years after the dissolution of the marriage either by the death or by divorce, and the woman not having remarried. This indirectly shows that if the child is born less than six months from the date of marriage or the father denies the lineage in court, paternity cannot be established. A similar provision can be seen in other States Enactment under different sections for example Section 110, Act 303 of the Islamic Family Law (Federal Territories) Act 1984, Section 109, Islamic Family Law (Perlis) Enactment No.4, 1992, and Section 115 of Enactment No.15, Islamic Family Law Enactment 1992 of Sabah. Differences in the section do not affect the meaning of the provisions.

4.2 Interpretation of Illegitimate Child in Muzakarah Fatwa Committee and State Fatwas

The Secretariat of the Muzakarah Fatwa Committee is placed under the Department of Islamic Development Malaysia (JAKIM). A ruling may be made either unanimously or by the majority of two-thirds votes from the Mufti or other representatives and members, except the Chairman and members of the Judicial and Legal Services or from the legal profession. Fatwa decided by the Muzakarah Fatwa Committee of the National Council for Islamic Religious Affairs is not legally binding. It is only binding at the state level if the state adopts and gazettes the ruling. Fatwa issued by the state Fatwa Committee when gazetted is legally binding on Muslims in the state only (Mohamed Azam, 2018). The 57th Muzakarah Fatwa Committee of the National Council for Islamic Religious Affairs (MKI) on 10th June 2003 detailed the definition of illegitimate children as follows:

Due to adultery or rape and he is not from the syubhah intercourse or a child from slavery.

Children born less than 6 months 2 years by qamariah calendar from the date of tamkin (intercourse).

An illegitimate child cannot carry the name of the man who caused his/her birth or the name of anyone who claims to be the father of the child. Consequently, they are not legible for an inheritance, are not considered as mahram, and cannot be a wali (Bahagian Pengurusan Fatwa JAKIM, 2015).

In general, the States Fatwa Committee in Malaysia has approved and adopted the meaning of illegitimate child from Muzakarah Fatwa Committee into their

respective states fatwa with slightly different versions or pronouncements. Referring to the issue of whether an illegitimate child can carry his biological father's name or establishing paternity, the majority of states fatwa have taken the approach to forbid it, except Perlis. Other states such as the Federal Territories, Penang, and Sarawak have declared that it must be bin Abdullah or any of the 99 names of Allah or Asmaul Husna (Maklumat al-Ahkam al-Fiqhiyyah (e-SMAF), 2020). Johor Fatwa Committee in 2004, on the other hand, gazetted the interpretation of illegitimate child without mentioning the issue of enabling the child by the name of Abdullah. But later in 2018, it was amended to allow illegitimate children to be named with the 99 names of Allah or Asmaul Husna, in addition to the name of Abdullah. The Johor Mufti Datuk Yahya Ahmad said the amendment was meant to prevent the illegitimate child from any possible harm in the future. However, the Fatwa Council of Perlis has made a different ruling in a fatwa gazetted in 2012 that "a child born less than 6 months after his mother is married, could be registered with 'bin' his/her mother's husband, unless otherwise denied by the husband". This fatwa applies only to Muslims in Perlis and not to other states (Md Zawawi, Wan Ibrahim & Mahyuddin, 2017).

Implementation and Practice of Births and Deaths Registration Act 1957 (Act 299) (BDRA 1957) Regarding Paternity of Illegitimate Child

Prior to 2009, the practice of the National Registration Department (NRD) did not include the father's name on the birth certificate even though the parent claimed that the child was his/her. The NRD would clear the father's name and record it as "unknown" in the father's information section. However, this practice was abolished by compliance with section 13A of BDRA1957 (Pekeliling JPN, 8/2009). Sections 13 and 13A of this Act authorized the name of the person claiming the father of the illegitimate child to register the surname or surname next to the mother or next to the father on condition that the child's mother gives her consents. No clause in this provision remarks the exclusion of its practices to the Muslims, so it is implicitly applicable to Muslims and non-Muslims.

However, the NRD does not accept any birth registration that would like to 'bin' his child to biological father if the documents are incomplete such as loss of marriage certificates, or marriage involving births less than six months from the date of marriage. In practice, the NRD will ask the applicant to refer the case to the Syariah Court and obtain an Order for Child Ascription (Mohamed Azam, 2018).

4.4 Case analysis of 'Bin Abdullah' (The National Registration Department & 2 Ors v A Child & 2 Ors)

The case lasted five years and eleven days from February 2nd, 2015 until February 13th, 2020. It has been noted as a controversial issue among academics, legal practitioners, and religious leaders such as the Mufti as it deals with the matter of the Court of Appeal's decision on July 25th, 2017 that enables illegitimate children to be named (bin Abdullah) with after the biological father while this decision clearly contradicts the States Fatwa.

Several State Muftis, including SahibusSamahah Tan Sri Harussani bin Zakaria, Perak Government Mufti, SahibusSamahah Datuk Mohamad Shukri Mohamad, Kelantan Government Mufti disagree with the Court of Appeal's decision on the grounds that, the Federal Constitution recognized the position of Islam as the religion of the Federation, fatwa gazetted (in the state) is legal and binding, it will also cause confusion and various problems such as marriage and distribution of inheritance. In addition, the decision on this issue should be made as prescribed by Shafi'iMazhab as the majority State official Mazhab in Malaysia. This view was also supported by Datuk Seri Dr.Zulkifli Mohamad Al-Bakri (2018), former Wilayah Persekutuan Mufti (currently holding the position of Minister in the Prime Minister's Department (Religious Affairs)).

However, SahibusSamahah Prof. Dr. Dato 'Arif Perkasa Mohd Asri Zainul Abidin, Perlis State Mufti, agreed with the decision of the Court of Appeal saying that the decision could overcome humiliation, awarding people the opportunity to repent and avoiding punishing innocent children along with the 'Islamic religion of punishment' mentality because Islam is merciful in nature ("Larangan 'bin Abdullah'", 2017).

Chronologically, it started on February 2nd, 2015 when the parents of a 7-year-old child, was born 5 months 24 days (or 5 months 27 days according to the qamariah calendar) after his parent's marriage. They had applied to the NRD pursuant to Section 13 of BDRA 1957 to have the child to be registered with 'bin' his father's name ("bin MEMK") in his birth certificate, but the NRD refused it on the grounds that the child is illegitimate. The parents then filed a judicial review application in the High Court but were rejected on August 4th, 2016. Then, the couple appealed to the Court of Appeal on May 25th, 2017. The Court of Appeal unanimously allowed their judicial review to direct the Director-General of NRD to replace 'bin Abdullah' with the child's father's name in the birth registration. On August 21st, 2018, the Federal Court granted an application by the National Registration

Department (NRD) to delay the execution of the Court of Appeal's decision. As this judgment could lead to problems for Muslim illegitimate children, the NRD's Director General and the Government of Malaysia have appealed to the Federal Court to dismiss the judgment of the Court of Appeal. The Federal Court heard the appeal on 14th November 2019 and on February 13th, 2020, the supreme court in a 4-3 majority decision, dismissed the Appeals Court's decision and decided that Muslim children who were born out of wedlock or illegitimate, could not bear his father's name ("bin Abdullah' case", 2020).

4.5 Argument on Legal Issues

Three legal issues will be analysed in this study; the use of family name (surname), legally binding effect of Muzakarah Fatwa Committee and state fatwas, as well as whether the decision is constitutional or not.

The Court of Appeal had decided in their judgment to allow Muslim illegitimate children to take on their biological father's name, and not necessarily to carry "Abdullah" as their surname. This decision was reached in line with section 13A (2) of the Birth and Death Registration Act (BDRA) 1957 (Act 229) which does not distinguish between a Muslim child and a non-Muslim child. This provision had been discussed by the Court of Appeal and ruled that the National Registration director-general cannot deny the rights of the father to attach his name to his child's name.

In presenting the results of the majority Federal Court decision, Justice Datuk Rohana Yusof had pointed out that Section 13A of the Births and Deaths Registration Act of 1957 (BDRA) shall not be applied to the registration of the birth of Malay Muslim children as Malays do not carry any surnames. Thus, the provision has no application to the Malay system and did not enable the children to be named with the personal name of a person acknowledged to be the father of the children. The Federal Court also ruled that surname is additional information, not a must. If the applicant has a surname, it can be entered. In fact, Section 13A does not discriminate between Muslims and non-Muslims but does discriminate between persons with surnames or not. In addition, the use of surnames is very different and has not been reviewed by the Court of Appeal before ("bin Abdullah' case", 2020). Accordingly, the Director-General of NRD should name 'bin Abdullah' in his birth certificate. However, Federal Court judge Datuk Nallini Pathmanathan in her dissenting judgment is of the view that if the literal meaning of the word surname is to be adopted by the court, this would defeat the objective and intention of Section 13 of BDRA (Press Summary, n.d.).

The second issue is regarding the legally binding effect of the Muzakarah Fatwa Committee and state fatwas. The majority of the states have adopted the Fatwa by the Muzakarah Fatwa Committee and gazetted it in their respective states (except Perlis) that forbade the attribution of illegitimate child's nasb to their biological father. Justice Abdul Rahman Sebli (currently Federal Court Judge) in his written judgment released on July 25th, 2017, said that the National Registration Department (NRD) director-general was not bound by the fatwa or religious edict issued by the Muzakarah Fatwa Committee to decide on the surname of a Muslim child born out of wedlock. The court said that the director-general's jurisdiction was civil and limited to determine whether the child's parents had fulfilled the requirements under the BDRA, which covers illegitimate children without any distinction between Muslim and non-Muslim. The court had held that a fatwa had no force of law and could not form the legal basis for the National Registration Department (NRD) director-general to decide on the surname of an illegitimate child under Section 13A (2) of the BDRA 1957.

The majority ruling read out by Datuk Rohana was of the view that the national registration director-general had erred by referring to the fatwa made by the Muzakarah Fatwa Committee concerning "bin Abdullah" because it had not yet been gazetted and cannot form part of a valid law to be applied as provided by Section 49 of the Administration of the Religion of Islam (State of Johor) Enactment 2003 (Press Summary, n.d.). In summary, the court ruled that it was not wrong for the National Registration Department to refer to the Islamic institution in determining any issue related to the Muslim and if any fatwas were gazetted, it would bind the parties. This shows that the court also recognizes the position of the fatwa as a source and reference to civil law if it is legally gazetted. However, for this case at that time bin Abdullah's fatwa had not been gazetted. Therefore, the illegitimate child cannot be justified by his biological father or 'bin Abdullah'. Therefore, the court issued an important order for the Director-General of NRD to remove 'bin Abdullah' from the birth certificate. On May 21st, 2018, a ruling to put bin Abdullah's name and 99 other names of Allah was gazetted in Johor. According to Datuk Ikbal Salam who represented the Johor Islamic Religious Council, this fatwa will remove any confusion regarding illegitimate child-related issues in the future. Zainul Rijal Abu Bakar (2020) had voiced his view on how interesting the judgment made by the Federal Court in this issue that reference can be made to Islamic bodies in deciding the validity of a matter related to Islam.

The majority ruling by the four judges in the Federal Court also decided that the National Registration director-general acted correctly when refusing the application to let the Johor child take on his father's name of "bin MEMK" and to remove

the “bin Abdullah” portion in the birth certificate. This is because the Johor-born child and his Muslim parents were bound by Johor’s state Islamic law, specifically Section 111 of the Islamic Family Law (State of Johor) Enactment 2003 which provides that an illegitimate Muslim child cannot be ascribed to his father’s name. The refusal made by the NRD director-general to replace “bin Abdullah” with “bin MEMK”, is considered reasonable as he was complying with the relevant written law and merely giving effect to the Islamic family laws applicable to the Johor family (Press Summary, n.d.).

Thus, it can be concluded that the decision made by the Federal Court was constitutional as it is in line with the provision provided in Schedule 9, List II, (State List) Para 1 of Federal Constitution and the implicit meaning of Article 3 as the Court of Appeal Judge in the case of *Special Islamic Position In Constitution of Internal Security & 8 Ors vs Titular Roman Catholic Archbishop Of Kuala Lumpur* Civil Appeal No. W-01-1-2010 highlighted that Article 3 of the Federal Constitution that the position of Islam as the religion of the Federation is not a mere declaration, but it imposes a positive obligation on the Federation to protect, defend, promote Islam and to give effect by appropriate state action, to the injunction of Islam and able to facilitate and encourage people to hold their life according to the Islamic injunction spiritual and daily life.

According to Emeritus Professor Datuk Dr. Shad Saleem Faruqi (2017) as Tunku Abdul Rahman Professor of Law at Universiti Malaya, in his personal view for this case, believed that Islam as a source of law has indeed been given an exalted position as the religion of the Federation. Islamic law applies compulsorily to all Muslims but only in 24 areas specified in Schedule 9, List II, Para 1. National registration is a federal, civil matter in List I, Para 3(e),, and the court ruled rightly that rules of syariah are not applicable, unless the 1957 federal law specifically mentioned so, which it does not. In other words, the decision made by the Appeal Court was constitutional. On the other hand, the Federal Court Judge, Datuk Nallini, in her dissenting judgment also examined the issue of whether state laws enacted by state governments such as laws governing Muslims’ personal lives apply to federal laws enacted by the federal government such as the BDRA1957. She highlighted that the BDRA1957 is a federal matter as provided by the Constitution’s Federal List’s Item 3(e) which is national registration and Item 12(a) covering census and registration of births and deaths. Article 3(1) meanwhile provides Islam as the religion of the federation with other religions to be practiced in peace and harmony, and Article 3(4) which provides that nothing in Article 3 would diminish other constitutional provisions meant that the constitutional arrangement under Article 74 which divides the federal and state law-making powers continue to apply. Thus,

Islamic law has no application in so far as the registration of deaths and births is concerned. She concluded that the contents of Johor's Islamic Family Law (State of Johor) Enactment 2003 cannot be imported and applied in interpreting BDRA which is a federal law (Mahkamah Persekutuan, 2020).

In a nutshell, the decisions made by both courts, the Court of Appeal and the Federal Court can be considered constitutional and unconstitutional depends on the interpretation made by the learned judges of the provisions in the Statutes. From a practical standpoint, the Federal Court took the middle ground that could benefit everyone. The court forbids the child to carry the biological father's name because it is against the principle of lineage in Islam. In a nutshell, the decisions made by both courts, the Court of Appeal and the Federal Court can be considered constitutional and unconstitutional depends on the interpretation made by the learned judges of the provisions in the Statutes. From a practical standpoint, the Federal Court took the middle ground that could benefit everyone. The court forbids the child to carry the biological father's name because it is against the principle of lineage in Islam.

4.6 Maqasid al-Shariah Point of View

Regarding the issue of the attribution of illegitimate child nasb to the biological father, Muslim scholars had differed in opinions. The majority of Muslim scholars including scholars of the major mazhab, namely Malikiyyah, Shafi'iyah, and Hanabilah together with Zahiris (literalists) had forbidden it (Abdul Karim, 2000). This is also the stand of Syaikh Ibn Bazz (2004) and by the standing committee Fatwa Lajnah Daimah (Zulkifli, 2018). While the second opinion has resorted to allowing the attribution of nasb of illegitimate children to their biological father. This is the view of Ishak Rahuyah, UrwahZubayr, Sulaiman Yasar, Hasan al-Basri, Ibn Sirin, Ibrahim al-Nakhaie (Ibn Qudamah, 1969 & Muhammad Thayyar, 2011), Ibn al-Qayyim (1991), Ibn al-Taymiyah (1995), Rasheed Ridha (1990) and Ibn Uthaymin (2005). These two different views are two scholarly views that carry weight. This issue is a matter that opens to the ijtihad of Muslim scholars. Both views have a basis and arguments that support their view.

The majority of the Muslim scholars relied on literal understanding from the hadith in which Prophet SAW mentioned 'al-waladulilfirash'. This opinion is also based on the idea of preserving the purity of lineage (hifznasb/nasl) by upholding family institutions through valid marriage (Ibn Ashur, 2004 & Mustafa, 2006). By allowing the attribution of nasb to the adulterer, we might open the floodgates

that consequently will increase the rate of social problem cases such as adultery, especially among the young generation. On this basis, there lies the reason for 'haddzina' to the adulterer as prescribed by Quran and Sunnah.

Meanwhile, the second opinion which allows the attribution of nasb to the adulterer (biological father) is further explored through Maqasid al-Shariah and the wisdom behind the revealed text. They unanimously agreed that in the case of conflict between two claimants over the right of a child, the right must be given to the person in the wedlock, which is in line with the words of the Prophet SAW 'al-waladulilfirash'(al-Kasani, 1986 & al-Sarkhasi, 1993). In the case of the unavailability of marriage, the biological father can be attributed to his illegitimate child. This is to preserve the maslahah over the child and safeguard the child from any harm (Muhammad Thayyar et al., 2011 & Ibn Taymiyah, 1995). Ironically, fatwas regarding illegitimate child have never been the factor that leads to the increased rate of social problems such as adultery. In reality, millions of pornographic and sexual content are widely accessible to the online user. The advancement of ICT and technology as well as the idea of a borderless world made it difficult to control and filter the harmful content from spreading. On top of that, immoral values and attitudes that were portrayed through films and dramas are also accountable for shaping the personality and morality of teenagers. If we are serious to eradicate social problems among teenagers, we must find appropriate solutions and mechanisms to manage harmful and unhealthy material through online and mass media.

By not allowing attribution of nasb to the biological father, the mafsadah (harm) is even greater (Ibn Qudamah, 1969). Negative impressions from the surrounding people are unavoidable when they realized that the child's paternity name is not his or her father's.

This would create a cynical perception of the previous immoral act of the parent even if they had already repented from their sinful deeds a long time ago. But because of the ascription of paternity issue, their past will be revealed to the people continuously from time to time out of their will. Unfortunately, there will be the moment when the child will personally ask the parents what they have done wrong in the past since the negative outlook and contemptuous remark from the surrounding people are also shared by the child even though he or she was not involved in any of their parents' past issue. This situation will create tension between the child and the parents. The child will lose respect for the parents and look down upon them. Some Muslim scholars added protection of dignity (hifz al-'irdh) as part of 'kulliyat al-khams' (al-Ghazali, 1994 & al-Shatibi, 2001). Islam

urges its followers to cover or hide the disgrace of others as Allah SWT will cover yours. Prophet SAW says in a hadith narrated by Imam Muslim:

“Whosoever relieves from a believer some grief pertaining to this world, Allah will relieve from him some grief pertaining to the Hereafter. Whosoever alleviates the difficulties of a needy person who cannot pay his debt, Allah will alleviate his difficulties in both this world and the Hereafter. Whosoever conceals the faults of a Muslim, Allah will conceal his faults in this world and the Hereafter. Allah will aid a servant (of His) so long as the servant aids his brother.....”. (Nawawi, 2001)

According to Imam al-Nawawi (2001), covering and hiding the disgrace of others refer to those who do not disclose their previous sins to others. Prophet SAW also prohibited the sinner to reveal his sins and wrongdoings. Prophet SAW says:

“All my community will be excused except those who commit sins openly. Committing them openly includes a man who does something shameful at night and when morning comes tells someone that they did such-and-such, while Allah had concealed it for them. They slept under the cover of Allah, and they removed Allah’s covering from themselves in the morning” (al-Asqalani, 2000 & Nawawi, 2001)

If the sin belongs to the individual and does not negatively affect others, so we cannot reveal or expose it to others (Ibn al-Taymiyyah, 2001). Acts such as adultery and wine drinking are both individual sins, hiding them from the knowledge of others is mandub (recommended) in Islam (Wizarah al-Awqaf, 2006). This is originated from the practice of the Prophet SAW regarding hudud case on Ma’iz bin Malik as he confessed to the Prophet SAW for committing adultery. But Prophet SAW told him to withdraw the confession by saying to him “maybe you just kissed her or maybe you just groped her”. This clearly shows that hiding it is better (Wahbah, 2002). But if the sin affects the right of others, it must be disclosed to return the right to the owner (Ibn Taymiyyah, 2001).

5.0 CONCLUSION AND RECOMMENDATION

The decision of the Court of Appeal and the Federal Court in the case discussed has drawn many parties to come up with suggestions including religious leaders, academicians, legal practitioners, non-government organizations (NGOs), and even political figures.

Among the suggestions that should be taken into consideration is to amend the Births and Deaths Registration Act 1957 (BDRA) to include special provisions for naming Muslim children in accordance with Muzakarah Fatwa Committee related to the matter. This amendment is vital to avoid disputes in the future. This issue would be less complicated if it is resolved through the amendment of the Act (Zanariah, 2020). There is a significant need to strengthen State Islamic laws to make them legally binding as well as harmonization of Islamic Law among states. Last but not least, illegitimate children were not accountable for the wrongdoing of others. They deserved respect and privacy as given to others.

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REFERENCES

- 'bin Abdullah' case: Federal Court says illegitimate Muslim child cannot bear father's name. (2020, February 13). TheStar Online. Retrieved from <https://www.thestar.com.my/news/nation/2020/02/13/bin-abdullah-case-federal-court-says-muslim-child-cannot-bear-father039s-name>.
- Abdul Karim Zaydan. (2000). *Al-Mufasssal Fi Ahkam al-Mar'ah Wa Bait al-Muslim Fi al-Shariah al-Islamiyyah*. Beirut: Muassasah al-Risalah.
- Al-Asqalani, Ibn Hajar. (2000). *Fath al-Bari*. Beirut: Dar al-Kutub al-Ilmiyyah.
- Al-Ghazali, Abu Hamid. (1994). *Al-Mustasfa*. Beirut: Dar al-Kutub al-Ilmiyyah.
- Al-Kasani, Abu Bakar. (1986). *Badai' Sanai' Fi Tartib al-Sharai'*. Beirut: Dar al-Kutub al-Ilmiyyah.
- Al-Sarkhasi, Muhammad bin Ahmad. (1993). *Al-Mabsut*. Beirut: Dar al-Ma'rifah.
- Al-Shatibi, Ibrahim. (2001). *Al-Muwafaqat*. Beirut: Dar al-Kutub al-Ilmiyyah.

- BahagianPengurusan Fatwa, JabatanKemajuan Islam Malaysia (JAKIM). (2015). *Kompilasi Pandangan Hukum Muzakarah Jawatan Kuasa Fatwa Majlis KebangsaanBagi Hal EhwalUgama Islam Malaysia*. pp. 206-20. Malaysia: JAKIM.
- Büchler, A. & Kayasseh, E.S. (2018). Fostering and Adoption in Islamic Law – Under Consideration of the Laws of Morocco, Egypt, and the United Arab Emirates. *Electronic Journal of Islamic and Middle Eastern Law*. Vol. 6, pp. 31-55. University of Zurich: Switzerland. doi: 10.5167/uzh-157736
- Ibn al-Qayyim, Muhammad. (1991). 'Ilam al-Muwaqi' in 'An Rabb al-'Alamin. Beirut: Dar al-Kutub al-Ilmiyyah.
- Ibn al-Qayyim, Muhammad. (1994). *Zaad al-Ma'ad Fi Had'yKhair al-'Ibad*. Beirut: Muassasah al-Risalah.
- Ibn al-Taymiyyah, Taqiy al-Din. (1995). *Majmuk al-Fatawa*. Madinah: Majmak Malik Fahd Li Tiba'ah al-Mushaf al-Sharif.
- Ibn al-Taymiyyah, Taqiy al-Din. (2001). *Jami' al-Rasa'il*. Riyadh: Dar al-'Ata'.
- Ibn Ashur, Muhammad Thahir. (2004). *Maqasid al-Shariah al-Islamiyyah*. Qatar: Wizarah al-AwqafWaShuun al-Islamiyyah.
- Ibn Baz, Abd al-Aziz. (2004). *MajmukFatawaWaMaqalat al-Mutanawwi'ah*. Riyadh: Dar al-Qasim.
- Ibn Qudamah, Abdullah. (1969). *Al-Mughni*. Cairo: Maktabah al-Qahirah.
- Ibn Uthaymin, Muhammad Bin Soleh. (2005). *Syarh Riyadh al-Salihin*. Riyadh: Dar al-Wathan al-Nashr.
- IrwanMohdSubri, Zulkifli Hassan & Lukman Abdul Mutalib. (2015). Keputusan Mahkamah Tinggi Syariah Terengganu TentangNasab Anak Tak Sah Taraf: Krisis Perundangan?. *Al-Qanatir International Journal of Islamic Studies*. Vol. 1. No. 1. Retrieved from <http://www.myjurnal.my/public/article-view.php?id=96733>
- Isa Abdur-RazaqSarumi, AzizahMohd&Norlia Ibrahim. (2019). A Polemical Discourse Over the Legitimation of Illegitimate Children Under Islamic Law. *IIUM Law Journal*, Vol. 27 No. 1, 151 – 179. doi: 10.31436/iiumlj.

v27i1.413

Islamic Family Law (Federal Territory) Act 303, Act 1984

Islamic Family Law (Kedah Darul Aman) Enactment No.11, 2008

Islamic Family Law (Perak) Enactment No. 6, 2004

Islamic Family Law (Sabah) Enactment No. 15, 1992

Islamic Family Law (State of Johore) Enactment, No. 17, 2003

Islamic Family Law (State of Kelantan) Enactment No. 6, 2002

Islamic Family Law (State of Malacca) Enactment No.12, 2002

Islamic Family Law (State of Penang) Enactment No.3, 2004

Islamic Family Law (State of Selangor) Enactment No. 2, 2003

Islamic Family Law Ordinance, Chapter 43, 2001

Islamic Family Laws (Perlis) Enactment No. 4, 1992

Larangan ‘bin Abdullah’: Mufti Perlis Sambut Baik Keputusan Mahkamah. (2017, July 29). Free Malaysia Today. Retrieved from <https://www.freemalaysiatoday.com/category/bahasa/2017/07/29/larangan-bin-abdullah-mufti-perlis-sambut-baik-keputusan-mahkamah/>

Mahkamah Persekutuan Putus Anak Tak Sah Taraf Tidak Boleh Dibinkan, Binti Nama Bapa. (2020, February 13). Berita Harian Online. Retrieved from <https://www.bharian.com.my/berita/kes/2020/02/655225/mahkamah-persekutuan-putus-anak-tak-sah-taraf-tidak-boleh-dibinkan-binti>

Md Zawawi Abu Bakar, Wan Ibrahim Wan Ahmad & Mahyuddin Abu Bakar. (2017). Registration Problems of Illegitimate Children among Muslims in Malaysia. *Journal of Islamic Studies and Culture*, Vol. 5, No. 1, pp. 9-15. doi: 10.15640/jisc.v5n1a2

- Mohamed Azam Mohamed Adil. (2018). *Perlaksanaan Undang-Undang Islam di Malaysia, Khayalan Atau Realiti?* Kuala Lumpur, Malaysia: International Institute of Advance Islamic Studies (IAIS).
- Mohamed Azam Mohamed Adil. *Protection of Lineage: Nasab of Illegitimate Child from Fiqh and Law Perspective* (2019, September 12). International Institute of Advanced Islamic Studies (IAIS), Kuala Lumpur, Malaysia [Interview]
- Muhamad Rozaimi Ramle. *Protection of Lineage: Nasab of Illegitimate Child from Fiqh and Law Perspective* (2019, October 17). Jabatan Pengajian Islam, Fakulti Sains Kemanusiaan, Universiti Pendidikan Sultan Idris (UPSI), Perak, Malaysia [Interview].
- Muhammad Thayyar, Abdullah et. Al. (2012). *Al-Fiqh al-Muyassar*. Riyadh: Madar al-Wathan al-Nashr.
- Mustafa Zuhayli. (2006). *Al-Wajiz Fi Usul Fiqh al-Islami*. Damsyiq: Dar al-Khair Li Tiba'ah Wa Nashr Wa Tawzi'.
- Mzee Mustafa Mzee. (2016). *Islamic Law of Inheritance: The Case of Illegitimate Child and Possibility of Having an Assets of Deceased Father: A Tanzanian Case Study*. *Journal of Law, Policy and Globalization*. Vol. 45. Retrieved from <https://www.iiste.org/Journals/index.php/JLPG/article/view/28461/29203>
- Nawawi, Abu Zakariya. (2001). *Sahih Muslim Bi Syarh al-Nawawi*. Cairo: Dar al-Hadith.
- Press Summary. (n.d.). Civil Appeal No.: 01-43-09/2017(W). Retrieved from http://www.kehakiman.gov.my/sites/default/files/2020-02/Press%20Summary%20-%20Majority%20Judgment%20Bin%20Abdullah%20case%20-%20Civil%20Appeal%20No%2001-43-09-2017_Compressed.pdf.
- Rasheed Ridha, Muhammad. (1990). *Tafsir al-Manar*. Cairo: Al-Hai'ah al-Misriyyah al-'Ammah Li al-Kitab.

- Schlumpf, E. (2018). The Legal Status of Children Born out of Wedlock in Morocco. *Electronic Journal of Islamic and Middle Eastern Law (EJIMEL)*. Vol. 4, pp. 1-26. University of Zurich: Switzerland. doi: 10.5167/uzh-120614
- Shad Saleem Faruqi. (2017, August 3). Constitutional View on Bin Abdullah Case. The Star Online. Retrieved from <https://www.thestar.com.my/opinion/columnists/reflecting-on-the-law/2017/08/03/constitutional-view-on-bin-abdullah-case-islam-is-like-a-mansion-with-many-rooms-and-diversity-about>
- Syed As-Saqqa. (2015). *Naq al-Mauruth al-Feqh Walad Az-zina Annamuzuja*. Landon: Kutb Landon.
- WahbahZuhayli. (2002). *Al-Fiqh al-IslamiWaAdillatuhu*.Damsyiq: Dar al-Fikr al-Mu'asir.
- Wizarah al-AwqafWaShuun al-Islamiyyah Kuwait. (2006). *Al-Mawsu'ah al-Fiqhiyyah al-Kuwaitiyyah*. Misr: Dar al-Sofwah.
- Zaenul Mahmudi. (2018). The Status of Children Born Out of Wedlock in Indonesian Context with Special Reference to Their Inheritance Right Perspective of Maqasid Al Shariah. *Proceedings of the 1st International Conference on Indonesian Legal Studies (ICILS 2018)*. *Advances in Social Science, Education and Humanities Research*, Vol. 192. doi: 10.2991/icils-18.2018.21
- ZainulRijal Abu Bakar. (2020, Februari 13). PresidenPersatuanPeguam-Peguam Muslim Malaysia. Retrieved from https://www.facebook.com/permalink.php?story_fbid=831372574001786&id=273403396465376
- Zanariah Abd Mutalib. (2020, February 14). Kerajaan Disaran Pinda Akta Berkaitan Penamaan Anak Orang Islam. *BeritaHarian Online*. Retrieved from <https://www.bharian.com.my/berita/nasional/2020/02/655527/kerajaan-disaran-pinda-akta-berkaitan-penamaan-anak-orang-islam>
- Zulkifli Mohamad Al-Bakri. (2018). *Bayan Linnas*. Selangor: Grup Buku Karang kraf Sdn. Bhd.

Artificial Neural Networks and Its Application in Various Fields of Study

Wan Nur Azah binti Wan Nahar¹ and Rahimah binti Mohamed Yunos²

¹Lecturer, Faculty of Business,
Multimedia University, Melaka, Malaysia

²Associate Professor, Faculty of Accountancy
Universiti Teknologi Mara Cawangan Johor
Segamat, Johor, Malaysia

Email: wannurazah.wannahar@mmu.edu.my¹, rahim221@uitm.edu.my²,

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ABSTRACT

Artificial Neural Networks (ANN) approach is an alternate way to classical methods. As a computation and learning paradigm, the approach is used to solve complicated practical problems in numerous fields, such as accounting and business, engineering, medical and healthcare, geological and energy. The application varies from modelling, identification, prediction, and forecasting. In contrast to conventional procedure, ANN is trained using data exemplifying the behaviour of a system. This paper presents applications of ANN in various fields of study. The applications are in the form of designing and modelling, identification and evaluation, and prediction and control. Published literature presented in this study serves as evidence that ANN is a useful tool in various disciplines across many industries. This paper will encourage researchers and professionals to explore ANN.

Keywords: *Artificial Neural Network, prediction, forecasting, modelling*

1.0 INTRODUCTION

Artificial Neural Networks (ANN) was first introduced by Frank Rosenblatt in 1958. It is called the Perceptron model, a simple model of the biological neuron

in ANN. ANN is a processing system, motivated by the biological human brain system. It has a similar function to basic units of the human nervous system that are called “neurons”. Each neuron is associated with another neuron which carries weights. ANN consists of many nodes and connecting synapses; each node operates in parallel and connects over the connecting synapses, as shown in Figure 1. For example, the inductive learning process finds out the weights so that the relationship between input and output variables is determined. ANN is trained with examples of datasets without requiring analytical solutions. ANN learns the patterns presented to it. The methods in the process of learning are strictly related to the recommended mathematical form describing the artificial neuron function known as the activation functions. In other words, activation functions are the transfer function of an artificial neuron (Poznyak, Chairez, & Poznyak, 2019). Once they understand the pattern, new patterns may be presented to them for prediction or classification.

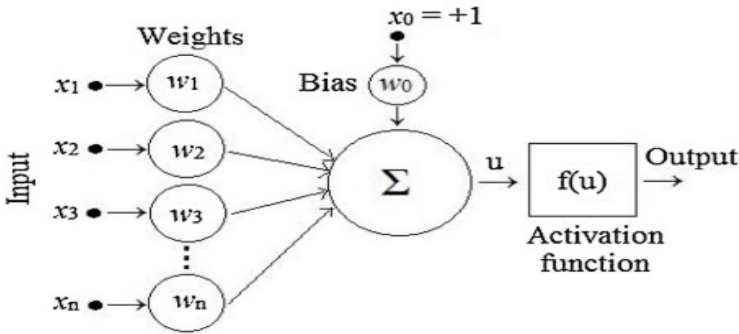


Figure 1: Mathematical model for Artificial Neural Network
Source: de Souza et al. (2019)

1.1.Categories of Artificial Neural Networks

ANN methods are categorized into two which are supervised learning and unsupervised learning (Rezaei, Shokouhyar, & Zandieh, 2019). These methods are different in terms of the data label. Under supervised learning, training data sets are labelled as training algorithms will work to find a mapping function from input and output layers. In contrast, no data label under the unsupervised learning category as it requires training data sets to find the hidden relationships in the patterns inside data set provided.

1.2. Operationalization of Artificial Neural Networks

ANN runs with training algorithms and there are numerous algorithms available for training neural network models. The training algorithms are regarded as a straightforward application of optimization theory and statistical estimation. Figure 2 shows the schematic diagram of a multilayer feed-forward neural network. The network consists of three layers: input layer, hidden layer, and output layer. Basic processing elements of ANN are represented by the number of neurons on each layer. The neurons relate to each other and each connection has an associated weight. Input layer works to feed raw information to hidden layers. At this stage, the input layer provides information for the hidden layer to learn the pattern of the input layer. Simultaneously, the hidden layer calculates the total weighted activation of other neurons through its incoming connections. Then the weighted sum is handed through an activation function and this activated value based on the input and hidden layers become the output of the neuron. According to Poznyak et al. (2019), there are four basic activation functions in ANN namely which are Threshold, Sigmoid, Piecewise and Gaussian. These functions are used in different applications in ANN. Naidu and Govinda (2018) stated that the speciality of ANN of its capability to consider the past experiences then makes a more precise decision over time. The performance of ANN relies on the mathematical function for each neuron and the weight for each interconnected neuron. The output of the neuron is obtained after the input value passed through an activation function.

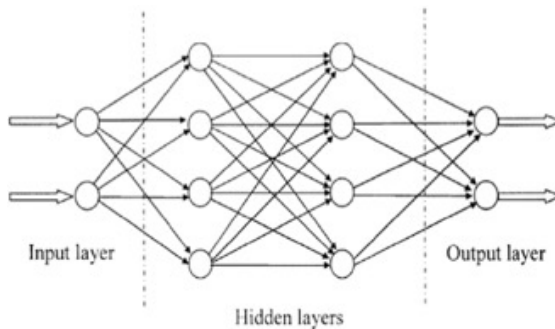


Figure 2: Schematic diagram of a multilayer feed-forward neural networks
Source: Kalogirou (2001)

The most widespread algorithm is the backpropagation algorithm, which uses a supervised learning method and a feedforward network. In the backpropagation algorithm, the weights of the neurons are defined first and then allocated to the knots. Then the learning samples are introduced into the model. The output is

then generated and compared with trial samples. An ANN with a back-propagation algorithm learns by altering the connection weights, and the alterations are stored as knowledge. Figure 3 shows an artificial neural network structure employing the back-propagation learning rule.

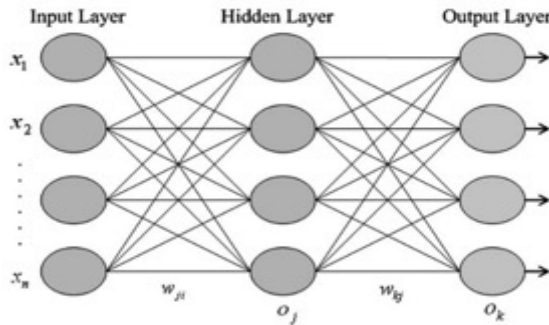


Figure 3: An artificial neural network structure employing the back-propagation learning rule

Source: Chen and Du (2009)

1.3 Advantages of Artificial Neural Networks

Empirical studies suggest that ANN provides better results mainly due to its speed and simplicity. Among the benefits are ANN can extract the nonlinear relationships by training the data and it has the potential to make better, quicker, and more practical predictions than other traditional methods (Kalogirou, 2001). ANN is also able to establish patterns, detect complicated trends, perform other computational techniques (Adebayo, Hashim, Abdan, Hanafi, & Zude-Sasse, 2017), able to solve high complexity problems (de Souza et al., 2019). Besides, ANN is sensitive to the distribution of input data as compared to other computational patterns (Jahangir, Mousavi Reineh, & Abolghasemi, 2019).

Many experts are in favour of ANN as a predicting model due to three (3) general advantages of ANN. First, ANN does not require any assumptions, hence allow inference from historical data to forecasting activity. Second, ANN can solve complex nonlinear problems. Third, ANN picks proper weights while in the training process and learns them to estimate the output, in contrast to the traditional statistical techniques that estimate the coefficient of independent variables. The ability of ANN to establish results from data it gathered during the learning process has successfully made ANN a very worthwhile tool in classification tasks (Adebayo et al., 2017). Another study by Rezaei et al. (2019) regarded ANN with efficiency, robustness, adaptability, and high performance, which turn it into a powerful tool for prediction, classification, decision support, financial analysis, and modelling in

most industries.

Despite the continuous effort on the studies in this general idea since 1958, this study attempts to translate the literature findings into a review of knowledge. This study aims to explore the existing literature regarding the ANN concept and how it benefits different disciplines. This study seeks to improve the level of understanding of how ANN is pursued at performing its function in speeding and simplifying a prediction, classification process as well as a problem-solving solution.

2.0 METHODOLOGY

This study performed a string search related to the use of ANN from peer-reviewed research databases, Web of Science and Elsevier. The keywords used to search for literature include ANN usage, ANN adoption, ANN implementation, ANN prediction, forecasting and modelling. A string search, for example, “Adopt*” OR “Artificial neural network” OR “ANN” AND “accounting” were used. These search strings were identified progressively from basic to complex terms. The exploration of related works, which are limited to publications in English, was executed from 2015 to 2019. The selected research works are the ones that consider ANN solely as the decision tool, combine ANN with other methods and associate the performance of ANN with other statistical methods. The results were organized in Microsoft Excel to ensure reliable and sufficient information are gathered as well as to identify further keywords in this study. This study identified seven different fields adopting ANN namely accounting, business, engineering, geological, medical, agriculture and energy. Several themes are performed such as the collection of definitions and concepts regarding ANN, how it works and its advantages. The abstracts were classified based on the narrative descriptions of the study. Articles were reviewed according to their field of studies to find consistency and comparisons.

3.0 APPLICATION OF ARTIFICIAL NEURAL NETWORKS IN PREVIOUS STUDIES

The application of ANN can be found in diverse fields of study and those presented in this paper are exhaustive. In the area of accounting, Naidu and Govinda (2018) used ANN to examine bankruptcy prediction and found that errors in the results using neural networks with sigmoidal activation function were lesser at 4.43% in contrast to results obtained from random forest classification at 5.19%. They concluded that neural networks are more reliable in predicting the bankruptcy of

a company. Vaez and Banafi (2017) employed a backwards propagation algorithm in ANN to predict related party transactions of companies listed in Tehran Stock Exchange. They presented that ANN models provide more than 70% coefficient of determination, which is best for prediction. ANN is also applied in a fraud prediction study. Omar, Johari and Smith (2017) reported that ANN methods outperform (94.87%) other statistical methods such as traditional statistics, linear regression and other techniques that were used in previous studies on fraudulent financial reporting prediction. Geng, Bose and Chen (2015) examined financial distress companies based on several financial ratios: net profit margin on total assets, return on total assets (ROA), earnings per share (EPS), and cash flow per share. They reported that ANN methods are better in predicting financial distress firms as compared to decision trees, support vector machines and groups of multiple classifiers. Application of ANN found in business studies was on decision support, stock price forecasting and towards classification tasks (Tkáč & Verner, 2016). Focusing on downstream lines, Rezaei et al. (2019) used ANN to establish a model to assess risk and classify the retailers who have interconnected rules downstream of the supply chain. In a broader context of supply chain management, Lima-Junior and Carpinetti (2019) proposed a model to predict systems for supply chain performance assessment. The diagnosis of the performance will result in plans and objectives improvement which will then trigger rational decision making. They used a combination of ANN and SCOR® (Supply Chain Operations Reference) metrics. It was claimed that ANN has more advantage than SCOR® metrics because it allows specific environment adaptation of historical performance data, in which applying SCOR® alone to predict supply chain performance is limited.

In the engineering field, Taheri, Abbasi and Khaki Jamei (2019) compared the application of Artificial Neural Network (ANN) and Finite Volume Method (FVM) to compute the length development of laminar magnetohydrodynamics (MHD) flow in the entrance region of a channel. The investigation of MHD flow in the channel or pipe is essential for the application in engineering sectors, taking the cooling process of reactors, design, and analysis of pipe flow systems and MHD wind tunnels as examples. The study suggested that ANN is useful in developing MHD channel flow and prediction of the development length. Xu et al. (2019) introduced a modified ABC (ABC- ISB) optimization algorithm to automatically train the parameters of Feed-Forward Artificial Neural Networks, which is a typical neural network for deep learning. They stated that deep learning has been widely used in many areas such as speech recognition, image recognition, and natural speech processing. The results of the proposed algorithm have achieved satisfactory results which means evolutionary algorithms can be used as an effective tool to optimize neural network parameters.

In geological discipline, Jahangir et al. (2019) investigated the use of ANN to improve the proposed analysis on one of Iran's natural disasters which is the flood. They used data from Hydrometric and Rain-Gauge stations, satellite images and thematic data layers in the form of ANN algorithm for prediction of discharge values and to model spatial modelling of floods at Kan River Basin located in Tehran province. The results of the study show that the ANN method has one of the highest correlations and lowest RMSE in flood modelling. Precision parameters such as R^2 , RMSE and MAE were used to show the efficiency of the proposed model. The current evidence can be applied in future planning to improve risk management and environmental crises. Tian, Xu, Cai, Wang and Wang (2019) proposed the use of ANN in predicting volcanic dissolution distribution using a real case study from Junggar Basin in northwestern China. The study constructed a multi-layer ANN model to map the seismic attributes into a synthetic reservoir property called Dissolution Comprehensive Values (DCV). The results of the study are like the prediction from the geological volcanic dissolution model in geological knowledge. The result proves that ANN is a reliable method to predict spatial dissolution distribution in the volcanic weathered crust. Apart from flood and volcanic crises, landslides are another natural disaster that can harm socio-economic and environment. Abbaszadeh Shahri, Spross, Johansson and Larsson (2019) developed a map on landslide susceptibility in Sweden. They used 14 causal factors to relate to landslides in a large area in Southwest Sweden. The study which captured 242 landslide events resulted in a map on landslide susceptibility which is consistent for future landslide susceptibility zonation. Interestingly, models produced based on the ANN method are cost-effective and beneficial for planning on the development of cities and municipalities in urban areas.

Penetrating medical and healthcare studies, Oner, Turan, Oner, Secgin and Sahin (2019) observed that ANN gives a higher success rate in sex identification on skeleton than the ones achieved using linear models. DNA test may be the best method to predict sex, but it has a few limitations such as costly, difficult to access, requires qualified personnel, and in some cases, DNA test failed. ANN also has been used in the development of a tool known as Fall Detection Systems (FDS); this is to assist elderly citizens from Fear of Falling (FOF) syndrome. FDS is a wearable system proposed to attach mobility sensors (especially accelerometers) to the clothes or garments transported by the subject. Unlike FDS, CAS is strategically arranged at fixed positions on a monitoring zone where patient's movements will be supervised. One of the main advantages of using ANN as the core of FDS is neural systems can directly employ the raw sensor data to produce the classification decision without requiring any further preprocessing (Casilari-Pérez & García-Lagos, 2019). However, Khojasteh, Villar, Chira, González and de la Cal (2018)

used several different models on the wrist wearable accelerometer and found that rule-based systems represent a promising research line as they perform similarly to neural networks, but with a reduced computational cost.

A Brazil study on agriculture sector performed by de Souza et al. (2019) showed that ANN models can forecast the period of banana harvesting related to five years of data are given different conditions for the climate. Adebayo et al. (2017) investigated the technology to measure the quality of bananas called Laser Light Backscattering Imaging (LLBI). Using ANN techniques, the study measured the ripening stage of a subgroup of cavendish bananas in Germany and established the quality of the banana. Bonini Neto, Bonini, Bisi, Coletta and Dos Reis (2017) used ANN to classify and analyze degraded soils which are classified as Oxisol. The study proved that ANN models produce a low mean square error from the data, suggesting that ANN can be used as a measurement tool to classify degraded soils.

In energy and environmental studies, ANN has developed many techniques and approaches that are beneficial to solve complicated system problems in wind energy systems (Kalogirou, 2001). D'Amico, Ciulla, Traverso, Lo Brano and Palumbo (2019) used ANN to solve the energy and environmental balance of buildings in Europe. They suggested that their results can be implemented in a software program in the form of software algorithms to predict a building's performance. A summary of these studies is presented in Table 1.

Table 1: ANN application in previous studies

	Authors	Field & Types of investigations	Types of training algorithms	Activation Function	Objectives	Results
1.	Naidu and Govinda (2018)	Accounting Bankruptcy predictions	ANN and Random Forest algorithms	Sigmoid function	To determine which types of training algorithms used for predicting bankruptcy of a company.	Neural network is more reliable in predicting the bankruptcy of a company.
2.	Vaez and Banafi, (2017)	Accounting Bankruptcy predictions	Backward Propagation algorithm	Tangent sigmoid transfer, linear transfer function	To predict the amount of transactions with related parties in companies listed in the Tehran Stock Exchange.	Result model the best network to predict the amount of transactions with related people.
3.	Geng et al. (2015)	Accounting Bankruptcy predictions	Prune algorithm	Not informed	To predict bankruptcy in China using ANN, decision trees and support vector machines.	Result from ANN is more accurate than other classifiers.
4.	Rezaei et al. (2019)	Business Retailer risk assessment	Batch Training algorithm	Gaussian function	To assess the risk of retailers using ANN.	A model from this study can provide a basis for classification of retailers based on the specified risk levels.
5.	Lima-Junior & Carpinetti (2019)	Business Supply chain performance	Multi-Layer Perceptron (MLP)	Logistic function, hyperbolic tangent	To propose a performance prediction system based on the SCOR® metrics using ANN.	MLP networks are adequate to support supply chains based on the SCOR® model.
6.	Taheri et al. (2019)	Engineering Computing the development length of laminar magnetohydrodynamic	Feed-Forward, Back-Propagation neural network and Levenberg Marquardt (LM) algorithm	Sigmoid Function	To study the field of the MHD flow in the entrance region and propose a correlation for	ANN can be employed for modelling the MHD channel flow and prediction of the development length.

7.	Xu et al. (2019)	Engineering Deep learning	Artificial Bee Colony (ABC)-ISB algorithm	Fitness Function	To propose a modified ABC algorithm to train the Feed-Forward Artificial Neural Networks.	In the scout bee phase, this paper introduces an improved strategy which enhances the global search ability more effectively.
8.	Jahangir et al. (2019)	Geological Prediction of discharge values and spatial modelling of floods	Back Propagation	Nonlinear sigmoid function	To assess whether artificial neural networks can be combined with GIS spatial analysis functions for spatial modelling of the flood.	ANN method has one of the highest correlations and lowest RMSE in flood modelling.
9.	Tian et al. (2019)	Geological Prediction of volcanic dissolution distribution	Back Propagation	Rectified linear unit	To model and predict the volcanic dissolution distribution by integrating the image logging semi-quantitative analysis with seismic prediction using ANN.	Spatial dissolution distribution in volcanic weathered crust can be reliably predicted by this integrated method.
10.	Abbaszadeh Shahri et al. (2019)	Geological Identification/modelling a landslide susceptibility	Back Propagation	Hyperbolic tangent, soft axon, squash	To produce a landslide susceptibility map.	A model on a landslide susceptibility map using ANN approach is produced.
11.	Oner et al. (2019)	Medical Identification of sex	Multilayer Perceptron Classifier (MLPC)	Hyperbolic tangent	To identify sex from skeleton.	The success rates that were achieved in sex identification with measurements on the skeleton using ANN were observed to be higher than those achieved

12.	Khojasteh et al. (2018)	Medical Improving fall detection	Feed Forward	Fitness Function	To develop a wrist wearable solution for Fall Detection (FD) focused on the elderly.	The rule-based systems represent a promising research line as they perform similarly to neural networks, but with a reduced computational cost.
13.	de Souza et al. (2019)	Agriculture Modelling harvesting period of banana	Back Propagation	Hyperbolic tangent function	To predict the time of the banana harvesting period based on the relationship of climate in the banana growth.	The model of harvesting period is developed.
14.	Adebayo et al. (2017)	Agriculture Measuring stage of ripe banana	Back Propagation – Multilayer Perceptron (BP-MLP)	Sigmoid activation function	To predict and classify models of ripe bananas.	The used of LLBI together with ANN is to determine quality of banana by non-destructive estimation and classification of the banana ripeness
15.	Bonini Neto et al. (2017)	Agriculture Classification and Analysis of degraded soils	Back Propagation	Sigmoid activation function	To evaluate ANN to establish a classification and analysis of degraded soils.	ANN is interesting and powerful tool to classify degraded soils.
16.	D'Amico et al. (2019)	Energy Building energy performance	Feed-Forward BP neural network	Tanh-sigmoid activation function and a linear activation function	To propose an application of ANN to solve the energy and environmental balance of building.	ANN solves the energy and environmental balance of building.

5.0 CONCLUSION

ANN is applicable in many research fields such as accounting and business, medical and health, engineering, geological and tourism. Many researchers take the advantage of ANN as it is a fast and accurate method as well as its ability to produce multiple predictions and to work with missing parameters. However,

in the selection of training dataset for the ANN algorithms, precautions need to be taken into considerations. The review of this paper is useful for researchers and professionals to further explore ANN and consider using it as additional data analysis within their area of interest.

REFERENCES

- Abbaszadeh Shahri, A., Spross, J., Johansson, F., & Larsson, S. (2019). Landslide susceptibility hazard map in southwest Sweden using artificial neural network. *Catena*, 183, 1–14.
- Adebayo, S. E., Hashim, N., Abdan, K., Hanafi, M., & Zude-Sasse, M. (2017). Prediction of banana quality attributes and ripeness classification using artificial neural network. *Acta Horticulturae*, 1152, 335–343.
- Bonini Neto, A., Bonini, C. S. B., Bisi, B. S., Coletta, L. F. S., & dos Reis, A. R. (2017). Artificial neural network for classification and analysis of degraded soils. *IEEE Latin America Transactions*, 15(3), 503–509.
- Casilari-Pérez, E., & García-Lagos, F. (2019). A comprehensive study on the use of artificial neural networks in wearable fall detection systems. *Expert Systems with Applications*, 138, 1–26.
- Chen, W. Sen, & Du, Y. K. (2009). Using neural networks and data mining techniques for the financial distress prediction model. *Expert Systems with Applications*, 36, 4075–4086.
- D’Amico, A., Ciulla, G., Traverso, M., Lo Brano, V., & Palumbo, E. (2019). Artificial neural networks to assess energy and environmental performance of buildings: An Italian case study. *Journal of Cleaner Production*, 239, 1–21.
- de Souza, A. V., Bonini Neto, A., Cabrera Piazzentin, J., Dainese Junior, B. J., Perin Gomes, E., dos Santos Batista Bonini, C., & Ferrari Putti, F. (2019). Artificial neural network modelling in the prediction of bananas’ harvest. *Scientia Horticulturae*, 257, 1–7.

- Geng, R., Bose, I., & Chen, X. (2015). Prediction of financial distress: An empirical study of listed Chinese companies using data mining. *European Journal of Operational Research*, 241(1), 236–247.
- Jahangir, M. H., Mousavi Reineh, S. M., & Abolghasemi, M. (2019). Spatial predication of flood zonation mapping in Kan River Basin, Iran, using artificial neural network algorithm. *Weather and Climate Extremes*, 25, 1–11.
- Kalogirou, S. A. (2001). Artificial neural networks in renewable energy systems applications: A review. *Renewable and Sustainable Energy Reviews*, 5(4), 373–401.
- Khojasteh, S. B., Villar, J. R., Chira, C., González, V. M., & de la Cal, E. (2018). Improving fall detection using an on-wrist wearable accelerometer. *Sensors (Switzerland)*, 18(5), 1–28.
- Lima-Junior, F. R., & Carpinetti, L. C. R. (2019). Predicting supply chain performance based on SCOR ® metrics and multilayer perceptron neural networks. *International Journal of Production Economics*, 212, 19–38.
- Naidu, G. P., & Govinda, K. (2018). Bankruptcy prediction using neural networks. In *Proceedings of the 2nd International Conference on Inventive Systems and Control, ICISC 2018* (pp. 248–251). IEEE.
- Omar, N., Johari, Z. A., & Smith, M. (2017). Predicting fraudulent financial reporting using artificial neural network. *Journal of Financial Crime*, 24(2), 362–387.
- Oner, Z., Turan, M. K., Oner, S., Secgin, Y., & Sahin, B. (2019). Sex estimation using sternum part lengths by means of artificial neural networks. *Forensic Science International*, 301, 6–11.
- Poznyak, A., Chairez, I., & Poznyak, T. (2019). A survey on artificial neural networks application for identification and control in environmental engineering: Biological and chemical systems with uncertain models. *Annual Reviews in Control*, 48, 250–272.

- Rezaei, S., Shokouhyar, S., & Zandieh, M. (2019). A neural network approach for retailer risk assessment in the aftermarket industry. *Benchmarking*, 26(5), 1631–1647.
- Taheri, M. H., Abbasi, M., & Khaki Jamei, M. (2019). Using artificial neural network for computing the development length of MHD channel flows. *Mechanics Research Communications*, 99, 8–14.
- Tian, M., Xu, H., Cai, J., Wang, J., & Wang, Z. (2019). Artificial neural network assisted prediction of dissolution spatial distribution in the volcanic weathered crust: A case study from Chepaizi Bulge of Junggar Basin, northwestern China. *Marine and Petroleum Geology*, 110, 928–940.
- Tkáč, M., & Verner, R. (2016). Artificial neural networks in business: Two decades of research. *Applied Soft Computing Journal*, 38, 788–804.
- Vaez, S. A., & Banafi, M. (2017). Prediction of related party transactions using artificial neural network. *International Journal of Economics and Financial Issues*, 7(4), 207–213.
- Xu, F., Pun, C. M., Li, H., Zhang, Y., Song, Y., & Gao, H. (2019). Training feed-forward artificial neural networks with a modified artificial bee colony algorithm. *Neurocomputing*, 1–16.

The Analysis of E-Commerce Website Features on Customer's Purchase Intention Using Fuzzy Expert System

Wan Mohd Yaseer Mohd Abdoh¹, Mohd Fazril Izhar Mohd Idris², KhairuAzlan Abd Aziz³ and Ibrahim Roslan⁴

¹Senior Lecturer, Finance Department, Faculty of Business and Management, Universiti Teknologi MARA, Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

^{2,3,4}Senior Lecturer, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

Email: wanmohdyaseer@uitm.edu.my¹, fazrilizhar@uitm.edu.my²,
khairu493@uitm.edu.my³, ibrahimroslan96@gmail.com⁴

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ABSTRACT

The rapid growth of internet users over the past few decades indicates a changing in the business model, in which previously the business only focuses on brick-and-mortar store whereas now, exists a need to add another store named as the e-commerce store. Business-to-Consumer (B2C) e-commerce is one of the various types of e-commerce, which has turned into an influential key to business channel. In order to meet the demands of the current business model, numerous e-commerce websites have been developed. However, building an e-commerce website is not enough if it does not meet the customers' expectation which influences the customers' purchase intention. This study investigates the features of an e-commerce website that influences the customers' purchase intention as well as the most important feature of an e-commerce website based on the customers' perspective. The e-commerce website features that being investigated are website design, information quality, security and privacy which are gained from the literature review. The data is collected through an online survey which consists of 358 respondents who are familiar with purchasing on the e-commerce website. An expert system has been developed by using a fuzzy logic approach to determine which feature possesses the biggest influence on customers in order to perform purchasing on the e-commerce website. The results performed in the MATLAB software shows that

the most significant feature in the e-commerce website is the information quality.

Keywords: *E-commerce, Purchase Intention, B2C Website, Website Features, Fuzzy Expert System.*

1.0 INTRODUCTION

Artificial Neural Networks (ANN) was first introduced by Frank Rosenblatt in 1958. It is called the Perceptron model, a simple model of the biological neuron in ANN. ANN is a processing system, motivated by the biological human brain system. It has a similar function to basic units of the human nervous system that are called “neurons”. Each neuron is associated with another neuron which carries weights. ANN consists of many nodes and connecting synapses; each node operates in parallel and connects over the connecting synapses, as shown in Figure 1. For example, the inductive learning process finds out the weights so that the relationship between input and output variables is determined. ANN is trained with examples of datasets without requiring analytical solutions. ANN learns the patterns presented to it. The methods in the process of learning are strictly related to the recommended mathematical form describing the artificial neuron function known as the activation functions. In other words, activation functions are the transfer function of an artificial neuron (Poznyak, Chairez, & Poznyak, 2019). Once they understand the pattern, new patterns may be presented to them for prediction or classification.

Nowadays, e-commerce is a new business model in the world which grows rapidly. E-commerce also prompts a major change in the mode of production and services for the whole world (Elnaga and Al Shammari, 2016). E-commerce is a short form of electronic commerce that can be explained as purchasing and selling of services and goods over the internet (Khan, Khan, and Khan, 2014). An E-commerce website is a platform that can act as a store to receive money through online transactions, receive the order information, and process the delivery of that order. Data obtained from Chaffey (2018) projections show that in 5 years, the retail e-commerce sales will make up to 14.6% of total retail spending. That forecast will increase from USD 1.548 trillion to USD 4.058 trillion from 2015 to 2020. Based on these statistics, it can be said that e-commerce has become a key in business which could mean a modern enterprise competition.

According to Poong, Eze, and Talha (2009), the traditional brick and mortar stores are different from an e-commerce website since there is a separation between customers and web vendor over the internet. Poong, Eze, and Talha said that

e-commerce website also does not allow customers to know whether the web vendor is reliable in doing the business or not. Eventually, these complexities and uncertainties would trigger worries of internet users when they are dealing with online shopping. The authors also added that when customers want to buy products online, they must have a form of mental belief that could reduce complexity and uncertainty. This mental belief is also known as 'trust'. It is believed that the trust developed between the customers and the vendor is the key for the e-commerce business to be successful (Hidayanto et al., 2014).

Therefore, the purpose of this research is to analyze the features on an e-commerce website that influences customers' purchase intention which includes identifying the relevant features related to the customers' trust in e-commerce website and also developing a fuzzy expert system to determine the most significant trust factors in e-commerce websites.

2.0 RELATED WORKS

i. Information quality, online community and trust: A study of antecedents to shoppers' website loyalty

A study which involved 250 respondents conducted by Wang et al. (2009) stated that the information quality provides an important interaction mechanism between customers and websites. Information quality is information content that a website provides to its users. This study also mentioned that information quality is important because consumers can gratify their needs by searching for information online, and they may rely on the information quality on the websites. The perceived information quality leads the customers to believe the website and it provides the websites with positive influences to develop customers' trust in e-commerce.

ii. Key dimensions of business-to-consumer web sites. information & Management
The research from Ranganathan and Ganapathy (2002) discussed the key dimensions of the B2C website found that security and privacy have a great effect on customers' purchase intention. The researcher also mentioned that in order to attract and retain customers to purchase on a website, the website must focus on customers' expectation which is on the issues of security and privacy on a website.

iii. The effects of website design on customer trust in e-commerce
Coles (2010) who studied the effects of website design on customers' trust in e-commerce stated that website design has a positive correlation with customers' trust in e-commerce. Website design is a process of creating a website that focuses

on aesthetic factors like webpage layout, content production, and graphic design in order to make the website more visually appealing and easy to use. Coles stated that website design draws customers' first impressions and the sense of the initial level of trustworthiness and can be developed into a stronger level of trust. In this research, websites that include the privacy statement and buyer testimonials in their design have a higher significant value of trust based on the customers' perspective.

iv. A fuzzy logic analysis of e-commerce website quality factors for customers' purchase intention.

Rad, Nilashi, and Ibrahim (2017) conducted a research on the analysis of an e-commerce website by using the fuzzy logic approach to determine the quality factor for customers' purchase intention. An evaluation obtained from the trust factor consists of perceived security, perceived privacy and information quality. In this study, the researchers used fuzzy logic due to the availability to evaluate qualitative information which is related to human opinion, perception, and taste. As a result, it is easier to develop an assessment tool for customers' trust based on websites' features to improve the intention of purchasing on an e-commerce website.

3.0 METHODOLOGY

In this research, primary data was collected through a questionnaire created by using Google form and was distributed through social media. The data received were filtered before being used to formulate the model. The data can only be accepted if the respondents have spent more than 4 times on an e-commerce website to ensure that the respondents are familiar with purchasing through an e-commerce website. The fuzzy logic approach was used in developing the expert system which evaluated the features of B2C websites and determined their importance levels. In order to evaluate the trust factor of the e-commerce website, MATLAB software was used to apply the fuzzy system.

This research used the fuzzy logic approach which consists of two concepts for the fuzzy system design. The first one was the linguistic variable and another one was a fuzzy IF-THEN rule base. In this system, the important part was the decision making where the Fuzzy Inference Systems (FIS) was applied. FIS is a mechanism for evaluating the fuzzy system which computes output values from the input values. Basically, FIS formulates suitable rules for decision making. There are three components of the fuzzy system design which are fuzzification, fuzzy inference, and defuzzification. The structure of the fuzzy system is shown in

the following Figure 1.

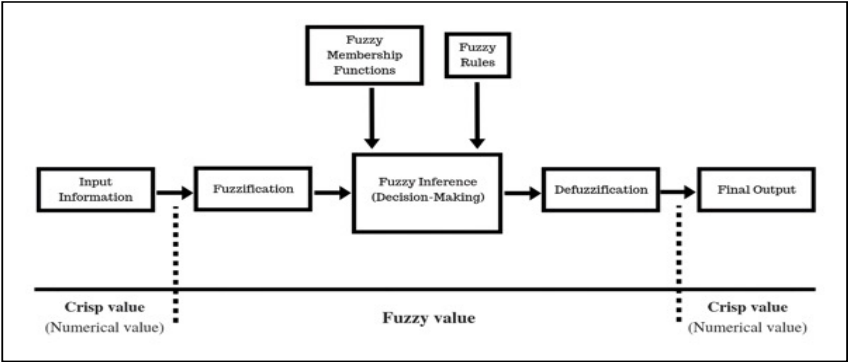


Figure 1: Structure of a fuzzy system

In this research, two types of membership functions will be inspected which are Gaussian membership function and triangular membership function as shown in Table 1. In fuzzification, the input membership functions were used while for defuzzification, the output membership function was used. Note that Gaussian and Triangular membership functions are common in a fuzzy logic system.

Table 1: Information of membership functions for input and output in the fuzzy model.

	Variables	Types of membership function
Inputs	Website Design	Gaussian
	Information Quality	Gaussian
	Security	Gaussian
	Privacy	Gaussian
Output	Important Level of Features	Triangular

i. Fuzzification

Fuzzification is a process of changing a real scalar value into a fuzzy value. A fuzzification is used to find the level of membership for each value in a set of values of inputs. For the Gaussian membership function with bell-shape, it can be defined as below

$$f(x, c, \sigma) = e^{-\frac{(x-c)^2}{2\sigma^2}}$$

In the above equation, x is the input variable, c stands for centre while σ is the

width. Fuzzy sets consist of a linguistic form and membership value. The following linguistic variables for all input variables were used and shown in Table 2.

Table 2: Fuzzy set input of e-commerce features

Linguistic variables	Symbols
Low	L
Moderate	M
High	H

ii. Fuzzy Inference

The fuzzy inference rules are used in the inference process in order to relate the input and output membership functions. The inference engine consists of a knowledge base and rules, which are important to generate the output. In order to formulate the conditional statements that consist of the fuzzy logic, “IF-THEN” statements are used in the linguistic rules. A fuzzy rule is a simple IF-THEN rule that has a condition and a conclusion. The methods used in the FIS is Mamdani method since this study is related to the interpretation of humans’ perception, the Mamdani modelling is used to determine the output membership function for each rule. The Mamdani is based on the following structure:

IF x_1 is A_{i1} and x_2 is A_{i2} and x_n is A_{in} , THEN y is C_i (2)

where x_j ($j = 1,2,..., n$) are the input variables, y is the output variable and A_{in} and C_i are fuzzy sets for x_j and y , respectively.

In this research, the fuzzy rules were obtained by extracting the responses of the respondents. The extracted responses were obtained from the Likert-based questionnaire that had been designed based on the four important features on the e-commerce website. For this research, there were four inputs with three linguistic expressions and one output with five linguistic expressions. From the 4 main features, a total of 12 sub-features, where each main feature contains 3 sub-features, had been collected based on the data from 358 respondents. Table 3 shows the main features and the sub-features used in the expert assessment system.

Table 3: Main features and sub-features used in the expert assessment system

	Main Features	Sub-features	Reference
Input	Website Design	1. This website has visually and well-organized appearance. 2. This website provides buyer testimonials. 3. This website displays privacy and security statement.	Coles, 2010
	Information Quality	1. This website provides accurate information on the item. 2. This website provides reliable information. 3. This website provides sufficient information during transaction.	Wang, Wang, Cheng and Chen, 2009
	Security	1. This website is safe for personal information. 2. This website protects transactions information. 3. This website does not use customers' information for other purposes without customers' authorization.	Ranganathan and Ganapathy, 2002
	Privacy	1. This website protects information on customers' web behaviour. 2. This website does not share customers' information with other websites. 3. This website protects customers' credit card information.	Norjihan and Zailani, 2009
Output	Importance level of features		

The data collected from this group was used in the FIS of the fuzzy logic-based assessment model. In order to determine the output membership functions for each rule, Mamdani modelling was used for the fuzzy inference and fuzzy decision-making.

iii. Defuzzification

Defuzzification is a process of transforming the fuzzy output into a crisp output. The most common defuzzification method is a centroid method since it can be applied for any type of fuzzy sets. Centroid method is also known as the centre of the area and the formula for the centroid method is given below

$$z = \frac{\int \mu_c(x).x dx}{\int \mu_c(x) dx}$$

where z is the crisp output, μ_c is the aggregated membership function while x is the output variable. All the units established in the implementation phase are integrated into a system after each unit is tested. The results of the defuzzification step are then used to reveal the importance level of B2C websites' features. For the triangular membership function with straight lines, it can be defined as below

$$f(x,a,b,c)=\begin{cases} 0, & x < a, x > c \\ \frac{x-a}{b-a}, & a \leq x \leq b \\ \frac{c-x}{c-b}, & b \leq x \leq c \end{cases}$$

The output variable is assigned with the triangular membership function, defined by a lower limit a, an upper limit c, and a value b, where a<b<c. Table 4 shows the linguistic variables for the output variables used.

Table 4: Fuzzy set output of degree of the customers’ perceptions of e-commerce features

Linguistic variables	Symbols
Very Low	VLow
Low	Low
Moderate	Moderate
High	High
Very High	VHigh

4.0 RESULT AND DISCUSSION

Result from Extracted Rules base

From the responses of the 358 respondents, only 22 rules base were generated. The extracted rules base was taken from the analysis of the responses in the questionnaire. These were 3 main steps taken before obtaining the extracted rules base:

1. Determine the updated linguistic variables.
2. Combine the input and the output variables to form a rule base.
3. Select rules base according to the highest number selected by the respondents.

The method used to obtain the updated linguistic variable was mode formula. If the mode formula fails, then the average formula would be used. When the first step is completed, each respondent has 4 input linguistic variables which indicated each main feature. The second step was to combine the input and the output variable to form an “IF-THEN” rule base. The last step, which is choosing the rules base, depends on the higher number selected by the respondents. Since there were 358 respondents, there had to be 358 rules base because each respondent has his or her own rules base. From 358 rules base, similar rules base did exist. However, the rules base that needs to be inserted in FIS must be a unique combination of input linguistic variables. Therefore, the higher selected output for that rules base is

chosen. From a total of 358 respondents, only 22 unique rules base were generated. Table 5 show the unique rules base that generated.

Table 5: Extracted rules base

Rule	IF	WD	AND	IQ	AND	S	AND	P	THEN	Trust Level
1		H		H		H		H		V High
2		H		H		H		M		High
3		H		H		M		H		High
4		H		H		M		M		Moderate
5		H		M		H		H		High
6		H		M		H		M		Moderate
7		H		M		M		H		High
8		H		M		M		M		Moderate
9		H		M		M		L		Moderate
10		H		L		H		H		High
11		M		H		H		H		Moderate
12		M		H		H		M		Moderate
13		M		H		M		H		High
14		M		H		M		M		High
15		M		M		H		H		High
16		M		M		H		M		Moderate
17		M		M		M		H		Moderate
18		M		M		M		M		Moderate
19		M		M		L		H		Moderate
20		M		M		L		M		Moderate
21		M		L		H		M		Low
22		L		M		H		M		High

(WD=website design, IQ=information quality, S=security, P=privacy)

Overall Evaluation of the Features of the Trust Level

From the combination of the inputs and the outputs of extracted rules base shown in Table 5, a correlation between the input and the output can be obtained in 2-D curves by using MATLAB software. The illustration of the relationship between input and output is essential in explaining the importance of the level of the features of e-commerce websites. Figure 2, 3, 4 and 5 represent the interdependency of trust and four main features through the curves obtained from the fuzzy rules generated from the data. The curves represent the variation of trust based on discovered rules. These curves indicate the trust level versus the importance level of each feature of the website.

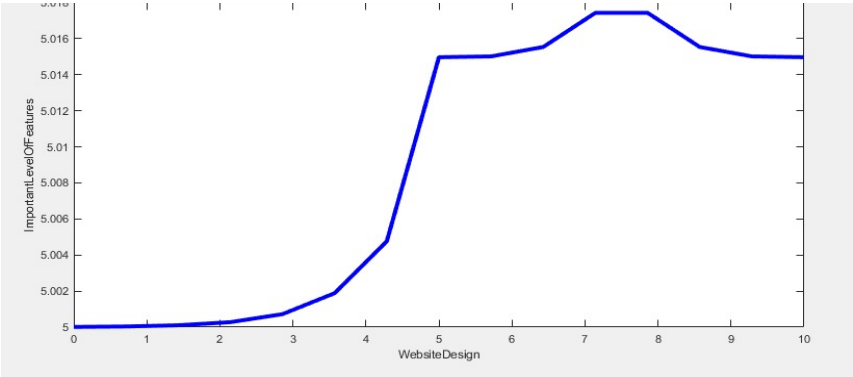


Figure 2: Importance level of website design.

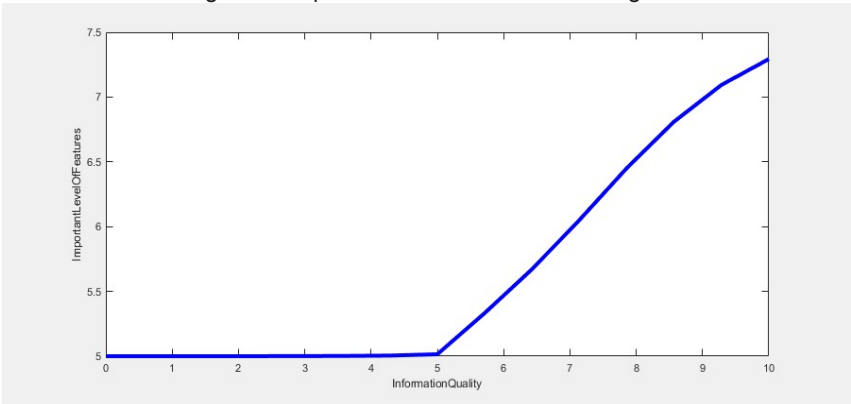


Figure 3: Importance level of information quality.

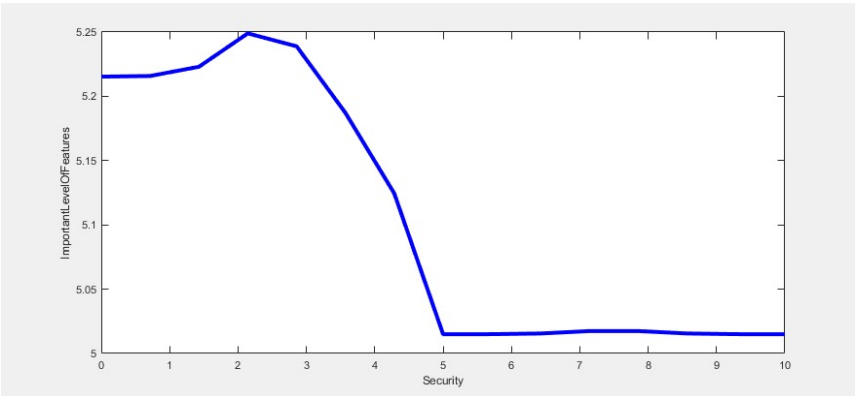


Figure 4: Importance level of security.

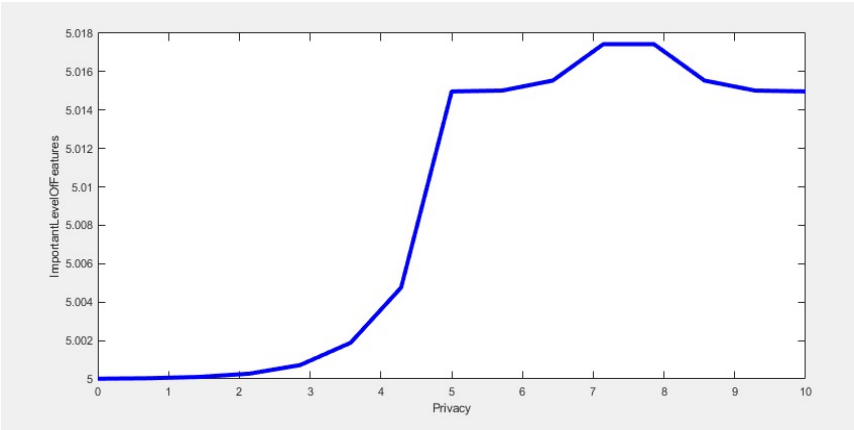


Figure 5: Importance level of privacy.

It can be said that evaluating the features of e-commerce websites can be effectively modelled by using fuzzy inference systems based on the customers' knowledge regarding the features of e-commerce websites, which is formed as fuzzy logic. Table 6 shows the maximum weights of all the features of e-commerce websites.

Table 6: Final assessment weight for the features of B2C websites.

Features	Maximum Weight
Website Design	5.017
Information Quality	7.25
Security	5.25
Privacy	5.017

By viewing the curves and discovering the fuzzy rules, it can be stated that trust is more affected by the information quality compared to security, and lastly followed by the website design and privacy. It shows that a website containing satisfying information quality for its customers increases the intention of the customer to purchase through the website compared to the other features. However, the result is inconsistent with past studies (Rad, Nilashi, and Ibrahim, 2017) where security represented the most significant effect on trust while the result of this study shows that information quality is the most important feature that customers observe before deciding to purchase through an e-commerce website. This difference may be due to the factors such as the sample size, different categories of respondents and number of main features that investigated which were security, privacy and information quality while this study added an extra feature to be investigated as well, which is the website design.

5.0 CONCLUSIONS

An effort was made in this study to develop an expert system using the fuzzy logic approach to determine the significant features in the e-commerce website. These significant features can influence customers' purchasing intention. The features of e-commerce websites related to the customers' trust, namely website design, information quality, security and privacy were selected from the literature. These four features achieved the first objective of this study which is identifying the relevant factor related to the customers' trust in an e-commerce website.

In order to evaluate the four features, an assessment system based on fuzzy logic was developed with its FIS. In the FIS model, all the input variables used the gaussian membership functions while for the output model, triangular membership functions were considered. The extracted rules base was discovered to be used in the FIS. The results of the expert system showed that the fuzzy logic was able to evaluate the features of e-commerce websites. Result also showed that the customers' trust was more influenced by information quality compared to the other features with a maximum level of about 7.25.

REFERENCES

- Chaffey, D. (2018). Forecast growth in percentage of online retail / Ecommerce sales. <https://www.smartinsights.com/digital-marketing-strategy/online-retail-sales-growth/>
- Coles, G. M. (2010). The effects of website design on customer trust in e-commerce. http://infotech.scu.edu.au/wsmart/documents/George_Thesis_Final.pdf
- Elnaga, A. A., & Al Shammari, F. H. (2016). The impact of e-commerce on business strategy: A literature review approach. *Journal of American Science*, 12(5), 68-79.
- Hidayanto, A. N., Herbowo, A., Budi, N. F. A., & Sucahyo, Y. G. (2014). Determinant of customer trust on e-commerce and its impact to purchase and word of mouth intention: A case of Indonesia. *Journal of Computer Science*. 10(12), 2395-2407.

- Khan, M. D., Khan, F., & Khan, M. E. (2014). Growing importance of e-commerce in global market. *International Journal of Management Sciences, Research Academy of Social Sciences*, 3(3), 147-151.
- Norjihan, A. G., & Zailani, M. S. (2009). Personal Information Privacy Protection in E-commerce. *WSEAS Transactions on Information Sciences and Application*, 3(6), 407-416.
- Poong, Y.-S., Eze, U. C., & Talha, M. (2009). B2C e-commerce in Malaysia: Perceived Characteristics of Innovating and trust perspective. *International Journal of Electronic Business*, 7(4), 392-427.
- Rad, M. S., Nilashi, M., & Ibrahim, O. (2017). A fuzzy logic analysis of e-commerce website quality factors for customers' purchase intention. *Journal of soft computing and decision support system*, 4(2).
- Ranganathan, C., & Ganapathy, S. (2002). Key dimensions of business-to-consumer web sites. *Information & Management*, 39(6), 457-465.
- Wang, M. C.-H., Wang, E. S.-T., Cheng, J. M.-S., & Chen, A. F.-L. (2009). Information quality, online community and trust: A study of antecedents to shoppers' website loyalty. *Int. J. Electronic Marketing and Retailing*, 2(3), 203-217.

Undergraduate Students Academic Progress Reporting Using UPRoS: A Feed Forward Approach

Eley Suzana Kasim¹, Abdul Rahman Mohamad Gobil², Wan Aryati Wan Ghani³,
Norlaila Md Zin⁴

¹*Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Negeri Sembilan ,
Kampus Seremban: Accounting Research Institute (ARI), Universiti Teknologi MARA,
Shah Alam*

^{2,3}*Faculty of Science Computer and Mathematics, Cawangan Negeri Sembilan , Kampus
Seremban*

⁴*Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Negeri Sembilan ,
Kampus Seremban: Institute of Leadership and Development, Universiti Teknologi
MARA, Enstek, Nilai, Negeri Sembilan*

Email: norlaila249@uitm.edu.my⁴

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ABSTRACT

Academic performance monitoring is traditionally based on feedback approach. A disadvantage of this approach is that any remedial action would be too late to be implemented. Given that higher education institutions are striving towards achieving graduate on time objectives, an innovative feed forward approach is highly needed. Undergraduate Progress Reporting System (UPReS) is an innovative monitoring and reporting system to monitor academic performance among undergraduate students using electronic spreadsheet. UPRoS enables users to forecast academic performance and to identify under-performing students which allows for early intervention programs to be implemented. Using qualitative methodology, this research found that UPRoS is able to overcome the limitations of current academic progress monitoring system and offers benefits to students, lecturers and higher education institutions.

Keywords: *Innovative, feed forward, academic progress, electronic spreadsheet, progress monitoring.*

1.0 INTRODUCTION

Monitoring of academic progress of undergraduate students are of paramount importance to universities and to the students themselves (Sencan & Karabulut, 2015; Ogor, 2007). While universities often associate the overall effectiveness of the curriculum offered through students' academic achievement, students also strive to achieve good grades for their own future employment (Rannveig et al., 2017). In Malaysia, the universities particularly public universities have the challenging tasks of ensuring that their graduates successfully complete their graduation package within the specified time frame (Othman et al., 2015).

Prior studies (e.g. Wagener, 2016) suggest that students may not graduate on time due to the difficulty to adapt to the higher education life compared to school environment. Othman et al. (2015) noted that several factors affect the success of students to complete their studies such as (1) lecturers' support, (2) job prospects, (3) alumni/senior students' support, and (4) counselors' role. However, more importantly, failure among students to graduate on-time may also be due to the ineffective monitoring of academic progress and performance throughout their studies. Most of the academic performance monitoring is based on traditional feedback approach using final examination grades (Wagener, 2016). This approach focuses on monitoring students' academic progress after they have undergone their final examination. A disadvantage of this approach is that any remedial action would be too late to be implemented.

One way to eliminate the problem is to adopt the feed-forward approach in academic progress monitoring to replace the existing feedback approach. In discussing students' preference on getting comments provided to them on drafts prior to the actual assignment submission, Ghazal et al. (2018) noted that students prefer having feed-forward instead of feedback by their instructors. In much the same way, lecturers and students need feed-forward assessment system which involves real-time academic progress monitoring. To reach this goal it is essential for the lecturers to have tools to help them identify students who are at risk academically and adjust instructional strategies to better meet these students' needs (Safer & Fleischman, 2005). Pettey (2007) noted that academic progress monitoring can be conducted on individual or class basis. Regular academic progress monitoring would facilitate the students and lecturers to determine whether they are progressing appropriately to the typical instructional program and to help design more effective programs for students who benefit inadequately from typical programs (Pettey, 2007).

Despite the call for using feed forward approach, there is still limited studies which focus on using this approach. Hence, the nature in which such approach can be adopted and the way in which it delivers the benefits to students and lecturers are still unclear. Therefore, this study aims to fill the existing gaps by examining the impact of an innovative monitoring tool known as Undergraduate Progress Reporting System used to monitor academic performance among undergraduate students. UPRs is a feed forward control approach to monitor academic progress using electronic spreadsheet. Apart from monitoring purposes, UPRs can also be used to forecast academic performance and as such it serves as a useful tool to identify under-performing students and allow for early intervention programs to be implemented.

2.0 LITERATURE REVIEW

Graduate-on-time (GOT) requirement among students have become a major concern among higher education institutions including in Malaysia. Aina et al. (2018) suggests that on-time graduation is viewed as one of the discriminating criteria for employee selection during recruitment process. This implies that students who graduate on time have better chances of being employed compared to those who experience delayed graduation. Students' success in securing employment upon graduation not only prevents unemployment among the students but also reflects relative success of the university itself. For example, many higher education institutions in Malaysia incorporate graduate on time as one of the key performance indicators to monitor its overall performance. One of the ways to ensure students graduate on time will be to monitor their academic progress and performance on a regular basis. In many higher education institutions, a typical scenario would suggest that at the end of the semesters, the lecturers are required to inform the students on their continuous assessment marks via tests, quizzes, presentations, projects and assignments before they sit for their final examinations. A problem that may arise in this situation is when the grades are not made available to the students in a timely manner. As a result, the students would not know their performance well in advance before their final examination starts. This may also mean that intervention programs designed to improve students performance could not be conducted. Similarly, the students may have a vague idea of how well they have performed during the semester and may not be able to pro-actively mitigate their poor performance. Intervention programs that need to be conducted for poor performing courses may only be implemented in the following semester. In other words, the current practice failed to address the poor academic performance of the students in time before they sit for their examination. It also means that

intervention program commonly designed for poor performing students will not be able to be effectively implemented for the benefit of the intended students. At best, the feedback approach would lead to improvement for future students but quite often it would be too late for current students.

Feed-forward concept has been largely discussed in the science and engineering literature before being adopted in the social science field. In particular, management studies use the feed-forward concept in examining organizational performance. The concept of feed-forward can be simply viewed as a system that measures disturbances and subsequently account for these disturbances before they have time to affect the system. In organizational studies, it is suggested that managers need an effective control system that will inform them well in time for corrective action (Kaplan & Norton, 1996). Relying on the feedback from the output of a system is not adequate for control to be achieved (Nishimura, 2019). This is because feedback control only acts as a little more than a post-mortem for which no meaningful action can be taken by managers to change the past. As such managers require feed-forward control to implement pro-active actions to avoid future difficulties. Ghazal et al. (2018) performed an experiment to examine the feed forward approach to students' performance. They found that the performance of students who were given feed forward comments on their assignments were better in terms of increased overall assignment and academic writing scores. The findings also reflected better results in terms of the (reduced) frequency of visits to their instructors for clarification of written feedback.

Drawing on the importance of feed forward academic monitoring approach, this research focuses on an innovative application of technology to support the goal of achieving graduate on time goals. Innovation implies newness (Johannessen, Olsen, & Lumpkin 2001) which involves complex and uncertain processes (Van de Ven, 2018). In general, innovation is referred to as development, modification and creation of new products or services, processes, or technologies with the intention of bringing up the newness of economically viable areas, which in turn will be translated into efficiency and profitability (Gunday et al., 2011). Innovation can be divided into three main types, via administrative innovation, product and process innovation, and technological innovation (Ax & Bjørnenak, 2005; Damanpour & Evan, 1984; Kimberly & Evanisko, 1981; Abernathy & Utterback, 1978).

The current research innovation is regarded as technological innovation in which it involves a system to monitor academic progress on a pro-active basis using real time approach. This type of innovation enables students and lecturers to gauge students' future performance. The focus is on what needs to be done to enhance

learning, both directly through the effort resulting in an indirect support and motivation (Zhanjun, Weifeng & Jiangbo, 2016).

3.0 METHODOLOGY

This study focuses on one of the public universities in Malaysia as a qualitative case study to examine the academic progress monitoring of its undergraduate students. The university is chosen due to its typical environment in which feedback control approach is implemented in monitoring academic progress. A series of semi-structured interviews with average duration of 30 to 40 minutes was conducted. The interviewees selected among the students who were taught by the researchers during the period of study.

3.1 Research Process

The present research uses a qualitative approach to scientific inquiry in which the research process consists of 5 stages as shown in Figure 1.

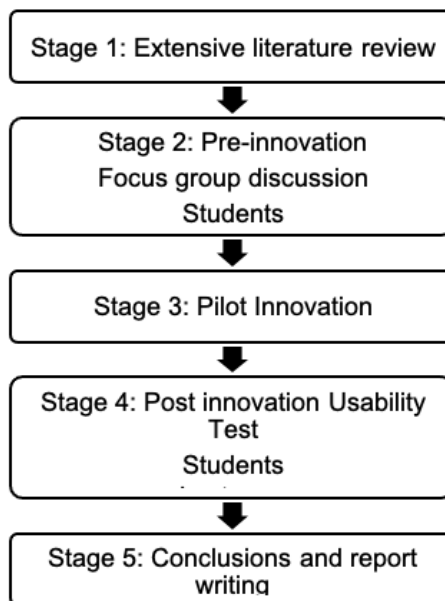


Figure 1: The research process

In Figure 1, the first stage involves extensive review of the literature. This is followed by a pre-innovation stage in stage 2. During this stage a focus group discussion was conducted in order to obtain initial feedback on the current academic progress monitoring system. The discussion involved students who were invited on a voluntary basis to participate in the discussion. These students have completed their 14-week lecture sessions and were revising their lessons for their final examination. The discussion session lasted for one hour and the discussion was audio recorded with consent of the participants. A transcription was later prepared and analyzed. An overall view was obtained by reading the transcribed interviews. The data analysis process involves data reduction by categorising results into themes and subthemes through thematic analysis. Subsequently the data was coded. Throughout the data analysis process, several rounds of coding have been conducted resulting in the final refined coding scheme. Categorising the results into themes and subthemes through thematic analysis. Finally, a refined coding scheme was established. Based on this categorisation, the data was interpreted and reported. The analysis revealed important findings which later became the critical input in developing the innovation tool, UPRoS.

In the third stage, the tool was piloted through a demonstration to two separate groups i.e., a group of students and a group of lecturers. This separation is done in order to avoid biasedness of feedback gathered from each group as well as to ensure objectivity in responses from both groups. The demonstrations were conducted specifically to gain feedback on the usability and effectiveness of the tool. While a focus group discussion was held for the student group, feedback from lecturers were obtained through semi-structured interviews in stage 4. The feedback serves as an important input for further improvement and redesign of the system. Finally, in stage 5, the findings were analysed and conclusions were drawn. The respondents of the research consisted of both students and lecturers in one of the public universities in Malaysia. The students were enrolled in an undergraduate program in one of the campuses of the university.

3.2 Undergraduate Progress Reporting System (UPReS)

Undergraduate Progress Reporting System (UPReS) is designed to monitor and report the learning progress for each individual student as well as for an entire class. This system is developed to help students overcome their eagerness of getting to know their ability to obtain certain grades for their final examinations. The current practice of conveying assessment marks is done through posting a plain spreadsheet at the end of semester showing on-going assessment marks namely quizzes, tests, assignments, case studies, projects and so on. There is little opportunity for

intervention made by most lecturers to help improve their students' performance. Although some lecturers might take an initiative to introduce educational 'clinics' specifically intended for weak students based on certain assessment, this effort is mainly voluntary and is commonly based on past students performance taking the same course. UPReS is designed to improve the current monitoring system with a simple yet effective system to gradually monitor students' performance. It gives a solid idea to the lecturers before they can start to intervene and evaluate the students' academic skill. Besides, it provides opportunity for both students and lecturer to discuss necessary actions for improvement.

The principle behind this innovation is the adoption of "feed forward" control approach whereby academic failure risks can be identified and mitigated before it occurs. In contrast to the conventional feedback control approach, the students' academic performance can be forecasted before their final examination. In this way, students are made aware of their strength or weaknesses and as a result would likely prompt them to take remedial actions to get better grades. Another unique feature of the tool is the ability of simulating students' grades using their current continuous assessment marks. This provides an opportunity for the students to forecast realistically several expected grades based on their current achievement. Due to its ease of use and adaptability, UPReS can be used at any time during the study period while the course is still ongoing. It also helps the students to allocate their time more wisely in their effort to achieve a targeted grade.

UPReS is friendly to the user with straightforward, clean, and well-organised interface. Its components include the Dashboard, Individual Performance and Raw Data. Dashboard is designed for lecturers as a reporting tool in tracking and make informed decision based on students' performance. Ideally, dashboard simplifies complex data into data visualisation in a form of graphs and tables. The Individual Performance component of UPReS is meant for students to check their assessment marks and simultaneously able to project their targeted final examination marks and grade. Besides, this system provides a Print button for quick printing. Lastly, Raw Data component is provided for lecturers to key in ongoing assessment marks to be manipulated in order for UPReS to generate students' performance report individually or group basis.

4.0 FINDINGS

This section presents the findings before and after the implementation of UPReS to the respondents.

4.1 Pre-innovation

The findings showed that there were limitations regarding the current system of monitoring student academic progress experienced by the students. This is mainly due to the absence of techniques in which the students are able to forecast their future grades in the final examination. Figure 2 displays the process involved in the existing academic performance monitoring system.

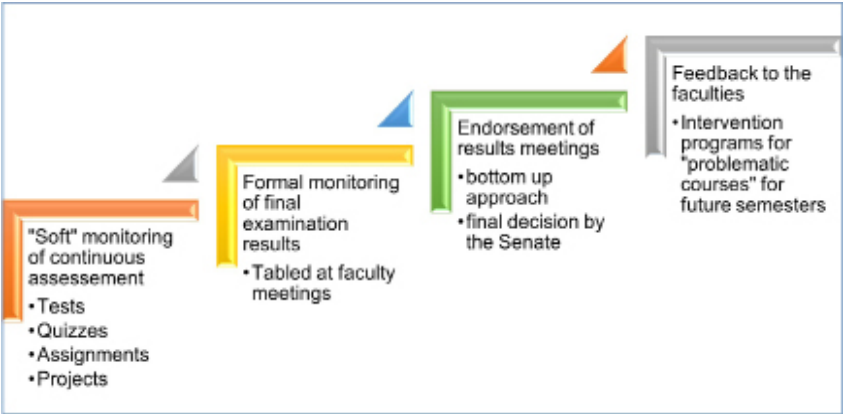


Figure 2: Feedback loop of academic performance monitoring

As shown in Figure 2, before the students sit for their examination, their academic progress is only informally monitored by lecturers throughout the semester. The regulation of the university stated that the students must be informed about their continuous assessment marks prior to the final examination. However, there is no specific guideline on how the students would be guided beyond that. Problems also occur when there is delay in receiving the carry marks as sometimes experienced by the students. Although there is no violation of regulation among the lecturers, this may cause difficulty among students to forecast their score in the final examination. Hence, the absence of proper reporting of academic progress was noted. The findings also indicated that for low achievers or weak students, there is a need to discuss academic progress with lecturer on a regular basis as their study progress. Currently, the academic advisors are appointed with the task to guide and mentor the students under their responsibility. However, there is no formal mechanism on how the monitoring should be done.

Within the current system (Figure 2), the academic performance of students is formally reported at both the faculty and university level following each final examination sessions. Among the outcome of this process in the identification of intervention programs by program coordinators and deans for the future semesters.

The aim of the intervention programs such as education clinics, revision sessions and mentoring system is to overcome low academic performance in the coming semesters. In effect, the current system is based on a feedback approach to monitor academic progress. One of the disadvantages of such approach is the untimely nature of the proposed intervention programs as there is a failure to take actions to boost academic performance before the final examination.

Based on the focus group discussion with students, several problems with the current academic progress system are noted. Firstly, there were occasions when students are not able to gauge their future performance before the final examination. One of the students commented: "...it is unfortunate that the students could not "target" for the paper (before the final examination" while another noted that "...I do not know how to target my score." The students also highlighted that knowing how to predict their scores is important in order to have realistic expectation of their future grades. As commented by a student: "I was targetting for at least a B or a B+ but when it came out with a C+, I was quite shocked."

4.2 Post-innovation

During the pilot innovation stage, the respondents were introduced to UPReS and shown their respective progress report. The reports were printed and distributed to respondents during the session. The implementation of the feed forward approach to academic progress monitoring in this pilot stage can be depicted in Figure 3.

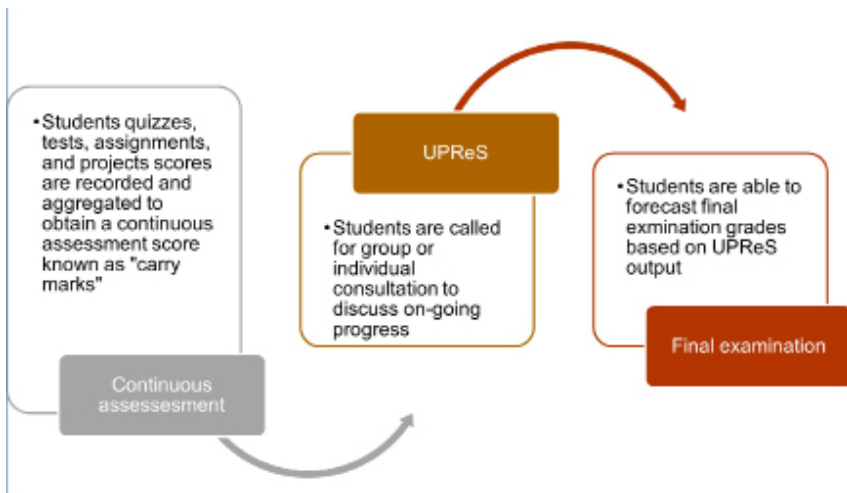


Figure 3: Implementation of UPReS

Following the pilot innovation of UPRoS among respondents, a usability test was conducted among both students and lecturers in order to obtain feedback on the usefulness of UPRoS. Several benefits of UPRoS were highlighted by the respondents. Firstly, the UPRoS system offers benefits to the students in many ways. Among them is (1) the generation of a progress report for students on an individual basis, (2) UPRoS can be used as a tool for motivating weak students to achieve better score in final examination, (3) it also provides a means for students to set realistic expectations by knowing the all possible grades they can achieve. Secondly, the system benefits the lecturers by (1) enabling them to easily identify students with potential academic failures as well as (2) to monitor students progression on a real time basis. Another benefit of UPRoS to lecturers is that the progress report can be used as a tool for motivating weak students to achieve better score in final exam. This is because weak students may easily lose motivation but the situation may be improved by discussing possibilities for them to achieve acceptable grades and thus help them to strive for better grades. In addition, the report generated from UPRoS provides data visualization that helps lecturers and students to interpret student academic performance effectively. Moreover, the use of dashboard in the academic progress report is consistent with the recent trends in industrial revolution 4.0. The system uses visuals of output as illustration of the performance data.

According to Petty (2007, p. 37), visuals of data would allow for:

“data be kept by the teacher in the form of a graphic record, where teachers are able to visually track student progress by graphing the student’s baseline, different interventions tried, and rate of growth. In a glimpse, the teacher is able to see whether progress is being made. If progress is not being made, then the teacher can make adjustments to the interventions. If progress is being made, then the teacher can see the growth trend and estimate whether the student is on target to catch up with the other students.”

Thirdly, this system provides advantages to higher education institutions particularly in supporting the effort to achieve graduate on time objective. This is because a more effective and systematic intervention programs would like to prevent academic failures to occur.

The usability test also involves interviews with lecturers. The views of the lecturers were found to be consistent with the interview findings from the students. During the demonstration of the system, the lecturers were given the hands-on opportunity to test the UPRoS. Positive feedback were received whereby on average the duration to search student record is around 10 seconds. As shared by one of the

lecturers.

“ This is what we are looking for all this while, this UPRES will help the students to know their current standing and if they should change their aims.”

In addition, UPReS was found to be useful in giving students the opportunity to plan for their revision before the final examination. From the results, it is recommended that academic advisors and lecturers to use UPReS as a systematic means to plan for academic intervention program such as “clinics” or mentoring programs. Figure 4 shows a proposed intervention model for lecturers in dealing with subjects with potential high failure rates among students.

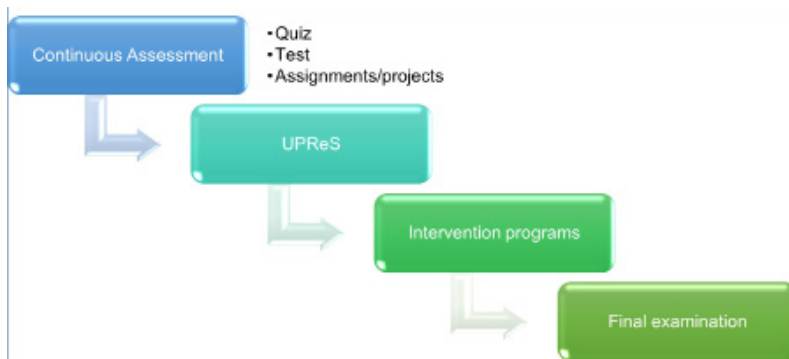


Figure 4: A model for feed forward academic monitoring

Based on this model (Figure 4), the students can be informed early on their on-going progress during their study period using UPReS. This model suggests that the lecturers and academic advisors would be able to monitor their students' performance and subsequently plan for more effective intervention program. This is because the intervention programs will be more suited to the needs and expectations of the students. Additionally, the feed forward control loop (i.e., continuous assessment - UPReS - Intervention program) can be repeated even after a single assessment such as a quiz or a test before the final examination. Hence, UPReS represents a system to monitor academic progress on a pro-active basis using real time approach and uses visuals of output as illustration of the performance data. This is in line with Reimann, Sadler, and Sambell (2019) and Rizzuto and Balodimou, (2019) a software or apps that serves as feedback platform facilitates tutors and students in forecasting the students performance. Following the progress monitoring, various intervention program can be implemented to avoid poor academic performance in the final examination. The intervention program can either (1) faculty-led intervention programs conducted for students involving the whole class or (2) focuses on students facing difficulties specifically.

5.0 CONCLUSIONS

Consistent with Hill and West (2019) and Petty (2007), this research suggests that students prefer having feed-forward instead of feedback approach in academic performance monitoring by their lecturers. In addition, this research supports the usefulness of applying modern information technology in the field of higher education particularly in monitoring students' academic performance (see Zhanjun, Weifeng & Jiangbo, 2016). The Undergraduate Progress Reporting System (UPReS) provides a platform for students to forecast future academic achievement and allows students to be aware of their on-going progress. This innovation can also be used as a means for motivating weak students to achieve better score in their final examination. UPRoS enables lecturers to monitor students progression on a real time basis and identify those with potential academic failures. In addition, the report generated from UPRoS provides data visualization that helps lecturers and students to interpret student academic performance effectively. Moreover, consistent with Jokhan, Sharma and Singh (2018) this innovation benefits higher learning institutions through forecast of results which facilitates academic advisers to address students' poor academic performance. UPRoS also provide a systematic approach to take remedial action such as "clinics" and mentoring system for students. Therefore, this innovation offers benefits to all relevant stakeholders which include students, lecturers and higher learning institutions.

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REFERENCES

- Abernathy, W. J., & Utterback, J. M. (1978). Patterns of industrial innovation. *Technology review*, 64, 254-228.
- Aina, C, Baici, E., Casalone, G., & Pastore, F. (2018). The economics of university dropouts and delayed graduation: A survey. *GLO Discussion Paper*, No. 189.

- Ax, C., & Bjørnenak, T. (2005). Bundling and diffusion of management accounting innovations-the case of the balanced scorecard in Sweden. *Management Accounting Research*, 16, 1-20.
- Johannessen, J. A., Olsen, B., & Lumpkin, G. T. (2001). Innovation as newness: what is new, how new, and new to whom?. *European Journal of Innovation Management*, 4(1), 20-31.
- Damanpour, F., & Evan, W. M. (1984). Organizational innovation and performance: the problem of "organizational lag". *Administrative Science Quarterly*, 392-409.
- Ghazal, L., Aijaz, A., Parpio, Y. & Tharani, A & Gul, R. B. (2018). Feed-forward: Paving ways for students' subsequent learning. *Nurse Education Today*, Vol. 71, 116-120.
- Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of Production Economics*, 133(2), 662-676.
- Hill, J., & West, H. (2019). Improving the student learning experience through dialogic feed-forward assessment. *Assessment & Evaluation in Higher Education*.
- Hill, J., & West, H. (2019). Improving the student learning experience through dialogic feed-forward assessment. *Assessment & Evaluation in Higher Education*.
- Johannessen, J. A., Olsen, B., & Lumpkin, G. T. (2001). Innovation as newness: what is new, how new, and new to whom?. *European Journal of Innovation Management*, 4(1), 20-31.
- Jokhan, A., Sharma, B., & Singh, S. (2018). Early warning system as a predictor for student performance in higher education blended courses. *Studies in Higher Education*.
- Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard: Translating strategy into action*. Boston, MA: Harvard Business Review Press.

- Kimberly, J. R., & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of management Journal*, 24 (4), 689-713.
- Nishimura, A. (2019). Strategic management accounting and feed-forward management: With reference to the unified management of profit opportunity and risk. In: *Management, Uncertainty, and Accounting*. Palgrave Macmillan, Singapore
- Ogor, E.N. (2007). Student Academic Performance Monitoring and Evaluation Using Data Mining Techniques. *Fourth Congress of Electronics, Robotics and Automotive Mechanics*, Washington, 354-359.
- Othman, J., Mohammed, F. D., Salleh, T. S., Bakri, N. & Mohd Fauzi, A. (2015). Factors contributing to graduate on time in a technical university: Lecturers' views. *Journal of Science & Technology*, 2 (2), 1-5.
- Penn, P., & Wells, I. (2017). Enhancing Feedback and Feed-Forward via Integrated Virtual Learning Environment Based Evaluation and Support. *Psychology Teaching Review*, 23(2), 60–65.
- Petty, S.L. (2007). Collecting data to monitor student academic progress (Doctoral dissertation). Retrieved from <https://search-proquest-om.ezaccess.library.uitm.edu.my>.
- Rannveig, S., Tove, D., Tore, S. & Oddgeir, F. (2017). Relationships between learning approach, procrastination and academic achievement amongst first-year university students. *Higher Education*, 74 (5), 757-774.
- Reimann, N., Sadler, I., & Sambell, K. (2019). What's in a word? Practices associated with 'feedforward' in higher education. *Assessment & Evaluation in Higher Education*.
- Reimann, N., Sadler, I., & Sambell, K. (2019). What's in a word? Practices associated with 'feedforward' in higher education. *Assessment & Evaluation in Higher Education*.
- Rizzuto, J. P., & Balodimou, E. (2019). Understanding feedback and feed-forward: insights drawn from project-based learning.

- Rizzuto, J. P., & Balodimou, E. (2019). Understanding feedback and feed-forward: insights drawn from project-based learning.
- Safer, N. & Fleischman, S. (2005). How student progress monitoring improves instruction. *Educational Leadership*, Vol. 62. No. 5, 81-83.
- Sencan, H. & Karabulut, A. T. (2015). Monitoring of educational performance indicators in higher education: A comparison of perceptions. *Educational Sciences: Theory & Practice*, 15(2), 359-376.
- Van de Ven, A. H. (2008). *The Innovation Journey*. New York: Oxford University Press.
- Van Heerden, M. (2020). (How) do written comments feed-forward? A translation device for developing tutors' feedback-giving literacy. *Innovations in Education and Teaching International*, 1–10.
- Wagener, B. (2016). Metacognitive monitoring and academic performance in college. *College Teaching*, 64 (2), 47-54.
- Zhanjun, W., Weifeng, Q. & Jiangbo, L. (2016). Data-Intensive Evaluation: The Concept, Methods, and Prospects of Higher Education Monitoring Evaluation. *Chinese Education & Society*, 49, 86–98.

What Matters to University Students when Looking for a Rental House?

Nor Adila Kedin¹, Izni Syamsina Saari², Hamidah Muhd Irpan³, Ainon Syazana Ab Hamid⁴ and Noor Ibtisam Abdul Karim⁵

^{1,2,3}Senior Lecturer, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Cawangan Melaka, Malaysia

⁴Lecturer, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Cawangan Melaka, Malaysia

⁵Senior Lecturer, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Cawangan Melaka, Malaysia

Email: noradila_kedin@uitm.edu.my¹, izni_syamsina@uitm.edu.my²,
hamidahirpan@uitm.edu.my³, ainonsyazana@uitm.edu.my⁴,
noor_ibtisam@uitm.edu.my⁵

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ABSTRACT

The rapid growth of higher education institutions in Malaysia is parallel with the growing demand of its population pursuing tertiary education. For such reason, universities and other tertiary education providers are constantly challenged in providing sufficient in-campus accommodation to help students living comfortably. Regardless of their continuous effort in improving their facilities, the issue of shortage of students' accommodation persists; thus, boosting the demand for rental properties surrounding campus location. This opens the opportunity for homeowners who own rental units within proximity to a campus location to target students as their potential tenants. Therefore, it is worth the effort for homeowners to understand students' preferences when searching for a rental unit. In line with the stipulated issue, this study aims to investigate university students' perceived perception of five relevant criteria when searching for a rental house. This study employed a quantitative research design with a total of 150 respondents were successfully gathered via an online questionnaire. These respondents are off-campus students studying at Universiti Teknologi MARA (UiTM) Melaka campus. The result of the descriptive analysis revealed that many of the respondents

placed rental agreement as to the utmost important criterion when deciding to rent a property. It was followed by the location of the property, the surrounding security, rental price, and finally utilities and amenities. From this study, it was suggested that the homeowner should emphasize all the mentioned criteria as it was relatively perceived as significant by potential tenants. It is recommended for future researchers to expand this study at other geographic locations in addition to examine other criteria focused on by tenants when searching for a rental house.

Keywords: *rental house, students, rental criteria.*

1.0 INTRODUCTION

The Malaysian education system has drastically improved for the past few decades and this has significantly increased the enrolment of students in higher education institutions (universities) from 2002 to 2019 (“Ministry of Education”, 2019). This situation has forced universities to be equipped with decent facilities and services such as accommodation spaces, learning and recreational and other supporting facilities to provide a comfortable space for the students to live and learn (Muslim et al., 2012). However, past data showed that the increasing enrolment of the students is exceeded and cannot cater by the facilities provided especially accommodation in-campus (Khozaei et al, 2012; Johari et al, 2017). These situations create options especially for senior students to choose whether to stay in-campus accommodation or off-campus accommodation (Azeez et al, 2016). In-campus means living in accommodation facilities provided by the university. Students who live in-campus will enjoy all the benefits from the facilities but at the same time, they are expected to follow all the rules and regulations and be actively involved with the university’s activities (Razak et al, 2017; Johari et al, 2017). Some students prefer freedom, and privacy, so they opt to rent a house outside the campus. Off-campus means living outside the campus by renting a private house that is not under the management of the university (Hubbard, 2009; Kobuea et al, 2017).

According to Wong (2018), in the last few years, the housing rental market for student accommodation or rental houses for university students has become prominent in Malaysia. Growing demand for a rental house from a university student has created an opportunity to generate an income for the homeowner especially for properties near to the location of universities. People willing to convert their properties specially to cater to students’ needs in finding a good rental house. Even shop-houses have been converted into student hostels. Renting a house to a student brings out more profit since the rent cost is sometimes charged

based on the number of students living in the house. It is estimated that the return of this investment is significantly promising, from 5% to 6% (Lum, 2018).

A study by Azeez et al (2016) stated that students are looking for a decent rental house with good environments and facilities so that they can stay comfortably and at the same enhance their academic performance. Living in a poor and inadequate house can lead to nightmares and stress. According to Lum (2018), students prefer large units so that they can share the cost of renting together with friends and bring the cost of rent lower for each student. Due to the strong demand on house rental among university students, it is worth for the homeowner to investigate the criteria of a rental house that can meet their future tenants need. Thus, this research aims to investigate students' perceived criteria and perceptions when selecting a rental house.

2.0 LITERATURE REVIEW

Housing choices are an essential part of life, and the factors influencing these choices are diverse (Chen et al, 2018; Wang & Otsuki, 2015). Based on the above justifications, this study will present an extensive preview of the literature and research related to perceptions of tenants when looking for a rental house focusing only on house rental price range, security, strategic locations that are convenient for the tenants, and lastly utilities and amenities provided by the homeowner since it is the most common and preferable criteria that tenants especially universities students are looking for in a rental house.

2.1 House Rental Price Range

Young adults especially students tend to have a below-average level of financial literacy and are lacking in access to financial services. Leaving the parents' home often triggers a greater sense of financial responsibility (Heath, 2008). Each property is considered unique; thus, is value differently (Cohen & Karpavičiūtė, 2017). As stated by Wickramaarachchi (2016), assessing the rental value of residential properties is a complex and challenging process. Tenants always looking for a reasonable price when renting a house and negotiation is important to make sure both parties (homeowners and tenants) are satisfied (Hajar et al, 2012; Rachmawati, 2016). Having reasonable rates does not mean having the cheapest prices. Students are normally attracted to housing areas near the campus and important facilities that offer affordable and reasonable rental prices (Razak et al., 2017). The study by Zainon et al. (2017) reported that majority of the tenants

prefer to stay near the city, as compared to the city centre because most of them can only afford to rent a house there. This is reflected in the rate of house rentals as houses located in the city centre are more expensive. However, some tenants prefer to move out to the suburbs due to the lower cost of living in addition to affordable (Oliver et al, 2016).

2.2 Surrounding Security

Security is also an essential factor that needs to be taken into consideration. It is important that a tenant feels safe and secure in the rental property (Hajar et al, 2012). Several studies (San, 2016; Robinson, 2018) agreed that it is a basic responsibility of the homeowner to provide the tenant with a secure home, adequate protection from intruders, free of all hazards of any types. This was supported by Zainon et al (2017) who also believes that tenant always hoping to live in a better and safe neighbourhood, such as in gated and guarded area residences with security guards patrolling the area all time. An active neighbourhood's association is very important to strengthen the surrounding safety. Living in an area where there is evidence of community engagement is important to a lot of people. That is amongst the criteria that they look for when they attend open houses (Robinson, 2018).

2.3 Location

According to Robinson (2018) and Zainudeen et al. (2006), location is the first criteria that prospective tenants look for in searching for a rental house. San (2016) stated that location usually will be represented by certain criteria to make it more functional and significant. Properties close to schools, hospitals, shopping centres and transportation do not stay very long in the rental house market (Robinson, 2018). A study by Zainon et al. (2017) reported that majority of the tenants prefer to stay near the city, as compared to the city centre, because of the proximity to their working place and other facilities which will provide services they need for the daily life.

2.4 Utilities and Amenities

In a rental house, utilities are another significant attraction point to the tenants. San (2016) believes that housing should provide under conditions which will promote good health including clean and adequate water supplies, stable electricity, and the removal of various kinds of waste. Studies by Chris & Somefun (2007) and Crone et al. (2004) explained the criteria that tenants' searching for a

rental house to have at least the basics (semi-furnished) facilities include bedroom (bed and wardrobe), kitchen (stove), and proper drainage. This can help the tenants to at least save some cost in buying new furniture.

2.4 Rental Agreement

According to NST Property (2018), rental or tenancy agreement is a legal contract between the homeowner and the tenant. The agreement outlines the requirements that must be met by the tenant (Jane, 2017). The main purpose of having a rental agreement is to safeguard the interests of both parties. It covers the responsibilities of both sides for the duration of the tenancy. The rental agreement should be drafted carefully (Deoras, 2015). Tenants are protected under the rental agreement in terms of rent increases, property damage and maintenance, and insurance or property taxes for which the homeowner may be responsible. The homeowner too can write the lease for their protection against the tenants (Jane, 2017). Therefore, the proper agreement should be made and is signed by both parties to benefit both homeowners and tenants, helping to reduce the potential risk of problems in the future.

3.0 METHODOLOGY

This study focuses on one of the public universities in Malaysia as a qualitative case study to examine the academic progress monitoring of its undergraduate students. The university is chosen due to its typical environment in which feedback control approach is implemented in monitoring academic progress. A series of semi-structured interviews with average duration of 30 to 40 minutes was conducted. The interviewees selected among the students who were taught by the researchers during the period of study.

4.0 RESULT AND DISCUSSION

4.1 Demographic Profiles

150 students were involved in this study. Majority of them are female (65.3%) and studying at bachelor's degree level (77.3%). All the students were off-campus students which mean they were staying in rental houses.

Table 4.1: Demographic profile of respondents

Variable		N	%
Gender	Male	52	34.7
	Female	98	65.3
Education level	Diploma	34	22.7
	Degree	116	77.3
Total		150	100.0

4.2 Descriptive statistics on rental house criteria

Based on the result in Table 4.2, respondents agreed that all criteria listed in the table below are important when looking for a rental house. The lowest mean score corresponds to the factor of utilities and amenities while the highest mean score refers to the rental agreement, followed by location, surrounding security, and the rental price range.

Table 4.2: Mean score for each variable in the study

Variable	Mean	SD
Rental Agreement	4.34	0.47
Location	4.23	0.51
Utilities and Amenities	3.90	0.49
Surrounding Security	4.21	0.53
Rental price range	4.07	0.47

Table 4.3: Mean score for each item in every variable

Variable	Item	Mean	SD
Rental Agreement	1) The rental agreement should be provided by the home owner each time	4.43	0.65
	2) The appropriate house rental agreement that the home owner provide is very important	4.39	0.68
	3) In the rental agreement, responsibility of both party for the rental house need to be stated clearly	4.39	0.73
	4) The content of the house rental agreement cannot be change after both parties (home owner and tenants) have signed the agreement	4.17	0.74
	5) The house rental agreement cannot be signed by other people beside the home owner and tenant themselves only	4.29	0.74
Location	1) Strategic location is included as the major factors for tenancy criteria	4.35	0.70
	2) Most of the tenant choose their rental house location to suite their daily need	4.29	0.76
	3) Home owners need to tell all about what kind of circumstances of the rental house area	4.27	0.80
	4) The tenants tend to avoid choosing the rental house far from public transport.	4.11	0.77
	5) The tenants are preferring to choose rental house that near with school/workplace	4.11	0.76
Utilities and Amenities	1) The house rental need to be fully furnish	4.19	0.74
	2) The house rental need to be semi-furnish only	3.87	0.86
	3) The not furnished rental house is acceptable	3.48	0.92
	4) The utilities bills must be included in the rental price agreed by the tenants	3.99	0.86
	5) Tenants need to give a deposit for utilities bill and amenities to the home owner as the initial house rental price	3.95	0.81
Surrounding Security	1) The neighbourhood association is important to be implied in the residential area	4.28	0.74
	2) Tenants usually rent a house that is near or in residential area that have many people	4.15	0.78
	3) The safety of home owner's property is not the home owner's responsibility but tenants themselves	4.06	0.81
	4) The security patrol in residential area is very important	4.27	0.65
	5) The effectiveness of having of security patrol and pass security in tenant house area for example apartment area	4.30	0.71
Rental price range	1) The home owner set the rental price based on their tenant's income	3.94	0.88
	2) The tenants can negotiate the price with the home owner based on the house rental condition	4.34	0.69
	3) The home owner can change house rental rate based on economic condition	3.76	0.99
	4) The house rental rate can be changed if agreement signed by both parties are not official (validated as legal authority)	4.13	0.74

Rental Agreement

From the mean score, it was found that majority of respondents agreed that the rental agreement should be provided ($M = 4.43$, $SD = 0.65$) and the agreement should be drafted appropriately ($M = 4.39$, $SD = 0.68$). On top of that, the responsibility of both parties should be stated clearly in the agreement ($M = 4.39$, $SD = 0.73$). Respondents also believed that the agreement should be signed between homeowners and actual tenants ($M = 4.29$, $SD = 0.74$) and the said documents are not amendable after signing ($M = 4.17$, $SD = 0.74$).

Location

From the mean score, it was found the respondents are looking at that strategic location when looking for a rental house ($M = 4.35$, $SD = 0.70$), that can facilitate their daily need ($M = 4.29$, $SD = 0.76$) such as near public transport ($M = 4.11$, $SD = 0.77$) and near to school/workplace ($M = 4.11$, $SD = 0.76$). Respondents also agreed that the homeowners should explain the conditions and neighbourhood area to the tenants ($M = 4.27$, $SD = 0.80$).

Utilities and Amenities

From the mean score, the respondents agreed that when looking for a rental house, it is a bonus when rental house provided a fully furnished house ($M = 4.19$, $SD = 0.74$) and utility bill ($M = 3.99$, $SD = 0.86$) also deposit for utility bill ($M = 3.95$, $SD = 0.86$) be included in the rental price to help the tenants estimate their budgeting monthly. However, at the same time, respondents still can accept a semi-furnished rental house ($M = 3.87$, $SD = 0.86$) or not furnished at all ($M = 3.48$, $SD = 0.92$) since less commitment needed to taking care of the home owner's property.

Surrounding Security

From the mean score, the respondents agreed that an effective security patrol ($M = 4.30$, $SD = 0.65$) or at least the existence of security patrol ($M = 4.27$, $SD = 0.65$) plus an active neighbourhood association is needed ($M = 4.28$, $SD = 0.71$) in order to improve the security around the house. Respondents also will try to rent a house in large population neighbourhood ($M = 4.15$, $SD = 0.78$). Respondents also agreed that it is the homeowner's responsibilities to protect their property ($M = 4.06$, $SD = 0.81$).

Price Range

From the mean score, the respondents agreed negotiation on rental price should be made between the homeowner and tenants considering the conditions of the house ($M = 4.34$, $SD = 0.69$) and the location of the house ($M = 4.17$, $SD = 0.70$). Besides that, the respondents agreed that the rental rate can be changed if they don't have a

legal rental agreement ($M = 4.13$, $SD = 0.74$). the respondents also slightly agreed that the rental price should be set depending on the income ($M = 3.94$, $SD = 0.88$) and economic conditions ($M = 3.76$, $SD = 0.99$).

5.0 CONCLUSION

This study explored students' perceived criteria and perception when searching for a rental house. From the research result, it was revealed that respondents' place the utmost emphasis on the rental agreement as well as location of the property, subsequently the surrounding security, rental price range and finally utilities and amenities when searching for a rental house. Therefore, it is imperative for homeowners who target universities students as their primary target market to consider the above factors in managing their rental units.

This research also addressed several limitations and recommendations following from earlier findings. Since this study targeted only off-campus students from UiTM Melaka Branch, findings produced were specific to the perspective of individuals representing the Malacca area. Therefore, the findings should cautiously be inferred or cannot be simply generalised to represent the entire population of off-campus students in Malaysia. It is recommended for future researcher to broaden the study at other geographic location to get different perceptions regarding the preference on a rental house and search for other segments of the target market.

Besides that, this study only observed the influence of five factors when searching for a rental house, hence it is recommended for future researcher to examine other potential criteria focused on by tenants when searching for a rental unit.

REFERENCES

- Azeez, T., Taiwo, D., Mogaji-Allison, B., & Bello, A. (2016). Comparative Assessment of Students' Satisfaction with Hostel Accommodation in Selected Private Universities in Ogun State, Nigeria. *European Scientific Journal, ESJ*, 12(32). DOI: 10.19044/esj.2016.v12n32p410
- Chen, J.H. Wu, Y. Guo, F. Wang, H.(2018) Domestic property and housing class in contemporary urban China. *J. Hous. Built Environ*, 33, 91–109. DOI: 10.1007/s10901-017-9545-6.

- Chris, A. O., & Somefun, A. O. (2007). The effects of facilities provision on rental values of residential properties in Ikeja: Lagos State, *Journal of Land Use and Development Studies*, 3, 61-67. DOI : 10.4038/besl.v12i1.7612
- Crone, T. M., Nakamura, L.I., & Voith, R., (2004). Hedonic Estimates of the Cost of Housing Services: Rental and Owner-Occupied Units. FRB of Philadelphia Working Paper, No. 04-22. DOI : 10.2139/ssrn.610942
- Cohen, V & Karpavičiūtė, L. (2017). The analysis of the determinants of housing prices. *Independent Journal of Management & Production*. 8. 49-63. DOI: 10.14807/ijmp.v8i1.521.
- Deoras, N. P. (2015). Factors to consider before renting out your house. *The Economic Times Wealth*. Retrived from: <https://economictimes.indiatimes.com/wealth/earn/factors-to-consider-before-renting-out-your-house/articleshow/48581645.cms?from=mdr>
- Hajar, S., Susilawati, M., & Nilakusumawati, D. P. (2012). Faktor-Faktor yang Memengaruhi Keputusan Mahasiswa Dalam Memilih Rumah Kost. *e-Jurnal Matematika*, 1. DOI: 10.30997/jtm.v3i2.1868
- Heath, S. (2008) Housing Choices and issues for young people in the UK. Joseph Rowntree Foundation. Retrieved from: www.jrf.org.uk
- Hubbard, P. (2009) Geographies of Studentification and purpose-built student accommodation: Leading separate lives? *Environment and Planning A*. 41(8), 1903-1923. DOI: 10.1068/a4149
- Jane, M. (2017, July 27). The Purpose of a Lease for Houses & Apartments. *Pocket Sense*. Retrieved from: <https://pocketsense.com/purpose-lease-houses-apartments-7942982.html>
- Khozaeia, F., Ramayah, T., & Hassan, A. (2012). A Shorter Version of Student Accommodation Preferences Index (SAPI). *American Transactions on Engineering & Applied Sciences*, 1(3), 195-211. Retrieved from <http://www.i-scholar.in/index.php/ATEASTUE/article/view/59231>
- Kobue, T. (2017). Understanding the Determinants of Students' Choice of Occupancy for Creative Construction. *Procedia Engineering*. 196. 423 – 428. DOI: 10.1016/j.proeng.2017.07.219

- Johari, M., Mohd, T., Abdullah, L., Ahmad@Mohamed, N., & Sani, S. I. A. (2017). Evaluating Off-Campus Student Housing Preferences: A Pilot Survey. AIP Conference Proceedings. 1891. DOI: 10.1063/1.5005401
- Ministry of Education, (2019). M. Quick Facts 2019, Malaysia Educational Statistics (Putrajaya: Educational Data Sector, Educational Planning and Research Division, Ministry of Education Malaysia, 2019). Retrieved from : <https://www.moe.gov.my/muat-turun/penerbitan-dan-jurnal/terbitan/buku-informasi/2722-quick-facts-2019/file>
- Muslim, M. H., Karim, H. A., & Abdullah, I. C. (2012). Satisfaction of Students' Living Environment between On-Campus and Off-Campus Settings: A Conceptual Overview. *Procedia-Social and Behavioral Sciences*, 68, 601-614. DOI: 10.1016/j.sbspro.2012.12.252
- NST Property, (2018, June 7). Guide to tenancy agreements in Malaysia. Retrieved from <https://www.nst.com.my/property/2018/06/377569/guide-tenancy-agreements-malaysia>
- Oliver, L.H.L., Mansir, N.A., Mohamed Musthafa, S.N.A. (2016). The housing preference of young people in Malaysian urban areas: A case study Subang Jaya, Selangor. *Geografia Online Malaysian Journal of Society and Space*, 12(7), 60 - 74. DOI : 10.17576/geo-2016-1207
- Rachmawati, S. (2013). Analisis Preferensi Mahasiswa Dalam Pemilihan Tempat Kos (Studi: Kawasan Kos di Kelurahan Ketawanggede dan Kelurahan Sumbersari, Kota Malang). *Jurnal Ilmiah Mahasiswa* Feb 2013, 2(1). Retrieved from : <https://jimfeb.ub.ac.id/index.php/jimfeb/article/view/846>
- Razak, A, F., Shariffuddin, N., Mohd Padil, H & Hanafi, N. (2017). Phenomenon Living in Off-Campus Accommodation among UiTM Students. *International Journal of Academic Research in Business and Social Sciences*. Vol.7. DOI: 10.6007/IJARBS/v7-i6/3038
- Robinson, L (2018, January 18). Factors That Influence Rental Decision. Retrieved from <https://www.rentalresults.com.au/factors-that-influence-rental-decision/>

- Ruivo, R. (2010). Determinants of rental rates in major cities in the United States, Bryant economic research paper,3(7), 1-14
- San, C. K. (2016). Attributes Influence Home Buyers' Purchase Decision: A Study of Residential Property in Setia Alam. 8-9. Retrieved from : <http://eprints.utar.edu.my/id/eprint/2078>
- Wang, Y.N. Otsuki, T. (2015). Do institutional factors influence housing decision of young generation in urban China: Based on a study on determinants of residential choice in Beijing. *Habitat Int.* 2015, 49, 508–515. DOI: 10.1016%2Fj.habitatint.2015.07.002
- Wong, K.W. (2018, June 14). The Edge Malaysia. Cover Story: Growing demand for student housing. Published on June 2014. Retrieved from <https://www.theedgemarkets.com/article/cover-story-growing-demand-student-housing>
- Wickramaarachchi, N. (2016). Determinants of rental value for residential properties: A land owner's perspective for boarding homes. *Built-Environment Sri Lanka*. 12. DOI: 10.4038/besl.v12i1.7612/
- Lum, K.K. (2018). Renting out to students. Published on January 2018. Retrieved from <https://www.edgeprop.my/content/1276550/renting-out-students>
- Zainon, N, Mohd-Rahim, F, A, Sulaiman, S, Abd Karim, S.B, Hamzah, Factors Affecting the Demand of Affordable Housing among the Middle-Income Groups in Klang Valley Malaysia A Journal of Design and Built Environment, Special Issue 2017. DOI: 10.22452/jdbe.sp2017no1.1
- Zainudeen, N. Senarathne, S. Jayasena, S. & Rameezdeen, R.(2006). Horizontal housing property market, *Built - Environment*-,Sri Lanka, 7(1), 16-22. DOI: 10.4038/besl.v7i1.1947



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