

# Career Development and Internship Quality Among UiTM Mathematics

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## ABSTRACT

The internship program a short program designed by the university to provide students with practical work experience in their field of study. It allows students to apply their knowledge and skills in a real-world setting, gain valuable insights into their chosen career path, and build professional connections. Thus, the evaluation of an internship program must include an evaluation of specific skills that the students have for them to sustain in the professional sector. To ensure that students are fully ready to venture into the industry, there is an urgency to look into what skills they have mastered during their internship program. Thus, this study aims to identify the skill based on selected attributes (skills) namely thinking and scientific skills, communication skills, social skills, teamwork and responsibility, ethical values and professionalism, and information management and life-long learning. The study involved 257 Mathematics students who underwent an internship program and the data was analyzed using descriptive analysis. The result shows that UiTM Mathematics students excel during their internship program based on the five attributes that indicate the readiness of the student to develop their career in the industrial sector. Mostly the students can build skills and knowledge through the program continuously which gives them a good internship quality for their career development. Further analysis reveals that UiTM Mathematics students are among those to be offered as employees, particularly in the National private sector.

**Keywords:** *Mathematics; Internship Programs; Internship; Skills; Employment*

## 1.0 INTRODUCTION

An internship program is a structured program designed by the university to provide supervised work experience to the students with the opportunity to gain practical knowledge, skills, and professional

expertise in a specific field or industry. It is typically a temporary position within an organisation or company, where interns work alongside professionals and contribute to real projects or tasks. The program is usually designed to bridge the gap between conceptual and theoretical knowledge and the practical application of the knowledge in a professional setting (Gault et al., 2010). The students can apply theoretical concepts, develop practical skills, and gain valuable industry insights. Internship programs offer numerous benefits to students, including the opportunity to explore career paths, build a professional network, enhance their resumes, and increase their chances of securing full-time employment after graduation. For organisations internship programs provide access to fresh talent, allow for knowledge transfer, and can serve as a pipeline for potential future employees. Overall, internship programs play a vital role in preparing students for the workforce by providing hands-on experience and helping them develop the necessary skills and connections to succeed in their chosen fields.

In Malaysia particularly in UiTM, almost all of the undergraduate programs incorporate internships at the end of their curriculum. Other than improving personal skills, the internship program also helps to polish student's professional growth and experience. The importance of the internship program has been taken seriously by higher-level institutions, students, and the industry (Anjum, 2020). The lack of internship programs for undergraduates poses a significant challenge for students entering the job market which could hamper their ability to gain practical experience and industry exposure, ultimately hindering their employability.

As for Mathematics students, internships can offer several advantages. Firstly, internships allow students to see the practical applications of their mathematical knowledge in real-world settings. They can work on projects that involve data analysis, optimization, modelling, or programming, among other areas. This hands-on experience can deepen their understanding of how mathematics is used in various industries and help them develop problem-solving skills. Therefore, most academic institutions must know what skills the students must have for them to sustain in a real professional setting. This is considered necessary for the institutions as their guidance for future goal setting in preparing a more comprehensive academic curriculum for their future students.

## **2.0 LITERATURE REVIEW**

### **2.1 Internship Across Undergraduate Mathematics Program in UiTM**

An internship can be described as an opportunity for undergraduate students to gain work-related experience and knowledge in their formal education in a university by getting involved in supervised and structured work in real-world working surroundings (Sumathi et al., 2012). Universities must prepare internship programs for students for them to be able to apply the theory they learned with practical knowledge in certain aspects (Tsuroyya et al., 2021). Based on Wye et al. (2012) and Wan et al. (2012), to ensure the durability and efficiency of skilled talents in the job markets, graduates need to be fully equipped with all the necessary skills to venture into the industry at the same time determine their career path.

In Malaysia, most of the institutions from private to government institutions make it compulsory for students in their final semester to undergo internship which was written down as part of the conditions to obtain an academic degree and also preparing students to adapt to real work situations after completed their program (Diah et al., 2014).

For undergraduates in the Mathematics program particularly in the School of Mathematical Sciences for College of Computing, Informatics and Mathematics (KPPIM) UiTM, the internship program is embedded into the academic curriculum whereby it is executed during the final semester of the program. The students need to complete their internship program within 16 weeks' time frame at a good reputation company. This is following Yusof et al. (2013) who suggest that the program should be executed in at least 6 months.

There is a need for students especially those taking Mathematics to undergo the internship program. They already learned the theoretical parts; they also need to learn how to apply their knowledge. According to Stockie (2015), mathematical problems can be found everywhere, and the best-suited persons to acknowledge and make use of these opportunities are mathematicians with interdisciplinary training and a wide understanding of mathematics. Mathematics students need to think critically. Critical thinking can only be learned and applied in real-life situations such as industry. As a result, mathematics students have bigger and wider opportunities to be placed in any type of industry after they complete their studies. The

type of industries involved in the internship program for Mathematics programs ranged from national to international organizations including private and government sectors, government-linked companies (GLC), statutory corporations (Badan Berkanun), business enterprises, Non-Government Organizations (NGOs), and others.

## 2.2 The Attribute Used for Evaluation of Internship Program in Malaysia and UiTM

Universities and colleges are demanded to produce highly mobile students which able to adapt well to the needs of the organizations that frequently change (Mokhtar and Fauzi, 2019). Higher Education Providers (HEPs) in Malaysian Higher Institutions, the importance of both hard and soft skills has been emphasized by the Ministry of Higher Education via the Malaysia Qualification Agency (MQA) which introduced the eight Malaysian Qualification Framework (MQF) learning outcome domains that required to achieve in the learning outcomes of all programs (MQA, 2010) are as follows:

- i. Knowledge
- ii. Practical skills
- iii. Social skills and responsibilities
- iv. Ethics, professionalism, and humanities
- v. Communication, leadership, and team skills
- vi. Scientific methods, critical thinking, and problem-solving skills.
- vii. Lifelong learning and information management
- viii. Entrepreneurship and managerial skills

Based on Orasion et al. (2019), Australian universities ingested several generic skills as part of their graduation qualities. In previous research done by Mokhtar and Fauz (2019), Table 1 describes the key elements that have been evaluated by companies. It is shown that flexibility in the task given was on top of the list. They are then followed by the potential to succeed in the future and openness to accept comments for improvement. It can be concluded that industries acknowledge interns' good behaviour and that they are capable of completing the work assigned when undergoing an internship program. Skills such as problem-solving and analytical application of knowledge and the ability to think creatively were the least important elements when students undergo internship programs.

**Table 1: Key elements by companies**

Generic Skills
Flexibility toward task assignments
Potential to excel in the future
Willing to accept feedback/improvement
Motivational level of trainee
Accountability and responsibility for tasks. (adherence to work standards, meeting datelines, sense of urgency)
Overall trainee's performance (attendance, productivity/contribution to organization)
Time management/willingness to work extra time learning
Learning capabilities in new tasks/jobs
Social and human interrelation skills
Computer and system (ICT)skills
Knowledge acquisition in doing tasks/assignments
Quality of work and creativity

Self-directed learner
Level of task management skills
Communication and language proficiency skills
Leadership qualities (ability to work with people, in a team)
Knowledge application and creative thinking abilities
Level of problem-solving/analytical skills

From Table 1 it can be concluded that companies demand students that were able to complete tasks given with flexibility in stipulated time. This means that students need to be fast learners and adapt fast to the working environment to finish the tasks. It also can be said that companies want students who listen and do not easily give up followed by the element of potential to excel in the future and willingness to accept feedback or improvement. The student does not necessarily need to be a top student with excellent knowledge theoretically as elements of knowledge application and creative thinking abilities also level of problem-solving/analytical skills.

For this study, the focus is on 5 attributes that were chosen based on the evaluation of internship courses for the Mathematics program which refers to thinking and scientific skills, communication skills, social skills, teamwork and responsibility, ethical values and professionalism, and information management and life-long learning as shown in Table 2.

**Table 2: Description of the 5 attributes**

Attributes	Description
Thinking and scientific skills	Refer to interpretation, justification, analysis, evaluation, inference, and self-control (Duncan et al., 2017).
Communication skills	Refer to effective verbal that expresses thoughts clearly and professionally like using English to communicate, presentations, or meetings (Pillai et al., 2011).
Social skills, teamwork, and responsibility	Refer to how the intern deals with work stress, the motivation to work, time management, and leadership skills (Pillai et al., 2011).
Ethical values and professionalism	Refer to the personality traits, behaviors, commitments, values, and aspirations (Mahajan et al., 2016).
Information management and life-long learning	Refer to having teamwork empowers group members to act faster compared to an individual which gives the benefits of accessibility of information exchange, development, and processing (Eliasa, 2014).

Table 2 describes all 5 selected attributes for undergraduate Mathematics students' programs in UiTM together with the description and references that used the attributes in their research. All the attributes have been selected based on the most preferred university to evaluate their student to undergo the internship program.

**Table 3: Selected Attributes based on the keypoint element by companies needed**

Attributes	Generic skills
Thinking and scientific skills	<ul style="list-style-type: none"> <li>- Knowledge acquisition in doing tasks/assignments</li> <li>- Knowledge application and creative thinking abilities</li> <li>- Level of problem-solving/analytical skills</li> </ul>
Communication skills	<ul style="list-style-type: none"> <li>- Communication and language proficiency skills</li> <li>- Social and human interrelation skills</li> </ul>
Social skills, teamwork, and responsibility	<ul style="list-style-type: none"> <li>- Learning capabilities in new tasks/jobs</li> <li>- Level of task management skills</li> <li>- Leadership qualities (ability to work with people, in a team)</li> </ul>
Ethical values and professionalism	<ul style="list-style-type: none"> <li>- Self-directed learner</li> <li>- Motivational level of trainee</li> <li>- Flexibility toward task assignments</li> <li>- Time management/willingness to work extra time</li> <li>- Willing to accept feedback/improvement</li> <li>- Overall trainee's performance (attendance, productivity/contribution to organization)</li> </ul>
Information management and life-long learning	<ul style="list-style-type: none"> <li>- Accountability and responsibility for tasks. (adherence to work standards, meeting datelines, sense of urgency)</li> <li>- Computer and system (ICT)skills</li> <li>- Quality of work and creativity</li> <li>- Potential to excel in the future</li> </ul>

Table 3 shows the categorization of generic skills according to the attributes. From the table, we can see that thinking and scientific skills refer to the knowledge of performing the task given by using creative thinking abilities and problem-solving skills. Meanwhile, communication skills are more to communication between colleagues and management the language used (most of the universities prefer to use English as their medium), and the social and human interrelation skills. Learning capabilities and managing new tasks have been categorized under social skills, teamwork, and responsibility attributes. Self-directed learning or learning on your own, motivation, flexibility to do tasks, time management towards tasks, and willingness to accept feedback for improvement are under ethical values and professionalism attributes. Lastly, if we relate the current situation with information management and life-long learning attributes, the generic skills that are needed by companies for internship students are computer and system (ICT) skills, quality of work, and creativity, and also the potential to excel in the future with least supervision.

**Table 4: List of Literature Review that focuses on five Selected Attributes**

Attributes	References				
	(Pillai et al., 2012)	(Chiu et al., 2016)	(Ahmad et al., 2018)	(Oraison et al., 2019)	This study
Knowledge	-		-	-	-
Practical skills	-		-	-	-
Thinking and scientific skills			-		
Communication skills					
Social skills, teamwork, and responsibility	-			-	
Ethical values and professionalism				-	
Information management and life-long learning		-		-	
Entrepreneurship and managerial skills	-	-	-	-	-

From Table 4, all listed references and attributes used are shown. These attributes are used to measure the performance of students during the internship program. The attributes listed were based on the Ministry of Higher Education via the Malaysia Qualification Agency (MQA). MQA introduced the eight Malaysian Qualification Framework (MQF) learning outcome domains that are required to achieve the learning outcomes of all programs (MQA, 2010).

These attributes are essential for personal and professional growth in the industrial sector and are not only valuable during internship programs but also serve as a foundation for a successful and fulfilling career in the industrial sector. They contribute to an individual's professional development and help them excel in various roles, from entry-level positions to leadership roles in industrial organizations. When entering the workforce, students' soft skills are critical and essential. Higher education institutions must identify the knowledge and soft skill levels of their students so that suitable techniques and interventions can be used to improve their skills (Ahmad et al., 2018). His study found that attributes in teamwork, procedures, and regulations, and well-performed skills in computer literacy were most preferred from the employer perspective.

Chin et al., (2016) study is to evaluate the knowledge and soft skills competency of the employer's viewpoint on the students in the industrial program. The evaluation consists of five attributes which are basic knowledge, communication skills, practical skills, leadership, and attitude. Hence Table 4 shows that only information management and life-long learning have not been considered. Chiu et al., (2016) agreed that thinking skills, communication skills, attitude, appearance, and other necessary skills to ensure that the programs are effective, internship programs have been made a requirement for the majority of undergraduate programs at Universiti Utara Malaysia (UUM). The results indicate that the employers were satisfied with the knowledge and skills portrayed by the students for them to prepare themselves for the real work environment. The employers are also satisfied with the student's performance in all attributes as mentioned before.

Some studies include the categories as follows written and oral communication, critical and analytical thinking, problem solving, information literacy, learning and working independently or collaboratively,

and ethical and inclusive engagement with communities, cultures, and nations. On the other hand, Ahmad et al., (2018) focused on six attributes which are computer literacy, communication skills, teamwork, procedures and regulations, professionalism ethics, and reports to evaluate engineering students of Politeknik Tuanku Syed Sirajuddin (PTSS) that participating in the internship programs program in December 2017 session. Compared to the attributes that this study focused on, only thinking and scientific skills are not included. The same purpose from Chin et al. (2016), and Ahmad et al., (2018) evaluate the knowledge and soft skills competency from the employer's viewpoint. However, the data was collected and analysed using SPSS 23.0. The results indicate that the employers also were satisfied with the knowledge and soft skills portrayed by the students. At the same time, some comments were given by the industrial supervisors about the weaknesses of the students in certain soft skills.

Pillai et al., (2011) stated that arranging industry-led workshops and seminars to provide students with a better understanding of the demands and expectations of the workplace which covers employability skills: self-presentation, communicating at the workplace, attitudes and attributes, and thinking skills. Having good skills, especially relevant and in-demand skills, significantly increases your opportunities to be absorbed into the workforce. Employability is a collection of qualities that increase graduates' chances of finding and keeping jobs in their desired professions. Different from the previous study, Pillai et al., (2011) did not include social skills, teamwork, and responsibility. This study discusses the internship programs program at the University of Malaya in Malaysia, specifically the issues that need to be addressed to enhance the employability skills of graduates. The same results, that most of the students are well prepared to face the real world of work with the soft skills that they have. However, several issues needed attention which are the mismatch between the tasks assigned to students and their areas of study. Some students need to enhance their English language competency to communicate.

Employers also seek out and give priority to graduates who have practical skills and 21st-century talents like communication and problem-solving, according to an analysis of the employability criteria (Oraison et al., 2019). Only 2 attributes were discussed in Oraison et al., (2019). The results may inform the development of future graduate attributes that better reflect preparedness for the real workforce. Alternatively, a reflection on graduate attributes and professional accreditation criteria might produce job advertisements that better reflect work contexts in an increasingly diverse society (Oraison et al., 2019).

Demonstrating ethical values and professionalism not only reflects positively on your character but also enhances your reputation and future career prospects. The study of morality is known as ethics, which involves a thorough examination of moral judgments and actions as well as their implementation (Mahajan et al., 2016). When faced with ethical dilemmas, use a systematic approach to make ethical decisions. Consider the potential consequences of the actions on decision and also seek guidance or advice from mentors or supervisors when uncertain about the ethical implications of a situation.

### **3.0 METHODOLOGY**

#### **3.1 Data Collection**

In this study, job distribution of industrial sector students by type of industrial and the performance of Mathematics students during the internship program is evaluated using five attributes namely thinking and scientific skills, communication skills, social skills, teamwork and responsibility, ethical values and professionalism, and information management and life-long learning. Moreover, their employment in the industries once their internship program is completed is also analysed. This study focuses on final-semester mathematics students for five semesters. The total number of students is 257.

The evaluation forms that consisted of five attributes from the supervisor of the university and supervisor from the industry towards the students were collected after the students finished their internship program. Five attributes are thinking and scientific skills, communication skills, social skills, teamwork and responsibility, ethical values and professionalism, and information management and life-long learning. The listed attributes are used as a basis to identify skills that should be attained by the students.

**Table 5: Total number of Mathematic students' program based on semester**

No .	Semester	Number of Students
1	March 2023 until August 2023	57
2	October 2022 until February 2023	45
3	March 2022 until August 2022	50
4	October 2021 until February 2022	38
5	March 2021 until August 2021	67
<b>Total</b>		<b>257</b>

### 3.2 Method of Analysis: Descriptive Analysis

In this section, the data collected were organized accordingly before the analysis process. Firstly, the data were arranged based on the type of industry. The category for the industries consists of national and private multinational companies, foreign companies, government and non-governmental organizations (NGO), statutory corporations, government-linked companies (GLC), business enterprises, and others. This is to observe the student's tendency to choose the type of industries they want to work for.

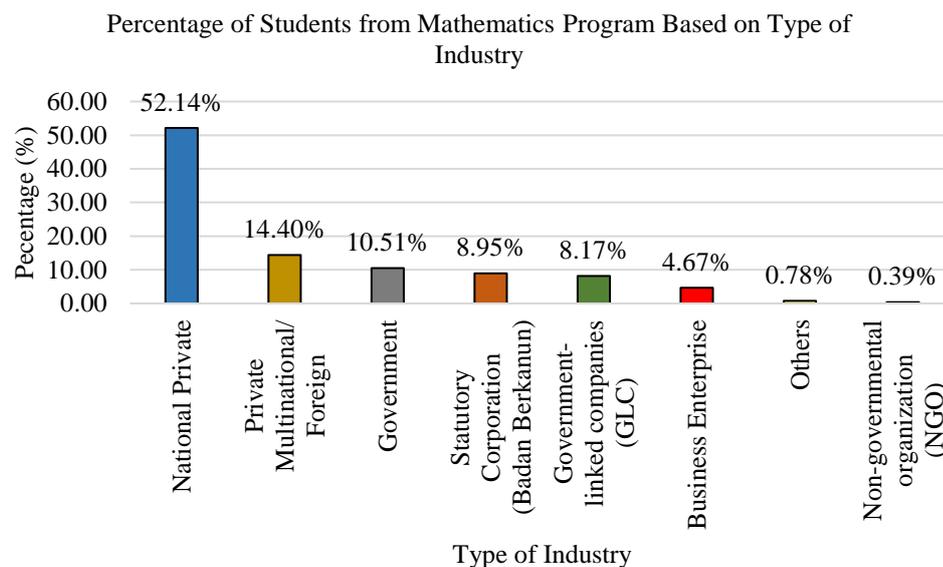
The next step is to organize and analyze the data based on the performance of selected attributes referring to Table 3. The analysis method used to evaluate the performance rate is by using the mean value data and standard deviation. It is shown that standard deviation is an important metric in performance testing analysis based on Tonot et al, (2021) who applied the same method to measure the rate performance of the students.

Lastly, the percentage of employment through the internship programs was obtained and a comparison of the percentage was done for five semesters from March 2021 until March 2023. This is to ensure the effectiveness of internship programs hence helping students to obtain jobs.

## 4.0 RESULTS AND DISCUSSION

In this section, the data were analysed based on the job distribution, performance on selected attributes, and employment through internship programs.

### 4.1 Distribution of Students Based on The Type of Industry



**Figure 1: Percentage of Students According to The Type of Industry**

Different types of industries were chosen by the students to gain experience during their internships. As shown in Figure 1, the highest percentage of industries is National Private companies where the finding shows 52.14% (134 students), followed by private multinational or foreign 14.40% (37 students), government 10.51% (27 students), statutory corporations 8.95 (23 students), and government-linked companies (GLC) 8.17% (21 students). The percentage shows a significant value compared to the others. Among the reasons the industrial sector of national private has the highest percentage is because of the opportunities offered, allowances given, exposure to jobs, and others. The lowest percentage of job distribution in the industrial is the Non-governmental organization where 0.39% (1 student only). This is due to limited and high competition in the internship programs' job availability.

#### 4.2 Students Performance Based on Selected Attributes

During the 16 weeks of the internship program, the appointed lecturers were assigned to visit and evaluate the student's performance based on the tasks and also based on the opinion of the appointed supervisor in the industry. Students were evaluated based on the selected attributes stated in the forms provided. Furthermore, it is also compulsory for each student to submit their final report which consists of the projects they have been involved in during internship programs along with their logbook. These two documents helped lecturers to have a better view of their performance at the company. Table 7 shows the mean value level for the performance rate obtained. The higher the mean value the higher the level of performance rate of the students.

**Table 6: Description Rate of Performance Based on Mean Value**

Mean Value	Rate of performance
Between 1.00 and 1.49	Very poor
Between 1.50 and 2.49	Poor
Between 2.50 and 3.49	Moderate
Between 3.50 and 4.49	Good
Between 4.50 and 5.00	Excellent

**Table 7: Performance Rating Guidance**

1	2	3	4	5
1	1.5	2.5	3.5	4.5
Very Poor	Poor	Moderate	Good	Excellent

The student's performance rates were defined based on five attributes in Table 3. The overall mark is then calculated by combining all attributes based on the mean value number. Table 6 and Table 7 show the mean value which refers to the rate of performance (Tonot and Othman, 2021). Table 8 shows the standard deviations (SD) that were calculated to show the performance of students for each attribute. The smaller the value of SD the higher the rate of performance.

**Table 8: The Results for Student Performance Attributes**

Attribute	No of Semester	Min	Max	Mean	SD	Rate of Performance
Thinking and scientific skills	5	4.33	4.65	4.46	0.12	Good
Communication skills	5	4.18	4.44	4.33	0.10	Good
Social skills, teamwork, and responsibility	5	4.35	4.57	4.49	0.08	Excellent

Ethical values and professionalism	5	4.75	4.97	4.86	0.08	Excellent
Information management and life-long learning	5	4.93	4.99	4.96	0.02	Excellent
<b>Overall, Mark</b>	<b>5</b>	<b>4.18</b>	<b>4.99</b>	<b>4.62</b>	<b>0.08</b>	<b>Excellent</b>

As shown in Table 8, the highest mean was information management and life-long learning, with a mean of 4.96 and a standard deviation (SD) of 0.02. Followed by ethical values and professionalism, with a mean value of 4.86 and a standard deviation of 0.08. Third highest is social skills, teamwork, and responsibility with a mean value of 4.49 and a standard deviation of 0.08.

The lowest mean was communication skills, with a mean value of 4.33 and an SD of 0.10. As mentioned in Section 2.2, communication skills are one of the vital attributes to be highlighted. It helps an employee to work better to deliver their work and perform better. However, students are still able to improve their communication skills from time to time. There are many platforms and programs that can be attended by students to be better at communicating. The SD value for thinking and scientific skills is higher than communication skills. This is normal due to the lack of experience of the students in practical work.

Focus on the overall mark of student performance, with a mean value of 4.62 and a standard deviation (SD) of 0.08 that indicates to excellent rate of performance. This is because all 5 attributes were rated as good and excellent. It shows that the students were gaining knowledge and behaving well during their internship for themselves, the company, and the university. In other words, they put a hundred percent effort into their internship period and were committed to five attributes as listed.

Even though the highest rate of performance attributes which are information management and life-long learning have not been measured in some studies, mathematics students excel in both skills. This proves that mathematics graduates are organized and always try to upgrade their knowledge and skills. Ahmad et al., (2018) mentioned that the students have poor computer skills such as Microsoft Office, but their independence and teamwork spirits are quite strong. It is not shown in this study since the student is from the College of Computing, Informatics, and Mathematics (KPPIM) UiTM.

Percentage of Industrial Students' Performance Based on Selected Attributes

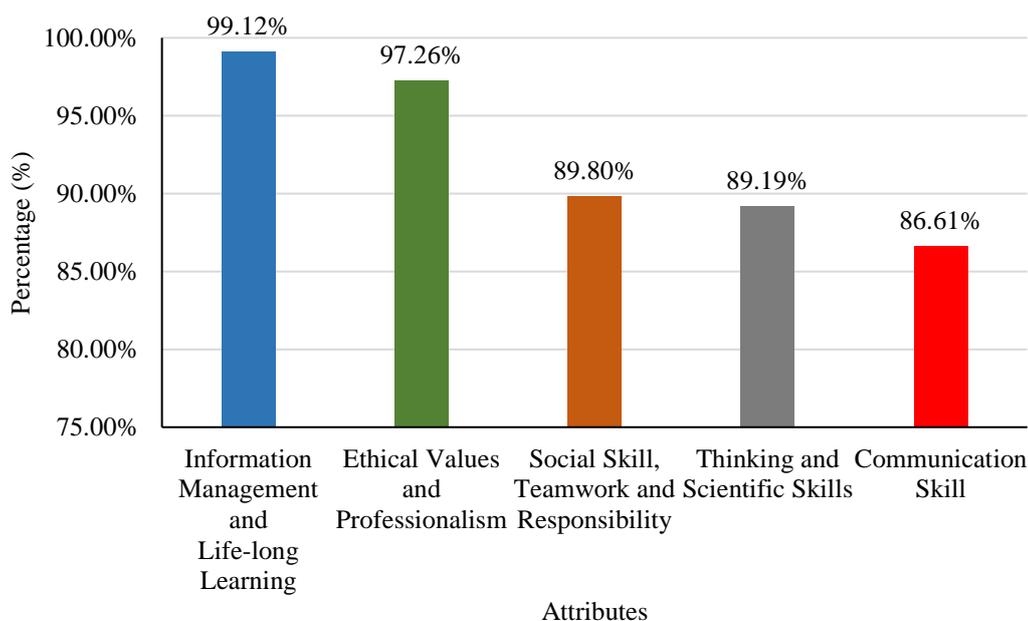
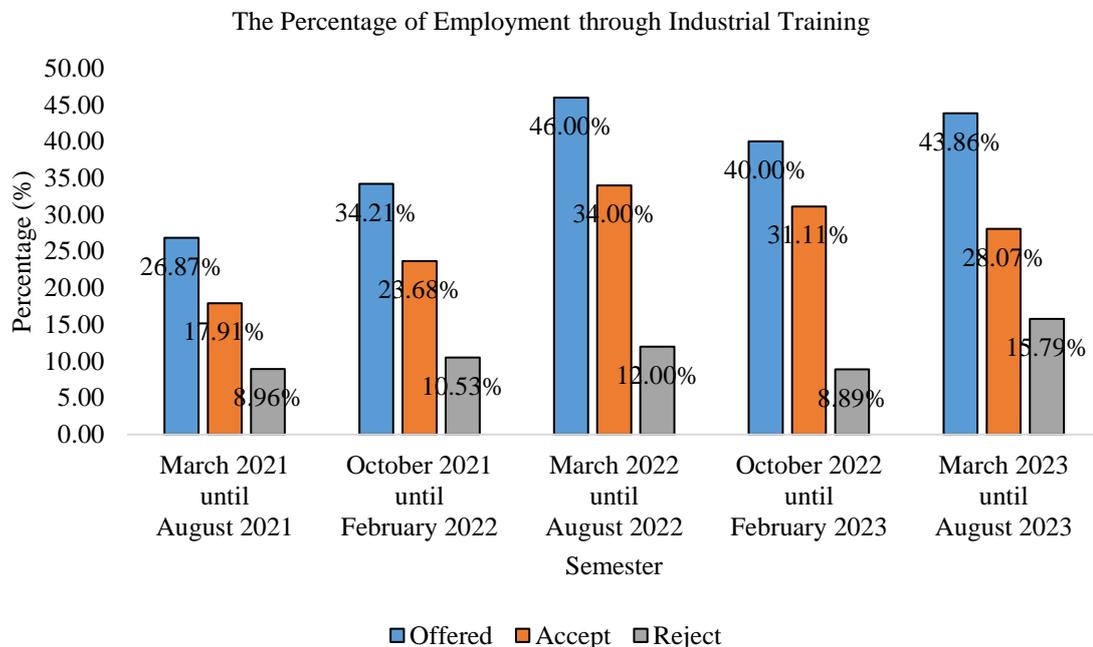


Figure 2: Percentage of Industrial Students' Performance Based on Selected Attributes

Based on Figure 2, the highest performance percentage is the information management and life-long learning. This proves that once students enrol in the internship programs, they want to apply the theory that they learned in class and are eager to apply it. The second-highest performance percentage is the ethical values and professionalism. This is followed by social skills, teamwork and responsibility, thinking and scientific skills, and communication skills.

### 4.3 Employment Through Internship Programs



**Figure 3: The Percentage of Employment Through Internship Programs**

After the internship programs are done, it is normal that some of the companies offer the students who performed well during the training to work with them. Based on Figure 3, the highest percentage of jobs offered by the company that the students undergo internship programs is during the semester of March 2022 until August 2022. This is because, in January 2022, the Malaysian government lifted the Movement Control Order (MCO) (MalayMail, 2022). The company started to run physically during that time. Hence, resulted in many companies opening job vacancies. The overall trend of jobs offered by the industrial sector is increasing over time. It started with the semester March 2021 until August 2021 with 26.87%. This was followed by October 2021 until February 2022, October 2022 until February 2023, and March 2023 until August 2023 with 34.21%, 40%, and 43.86% accordingly. Bawica (2021) states that the effectiveness of internship programs on the development skills of employment and behaviour toward future jobs,

## 5.0 CONCLUSION

Students demonstrated a diverse selection of industries for their internships, showcasing their varied interests and career goals. Notably, National Private companies emerged as the most popular choice, with 52.14% of students (134) opting for them. This preference can be attributed to the promising opportunities, financial incentives, job exposure, and other appealing factors that this sector offers. In contrast, Non-governmental organizations (NGOs) had the lowest representation, with only 0.39% (1 student). This low participation can be attributed to the limited availability of internship positions within the industrial sector and the stiff competition for such opportunities. The rate of internship performance revealed notable trends in the student's skill development and behaviour. Information management and life-long learning achieved the highest mean rating, scoring an impressive 4.96. This result indicates the students' strong commitment to applying classroom knowledge and their eagerness to learn its practical application. Communication skills received the lowest mean rating, suggesting room for improvement in this aspect. Overall, students

exhibited an excellent level of performance, with an impressive mean score of 4.62 across all attributes. This achievement is particularly noteworthy because all five assessed attributes were rated as either good or excellent. These findings underscore the students' dedication, knowledge acquisition, and professionalism during their internships, demonstrating their commitment to personal growth, contributing positively to their host companies, and representing their university well. Information management and life-long learning attained the highest performance percentage, highlighting students' motivation to apply theoretical knowledge in real-world industrial settings.

In summary, students displayed diverse industry preferences for their internships, with the majority favouring National Private companies due to the promising opportunities they offer. Their exceptional internship performance, particularly in information management and life-long learning, along with their commitment to ethical values and professionalism, reflects their dedication and positive contributions during their internship experiences. Students need to be fully equipped with all the necessary skills before they enter this phase of their life. In university, they only are able to learn things theoretically. Practical training helps students especially students in the mathematics field to gain adequate knowledge to start their journey in real working life situations and to be prepared mentally and physically to face the next challenge. National Private companies became the most popular organizations followed by the rest of the organizations. It shows that national private can fulfil student's needs and are willing to allow students to do practical training at their organizations. This can be caused by the allowance that is given also the opportunity to learn and explore more. From the company's point of view, it will cost them less to offer an internship to students than to hire new staff. It can be said that bachelor's degree in mathematics students succeed in becoming well-rounded students and adapt well to working life environments. They just need to improve more on their communication skills which is doable by attending soft skills workshops and exposing themselves to more programs that need them to talk in front of a crowd. However, Mathematics students are good at learning new skills and managing information as shown in Figure 2 for information management and lifelong learning which are good for their career development and will help them to be excellent employees in the future. The employment of students after they finish the internship programs also shows the marketability of Mathematics students in the industry is increasing from time to time.

There are several limitations in the study which refer to the number of students that were analyzed. Larger numbers of internship students' data could be analyzed to verify the results obtained and validate. Moreover, this study only focuses on undergraduate mathematics students who fulfilled the internship in Session March 2021 until August 2023. Further studies also can be done to explore the effect of internships on all students in mathematics courses at UiTM.

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