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The Internship Experience and its Returns: Effects on Young Bachelors' Employability

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Executive Summary

This working paper is part of KRI's series of research for the Graduate Tracer and Employability (GTSE) project. This paper aims to illustrate the internship landscape in Malaysia from the years 2010 – 2019 as well as investigate the influence of the internship experience among bachelor's degree holders (bachelors) on their labour market outcomes. The summary of findings and its respective policy consideration is as follows:

1. More bachelors are doing an internship.

The number of bachelors who have undergone an internship has been increasing across all fields of study. This may be spurred by the rising internship requirement set by higher education institutions (HEIs). However, independent of an internship requirement by their respective institution, the odds of a bachelor's student undergoing an internship is associated with their field of study and their academic performance (measured by the cumulative grade point average, CGPA). The rising number of bachelors who are doing an internship and longer internship durations signals a need for the labour law and regulation to include interns as this growing source of manpower is not protected under the current employment acts.

2. The effects of internship on the young bachelors' employability are varied.

Internship participation does not improve the bachelor's likelihood of being employed (in any type of employment) as well as being employed in full-time and permanent job (standard employment). However, among those who are in standard employment, bachelors who have completed an internship have higher odds of being in high-skilled standard employment. Despite this, it does not influence the likelihood of them earning a higher income, defined as being above RM2,000. This implies that, when done well, internships can improve the bachelors' skill development beyond their academic training and thus increasing their marketability towards higher-skilled jobs but issues surrounding wage may point towards a greater structural economic issue.

3. Not all internship experiences are equal.

Bachelors who have done a matched internship (where the internship industry matched their field of study) are more likely to land a job that match with their qualification. Additionally, bachelors who had interned for a longer duration or did their internship in multinational companies (MNC) or government linked companies (GLC) showed better employment outcomes in terms of occupation and income level. Bachelors who are in a paid internship also show better employment outcomes compared to their peers who are in unpaid internship.

Hence, beyond enforcing mandatory internship or heavily encouraging students to complete an internship, it is equally crucial to ensure that the internship experience is structured in a way that is meaningful for the students.

4. The share of bachelors in paid internships have increased, but distribution is uneven.

Overall, the proportion of bachelors who were in a paid internship has increased. However, bachelors from lower-income families, those who interned in government organisations, and those who did their internship in Perlis, Sabah, and Kelantan are less likely to be in a paid internship. While the question of whether an internship should be paid is not unique to Malaysia, it is important that Malaysia considers expanding the requirement for all internship providers to pay a fair minimum allowance to all its interns to alleviate the financial burden they may feel during their internship period.

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1. Introduction

In Malaysia, there is a popular perception among both employers and young graduate job seekers that practical work experience is important in the hiring of talent[1]. While the term "internship" can be used to describe a wide array of work-related experiences[2], for this paper, we will be following the definition set by the Ministry of Higher Education (MOHE). Internships (used interchangeably industrial training) are defined as the placement of students in an organisation to undergo supervised practical training in an industry of their choice, for a fixed duration of time during the pursuit of their certificate, diploma, or bachelors' degree[3].

Among those who have applied for an internship, their most cited motivations were to gain relevant experience for their resume, to gain work experience and improve employability, as well as to develop relevant technical and soft skills[4]. Such sentiments were echoed among Malaysian tertiary-level students where 27% identified that practical training through internships, apprenticeships, or on-the-job training is important in gaining a good job[5]. Meanwhile, existing international literature on the impact of internships on the labour market experience of young graduates has been inconclusive, either supporting or rejecting the effectiveness of internships on the graduate's employment outcomes[6].

Of those in favour of internships, Blasko et al. (2002) found that among British tertiary graduates in the mid-1990s, those with study-related work experience have more positive effects on their employment outcomes and entry salaries[7]. Similarly, Hakkien (2006) and Joensen (2009) found that students with work experience had higher wages and better employment opportunities[8]. However, Passaretta and Triventi (2015) had more mixed results on internships. In their paper, they found that internships lead to increased employment prospects, higher wages, and lower skill mismatch in both Spain and Italy, but had very little effect on employment outcomes for Germany and Norway[9].

The mechanisms of how internships affect the graduate's employment outcomes are also unclear[10]. In general, there have been three theories on how internships may operate in affecting the graduate's employment outcome. The first follows a human capital theory which assumes that the students acquire various skills during their internship experience, thus increasing their employability[11]. The second theory is based on signalling and selection, where internships help

[1] KRI (2018)
[2] Lawton and Potter (2010)
[3] MOHE (2010)
[4] Oakleigh Consulting Ltd and CRAC (2011)
[5] KRI (2018)
[6] International Labour Organization (ILO) (2018)
[7] Blasko et al (2002)
[8] Hakkein (2006), Joenses (2009)
[9] Passaretta and Triventi (2015)
[10] Bolli et al (2021)
[11] Becker (1964)

students communicate their skills and capabilities to future employers[12]. The last theory of how internships may influence labour market outcomes is through the social capital and networks the student develops during their internship period[13].

Given the varied evidence of internships on graduates' labour market outcomes, it is important to identify if an internship truly brings positive effects on the graduate's labour market outcomes in the Malaysian context. An internship is an investment, either in time or costs, that graduates are increasingly taking intending to improve their marketability. Thus, the question of the internship's effect and its operating mechanism is highly important to ensure that Malaysian graduates' internship experience can bring them positive returns.

Objective and scope of the study

This paper attempts to illustrate the internship landscape of bachelor graduates in Malaysia as well as understand its impacts on labour market outcomes. Previous literature surrounding the effects of internships on labour market outcomes tends to originate from Western Europe and North America[14]. Meanwhile, literature review on previous research on the influence of internships in Malaysia has shown that it was generally limited to a specific course or institution. Thus, this paper aims to bridge the current gap by providing a quantitative analysis of the effects of internship on the graduates' labour market outcomes at a national scale across all fields of study.

The main source of the data used in this study is the Graduate Tracer Survey (GTS) administered annually by the Ministry of Higher Education (MOHE). Hence, the variables and measures used in this study are limited by the existing questions that have been asked by the GTS survey in the past. Additionally, since the data is from MOHE's GTS survey, it will only include Malaysian graduates from local higher education institutions. Thus, the labour market outcomes of Malaysian overseas graduates remain outside the scope of this study. Regardless, the dataset is rich, and many interesting findings have been found using the existing variables.

While at the time of writing this paper, the GTS dataset is available for the years 2010-2021 and includes tertiary graduates in all fields and levels of study, the scope of this paper will only be consisting of local bachelor's degree graduates (bachelors) between the ages of 15-30 for the years 2010-2019.

The paper will only cover the years 2010-2019 as the COVID-19 pandemic caused labour market disruptions, and thus the operationalisation of internship programmes in 2020 and 2021. The limitation of the 15 to 30 years old age group is due to the paper's working definition of young graduates. Meanwhile, the selection of only degree-level bachelors in this paper is because earlier analysis of the data showed that more than 95% of the certificate- and diploma-level students

[12] Spence (1973)
[13] Granovetter (1973)
[14] ILO (2018)

have completed an internship, thus making it difficult to find meaningful labour market comparisons between interned and non-interned groups.

Table 1 summarises the total GTS respondents, those who are aged between 15-30, and those who are aged 15-30 that have graduated with a bachelor's degree for the years 2010-2019. Overall, this analysis covers 958,871 bachelor's degree respondents, aged 15-30 from 2010 to 2019, which is 41.7% of all respondents or 45.3% of all respondents aged 15-30 years old.

Table 1 Total GTS respondents by age group and study level, 2010-2019

Convocation Year	Overall sample	All study levels, 15-30 years old	Bachelor's degree graduates, 15-30 years old
2010	174,463	158,469	74,368
2011	185,830	171,133	78,801
2012	202,346	187,255	83,654
2013	212,802	196,550	84,834
2014	209,838	197,583	88,167
2015	229,568	201,214	88,911
2016	238,187	214,420,	108,065
2017	255,099	234,728	111,918
2018	290,282	274, 437	119,667
2019	298,551	281,968	120,486
Overall	2,296,966	1,628,900	958,871

Source: MOHE (various years)

Paper outline

This paper will provide an overview of bachelors who have undergone an internship in Malaysia as well as the influence of various characteristics of an internship on key labour market outcomes. It is structured as follows:

- Section 2 – The Internship Landscape in Malaysia
  This section describes the overall trends of bachelors who have undergone an internship in Malaysia for the years 2010 to 2019, as well as government's planned and implemented internship policies in the past decade.

- Section 3 – Impacts of Internships on Labour Market Outcomes
  This section examines the claim that internships have a positive contribution towards the bachelor's labour market outcomes, namely their employment attainment and job quality. This section also explores the relationship between various internship characteristics and their respective employment outcome.

- Section 4 – A Case for Paid Internship
  This section specifically seeks to determine if there is any difference in the labour market outcomes between paid and unpaid internships. This section begins with an overview of paid internship landscape in Malaysia before analysing the differences in employment type, job skill level, and income level of paid and unpaid interns.

- Section 5 – Concluding Remarks
  This section summarizes the key takeaways from previous sections and highlights some policy considerations based on the findings of this paper.

2. The Internship Landscape in Malaysia

Internships are increasingly becoming an essential component in a student's school-to-work transition[15]. First introduced in the United States of America[16], the pervasiveness of internships has also been growing in Malaysia. Hence, this section will provide an overview of the internship landscape in Malaysia for the past decade.

This section will firstly outline the Malaysia's government policies and programs relating to internships or industrial training, particularly those in place from 2010 onwards – in line with the timeframe of the data used in this paper (Section 2.1). Section 2.2 will then describe the development and status of internship programmes for bachelor students while Section 2.3 breaks down in further detail the internship location, organisation type, and duration.

2.1. Positive policy support for internships

Driven by the viewpoint that internships improve labour market outcomes, in 2010, the MOHE released the National Policy on Internship (NPI) intending to standardise the current internship programmes available in HEIs[17]. The policy states that internships, or industrial training, are a compulsory component to graduate students in certain study programs in all HEIs for the certificate, diploma, and bachelor's degree qualifications[18].

The NPI acts as a comprehensive guideline for the HEIs and outlines details such as the suggested internship duration, encouragement to give allowance to interns, the role of the HEI in the student placement in the industry and monitoring of the internship programmes the students undergo, as well as the responsibilities that should be undertaken by the organization that receives the interns[19]. The NPI also highlights the awarding of credits in cases where an internship is required for graduation as determined by the Malaysian Qualification Framework (MQF)[20].

The establishment of the NPI shows the positive view the MOHE has towards internships, especially concerning its perceived benefits towards graduate marketability. MOHE is not alone in this regard. In 2012, TalentCorp, which is currently under the Ministry of Human Resources (MOHR), started its Structured Internship Programme (SIP) to encourage companies to provide a meaningful internship experience for students as per a standard set of requirements[21]. As of 2022, SIP has been rebranded to the National Structured Internship Programme (MySIP) with the added mandate to accelerate and facilitate talent and companies across the nation[22].

In more recent years, several more policies have emerged regarding the nation's young graduate employability, with most highlighting the importance of internships and industrial training as

[15] ILO (2018)
[16] Carnevale & Hansen (2015)
[17] MOHE (2010)
[18] Ibid
[19] Ibid
[20] Ibid
[21] TalentCorp (2016)
[22] TalentCorp (2022)

part of the graduate's tertiary education. A summary of policies as well as its related internship initiative can be found in Table 2 below.

Table 2 Summary of government policies and its initiative

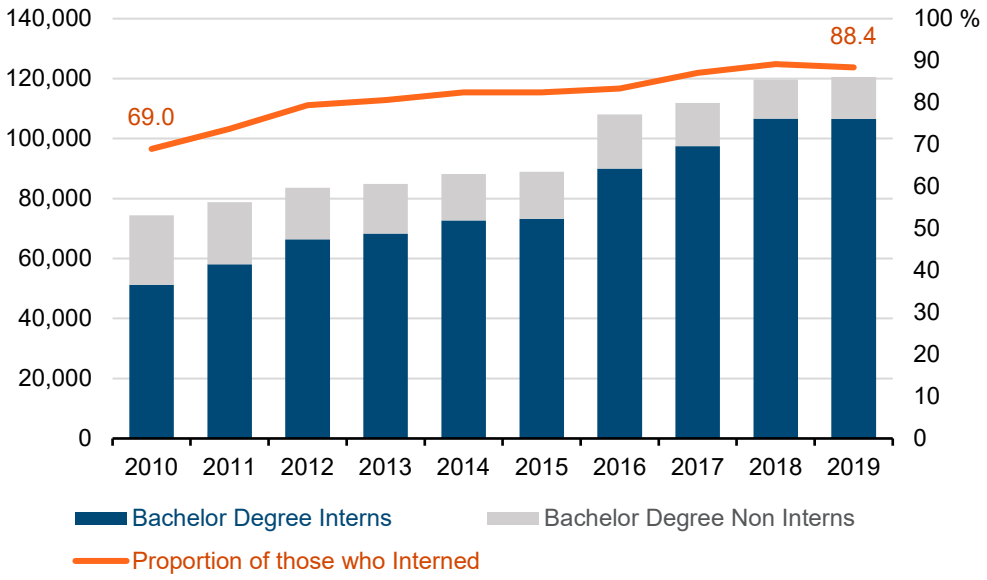
Program	Initiative
Malaysia Education Blueprint 2013-2025	• Enhance practicum in vocational programmes through greater private-sector collaboration, which aims to provide students with relevant work experience.
National Graduate Employability plan, 2021-2025	• The National Structured Internship Program (MySIP) ensures that students gain real-world work experience while also learning industry-specific skills. • Many study programmes have been improved to ensure that final-year students receive industrial training, with the intention of the industry hiring potential students.
University Transformation Programme - Enhancing Academic Productivity and Cost Efficiency	• Award standardised credit hours for programmes with compulsory internship components • To nurture potential leaders through experiential leadership programmes, such as on-the-job training that aims to acquire new knowledge and abilities through experiences
TalentCorp's Talent Roadmap 2020	• Enhance school-to-work transition by establishing early involvement of industry in university life as well as encourage collaboration to develop structured internships
National Fourth Industrial Revolution (National 4IR)	• Increased collaboration between industry and academia, especially in TVET and STEM education through structured industrial training programmes
Higher Education Institutions Entrepreneurship Action Plan 2021-2025	• To introduce student entrepreneurship industrial training, where students will receive hands-on business training through equal partnerships between HEIs & employers

2.2. The growing number of interns and rising internship requirements

More bachelors have done an internship

Given the perceived importance of internships, it is no surprise to find that the number of bachelor's degree holders who have undergone an internship during their studies has been increasing in both proportion and absolute numbers as shown in Figure 1. In 2010, there were 51,293 bachelors, or 69.0%, who have gone for an internship. By 2019 that number has doubled to 106,502 graduates, making up a proportion of 88.4% of all bachelors that have undergone an internship.

Figure 1 Number and proportion of bachelors by internship status, 2010-2019



Source: MOHE (various years), author's calculation

This rise of bachelors who have done an internship is also seen across all fields of study, though some fields saw a much higher increase in the number of interned bachelors compared to others. Most notably, *education* degree holders rose from 46.5% of its graduates having done an internship in 2010 to 96.0% in 2019 – implying almost all 2019 *education* bachelors have gone for some form of industrial training (Table 3).

Table 3 Proportion of bachelors who have completed an internship by field of study, 2010-2019, (percentage)

Field of Study	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Education	46.5%	55.1	56.2	54.6	59.1	62.5	69.0	92.6	96.3	96.0
Arts and Humanities	51.4	55.7	63.3	74.0	76.8	73.4	78.4	81.5	88.3	82.1
Social Sciences, Business, and Law	69.1	72.3	80.8	81.7	84.1	83.9	84.7	85.2	87.5	87.0
Sciences, Math, and Computers	70.5	76.9	84.1	84.4	85.5	87.7	87.8	91.5	91.7	91.2
Engineering, Manufacturing, and Construction	88.4	90.6	92.4	92.2	92.1	92.7	91.4	93.4	94.1	94.3
Agriculture and Veterinary	76.9	78.2	81.3	86.5	95.2	93.0	94.6	95.0	95.2	90.7
Health and Welfare	47.5	48.1	52.1	53.3	55.5	55.1	53.2	70.7	72.9	73.9
Services and Others	72.3	75.6	85.7	84.3	85.3	87.8	86.6	87.5	91.2	90.0

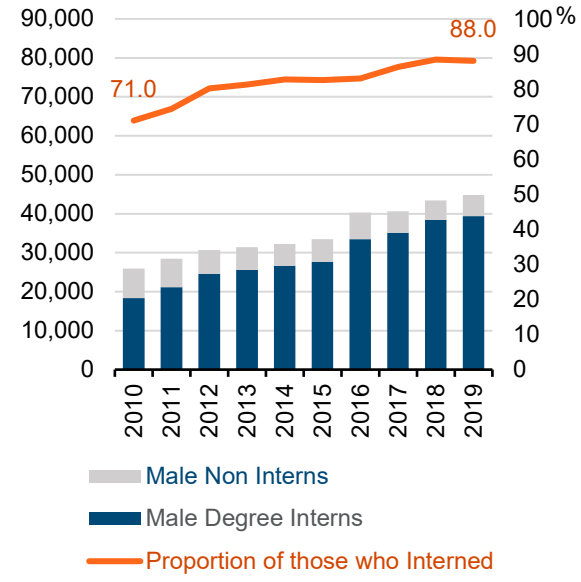
Source: MOHE (various years), author's calculation

For the more technical fields of study such as *engineering, manufacturing, and construction* as well as *agriculture and veterinary*, a significant majority of their bachelors have done an internship in 2010 and that number has increased since (Table 3). Among all fields of study, the proportion of *engineering, manufacturing, and construction* bachelors who have interned has been consistently high whereby more than 90% of their bachelors have undergone an internship from 2011 onwards.

Even among the more academic and non-technical fields of studies such as *arts and humanities*; *social science*, *business, and law*; as well as *sciences, math, and computers*; the number and proportion of bachelors who have undergone an internship have been rising (Table 3). *Arts and humanities* graduates for example went from having only around half (51.4%) of its bachelors did an internship in 2010 to having a peak of 88.3% of its graduates in 2018.

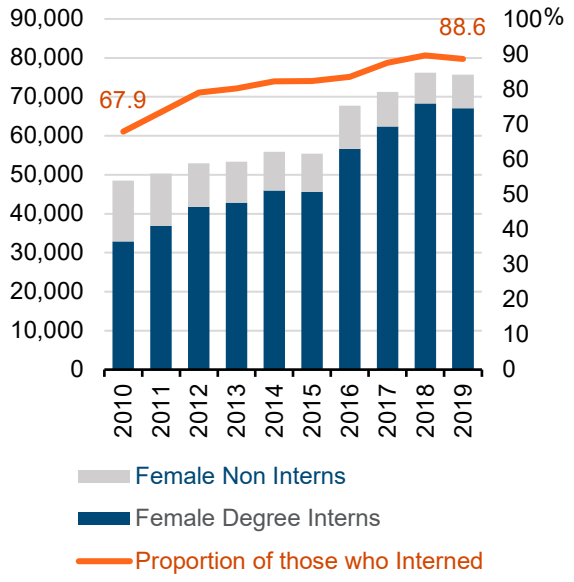
Between genders, both male and female bachelors have seen an increase in the numbers and proportion of graduates who have undergone an internship. While more females have done an internship in absolute numbers (as there are more female bachelors) the proportion of bachelors who did an internship is comparable between the genders. However, female bachelors have seen a much higher increase in the share of those who have undergone an internship, from 67.9% in 2010 to a peak of 89.6% in 2018. This may be due to the distribution of gender across the fields of studies, whereby certain courses such as *education* may disproportionately have higher females.

Figure 2 Number and proportion of male bachelors by internship status, 2010-2019



Source: MOHE (various years), author's calculation

Figure 3 Number and proportion of female bachelors by internship status, 2010-2019



Source: MOHE (various years), author's calculation

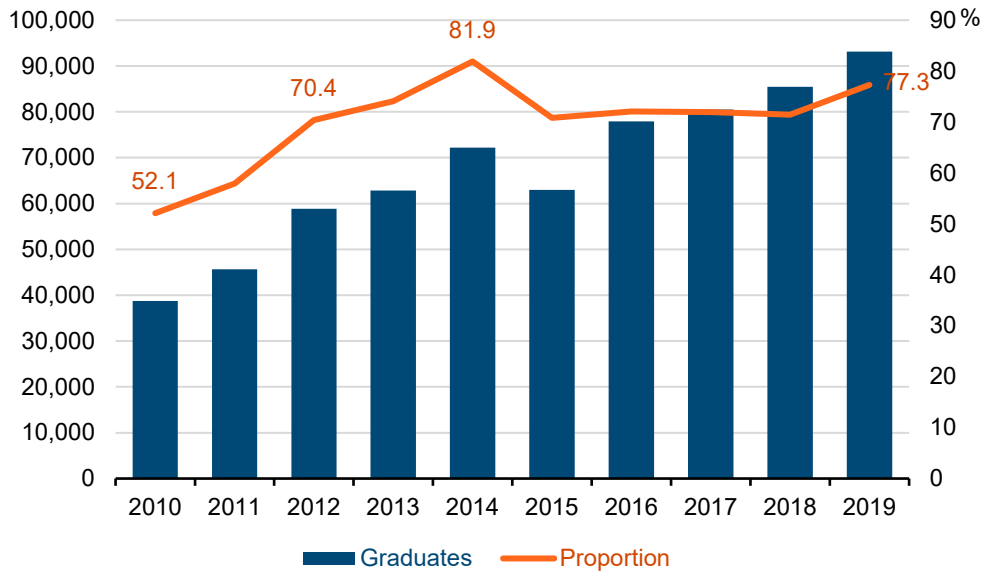
Rising internship requirements

The growing number of those who went for an internship among bachelors may also be spurred on by rising internship requirements set by their respective institution. The increase in requirements may be driven by the NPI released by the MOHE in 2010, which had a list of courses where the inclusion of internship as part of its curriculum was made compulsory, though was to be enacted in stages[23]. Examples of courses that were deemed necessary to have an internship requirement included computer science, information technology, economics, statistics, biotechnology, and tourism among others[24].

According to the GTS survey administered by the MOHE, the number of bachelor's respondents who have answered "they had an internship requirement" show an increasing trend (Figure 4). Most noticeably, the proportion of bachelors that had an internship requirement spiked from 52.10% in 2011 to 70.36% in 2012 and has steadily increased since.

[23] MOHE (2010)
[24] Ibid

Figure 4 Number and proportion of bachelors who had a HEI internship requirement, 2010-2019



Source: MOHE (various years), author's calculation

This sharp rise is most notable among *social science, business, and law*; *sciences, math, and computers*; *agriculture and veterinary*; as well as *services and other* fields of study as shown in Table 4. These fields of study each had around a 20% increase between 2010 to 2012 in bachelors who responded that they had an internship requirement as part of their studies.

Table 4 Proportion of bachelors who had a HEI internship requirement by field of study, 2010-2019 (percentage)

Field of Study	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Education	25.0%	37.2	38.0	33.7	42.0	41.1	44.4	39.0	51.0	79.6
Arts and Humanities	48.5	47.4	57.7	67.7	77.7	59.8	69.8	66.9	78.3	72.6
Social Sciences, Business, and Law	48.3	52.7	70.3	75.6	81.1	71.3	68.3	70.3	68.8	73.0
Sciences, Math, and Computers	49.8	56.7	73.6	71.4	86.2	71.2	71.3	73.0	70.2	76.4
Engineering, Manufacturing, and Construction	77.7	80.1	86.7	89.1	92.3	86.2	85.7	84.0	79.5	89.7
Agriculture and Veterinary	38.2	52.8	57.4	54.6	98.3	46.0	70.2	71.7	68.1	72.7
Health and Welfare	30.7	37.9	45.4	55.3	68.1	56.6	62.8	57.5	62.6	60.1
Services and Others	60.8	60.7	86.5	96.6	97.4	86.4	88.7	91.9	86.7	90.1

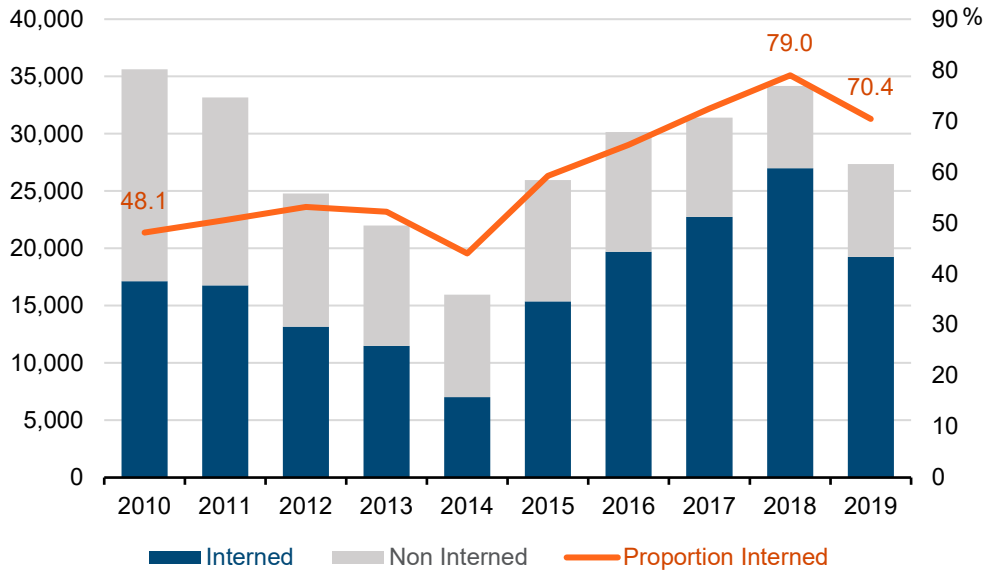
Source: MOHE (various years), author's calculation

Among all fields of study, *education* showed the most drastic increase of bachelors responding they had an internship requirement, from 25.0% in 2010 to 79.6% in 2019, though this increase was only seen in 2019. Meanwhile, on the opposite end of the spectrum, *engineering, manufacturing, and construction* courses showed a steady increase in internship requirements for their bachelors over the decade. However, this may also be because the proportion of *engineering, manufacturing, and construction* graduates in 2010 was significantly higher (at 77.7%) than all other fields of study, and in 2019, remains one of the highest at 89.7%.

Opting for Internships

While a significant factor, rising internship requirement is not the only cause for the increase in graduates who have completed an internship. Among bachelors who their programmes do not have an internship requirement, a rising share of them has voluntarily opted to undergo an internship. Figure 5 illustrates that the number of graduates who went for an optional internship increased from 48.1% in 2010 to a peak of 79.0% in 2018. However, it should also be noted that as HEI internship requirement increases, it may reduce the proportion of bachelors in voluntary internships.

Figure 5 Number and proportion of bachelors with no HEI internship requirement, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

This then brings to question on what factors prompt Malaysian bachelors in local higher education institutions to undertake an internship. To evaluate this, a binary logistic regression analysis was conducted on bachelors without an internship requirement to identify variables and characteristics among bachelors that may increase their likelihood to do an internship[25]. A simplified result of the regression is shown in Table 5.

[25] The detailed methodology and full regression table can be found in Appendix B

Table 5 Regression results on the likelihood of doing an internship by individual and institutional characteristics variables

Variables	Odds Ratio	P>|z|
CGPA Level (Base: Low CGPA)		
Mid CGPA	2.43	0.00
High CGPA	3.00	0.00
Field of Study (Base: Education)		
Arts and Humanities	0.68	0.00
Social Sciences, Business, and Law	1.84	0.00
Sciences, Math, and Computers	2.42	0.00
Engineering, Manufacturing, and Construction	3.15	0.00
Agriculture and Veterinary	3.45	0.00
Health and Welfare	1.53	0.00
Services and Others	2.76	0.00
Gender (Base: Male)		
Female	1.26	0.00
Family Income (Base: <RM1,000)		
RM1,000 - RM2,000	0.98	0.08
RM2,000 – RM3,000	0.83	0.00
RM3,000 – RM5,000	0.72	0.00
> RM5,000	0.67	0.00
HEI Type (Base: Public HEI)		
Private HEI	0.53	0.00
University Status (Base: University College)		
Comprehensive University	0.43	0.00
Specialized University	0.49	0.00

Source: MOHE (various years), author's calculation

Independent of an internship requirement, the likelihood of a bachelor doing an internship varies by their field of study. Those who are in *engineering, manufacturing, and construction* as well as *agriculture and veterinary* fields are 3.2 and 3.5 times more likely respectively, to do an internship compared to their *education* peers. Meanwhile, those who are in *sciences, math, and computers*; and *services and others* are more than twice likely to have undergone an internship[26].

[26] Compared to their *education* bachelor's peers.

Bachelors who have a higher CGPA level also have a higher likelihood to do an internship, with those who have high CGPAs (at 3.5 above) being 3 times more likely to have undergone an internship compared to their low CGPA (below 2.5) peers. This may also be in part due to CGPA requirements companies may have when recruiting bachelors for an internship.

Between genders, females are 1.25 times more likely to have done an internship compared to their male peers. However, factors such as HEI type and university status, as well as higher family income has a lower influence on the graduates' odds of doing an internship.

Understanding how the bachelor's various individual attributes and institutional characteristics are important as it may help to reduce biases when analysing the effects of internship on labour market outcomes in the later sections. Biases in the bachelor's employment outcomes may happen in the case where the population of students who are in an internship are characteristically different from those with no internship experience. For example, the organisations the bachelor's intern in may have requirements to their internship programs such as a certain level of CGPA, high proficiency in English, or specific fields of study they are looking for—and thus are variables to control for when evaluating outcomes.

However, some behavioural or non-tangible aspects of the students that could influence their likelihood to be in an internship, and potentially their labour market outcomes, are not captured in the GTS survey. Thus, characteristics such as the student's motivation, level of ambition, as well as leadership skills, are unable to be controlled for, hence not discussed in this paper.

2.3. Internship characteristics

This sub-section will look at several internship characteristics these bachelors undertake in terms of (1) the internship location, (2) the internship organisation type, (3) the duration of the internship, and lastly (4) if the internship industry is related to the field of study (internship study match).

Most bachelors do their internships in Selangor and Kuala Lumpur

Among those who have completed an internship, Kuala Lumpur and Selangor are the most popular internship locations. In 2019, the proportion of bachelors who had undergone their internship in Kuala Lumpur or Selangor made up 47.2% of all those interned graduates (Table 6). Additionally, while all states have seen an increase in the number of graduates who have completed an internship there (Table 7), only WP Kuala Lumpur, Selangor, and Pulau Pinang have seen a noticeable increase in the proportion of bachelors implying these three states as increasing popular internship locations. This may be due to these locations as economic centres within the country[27].

[27] KRI (2020)

Table 6 Number of bachelors by internship location, 2010-2019 ('000s)

State	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Johor	3.9	4.4	5.0	5.0	5.6	5.9	6.9	7.9	8.3	8.3
Kedah	2.8	2.8	3.1	3.1	3.5	3.5	4.1	4.8	4.9	4.9
Kelantan	2.8	3.4	3.7	3.8	4.4	4.0	4.7	4.9	5.0	4.4
Melaka	1.8	2.1	2.6	2.8	3.1	3.0	3.5	4.0	4.3	4.0
Negeri Sembilan	1.3	1.6	1.8	1.9	2.0	2.0	2.4	3.0	3.2	3.2
Pahang	1.8	2.0	2.3	2.3	2.6	2.5	3.0	3.5	3.4	3.3
Pulau Pinang	3.5	4.0	4.3	4.5	4.6	5.2	6.1	6.6	7.5	7.8
Perak	3.1	3.2	3.7	4.0	3.9	4.4	5.0	6.1	6.4	6.0
Perlis	0.4	0.4	0.4	0.5	0.5	0.4	0.6	0.7	0.7	0.7
Selangor	14.7	16.9	19.7	19.7	20.3	20.0	25.6	27.6	30.1	31.5
WP Kuala Lumpur	7.9	9.3	10.6	11.1	11.9	12.2	16.2	15.6	19.5	19.2
Terengganu	2.1	2.5	2.8	2.9	3.1	3.0	3.5	3.5	3.7	3.5
Sabah	2.5	2.7	2.9	3.0	3.2	3.2	3.7	4.1	4.4	4.1
Sarawak	2.2	2.3	2.7	2.9	3.1	3.0	3.8	4.1	4.2	4.3
Others	0.4	0.6	0.8	0.9	0.8	1.0	0.9	1.1	1.2	1.3
Total	51.3	58.1	66.4	68.4	72.7	73.1	90.1	97.5	106.7	106.5

Source: MOHE (various years), author's calculation

Table 7 Proportion of bachelors by internship location, 2010-2019, (percentage)

State	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Johor	7.7%	7.5	7.5	7.3	7.7	8.1	7.7	8.1	7.8	7.8
Kedah	5.5	4.9	4.7	4.5	4.8	4.7	4.6	4.9	4.6	4.6
Kelantan	5.4	5.9	5.6	5.5	6.0	5.4	5.3	5.0	4.7	4.1
Melaka	3.5	3.6	4.0	4.0	4.3	4.1	3.8	4.1	4.0	3.8
Negeri Sembilan	2.5	2.8	2.7	2.8	2.7	2.7	2.7	3.1	3.0	3.0
Pahang	3.5	3.4	3.4	3.4	3.6	3.4	3.3	3.5	3.2	3.1
Pulau Pinang	6.8	6.8	6.4	6.6	6.3	7.0	6.8	6.8	7.0	7.4
Perak	6.0	5.5	5.6	5.9	5.4	6.0	5.6	6.2	6.0	5.6
Perlis	0.7	0.6	0.6	0.7	0.7	0.6	0.7	0.7	0.6	0.6
Selangor	28.7	29.1	29.7	28.8	28.0	27.4	28.4	28.3	28.2	29.6
WP Kuala Lumpur	15.5	16.0	15.9	16.2	16.3	16.6	18.0	16.0	18.2	18.0
Terengganu	4.0	4.3	4.3	4.2	4.2	4.1	3.8	3.6	3.5	3.3
Sabah	5.0	4.7	4.3	4.3	4.5	4.3	4.1	4.2	4.1	3.9
Sarawak	4.2	4.0	4.0	4.2	4.2	4.1	4.2	4.2	3.9	4.0
Others	0.8	1.0	1.3	1.3	1.2	1.4	1.0	1.2	1.1	1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: MOHE (various years), author's calculation

Most bachelors who interned do so in the same state as their permanent residence (Table 8). Overall, more than 60% of bachelors did their internship in the same state as their home. Meanwhile, for those who interned outside their home state, around 10-16% interned in the same state as their higher education institute while the remaining bachelors were considered as "migrant" interns (ie. those who interned both outside their home and institution state).

Table 8 Proportion of interned bachelors by internship location related to home and institute location, 2010-2019

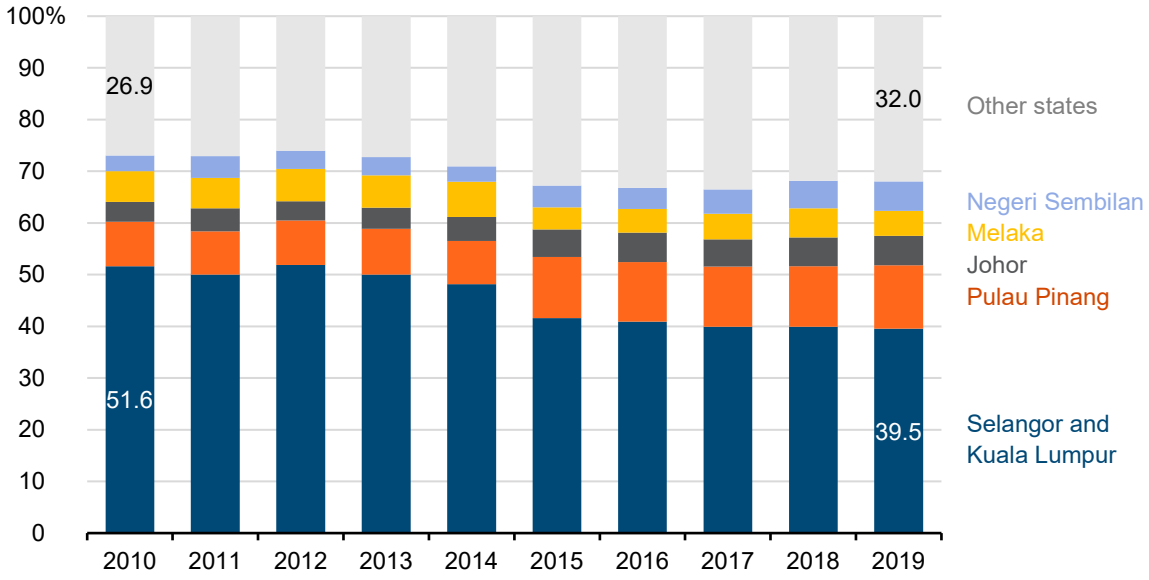
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Same state as home										
	62.2%	62.7	63.2	63.9	65.5	65.5	65.8	65.8	65.7	65.8
Not the same state as home										
Same state as HEI										
	12.2	12.3	10.8	10.6	10.2	14.9	15.9	15.2	15.9	15.9
Not the same state as HEI (*"migrant" interns*)										
	25.6	24.9	26.0	25.5	24.2	19.7	18.4	19.0	18.4	18.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: MOHE (various years), author's calculation

In the past decade, the proportion of bachelors who did their internship in the same state as their permanent residence or higher education institution has been increasing. Conversely, the proportion of "migrant" interns has been decreasing in the same period. This may imply that bachelors may be less willing to seek internship opportunities outside these two locations, in part due to needing to seek a short-term accommodation should they choose to "migrate" for an internship.

When breaking down the destination of choice for these "migrant" interns, most of them did their internships in Kuala Lumpur and Selangor (Figure 6). This is then followed by Pulau Pinang, Johor, Negeri Sembilan, and Melaka as the second, third, fourth, and fifth largest proportion as of 2019. Meanwhile, the other nine states had a combined proportion of around 32% to 35%, which is consistently lower than the proportion of migrant interns in Selangor and Kuala Lumpur.

Figure 6 Proportion of migrant interns, by state, 2010-2019, (percentage)



Source: MOHE (various years), author's calculation

While from 2010 to 2013, half of the "migrant" interns did their internship in Selangor and Kuala Lumpur, the proportion has since decreased in recent years. Instead, the proportion of "migrant" interns has been increasing in other states, particularly in Penang which saw a rise from 8.6% in 2010 to 12.3% in 2019.

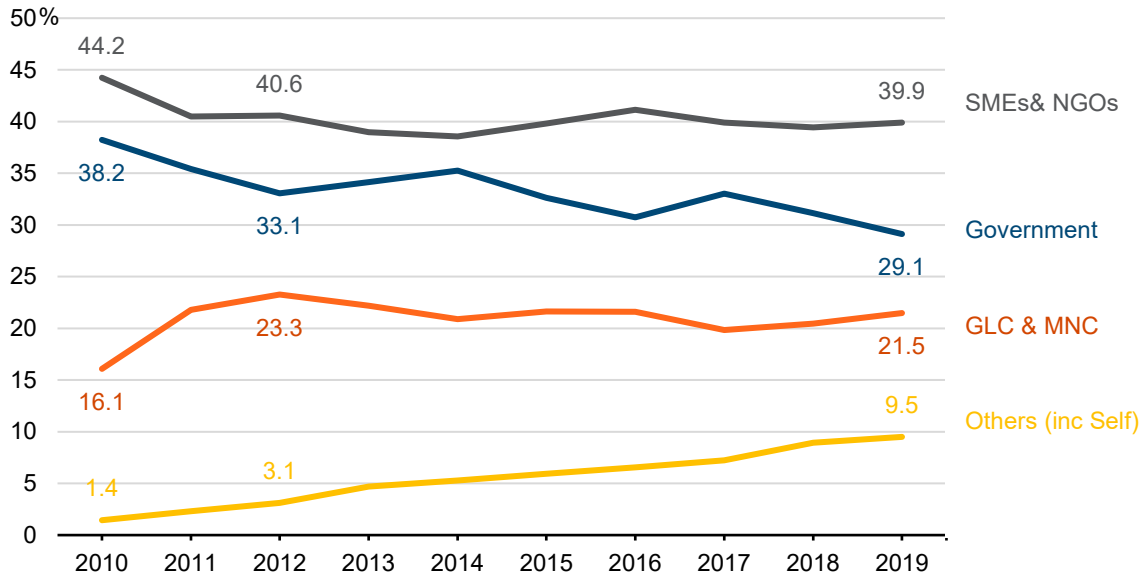
Private firms and non-government organisations have the highest share of interns

When dissecting the bachelor's internship by organisation, the private local companies (SME) and non-government organisations (NGOs) had the highest proportion of bachelors (Figure 7). This is followed by government organisation, government-linked companies (GLCs) and multinational companies (MNCs), and lastly, the "others" category which includes self-internship[28].

While together the *SMEs & NGOs* as well as *government* organisations made up more than three-quarters of the interned bachelors in 2010, the proportion has declined significantly in recent years. In 2010, the share of bachelors who interned in SMEs & NGOs was 44.2% and has since dropped to 39.9% in 2019. Within the same period, government organisations experienced a much larger drop, falling from 38.2% in 2010 to 29.1% in 2019—close to a 10 ppt drop.

[28] The arrangement of what constitutes an others or self-internship is unclear. However, this sector consists of bachelor's respondents who had selected "self-employment" as their internship sector whilst filling up their GTS survey.

Figure 7 Proportion of interned bachelors, by internship organization type, 2010-2019, (percentage)



Source: MOHE (various years), author's calculation

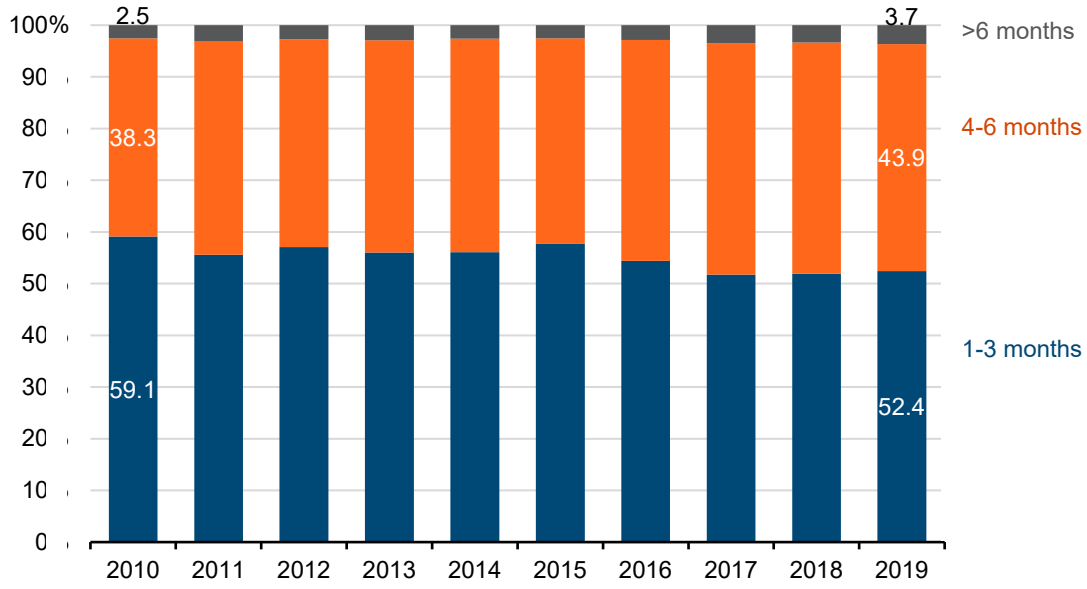
GLCs & MNCs experience a spike in the share of interned bachelors in the 2010 to 2012 period, climbing from 16.1% in 2010 to 23.3% in 2012. However, the proportion has since remained stagnant, with the remaining years (2013-2019) having around a fifth of bachelors interning in the *GLCs & MNCs*. The rise in interned bachelors in these organisations during 2011 and 2012 may be due to the introduction of the SIP which had several GLCs and MNCs as early participants of the programme.

Meanwhile, the O*thers* category has shown a steady and significant increase in the proportion of interned bachelors in the past decade. Only making up a 1.4% share of interned bachelors, the share has since increased almost 7-fold to 9.5% in 2019.

Bachelors are increasingly in longer internship durations

Among those who completed an internship, the majority of graduates had an internship duration of between 1 to 3 months, though that proportion has been decreasing in recent years (Figure 8). Concurrently, longer internship periods are increasing in popularity as the share of graduates who had an internship duration between 4 to 6 months had increased from 38.3% in 2010 to a high of 44.7% in 2018, while those who had interned for longer than 6 months rose from 2.53% to 3.35% in the same period.

Figure 8 Proportion of interned bachelors, by internship duration, 2010-2019



Source: MOHE (various years), author's calculation

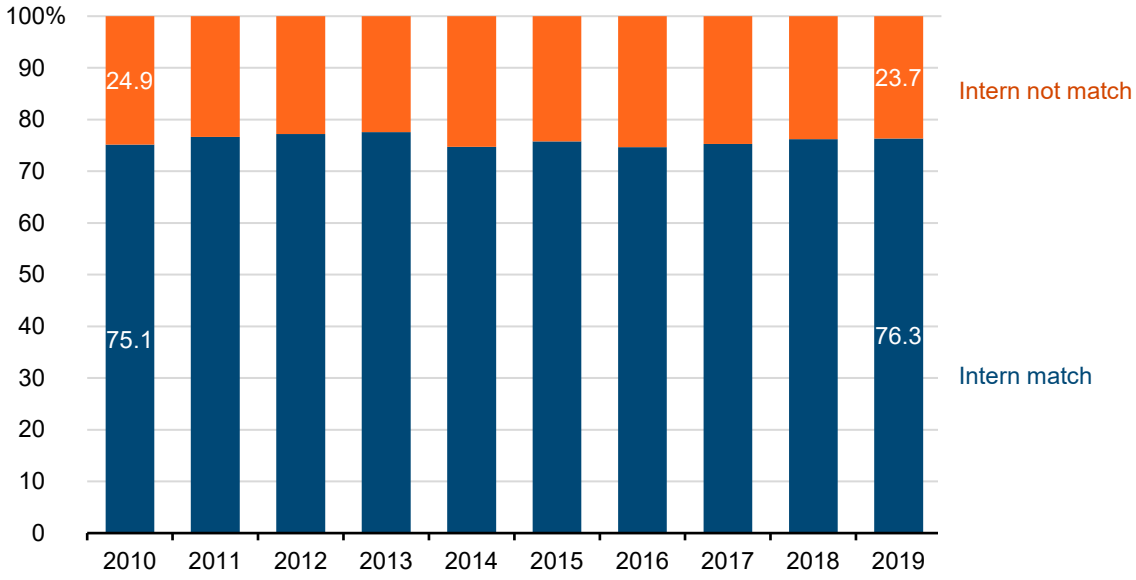
In 2010, NPI detailed that the internship duration must be at least three months (or 12 weeks long)[29]. However, different courses or higher education institutions are free to set their required internship duration (for mandatory internships) so long as it fulfils the 3-month minimum. Hence, some institutions have set longer mandatory internship duration as part of their curriculum. For example, University Technology PETRONAS (UTP) has a compulsory 8-month internship requirement for all their undergraduate students[30].

Most bachelors are in matched internships; however, the prevalence varies by field of study

Overall, majority of the graduates who have completed an internship did so in an industry that matched their field of study (internship match[31]) at around three-quarters of total interned bachelors (Figure 9). This proportion is fairly consistent from 2010 to 2019 despite the rise of graduates who have internship requirements and those who have completed an internship.

[29] MOHE (2010)
[30] Sumathi et al (2017)
[31] The table of what is considered a match internship can be found in Appendix A

Figure 9 Proportion of interned bachelors, by matched internship, 2010-2019, (percentage)



Source: MOHE (various years), author's calculation

However, when breaking down by field of study, the proportion of graduates who did matched internships varies by their course. While most of the fields of study share of matched intern bachelors were around or above the overall proportion, the *social sciences, law, and business* as well as the *services and others* study fields share were below average. The proportion of bachelors who are in a matched internship in the *social sciences, law, and business* field hovers around 70%, while the *services and others* are much lower, moderating around 60% despite its earlier improvement between 2011-2013.

Table 9 Proportion of interned bachelors in matched internships, by field of study, 2010-2019

Field of Study	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Education	80.8%	89.5	88.3	93.5	87.5	87.7	90.0	92.1	91.5	92.6
Arts and Humanities	85.8	89.5	88.1	88.8	85.8	85.5	85.3	86.0	85.6	84.9
Social Sciences, Business, and Law	67.3	68.7	70.4	70.3	66.0	66.9	66.2	66.1	67.6	66.9
Sciences, Math, and Computers	76.0	76.6	76.4	79.9	78.7	79.0	79.1	77.3	78.5	78.7
Engineering, Manufacturing, and Construction	80.0	80.3	80.3	80.2	80.3	81.5	80.4	80.5	81.0	82.3
Agriculture and Veterinary	88.2	92.6	93.6	89.6	83.9	80.1	81.0	78.3	78.5	85.1
Health and Welfare	83.0	86.3	86.7	86.5	84.8	86.8	86.2	90.2	90.6	89.8
Services and Others	59.5	64.6	69.1	69.2	65.4	58.2	58.6	56.0	59.4	59.1

Source: MOHE (various years), author's calculation

KEY TAKEAWAYS

- The number of bachelors who have undergone an internship is increasing across genders and all fields of study. However, there are variations in the rise of interns in the study fields.
- The number of bachelors who have reported having an internship requirement set by their higher education institution has been increasing, with most fields of study having a spike in requirements in 2012.
- More bachelors are opting to do internships. Aside from the internship requirement, the bachelor's field of study and CGPA level greatly influences the likelihood of them doing an internship.
- Longer internship periods are increasing in popularity among bachelors. However, only three-quarters are in internships that match their field of study—though some study fields have a lower prevalence of interns being in match internships.
- A significant number of bachelors did their internship in Kuala Lumpur and Selangor. On the other hand, while most bachelors choose to intern in the same state as their home, Selangor and Kuala Lumpur is a popular choice among those who did their internship in a state outside their home or HEI.

3. Impact of Internships on Labour Market Outcomes

This section seeks to examine if there is a positive correlation between the internship experience among graduates with bachelor's degree ("bachelors") and their labour market outcomes in Malaysia's context. The two areas of interest are the bachelors' employment attainment (getting a job upon study completion) and employment quality (getting a job that matched with qualification and field of study). The employment attainment is examined through their employment status and type of employment. Meanwhile, employment quality is assessed through their job skill level, income level, and if they are working in an economic sector related to their field of study (horizontal job match).

To explore the various impacts of internships on the bachelor's labour market outcomes, section 3.1 will first summarise the bachelor's employment attainment status and quality in the past decade as well as outline this section's methodology. Section 3.2 will discuss the findings on the influence of internships on job attainment. The effect of internships on horizontal job match, job skill level, and income level will be discussed in sections 3.3, 3.4, and 3.5 respectively.

3.1. Overview of bachelor's labour market outcomes and section methodology

More bachelors are working, but those in standard employment are decreasing

Table 11 shows the distribution of the bachelor's labour market outcomes for the years 2010-2019. The bachelor's employment status is generally classified into three categories i.e. whether they are: (1) *working*, (2) *not working*, or (3) *awaiting their job placement*. Among bachelors who are *working*, this is further divided into two categories i.e. whether they are in: (1) standard or (2) non-standard employment. Standard employment is defined as those who are in full-time or permanent positions, while non-standard employment is those in part-time, contract, or self-employment.

Bachelors who are *not working* are also divided into a few subcategories. The first, *unemployed* refers to bachelors who are currently not working but are actively searching for work. This is different from the *not looking for work* category which consists of bachelors who are not interested or chose not to work at the point of the survey. The last two categories are bachelors who are furthering their studies (*further study*) or are currently in up- or reskilling programs (*upskilling/reskilling*).

Data from GTS indicates that, overall bachelors are increasingly employed shortly after study completion, rising from only 50.9% working in 2010 to 68.3% in 2019. However, the share in standard employment has been dropping from 55.2% in 2010 to 43.5% in 2019. Thus, while the proportion of *working* bachelors has been rising, it is largely in more precarious employment[32].

On the other hand, among non-working bachelors, while a larger proportion of them are choosing to further study or up-/reskill themselves, a worrying trend is seen among those who are not

[32] Precarious employment is defined as workers whose employment and income are unsecured. They typically hold informal and non-standard jobs (Hawati and Thuraya, 2020)

looking to work. This proportion of graduates can be considered as NEETs (not in employment, education, or training) and their prevalence among non-working bachelors have been increasing in the past decade, from 12.4% in 2010 to a high of 20.7% in 2019.

More bachelors are earning above RM2,000 though general trends show decreasing prevalence of bachelors in high-skilled standard employment

Employment quality in this paper is conceptualised into three main dimensions, which are (1) job skill level, (2) job-field match, and (3) income level. Job skill level refers to the occupation group that the bachelors are employed in. Those working as *professionals, managers,* and *technicians and associate professionals* are categorised as high-skilled based on the ILO's occupation classification[33]. Meanwhile, the job-field match would evaluate if the industry they are employed in is related to the field of study they have graduated in[34]. Lastly, the income level is divided into two categories, on whether their monthly salary is above RM2,000 or below.

Table 12 below shows the distribution of bachelors in standard employment graduates by various employment characteristics for the years 2010 and 2019. This study will focus on the standard employment in analysing the employment quality given the income level is more uniform, in contrast to non-standard employment which typically involve varying work hours leading to high variability in the income level.

With regards to the bachelor's job skill level, the proportion of those in high-skilled standard employment has shown a decreasing trend from 2010 (78.1%) to 2018 (67.6%). However, this proportion rose sharply in 2019 to 81.8%, surpassing the percentage in 2010. This large increase is driven by a rise in professionals, from 15,820 in 2018 to 20,162 in 2019, particularly among bachelors from the *sciences, math, and computers* as well as *engineering, manufacturing, and construction* fields of study.

Another positive note is that the proportion of bachelors in standard employment who are earning above RM2,000 has been increasing in the past decade. While only around half of the graduates were earning above RM2,000 in 2010, this proportion has risen to 67.6% in 2019. Meanwhile, the proportion of bachelors who are working in an industry related to their field of study has slightly decreased from 74.5% in 2010 to 72.8% in 2019. However, it is worth noting that the majority are in a horizontally matched employment[35].

Among those in standard employment, the breakdown by job's economic sector indicates that the majority are employed in the services sector. (Table 13). Within the services sector, it is distributed almost evenly between traditional and modern services, though *traditional service*s have a slightly higher proportion, hovering around 40% of all standard employed bachelors. The *industria*l sector makes up around a quarter of all standard employed bachelors. Meanwhile, the *agriculture, forestry, and fisheries* sector make up the smallest proportion, at around 1-2% of all

[33] Refer to ISCO-08, ILO (2012)

[34] Full list of what is considered match employment can be found in Appendix A

[35] Horizontally match employment refers to employment in the same field as study

standard employed bachelors. The detailed breakdown of which industry is in each respective economic sector can be found below in Table 10.

Table 10 Classification of job industry to its economic sector

Economic sector	Job industry
Agriculture, Forestry, and Fisheries	• Agriculture, Forestry, and Fisheries
Industrial	• Manufacturing • Mining and Quarry • Construction
Traditional Services	• Wholesale & retail services • Transportation & storage services • Administration & support services • Accommodation & food services • Education • Health & social work • Public administration • Defence and compulsory services • Utility services • Other services
Modern Services	• Professional & technical services • Financial services • Information & communication services • Real estate services

Note: Classified based on KRI (2020) and Ng, A., Tan, T. T., & Tan, Z. G. (2019)

Among the different economic sectors, the *modern services* and *industrial* sectors have the highest proportion of bachelors in high-skilled jobs. This is in line with the overall national economic structure where high-skilled jobs are concentrated in the *modern services* sector[36].

[36] KRI (2020)

Table 11 Distribution of bachelors by job attainment status, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of bachelors	74,368	78,801	83,654	84,834	88,167	88,911	108,065	111,918	119,667	120,486
Working	50.9%	56.7	53.3	48.9	50.7	49.4	54.5	55.4	58.8	68.3
Standard employment	55.2	55.0	50.9	52.0	50.1	52.9	51.3	49.6	46.1	43.5
Non-standard employment	44.8	45.0	49.1	48.0	49.9	47.1	48.7	50.4	53.9	56.5
Not working	36.8	34.8	38.6	42.6	41.7	43.1	38.6	36.6	33.0	24.1
Unemployed	66.4	62.3	65.2	65.1	63.2	63.9	61.2	58.6	58.7	51.9
Further Study	15.3	16.6	14.1	16.1	17.3	15.7	13.4	13.9	13.8	21.2
Upskilling / reskilling	5.9	5.9	5.3	4.4	5.1	6.2	9.4	9.2	6.8	9.4
Not looking for work	12.4	14.8	15.4	14.5	14.4	14.3	15.5	18.3	20.7	17.5
Awaiting job placement	12.3	8.5	8.1	8.5	7.6	7.5	6.9	8.0	8.2	7.6
Total	100.0%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: MOHE (various years), author's calculation

Table 12 Distribution of bachelors in standard employment by job skill level, job-field match, and income level, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of bachelors in standard employment	20,905	24,575	22,711	21,576	22,359	23,250	30,211	30,717	32,440	35,815
Job Skill Level										
High-skilled	78.1%	78.9	77.8	75.6	74.9	74.5	70.5	69.2	67.6	81.8
Semi-skilled	20.5	19.6	21.1	22.6	23.5	23.7	27.7	28.5	29.7	17.4
Low-skilled	1.5	1.5	1.1	1.5	1.6	1.7	1.9	2.3	3.7	0.8
Job Field-Match										
Match	74.5	74.8	75.5	75.4	74.9	74.5	72.9	72.9	73.5	72.8
Not Match	25.5	25.2	24.5	24.6	25.1	25.5	27.1	27.1	26.5	27.2
Income Level										
> RM2,000	50.2	55.1	58.6	61.8	64.4	69.1	65.2	65.2	67.8	67.6
< RM2,000	49.8	44.9	41.1	38.2	35.6	30.9	34.8	34.8	32.2	32.4

Source: MOHE (various years), author's calculation

Table 13 Distribution of bachelors in standard employment by economic sector and employment skill level, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total number of bachelors in standard employment	20,905	24,575	22,711	21,576	22,359	23,250	30,211	30,717	32,440	35,815
Agriculture, Forestry, and Fishery	1.7%	1.5	1.4	1.2	1.3	1.3	1.3	1.1	0.9	1.1
High-skilled	52.4	54.0	54.5	53.6	50.0	44.6	46.6	45.1	32.3	70.3
Semi-skilled	45.2	41.4	44.0	46.1	47.6	52.6	50.8	52.9	66.0	26.6
Low-skilled	2.5	4.6	1.6	0.4	2.4	2.9	2.7	2.0	1.7	3.1
Industrial	24.4	24.6	24.7	22.9	22.8	22.5	23.8	26.2	25.0	24.5
High-skilled	83.5	84.3	83.8	83.2	80.8	80.9	78.0	78.1	73.9	88.1
Semi-skilled	14.7	13.8	15.0	15.3	17.5	17.4	20.0	19.7	23.4	11.5
Low-skilled	1.6	1.9	1.3	1.5	1.7	1.7	2.1	2.2	2.7	0.4
Traditional Services	37.8	37.3	39.2	41.2	40.7	42.3	42.4	42.2	39.3	41.9
High-skilled	67.9	68.2	67.5	64.7	62.6	64.1	57.3	54.7	50.6	71.5
Semi-skilled	30.0	29.8	31.0	33.0	35.0	33.8	40.2	41.9	45.5	27.1
Low-skilled	2.2	2.0	1.5	2.3	2.4	2.2	2.6	3.4	3.9	1.4
Modern Services	36.0	36.7	34.7	34.7	35.1	33.9	32.5	30.5	34.8	32.6
High-skilled	86.3	87.2	86.2	85.2	86.1	84.6	83.1	82.4	83.2	90.6
Semi-skilled	13.1	12.3	13.2	14.1	13.3	14.3	16.1	16.8	15.6	9.1
Low-skilled	0.6	0.5	0.6	0.7	0.6	1.2	0.9	0.8	1.3	0.3
Total	100.0%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: MOHE (various years), author's calculation

Empirical framework and methodology

The key independent variable of interest in this section is the internship experience of Malaysia's bachelor's degree graduates. To examine the effect of internships onto various labour market outcomes, a binary logistic regression was applied as shown in Equation 1. This regression was repeated on year 2010 until 2019 to analyse any long-term trends.

The analysis also controlled for individual characteristics, institutional characteristics, and their individual academic capabilities as other variables that may influence labour market outcomes. The details of the variables and measures used are further detailed in Table 14 and Table 15).

Equation 1 General format of binary logistic regression used to analyse impacts of internship characteristics on bachelor's labour market outcomes.

$$Observed\ Variable^{(I)} = \alpha + \beta_{i,t} Change\ Variable^{(II)} + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study^{(III)} + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ sector^{(IV)} + \varepsilon_{i,t}$$

(I) Equation is repeated for each observed variable as listed in Table 14
(II) Equation is repeated for each change variable as listed in Table 14
(III) Field of study control variable is removed for job-field match observed variable to avoid collinearity
(IV) Economic sector variable is only added for employment type, skill level, and income level variables

Table 14 Summary of observed and changed variable and its respective measurements

Observed Variable	Measurement	Changed Variable	Measurement
Job attainment indicator		**Internship indicator**	
(1) Employment status	0=Unemployed, 1=Employed[37]	(a) Internship status	0=No Internship 1=Internship
(2) Employment type	0= Non-standard 1= Standard	**Internship quality indicator**	
Employment quality indicator		(b) Internship duration	0=No Internship, 1= 1-3 months 2= 4-6 months 3= > 6 months
(3) Employment skill level	0= Low- or Semi-Skilled 1=High-Skilled		
(4) Horizontal job match[38]	0=Not Match 1=Match	(c) Internship organisation type	0=No Internship, 1=Government, 2=GLC & MNC 3= SME & NGO 4= Others (including Self)
(5) Income level	0= < RM2,000 1= > RM2,000		
		(d) Matched internship	0=No Internship, 1=Not match internship, 2=Match internship

Note: author's defined measurements

[37] Defined as bachelors who are working or awaiting job placement
[38] Defined as bachelors whose job industry is in a field related to their field of study

Table 15 Summary of control variables and its respective measurements

Control Variable	Measurement	
Individual characteristics		
Gender	0=Male	1=Female
Family income	0=<RM1,000	3= RM3,000-5,000
	1= RM1,000-2,000	4=>RM5,000
	2= RM2,000-3,000	
Field of study	0=Education	4= Engineering, Manufacturing, and Construction
	1= Arts and Humanities	5= Agriculture and Veterinary
	2= Social Science, Business, and Law	6= Health and Welfare
	3= Sciences, Math, and Computers	7= Services and Others
Institutional characteristics		
HEI type	0 = Public HEI	1 = Private HEI
University status	0= University College[39]	2= Specialized University[40]
	1= Comprehensive University[41]	
Individual academic capabilities		
CGPA level	0=Low 1= Mid	2= High
Malay proficiency	0=Medium	1=High
English proficiency	0=Medium	1=High
ICT skill level	0=Medium	1=High
Job characteristics		
Economic sector	0=Agriculture	2=Traditional Services
	1= Industrial	3= Modern Services

Note: author's defined measurements

In each of the observed variable as listed in Table 14, there are only two possible outcomes, hence the use of a binary regression model. For example, for the (2) *employment type* variable, the bachelors are either in *standard* (=1) or *non-standard* (=0) employment. Each of the observed variable is also repeated for each changed variable, thus investigating how each labour market outcomes variable would interact with either internship or other internship quality indicator variables.

[39] University college refers to higher education institutions that offer tertiary education but do not have full or independent university status.

[40] Specialised universities consist of research universities, technical universities (MTUN), medical universities, and overseas universities with a local branch

[41] Comprehensive universities are universities that offer various courses and different fields of studies, with a ratio of 70:30 of undergraduates to post-graduates.

There are also some slight variations in terms of the control variables and the sample group depending on the observed variable used. For example, the *economic sector* control variable is included in the (2) *employment type*, (3) *employment skill level*, and (5) *income level* regression equations but are absent for (1) *employment status* and (4) *horizontal job match* equations. The inclusion (or exclusion) of certain control variables and the changes in the sample group is further explained in their respective subsections.

The logit regression results for the change and control variables are then transformed into odds ratio which represents the probability of a subgroup under each independent variable[42] of being either (1) employed, (2) in standard employment, (3) in high-skilled jobs, (4) in a matched job, or (5) earning more than RM2,000, depending on the observed variable used, relative to the base group of each independent variable.

The use of the base group implies that all the results and statistical significance of the results will be interpreted relative to this subgroup. The base of each variable is indicated by the "=0" in the change and control variables list. For example, the base group for (a)*internships* is "no internship" and thus the outcome of graduates who have done an internship will be compared to those who have not done an internship.

To simplify the presentation of the results of each regression analysis, only the odds ratios of the relevant change variable are shown. However, the list of all the equations used in this section and its full regression results can be found in Appendix C. In general, an odds ratio of more than 1 indicates that the bachelors in the attribute category have a higher chance of being in the observed variable of interest compared to the reference group. Conversely, an odds ratio of below 1 implies lower probability.

3.2. Impact of internships on job attainment

Internships show no effects on bachelor's employment status

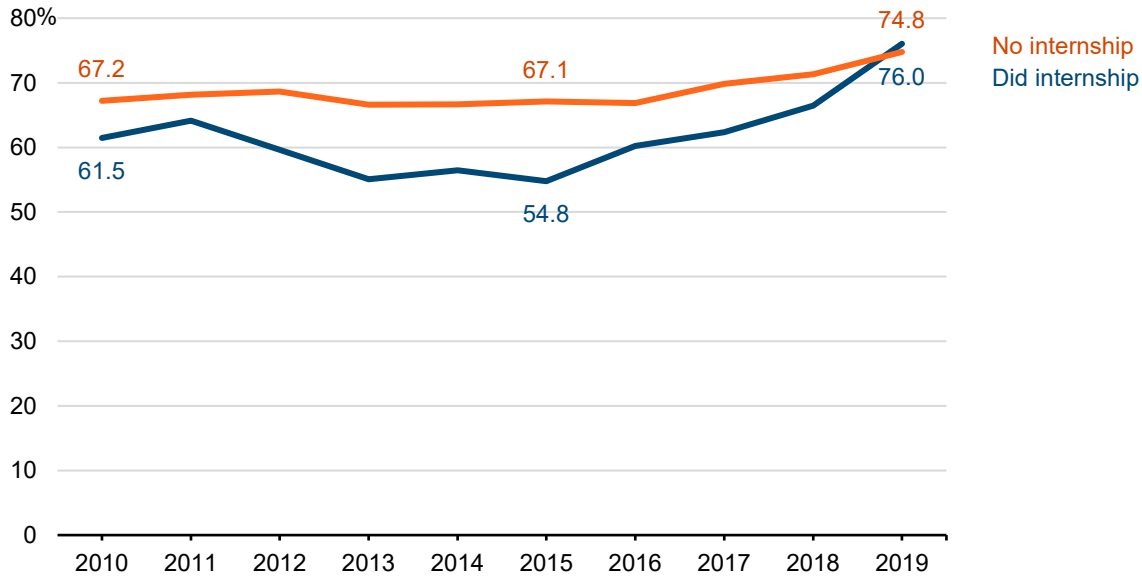
This section looks at the effect of internships onto employment status, i.e. whether internships improve the likelihood of the graduates to be *employed* (defined as *working* and/or *awaiting job placement*) or *unemployed* (not able to secure a job upon study completion).

Overall, internships had little impact on graduates' employment status across cohorts and fields of studies. Figure 10 shows that the proportion of those who are employed has consistently been lower among the graduates who had completed an internship compared to those with no internship experience.

This difference was the largest in 2015 when the proportion of those who are *working* or *awaiting placement* among interned bachelors was at 54.8% compared to 67.1% among non-interns. However, this gap has been narrowing from 2016 onwards, and in 2019, the proportion of interned graduates who are *employed* overtook those with no internship experience.

[42] Both change and control variables are independent variables

Figure 10 Proportion of bachelors who are employable, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

Table 16 below shows the regression results for the internship odds ratio from the years 2010-2019. Across the decade, bachelors with an internship experience have an odds ratio below one, ranging from 0.66 to 0.84. This indicates that they are less likely to be employed compared to graduates who have not completed an internship when controlled for all individual, institutional, and academic characteristics.

Table 16 Regression results on employment status by internship status, 2010-2019, (odds ratio)

Observed var: **Employment Status**									*(1: Employable, 0: Unemployed)*
Changed var**: Internship status**									
Internship odds ratio									*Base: No internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
0.84***	0.83***	0.73***	0.74***	0.80***	0.69***	0.77***	0.66***	0.67***	0.80***
Pseudo R2									
0.09	0.05	0.05	0.03	0.03	0.04	0.02	0.02	0.02	0.02

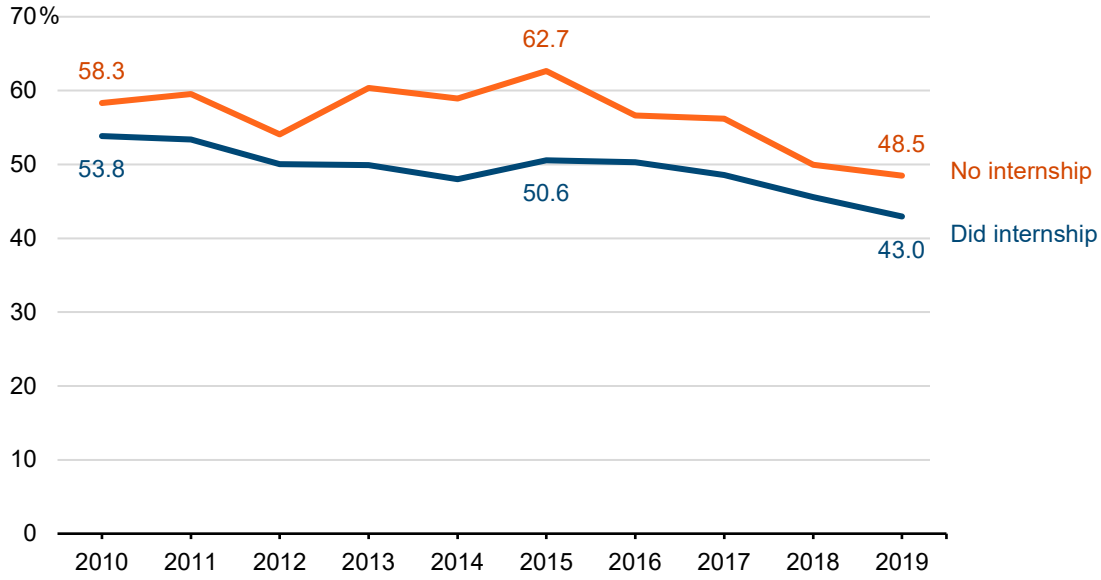
Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Internships also have little effect onto bachelor's employment type

The second dimension of job attainment focuses on the type of employment these bachelors are working in and if internships play an influence on their likelihood to be in standard employment. In this subsection, only *working* graduates are examined and those who are *awaiting job placement* are excluded as the information of their employment type is not available.

When comparing the proportion of graduates who are in standard employment between the bachelor's internship status, Figure 11 shows that those with no internship experience showed a higher proportion of being in standard employment. However, the gap in the prevalence of those in standard employment between interned and non-interned bachelors has narrowed since its peak in 2015 (12.1 ppt). Despite this, the closing of the gap is driven by the decrease in non-interned bachelors in standard employment rather than the rise of interned bachelors in standard employment.

Figure 11 Proportion of bachelors who are in standard employment, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

The observation that bachelors with no internship experience showed a higher proportion of being in standard employment—and thus the low influence on internships onto the bachelor's likelihood to attain standard employment—is further supported by the regression results shown in Table 17.

This table shows the likelihood of bachelors being in standard employment by internship status for the years 2010-2019 when controlling for individual attributes, institutional characteristics, academic achievement, and job's economic sector. As the odds ratio for interned bachelors have consistently remained below 1, it can be inferred that those who have undergone an internship are not at any advantage of attaining standard employment when compared to their peers with no internship experience.

Table 17 Regression results on employment type by internship status, 2010-2019, (odds ratio)

Observed var: **Employment Type**									*(1:Standard, 0:Non-Standard)*
Changed var: **Internship Status**									
Internship odds ratio									*Base: No internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
0.80***	0.73***	0.74***	0.58***	0.63***	0.62***	0.73***	0.64***	0.74***	0.73***
Pseudo R2									
0.07	0.07	0.08	0.07	0.08	0.07	0.06	0.07	0.06	0.06

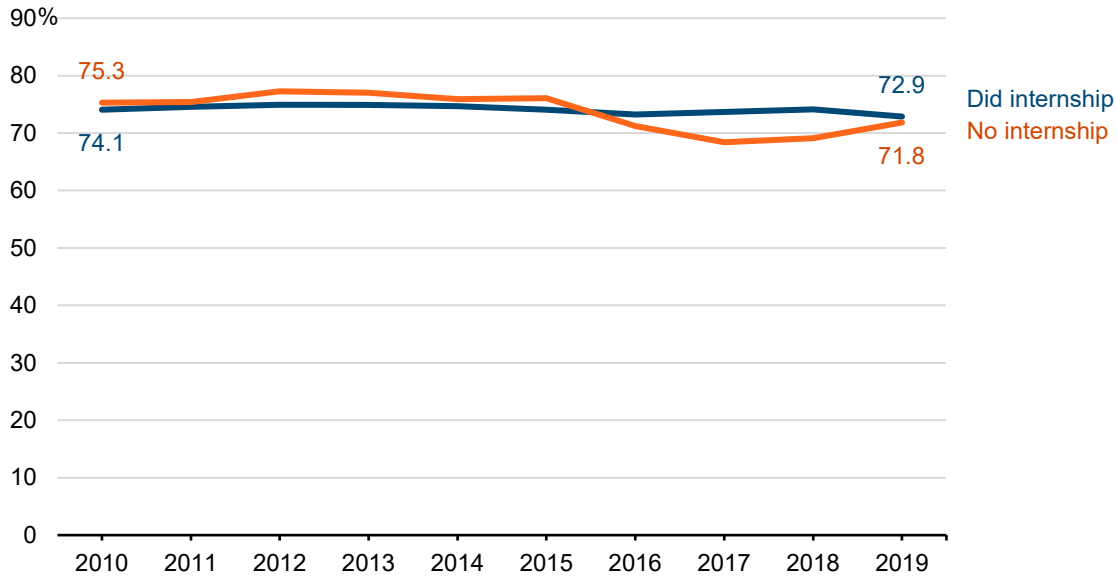
Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

The finding that internships had little impact on the bachelors' employment status or employment type seem to contradict with the perception of work experience being an important determinant in seeking employment. However, these results may be explained through the quality of employment these graduates are in, which is further explored in the following subsections. While internship may not be influential in getting a job, it may instead contribute to their ability in getting a "good job".

3.3. Impact of internships on horizontal job match

In general, internships have little effect on horizontal job match

Figure 12 Proportion of bachelors in horizontal job match, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

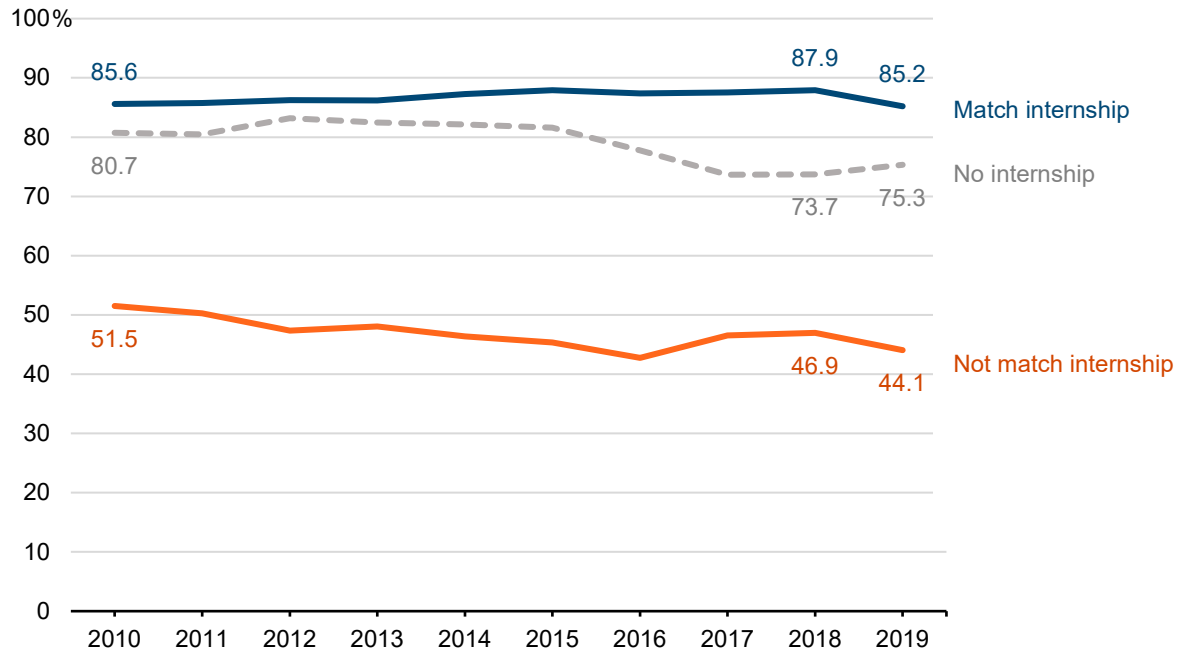
The first dimension of job quality explored is if the bachelors are employed in an economic sector related to their field of study (horizontal job match). Figure 12 shows that the horizontal job match between interned and non-interned bachelors were comparable between the years 2010 until 2015. However, when observing the outcomes for the years 2016 to 2018, internships were

seen to have a slight influence in the likelihood of bachelors being employed in a field that matches their field of study. In that same period, bachelors who have done an internship had a higher proportion of being in a job-field match employment, with a difference of around 5 ppt in 2017 and 2018.

Match internships leads to match jobs

While in general, internships had little influence onto the likelihood of the bachelors in being employed in a job that meets their level of studies, the story shifts when we dissect it by whether their internship experience itself was a match to their field of study. Figure 13 shows the proportion of these bachelors in standard horizontal match employment based on their internship type.

Figure 13 Proportion of bachelors in horizontal job match, by matched internship status, 2010-2019



Source: MOHE (various years), author's calculation

From the chart above, we can observe that bachelors who were in *not matched* internships fare worse (i.e. less likely to be in match employment) compared to the group of bachelors with match internships and those with no internship experience. On the other hand, those who did a matched internship consistently had the highest proportion of bachelors in match standard employment. In 2019, the prevalence of those with matched internships being in horizontally matched jobs were 9.9 ppt higher than those with no internship experience and 41.1 ppt higher than those with *not matched* internships.

Table 18 Regression results on horizontal job match by matched internship status, 2010-2019, (odds ratio)

Observed var: **Horizontal job match**									*(1:Match, 0:Not Match)*
Changed var: **Matched internship**									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Unmatched Internship Odds Ratio									
0.34***	0.33***	0.29***	0.32***	0.33***	0.26***	0.31***	0.40***	0.39***	0.32***
Matched Internship Odds Ratio									
1.58***	1.65***	1.53***	1.61***	2.04***	1.69***	2.13***	2.28***	2.29***	1.93***
Pseudo R2									
0.06	0.07	0.08	0.08	0.10	0.10	0.12	0.10	0.10	0.11

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

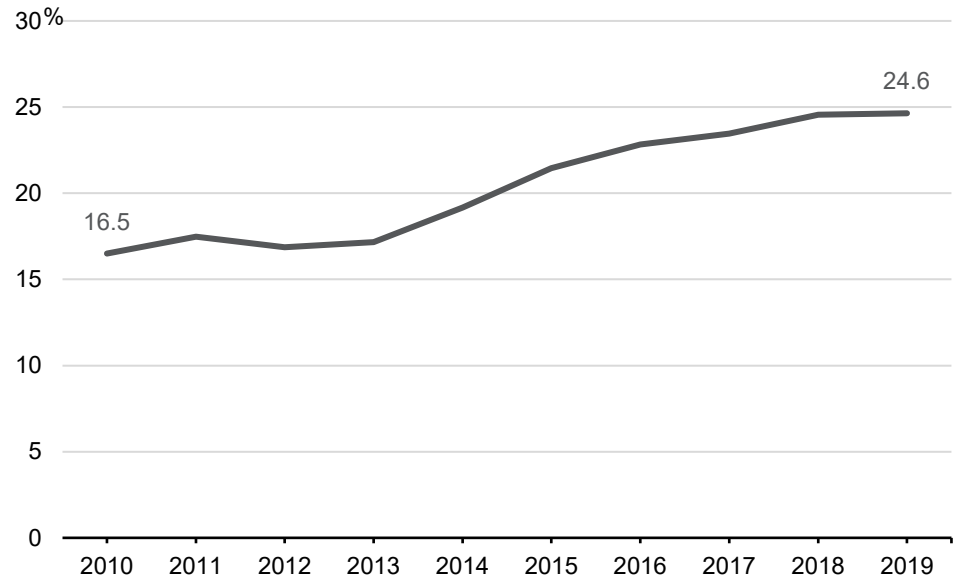
Table 18 shows the odds ratio of the bachelors' likelihood to be in a horizontal matched employment by internship match type when all other fields are equal for the year 2010-2019. From the table above, bachelors who are in a matched internship are 1.6 to 2.3 times more likely to be in a field-matched employment compared to those who have no internship experience (base); thus, highlighting the importance of a matched internship experience.

Meanwhile, the odds of bachelors who did an internship in an economic sector outside their field of study (unmatched internship) to be in a matched employment were less than half of those with no internship experience. This shows that the economic sector the bachelors choose to intern in matters, and their likelihood to be in a match employment only increases if the internship experience was done in an industry that matches their field of study.

While it may be the case that not all bachelors want to be employed in the same economic sector as their field of study, Figure 14 shows that in 2010, 16.5% of those in standard employment and stated an intention to change jobs cite wanting to be employed in the same industry as their field of study as their main reason. This proportion has since risen in the past decade, reaching as high as 24.6% in 2019 thus indicating that horizontal employment match is an increasingly important aspect to many bachelors.

Thus, beyond simply having an internship experience, the economic sector the bachelors choose to intern in plays a large role in their labour market outcomes—and in this case, their likelihood of being in a job that matches their field of study. Hence, in this aspect, having no internship experience has better labour market outcomes than a non-match internship.

Figure 14 Proportion of bachelor's respondents who responded their main intention to change jobs is to be employed in the same industry as field of study, 2010-2019



Source: MOHE (various years), author's calculation

3.4. Impact of internships on job skill level

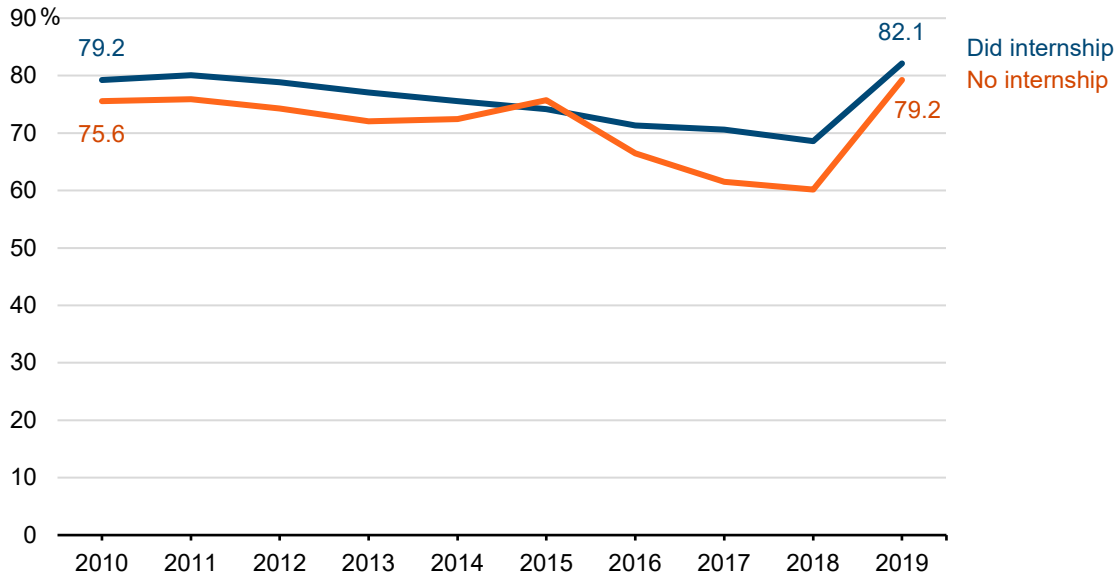
Besides horizontal job match, another aspect of job quality explored is the bachelors' occupation (interpreted in terms of job skill level). As these graduates have higher education qualifications, their job skill level serves as an indicator if they are appropriately employed in a "graduate job"—a position that matches their qualification level (vertical job match). Hence this subsection aims to identify whether an internship experience, and its various characteristics, would increase the likelihood of these bachelors to be employed in high-skilled standard employment.

Internships bring positive influence on bachelors' job skill level

Figure 15 shows that among the bachelors who are working in standard employment (full time or permanent jobs), those who have completed an internship requirement are more likely to be in high-skilled occupations. Besides the single instance in 2015, bachelors with an internship experience had a higher proportion of being employed in high-skilled jobs.

The gap between interned and non-interned bachelors in high-skilled standard employment has seen to be increasing between 2016 to 2018, having an 8.2 ppt difference in 2018. This implied a higher influence of internships towards the bachelors being employed in high-skilled jobs during this period. However, this gap greatly closed in 2019, which concurrently saw a sharp spike in the proportion of bachelors in high-skilled standard employment.

Figure 15 Proportion of bachelors in high-skilled standard employment, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

The above observation is verified by the regression results shown in Table 19. Bachelors who have completed an internship are 1.21 to 1.46 times more likely to be in high-skilled standard employment compared to bachelors with no internship experience. This showcases the influence of internship towards the likelihood of gaining a high-skilled employment when other personal, academic, institutional, and economic sector is held equal.

The results of the regression may also shed some light onto the spike and closing of the high-skilled employment gap between the interned and non-interned bachelors in 2019. The lower pseudo r-squared in 2019 at 0.13 compared to the previous year indicate that there may be other factors not explained in the regression that was not present in the previous years.

Table 19 Regression results on employment skill level by internship status (odds ratio), 2010-2019

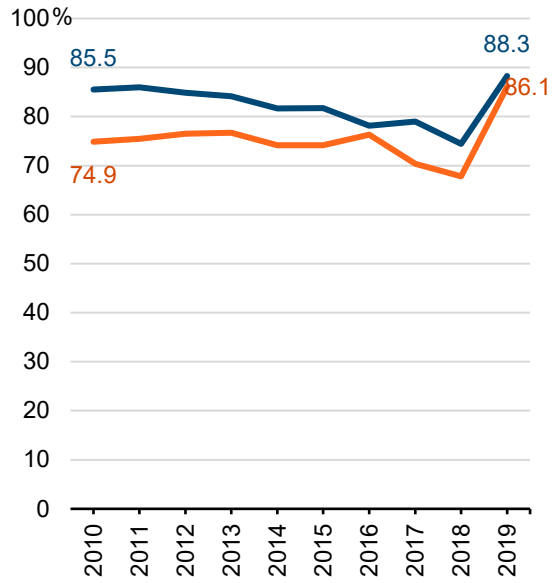
Observed var: **Employment skill level**									*(1:High-skill, 0:Low and Semi Skill)*
Changed var: **Internship status**									
Internship Odds Ratio									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
1.21***	1.26***	1.40***	1.46***	1.34***	1.20***	1.38***	1.30***	1.37***	1.31***
Pseudo R2									
0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.13

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Additionally, the influence of internships towards the likelihood of being in high-skilled standard employment varies by the economic sector. When comparing the outcome of bachelors by internship status across the four economic sectors, the *industrial* sector and *modern services* showed the highest difference in outcomes between the interned and non-interned bachelors.

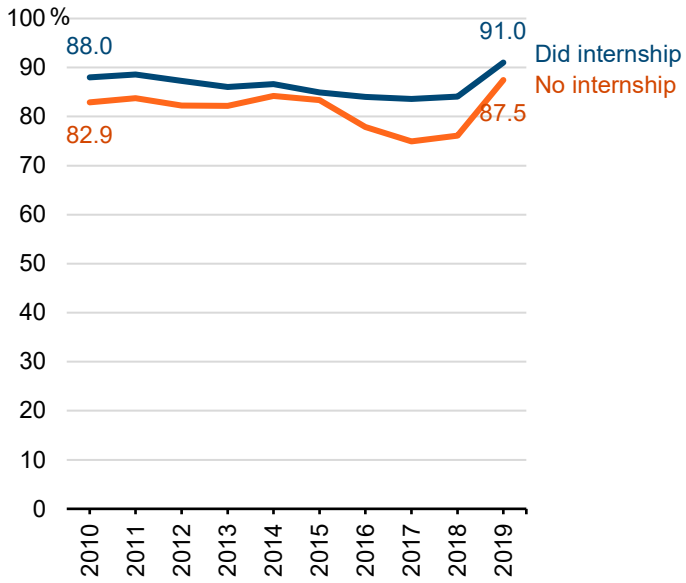
In both these economic sectors, bachelors who have completed an internship had consistently showed better outcomes (i.e.: in high-skilled employment) compared to their non-internship peers who are competing for employment in the same sector. Meanwhile, the outcomes were inconclusive for bachelors who worked in the *agriculture* sector and is comparable in the *traditional services* sector.

Figure 16 Proportion of bachelors in the industrial sector in high-skilled standard employment, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

Figure 17 Proportion of bachelors in the modern services sector in high-skilled standard employment, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

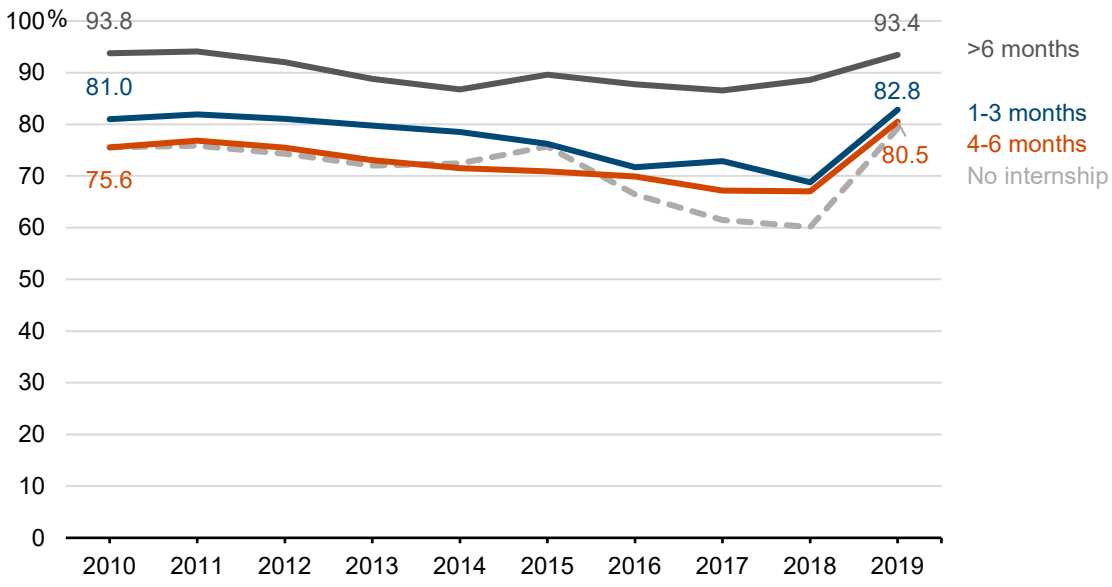
The correlation between bachelors who have done an internship and an increase in their likelihood of being in standard employment moves in tandem with one of the major rationales for internships—where interns are able to bridge the theory and practical gap by learning job-related knowledge and skills as well as workplace skills[43]. This then may explain the differences in the bachelors' outcome in the *industrial* and *modern services* sector which may require more technical or job-specific skill compared to the *agriculture* or *traditional service*s sector.

Longer internships, higher skilled jobs

Additionally, the duration of the internship experience also influences the likelihood of these bachelors being in high-skilled jobs. Figure 18 shows the proportion of bachelors in high-skilled standard employment by internship duration for the years 2010-2019. While in general all internship durations outperform the no internship bachelors' group, those who did an internship for longer than 6 months had a much higher proportion of being in high-skilled jobs compared to all the other groups.

[43] Maertzetal et al., 2014

Figure 18 Proportion of bachelors in high-skilled standard employment, by internship duration, 2010-2019



Source: MOHE (various years), author's calculation

The table below shows the odds ratio of the different internship periods when controlled for individual characteristics, institutional attributes, academic capabilities, and economic sector for the years 2010-2019. Across the decade, the odds ratio rises as the length of the internship duration increases. This indicates, the longer the bachelors' internship period, the likelihood of them to be in a high-skilled standard employment increase.

Table 20 Regression results on employment skill level by internship duration (odds ratio), 2010-2019

Observed var: **Employment skill level**									*(1: High-skill, 0: Low and Semi Skill)*
Changed var: **Internship duration**									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
1-3 Month Internship Odds Ratio									
1.07	1.13**	1.19***	1.31***	1.16**	*1.03*	1.17***	1.13**	1.13**	1.17**
4-6 Month Internship Odds Ratio									
1.28***	1.34***	1.56***	1.56***	1.50***	1.35***	1.55***	1.40***	1.51***	1.40***
>6 Month Internship Odds Ratio									
2.00***	3.03***	2.68***	2.00***	1.26*	1.96***	1.89***	2.13***	2.58***	2.22***
Pseudo R2									
0.17	0.17	0.18	0.17	0.17	0.17	0.16	0.16	0.17	0.14

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Thus, while Figure 18 shows the proportion of those who are in 1-3 months internship are shown to have a higher proportion of bachelors who are in a high-skilled employment compared to those

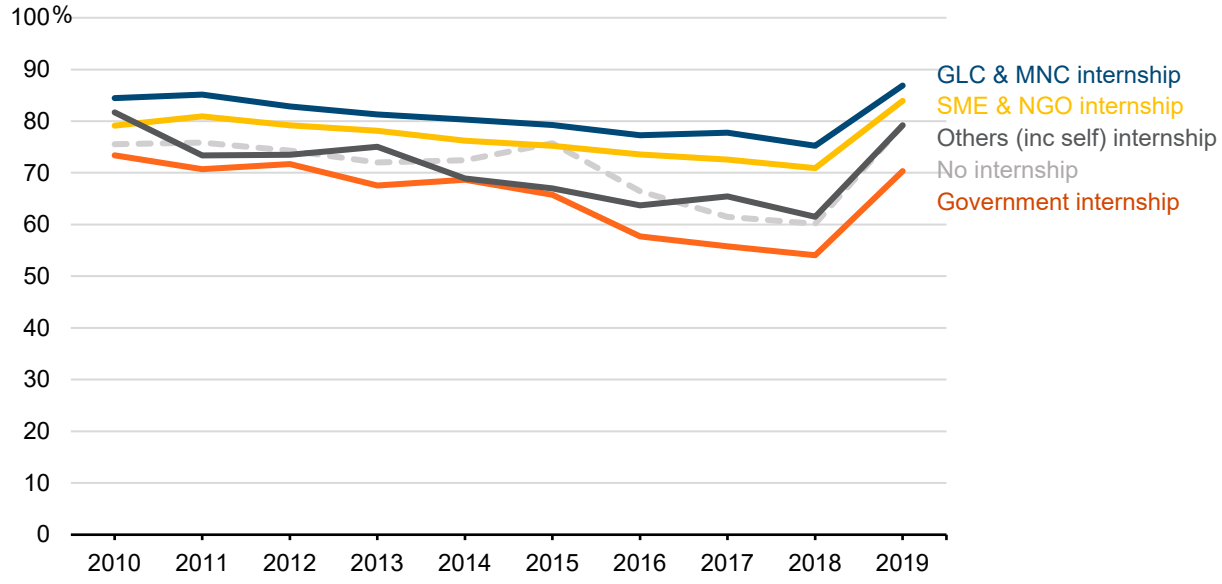
who did 4-6 months internship, Table 20 shares a different story. The odds ratio of the 4-6 month internship period is consistently higher than the 1-3 month internship period. This implies, that when controlled for all other factors that may influence employment skill level, the longer internship duration will bring better outcomes (ie. have a higher likelihood of being in high-skilled job).

Meanwhile, Table 20 corroborates with Figure 18 which shows that the >6 month internship period has the highest likelihood of being in high-skilled standard employment. Bachelors who had done an internship longer than 6 months are 2 to 3 times more likely to be employed in high skilled jobs compared to bachelors with no internship experience. This highlights the value in long internship durations in helping bachelors to be employed in jobs that matched their level of qualification regardless of economic sector and field of study.

Of all internship organisation types, bachelors who did their internship in GLCs & MNCs are most likely to be in high-skilled standard employment

Besides internship duration, another characteristic that could influence the bachelor's likelihood of being in high-skilled standard employment is the type of organisation these bachelors interned in. Among the different organisations, the gap between internship status is highest in among *GLC & MNC internships* (Figure 19), whereby those with GLC & MNC internship experience consistently has a higher proportion of those in high-skilled standard employment compared to bachelors with no internship experience or those with internship experience in other organisation types.

Figure 19 Proportion of bachelors in high-skilled standard employment, by internship organization type, 2010-2019



Source: MOHE (various years), author's calculation

On the opposite end of the spectrum, those with a government internship experience are less likely to be high-skilled standard employment compared to the bachelors with no internship experience. Meanwhile, the outcomes of those who interned in *others*, which also includes self-internship, were comparable to those with no internship experience. This implies that out of the four different organisation types, completing an internship in *government* or *others* does not bring an added benefit for the bachelor's likelihood in being in high-skilled standard employment.

Table 21 further shows that out of the various internship organisation types, those in an MNC & GLC internships has the highest odds of being in high-skilled standard employment. Compared to the bachelors with no internship experience, those who are in MNC & GLC internships are 1.5 to 1.7 times more likely to be in high-skilled occupations compared to their non-interned peers when controlling for individual characteristics, institutional attributes, personal academic capabilities, and the job's economic sector.

However, those who interned in the government organisations are at lower odds to be in high-skilled employment compared to those with no internship, even when controlling for all other identified potential variables. Meanwhile, for those who are in *others*, while some years show an odds ratio above 1, it is not significant. This indicates that the occupational skill outcomes of bachelors who are in the *others* organisation type are similar to those not doing an internship.

Table 21 Regression results on employment skill level by internship organization type (odds ratio), 2010-2019

Observed var: **Employment skill level**									*(1: High-skill, 0: Low and Semi-skill)*
Changed var: **Internship organisation type**									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Government Internship Odds Ratio									
0.84**	0.82***	0.93	0.97	0.93	0.72***	0.85***	0.77***	0.90*	0.82***
MNC & GLC Internship Odds Ratio									
1.50***	1.62***	1.62***	1.73***	1.62***	1.53***	1.68***	1.64***	1.61***	1.65***
SMEs & NGO Internship Odds Ratio									
1.26***	1.37***	1.53***	1.61***	1.46***	1.37***	1.57***	1.44***	1.47***	1.43***
Others (Inc.Self Internship) Internship Odds Ratio									
1.07	0.84	1.21*	1.46***	1.09	0.97	1.01	1.09	1.02	1.14*
Pseudo R2									
0.17	0.17	0.18	0.17	0.17	0.18	0.16	0.17	0.17	0.14

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Understanding how the various internship organisation types influence the outcomes of the bachelor's employment skill level is important to ensure that bachelors are entering into a meaningful internship experience. Differences in the outcomes between types of organisations are likely to be explained by the level of resources that each organisation may have when it comes to shaping the bachelor's internship experience. While programs such as the SIP may encourage

smaller organisations to have a more structured internship program, many in the *SMEs & NGO* category are not under this experience. As of date, the initiative has mainly benefitted GLC, MNC, and other large-scale companies.

Additionally, the rising number of bachelors choosing to self-intern and the lack of significant differences in outcomes compared to those with no internship may indicate that this internship experience may not be as beneficial for the bachelors. Meanwhile, deeper analysis is needed to investigate why the outcomes of bachelors who are in government internship are lower compared to those with no internship experience.

3.5. Impact of internships on income level

The last dimension of employment quality in this paper is on the bachelors' income level when they are employed in standard employment. Earnings is an important indicator for the bachelors' labour market outcomes as there is the common belief that a university degree can act as a pathway to stable and well-paid employment as well as improve the graduates' social mobility.

As the GTS survey is conducted within 6-12 months of the completion of the bachelors' studies, this dataset is also most likely to capture their first salaried employment. Information on their starting income level is important as acceptance of allow starting salary could result in adverse outcomes and may have a compounding effect in deteriorating their upward mobility[44]. Hence, this section investigates the influence of the internship experience onto the bachelor's starting salary.

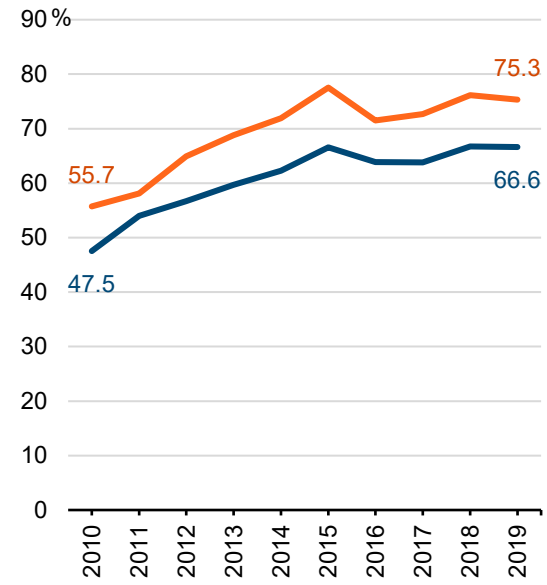
Internships had a low influence on the bachelors' income level

While internships were seen to have a positive influence on the bachelor's likelihood of being in high-skilled standard employment, unfortunately it does not necessarily translate to a greater likelihood for higher pay.

When comparing the income level outcomes of those in standard employment among bachelor graduates, those who did not complete an internship showed a higher prevalence in earning above RM2,000 compared to the bachelors that did an internship (Figure 20). This is also the case when comparing among bachelors who are in high-skilled standard employment (Figure 21)

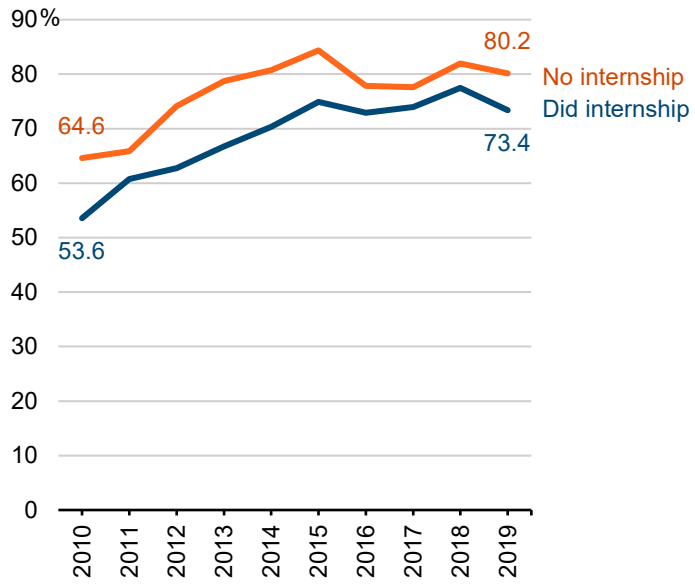
[44] Amirul and Shazrul (2022)

Figure 20 Proportion of bachelors who are in standard employment earning above RM2,000, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

Figure 21 Proportion of bachelors who are in high-skilled standard employment earning above RM2,000, by internship status, 2010-2019



Source: MOHE (various years), author's calculation

The lack of influence of internships onto the bachelors' income outcomes is supported in the regression results of the internship odds ratio of the income of those in high-skilled standard employment for the years 2010-2019 (Table 22). As higher skilled jobs have a positive effect on the bachelor's employment[45], the regression will only look at those in high-skilled standard employment.

Table 22 shows that those who completed an internship are at lower odds to earn above RM2,000 compared to their non-interned counterparts when controlling for individual attributes, institutional characteristics, personal academic capabilities, as well as the economic sector they are employed in. The odds ratio to earn above RM2,000 for interned bachelors ranges around 0.6 to 0.8 compared to non-interned bachelors, save for the year 2011 where it was comparable (close to 1) but not statistically significant. This indicates that an internship experience has little effect on the bachelors' likelihood to have higher earnings.

[45] Hawati Abdul Hamid (2022)

Table 22 Regression results on income level by internship status (odds ratio), 2010-2019

Observed var: **Income level**									*(1: >RM2,000, 0:<RM2,000)*
Changed var: **Internship status**									
Internship Odds Ratio									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
0.79***	*0.97*	0.66***	0.57***	0.65***	0.67***	0.79***	0.75***	0.69***	0.70***
Pseudo R2									
0.12	0.14	0.13	0.11	0.12	0.12	0.11	0.13	0.13	0.15

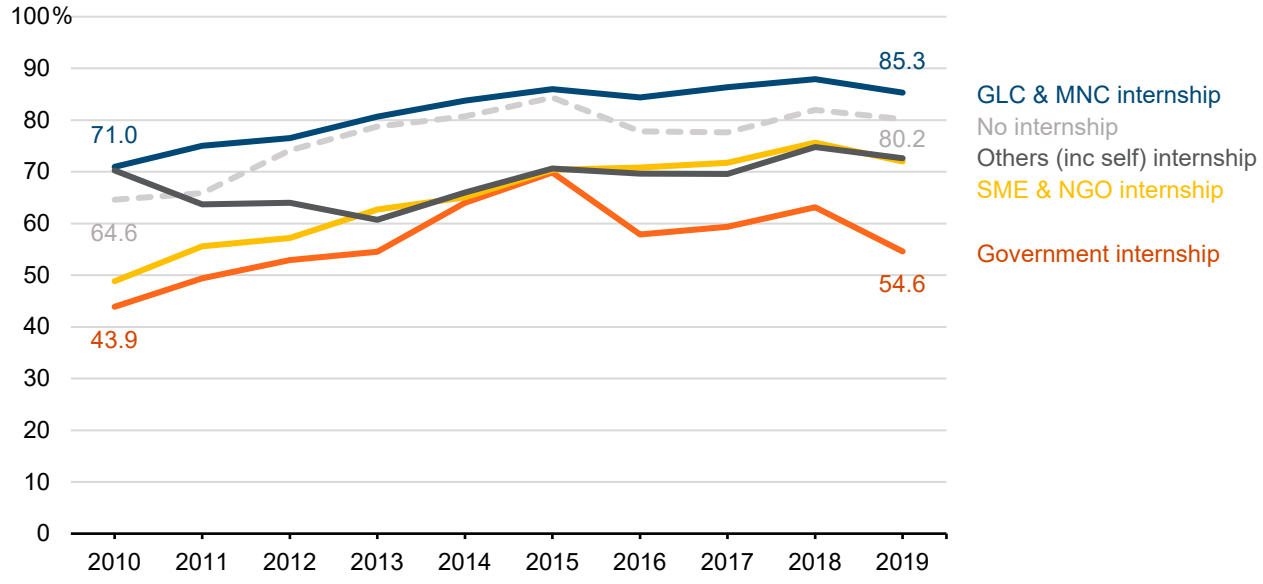
Source: MOHE (various years), author's calculations
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Bachelors in MNC & GLC internships are more likely to earn above RM2,000

However, when comparing the income outcomes of those in different internship organisation types, those who did an *MNC & GLC* internship are more likely to be earning above RM2,000 while being in a high- skilled standard employment. In fact, bachelors who interned in GLC and MNC internships have consistently had a higher proportion of those earning above RM2,000 compared to their non-interned peers (Figure 22).

The same cannot be said for the remaining three organisation types whereby the proportion of bachelors earning above RM2,000 is consistently lower than those with no internship experience (Figure 22). The lowest of which is among the bachelors who did a government internship, where the proportion of those who earn above RM2,000 is only at 54.6% in 2019 compared to the non-interned bachelors who had a share of 80.2% in that same year.

Figure 22 Proportion of bachelors in high-skilled standard employment earning above RM2,000 by internship organization type, 2010-2019



Source: MOHE (various years), author's calculation

The comparison between government internship income outcomes compared to bachelors with no internship experience is even more apparent when looking at the internship organisation type odds ratio in Table 23. Based on the regression of the internship's organisation type onto income outcomes, bachelor's in government internships are around half as likely to be earning above RM2,000 compared to those with no internship experience when controlling for individual characteristics, institutional attributes, personal academic capabilities, and economic sector. On a more positive note, those who interned in MNCs & GLCs are 1.2 to 1.8 times more likely to be earning above RM2,000 compared to their non-interned peers when controlled for all known related factors.

Table 23 Regression results on employment skill level by internship organization type (odds ratio), 2010-2019

Observed var: **Income level**									*(1: >RM2,000, 0:<RM2,000)*
Changed var: **Internship organisation type**									*Base: No Internship*
2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Government Internship Odds Ratio									
0.49***	0.59***	0.40***	0.35***	0.50***	0.49***	0.55***	0.55***	0.52***	0.47***
MNC & GLC Internship Odds Ratio									
1.67***	1.88***	1.28***	1.20**	1.39***	1.39***	1.42***	1.46***	1.24**	1.29***
SMEs & NGO Internship Odds Ratio									
0.72***	0.84***	0.59***	0.53***	0.54***	0.60***	0.72***	0.67***	0.60***	0.61***
Others (Inc.Self Internship) Internship Odds Ratio									
1.48**	1.05	0.77*	0.47***	0.61***	0.62***	0.72***	0.62***	0.60***	0.67***
Pseudo R2									
0.14	0.15	0.15	0.13	0.14	0.13	0.12	0.14	0.15	0.17

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

KEY TAKEAWAYS

- An internship experience has no impact on the bachelors' likelihood to be employed or to be in a standard employment.
- Bachelors who did an internship that matches their field of study are more likely to be in job that also matches their field of study when they start working. However, general internships have very little effect on horizontal job match.
- Bachelors who had interned are at higher odds of being in high skilled standard employment. Additionally, those with longer internship durations and those in GLCs and MNCs had higher the odds of being in high-skilled employment.
- Overall, internships had a low influence on the bachelors' income level. However, the internship organisation type can influence higher pay as those who were in a GLC & MNC internship were more likely to be earning above RM2,000.

4. A Case for Paid Internships

While the earlier Section 3 have discussed the various effects (or in some cases, a lack thereof) of internships on the bachelor labour market outcomes, this section seeks to identify, more specifically, if there is any difference between paid and unpaid internships. Previous literature on this topic has indicated that paid internship programs is associated with a better subsequent labour market outcomes compared to unpaid internships[46].

Additionally, the 2017 Student Survey Report conducted by the National Association of Colleges and Employers (MACE) showed that unpaid internships were associated with less success on the likelihood to receive job offers and salary amount after graduation[47]. Crain (2016) also reported a similar outcome, though they acknowledge the positive experience reported by those who did an unpaid internship, such as being able to confirm career interests, setting career goals, as well as having an opportunity to network within the interested industry[48].

However, the existing works supporting the positive effects of a paid internship onto the graduates' labour market outcomes have primarily been on students in Western Europe and the United States of America. Hence, it is important to see if the same effect of paid internship is observed when comparing the labour market outcomes of Malaysia's bachelors between these two intern groups.

This section will begin with an overview of paid internship in Malaysia (Section 4.1), followed by investigating the difference in labour market outcomes between paid and unpaid internships in Section 4.2.

4.1. Overview of paid internships in Malaysia

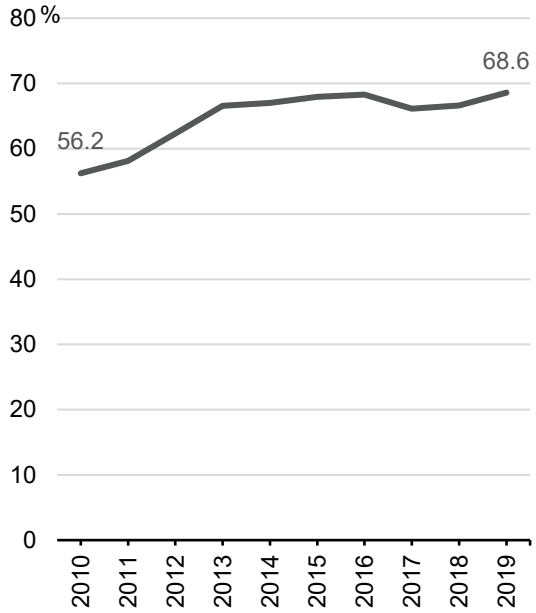
It has been argued that internships exist outside the realm of "employment"[49] and as such its renumeration does not have to comply with the national minimum wage nor the National Wages Consultive Council Act 2011. Meanwhile, NPI, which had a section on internship renumeration only states that organizations are only encouraged to give their interns an allowance[50] though there was no guideline as to how much is considered fair. Thus, paid internships are often offered voluntarily, with varying rates, by both private and government organisation, save a few exceptions.

Of all the graduates who have completed an internship, more than half were paid during their internship period and this proportion has been increasing. In 2010, only 56.2% of graduates were in a paid internship compared to the 68.6% in 2019 (Figure 25). The growth in paid internship may be spurred by government programmes that requires interns to be paid such as the introduction of TalentCorp's Structure Internship Programme (SIP) in 2012 where organisations offering internships under the SIP are required to pay its bachelor's degree interns a minimum

[46] ILO (2018)
[47] NACE (2017)
[48] Crain (2016)
[49] Junaidi Mansor et al. (2019)
[50] MOHE (2010)

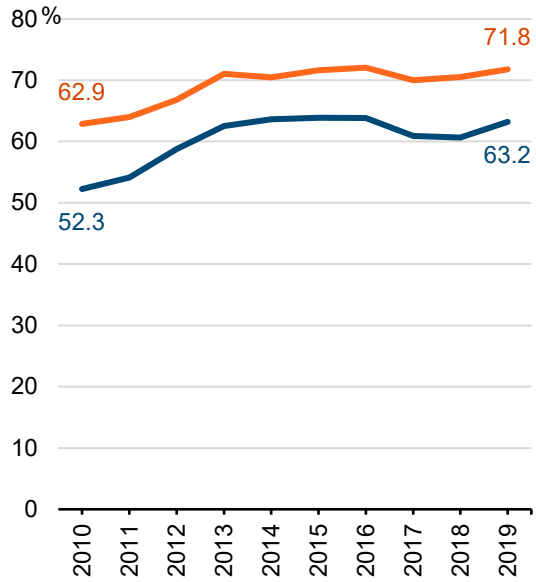
allowance of RM600[51]. Meanwhile, in 2019, then Sports and Youth Minister required all federal government department interns to receive an allowance of RM900 per month[52], with an intention to expand this requirement to the private sector though as of 2022 no official policy has been made.

Figure 23 Proportion of interned bachelors who had a paid internship, 2010-2019



Source: MOHE (various years), author's calculation

Figure 24 Proportion of interned bachelors who had a paid internship, by family income, 2010-2019



Source: MOHE (various years), author's calculation

However, when breaking down graduates who had interned by family income, those who come from families with income less than RM2,000 are much less likely to be in paid internships compared to families with income of more than RM2,000 (Figure 26). This is particularly concerning as graduates who come from lower family backgrounds and undergo an internship away from home or their HEIs are at a great financial disadvantage as they may have to spend much more to complete an internship.

The relationship between family income and the likelihood of obtaining a paid internship has also been highlighted in previous literature. Families with a higher income background are more likely to access more established internships, which includes paid internships, as they have a higher social capital and network that allows for these opportunities[53].

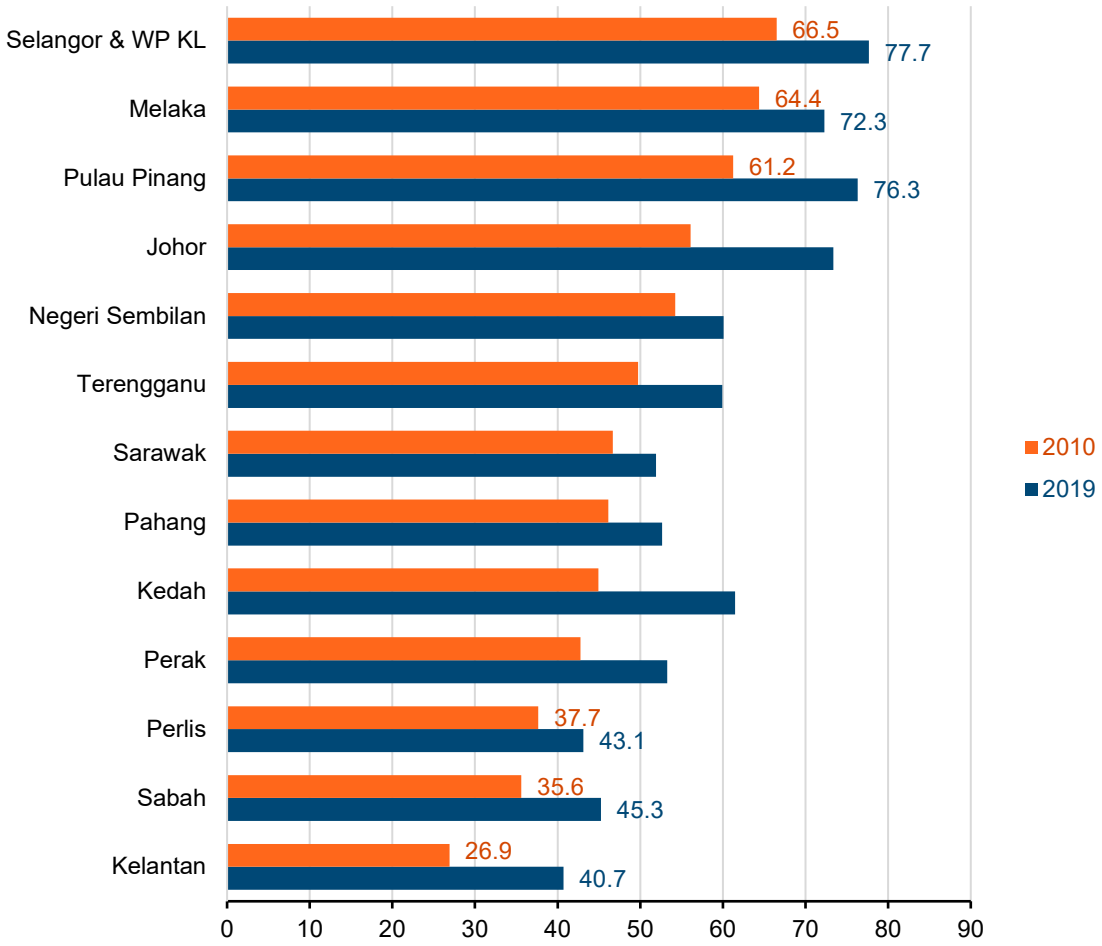
[51] TalentCorp, (2016)
[52] TheStar (2018)
[53] Gardiner (2011)

Selangor and Kuala Lumpur have the highest proportion of bachelors with paid internship

Among all the different states, Selangor and WP Kuala Lumpur have the highest proportion of bachelors who are in a paid internship (Figure 25). In 2019, 77.7% of all interned bachelors in Selangor and WP Kuala Lumpur were paid. This is followed closely by Pulau Pinang, which had a share of 76.3% of its interned bachelors paid in 2019. On the other end of the spectrum however, Kelantan had the lowest proportion of paid bachelor's interns, with a share of 26.9% in 2010 and 40.7% in 2019.

Regardless, all states saw an increase of their paid bachelor interns, though at varying rates. In 2010, only 5 (Selangor & WP Kuala Lumpur, Johor, Negeri Sembilan, Melaka, and Pulau Pinang) of the 13 listed states had more than half of their interned bachelors paid. This has since doubled, where in 2019 10 out of the 13 listed states had a share of more than 50% of paid opportunities among its bachelor interns. However, Kelantan, Perlis, and Sabah are still majority unpaid internships, where only 40.7%, 43.1% and 45.3% of their interned bachelors were paid respectively.

Figure 25 Proportion of interned bachelors who are paid, by internship location, in 2010 and 2019



Source: MOHE (various years), author's calculation

The proportion of paid internships by state seems to also reflect the proportion of migrant interns as well, as previously discussed in Section 2.2. Out of all the states, most of the migrant interns were in Selangor & WP Kuala Lumpur (39.5% in 2019) followed by Pulau Pinang (12.3% in 2019), which coincides with the top two states with the highest proportion of paid interns. This could imply that most "migrant" interns may choose to intern in these two states not only because of higher opportunities there but also the higher likelihood of being in a paid internship. This is especially the case when interning away from home or institution may incur higher costs during the internship period.

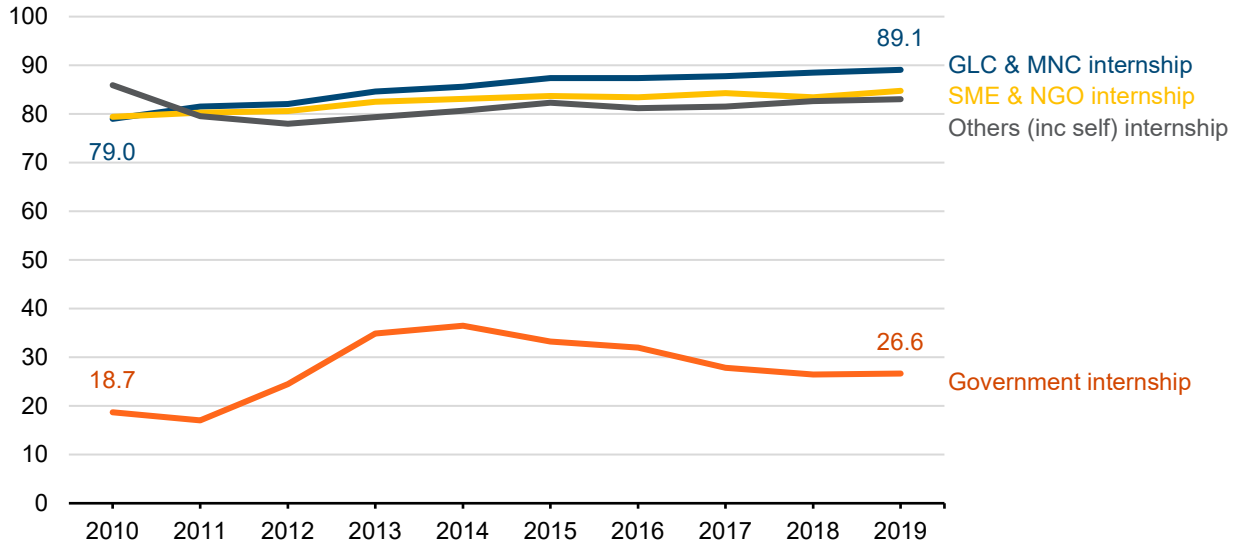
Bachelors who did their internship in government organisations are the least likely to be paid

In 2010, the *GLC & MNC* and *SME & NGO* had a share of paid bachelor interns at 79.0% and 79.4% respectively (Figure 28). The proportion of paid internship in both organisation types have consistently increased in the past decade, with *GLC & MNC* having the highest prevalence of paid interns at 89.1% followed closely by *SME & NGO* at 84.8% in 2019.

Conversely, although government organisations has the second highest proportion of interned graduates (refer to Section 2.3), a large portion of them are unpaid interns (Figure 28). In 2010, the share of paid bachelor's interns was only at 18.7%. While it has since increased to 26.6% in 2019, it has fallen from its highest proportion of 36.5% in 2014 and has remained much lower than all the other sectors across the decade.

While NPI encourages paid internships, this is not reflected in the prevalence of paid internships in the government organisations. The proportion of paid government interns is also much lower than the more informal *others (inc Self)*. While in 2019, it was made mandatory for federal government agencies to pay a minimum allowance of RM900 (from RM300 before 2019), it does not extend to state government departments, thus potentially explaining the low share of paid interns in government organisations.

Figure 26 Proportion of interned bachelors in a paid internship, by internship organisation type, 2010-2019



Source: MOHE (various years), author's calculation

4.2. Effect of paid internships on bachelor labour market outcomes

Empirical methodology

The question surrounding the influence of paid internships onto the bachelor labour market outcomes can generally be divided into two parts. First, do paid internships lead to more successful labour market outcomes compared to unpaid internship programs? Secondly, if paid internships do bring positive effects, how so?

It is also important to note that beyond paid internships, other internship characteristics can also influence bachelor labour market outcomes such as internship duration, internship organisation type, and internship match as discussed previously in Section 3. Paid internship can also serve as an indicator of the organizations' readiness towards accepting interns as a part of their personnel policy and may indicate a more structured and formal internship experience[54].

Thus, keeping all these variables in mind, a binary logistic regression was conducted to identify the effects of a paid internship on the bachelor's labour market outcomes. The equation used is as follows:

Equation 2 General format of binary logistic regression equation used to analyse impacts of paid internship on bachelor labour market outcomes

$$\begin{aligned} Observed\ Variable \\ &= \alpha + \beta_{i,p} Paid\ Internship + \beta_{i,p}\ Gender + \beta_{i,p}\ Family\ Income \\ &+ \beta_{i,p}\ Field\ of\ Study + \beta_{i,p}\ HEI\ Type + \beta_{i,p}\ HEI\ Status + \beta_{i,p}\ CGPA\ Level \\ &+ \beta_{i,p}\ Malay\ Proficiency + \beta_{i,p}\ English\ Proficiency + \beta_{i,p}\ ICT\ Skill\ Level \\ &+ \beta_{i,p}\ Economic\ Sector + \beta_{i,p}\ Internship\ Organisation\ Type \\ &+ \beta_{i,p}\ Year\ Graduated + \varepsilon_{i,p} \end{aligned}$$

This equation is repeated for three different observed variables and two internship durations, namely (a) 1-3 months and (b) 4-6 months. Each observed variable also has its respective sample group to account for any variations in outcomes that is not explained in the equation. Table 24 lists out the observed variable and its respective sample group.

Table 24 Summary of observed variables used in the regression analysis and its respective measurement and sample group

Observed Variable	Measurement	Sample Group
(1) Employment Type	0=Non-standard 1=Standard	Working bachelors with an internship experience
(2) Skill Level	0=Low and Semi Skill 1=High-skill	Standard employed bachelors with an internship experience

[54] ILO (2018)

(3) Income Level	0 = <RM2,000 1= >RM2,000	High-skilled standard employed bachelors with an internship experience

Meanwhile, all other variables besides the *paid internship* acts as a control variable to mitigate any external effects of the bachelors' individual attributes, institutional characteristics, academic capabilities, economic sector, as well as other internship qualities onto their labour market outcomes.

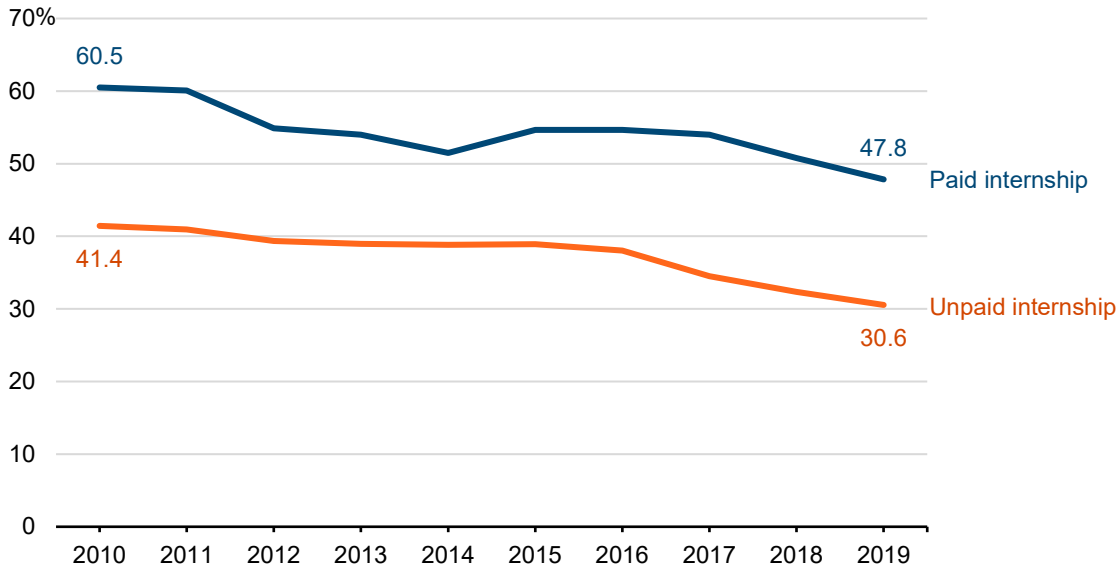
Those with paid internships are more likely to be in standard employment

The first variable analysed is the influence of paid internships onto the bachelors' type of employment. When comparing the employment type between paid and unpaid bachelor interns in the past decade, those who had a paid internship experience consistently showed a much higher proportion of its graduates in standard employment (Figure 29).

Additionally, there is a large gap between the prevalence of bachelors in standard employment between those in paid and unpaid internship. In 2010, the difference between them was at 18.8 ppt, where 60.5% of those who did a paid internship were in a permanent or full-time employment compared to the 41.3% of those who did an unpaid internship.

While in both cases the share of bachelors in standard employment have been decreasing, the difference in outcomes between the paid and unpaid bachelor interns remained large. In 2019, there was a 17.7 ppt difference where 47.8% of paid interns were in standard employment compared to 30.6% of unpaid interns.

Figure 27 Proportion of bachelors in standard employment, by paid internship status, 2010-2019



Source: MOHE (various years), author's calculation

When controlling for various other factors that may influence the bachelor's employment type, the binary logistic regression results support the finding that those with paid internships were more likely to be in standard employment compared to unpaid ones (Table 25). Among those who

did a 1-3 month internship, bachelors who did a paid internship were 1.2 times more likely to be in a standard employment compared to their unpaid internship peers.

Table 25 Regression results on type of employment by internship paid (odds ratio), 2010-2019

Observed var: **Employment type**	*(1: Standard, 0: Non-standard)*
Changed var: **Paid internship**	
1-3 months internship	**4-6 months internship**
Paid Internship odds ratio	*Base: Unpaid Internship*
1.20***	1.12***
Pseudo R2	
0.08	0.08

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

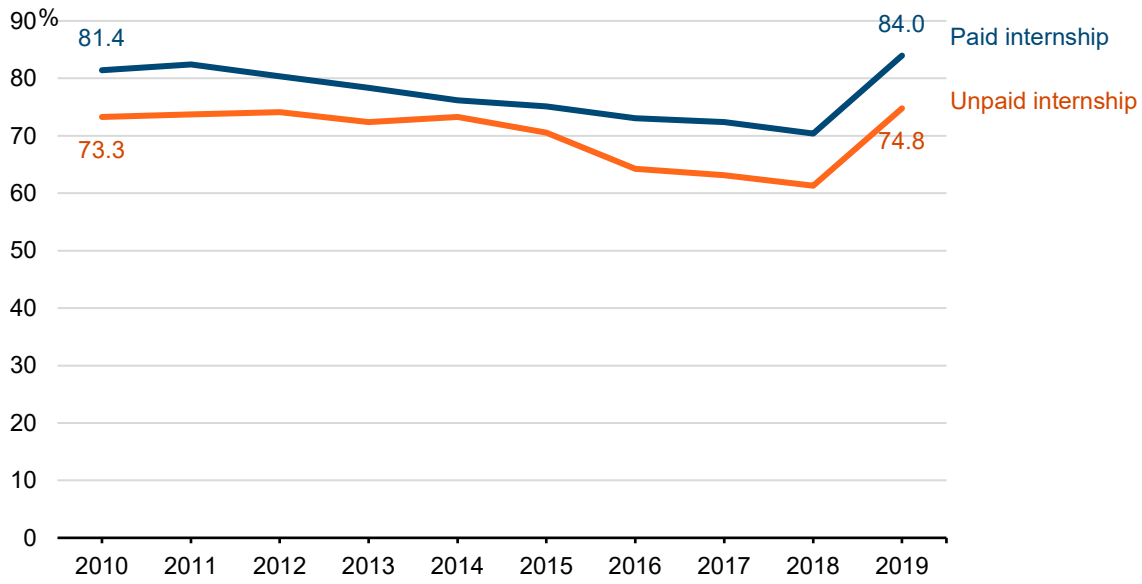
However, when comparing the outcomes of bachelors who did a 4–6-month internship duration, those in a paid internship were only 1.12 times more likely to be in standard employment compared to those who have an unpaid internship. This indicates that the effect of a paid internship is more pronounced on employment type when the duration of the internship is shorter.

Positive effects of paid internship onto high-skilled employment outcomes

Figure 30 shows the proportion of bachelors in high-skilled standard employment by the payment status of their internship. From the figure below, bachelors who had a paid internship experience shows higher prevalence of being in high-skilled employment compared to their peers who were in unpaid ones.

While the gap between the outcomes of paid and unpaid interns narrowed slightly between 2010 to 2014, the difference has since widened from 2015 onwards indicating an increasing effect of paid internship onto the bachelor's likelihood to be in high-skilled employment in recent years. In 2019, there was a 9.2 ppt difference between paid and unpaid internship outcomes, where the prevalence of the bachelors in high-skilled employment were at 84.0% and 74.8% for that year respectively.

Figure 28 Proportion of bachelors in high-skilled standard employment, by paid internship status, 2010-2019



Source: MOHE (various years), author's calculation

The positive influence of a paid internship onto the bachelor's likelihood to be in high-skilled standard employment is further supported by the regression results as shows in Table 26. Among those who have completed an internship in the duration of 1-3 months, those who are paid are 1.13 times more likely to be in a high skilled job compared to their unpaid peers, when controlling for the bachelors' individual attributes, institutional characteristics, academic capabilities, economic sector, and other internship qualities.

Meanwhile, the odds ratio for those in 4-6 month internship is higher at 1.19, indicating that those who were in a paid 4-6 month internship are 1.19 times more likely to be in high-skilled employment compared to those in unpaid 4-6 month internship. The difference in the odds ratio between these two internship lengths also implies that the effect of a paid internship is higher among those who are in a longer internship.

Table 26 Regression results on employment skill level by internship paid (odds ratio), 2010-2019

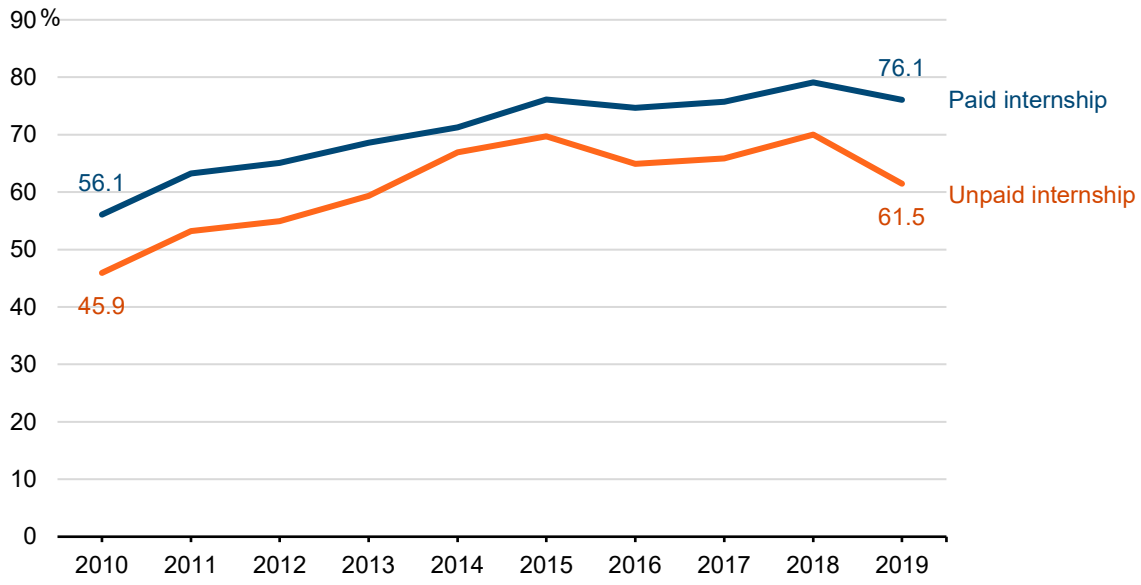
Observed var: **Employment skill level**	*(1: High-skill, 0: Low and Semi-skill)*
Changed var: **Paid Internship**	
1-3 months internship	**4-6 months internship**
Paid Internship odds ratio	*Base: Unpaid Internship*
1.13***	1.19***
Pseudo R2	
0.19	0.15

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Higher prevalence of those earning above RM2,000 among paid interns

The last employment outcome observed in this section is to see the influence of paid internship programmes onto the bachelor's likelihood to be earning above RM2,000. Figure 47 shows the prevalence of bachelors in high-skilled standard employment earning above RM2,000 by the internship payment type. While the share of those earning above RM2,000 have been increasing for both paid and unpaid internships, when comparing the two, bachelors who were in a paid internship had a higher proportion of earning above RM2,000 compared to those who were in an unpaid internship. In 2019, there was a 14.6 ppt difference between the outcomes, where 76.1% of paid interns were earning above RM2,000 compared to only 61.5% of unpaid interns.

Figure 29 Proportion of bachelors in high-skilled standard employment earning above RM2,000, by paid internship status, 2010-2019



Source: MOHE (various years), author's calculation.

The positive effects of being in a paid internship onto the bachelors' income outcomes prevails even after controlling for other internship qualities as well as the bachelors' individual attributes, institutional characteristics, academic capabilities, and economic sector. Table 22 shows the odds of those in a paid internship is 1.37 and 1.20 times more likely to be earning above RM2,000, compared to those who are in unpaid internships for 1-3 months internship and 4-6 months internship respectively. This also implies that the influence of a paid internship onto a bachelor's income outcomes is higher during a shorter internship period.

Table 27 Regression results on income level by internship paid (odds ratio), 2010-2019

Observed var: **Income Level**	*(1: Standard, 0: Non-standard)*
Changed var: **Paid Internship**	
1-3 months internship	**4-6 months internship**
Paid Internship odds ratio	*Base: Unpaid Internship*
1.37***	1.20***
Pseudo R2	
0.16	0.16

Source: MOHE (various years), author's calculation
Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

KEY TAKEAWAYS

- Overall, the proportion of bachelors who are in a paid internship has increased. However, bachelors from lower income families are less likely to be in paid internships.
- Selangor and WP Kuala Lumpur had the highest share of paid internships. Meanwhile, less than half of the bachelors who interned in Perlis, Sabah, and Kelantan were paid in 2019.
- Among all types of employers, bachelors who did a government internship are far less likely to be in paid internships compared to their peers interning with other types of employers such as those in MNCs and GLCs.
- Bachelors who are in a paid internship are more likely to be in standard employment, had a higher likelihood of being in high-skilled jobs, and showed a higher prevalence of earning above RM2,000.

5. Conclusion

This working paper began with two main objectives. The first, to illustrate the Malaysia's internship landscape among bachelor graduates in the past decade. Secondly, to identify the influence of bachelors' internship experience on their labour market outcomes. Utilising the bachelors' responses from MOHE's annual GTS dataset for the years 2010 to 2019, this paper has identified eight key findings as follows:

1. The number of bachelors who have undergone an internship has been increasing across all fields of study. This may be spurred by the rising internship requirement set by HEIs.

2. Independent of an internship requirement by their respective institution, the odds of a bachelor's student undergoing an internship is associated with their field of study and their academic performance (measured by the cumulative grade point average, CGPA).

3. Internship participation does not improve the bachelor's likelihood of being employed (in any type of employment) as well as being employed in full-time and permanent job (standard employment). Instead, those with no internship experience showed higher odds of being employed or in standard employment.

4. Bachelors who have completed an internship have higher odds of being in high-skilled standard employment. Despite this, it does not influence the likelihood of them earning a higher income, defined as being above RM2,000.

5. Bachelors who have done a matched internship are more likely to be in match employment. Despite this, only three-quarters of those who had done an internship did so in an industry that matches their field of study.

6. Where and how long graduates interned matters. Bachelors who had interned for a longer duration or were in MNCs and GLCs showed better employment outcomes in terms of occupation and income level.

7. Overall, the proportion of bachelors who were in a paid internship has increased. However, bachelors from lower-income families and those who interned in the government organisations are less likely to be in a paid internship.

8. Bachelors who are in a paid internship show better employment outcomes compared to their peers who are in an unpaid internship. Those who are in a paid internship are more likely to be in standard employment, in high-skilled jobs, and earn above RM2,000

Discussions and Policy Considerations

Overall, the effects of internships onto these young bachelors' employability are varied, and not all internship experiences have brought similar outcomes. While internships are not influential in increasing the general likelihood to be employed or to be in standard employment, it does bring positive outcomes onto the job level of those in standard employment. This indicates that, when done well, internships can improve the bachelor's skill development beyond their academic training and thus increasing their marketability towards higher skilled 'graduate-level' jobs.

Meanwhile, characteristics such as the internship length, organisation of the internship, internship match, as well as the payment status of internships have each influenced several aspects of the bachelor labour market outcomes, with some bringing in more positive effects than others. Hence, beyond enforcing mandatory internship or heavily encouraging students to complete an internship, it is equally crucial to ensure that the internship experience is structured in a way that is meaningful for the students. Though NPI highlights the responsibilities of various stakeholders involved in the internship ecosystem, it is unclear to what extent it is enforced across all higher education institutions and organisations that accept interns, especially for non-mandatory internships.

The rising number of bachelors who are doing an internship and longer internship durations signals a need for the labour law and regulation to include interns as this growing source of manpower is not protected under the current employment acts. Despite internships existing in a space between the education landscape and the labour market, the NPI stipulates that throughout the internship period, interns are covered under the 1971 University and University College Act, the 1996 Private Higher Education Institutions Act, as well as the 1996 Education Act[55].— emphasising their position as students regardless of internship duration.

The position of interns being considered outside the labour market has also led to a lack of oversight regarding the payment status of internships as well as its amount. While around 60% of interns are being paid, it is not consistent across organisations and family income. Bachelors from lower income families are less likely to be in paid internships, and thus are also less likely to be financially stable during the internship period compared to bachelors from higher income families.

While the question of whether an internship should be paid is not unique to Malaysia, it is important that Malaysia considers expanding the requirement for all internship providers to pay a fair minimum allowance to all its interns. Findings from this paper found that Malaysian bachelors who had undergone a paid internship showed better employment outcomes overall, and thus besides aiding the interns in offsetting the costs incurred during the internship period (such as travel and accommodations costs), it may also benefit organisations and interns in building more skilled talent.

A key theme that this paper has highlighted is that not all internship experiences are equal, and thus a crucial consideration when shaping policies for internships in Malaysia is the balance

[55] MOHE (2010)

between providing more internship opportunities (and thus making internships accessible) or ensuring internship quality (hence ensuring internships are beneficial). As the number of internship opportunities increase, it may pose a greater challenge to enforce appropriate internship guidelines towards all internship providers as not all organisations may have the capabilities to fulfil all the necessary requirements. This is especially so among small and medium enterprises (SMEs). Hence collaboration between HEIs, the industry, as well as relevant government agencies is crucial for the development and enforcement of internship programmes in Malaysia. Undeniably, the NPI and MySIP has been a good start in this direction.

Limitations and Future Work

While this paper aims to be as comprehensive as possible when exploring the influence of internships onto the bachelor labour market outcomes, several questions remain. As this paper utilises the data from MOHE's GTS survey, there are limitations on the amount of information of the bachelor's internship experience such as (i) the number of internships completed, (ii) their perception of skills learnt during the internship, (iii) the degree of support they receive either from their HEI or host organisation during the internship, and (iv) if their internship experience was on par with their academic capabilities. Thus, the "goodness of fit" of the binary regressions used in this study (which is explained by the Pseudo-R2) could perhaps be further improved with the inclusion of these variables.

Additionally, since this paper is limited to the MOHE's GTS data, it only captures the outcomes of graduates within 6 to 12 months after their study completion. Hence, those who may have undergone an internship or industrial training placement after graduation are not captured in this study. Internships, industrial training, and apprenticeships (i.e., those done after graduation) can all be used as a form of active labour market policies to promote young graduate employability. Thus, future research is required to evaluate these forms of internship that takes place after graduates' study completion and its effects onto their labour market outcomes.

Concluding remarks

Internships, and the students who undertake them, sit in a unique position. While not yet fully in the labour market, for some, their internship experience may be their first work experience and interaction with the world of labour. Often having to balance the responsibilities of both as a student and as a worker, the internship policies in place too must play a balancing act to ensure equitable outcomes for both the graduates and the industry that absorbs them.

Nonetheless, internships are only a part of the larger question of young graduate employability in their transition from education to work. The issue of young graduate employability cannot be viewed solely as a higher education problem as there are also structural economic challenges outside the realm of education that equally needs to be addressed though is beyond the scope this paper.

6. Appendices

6.1. Appendix A: Schedule for industry and field of study match

Table 28 Summary of the field of study and its relevant matched industry

Field of study	Matched industry
Education	• Education
Arts and Humanities	• Manufacturing • Information & communication services • Administration & support services • Arts, entertainment, and recreational services • Other services
Social Sciences, Business, and Law	• Manufacturing • Professional & technical services • Financial services • Information & communication services • Real estate services • Administration & support services
Sciences, Math, and Computers	• Agriculture, Forestry, and Fisheries • Manufacturing • Information & communication services • Professional & technical services • Administration & support services • Education
Engineering, Manufacturing, and Construction	• Manufacturing • Mining and Quarry • Construction • Utility services • Professional & technical services • Other services
Agriculture and Veterinary	• Agriculture, Forestry, and Fisheries
Health and Welfare	• Health & social work • Professional & technical services • Education
Services and Others	• Accommodation & food services • Arts, entertainment, and recreational services • Other services

6.2. Appendix B: Methodology for bachelor's likelihood in doing an internship

To identify if there are certain demographic characteristics that increases the bachelor's likelihood of doing an internship, a binary logistic regression was applied onto bachelors with no internship requirement as detailed in Equation 3:

Equation 3 Binary logistic regression equation used to analyse the likelihood of doing an internship

$$Internship = \alpha + \beta_i\, Gender + \beta_i\, Family\ Income + \beta_i\, Field\ of\ Study + \beta_i\, HEI\ Type + \beta_i\, HEI\ Status + \beta_i\, CGPA\ Level + \beta_i\, Malay\ Proficiency + \beta_i\, English\ Proficiency + \beta_i\, ICT\ Skill\ Level + \beta_i\, Year\ Graduated + \varepsilon_i$$

The analysis controlled for the bachelors' individual attributes, institutional characteristics and academic capabilities. Meanwhile, the *Year Graduated* variable is added to remove the effects the years have on the likelihood of the bachelors undertaking an internship.

The full result of the regression is shown in Table 29.

Table 29 Regression results on the likelihood of doing an internship by individual and institutional characteristics variables

Variables	Odds Ratio	P>|z|
Gender (Base: Male)		
Female	1.26	0.000
Family Income (Base: <RM1,000)		
RM1,000 - RM2,000	0.98	0.083
RM2,000 – RM3,000	0.83	0.000
RM3,000 – RM5,000	0.72	0.000
> RM5,000	0.69	0.000
Field of Study (Reference: Education)		
Arts and Humanities	0.68	0.000
Social Sciences, Business, and Law	1.84	0.000
Sciences, Math, and Computers	2.42	0.000
Engineering, Manufacturing, and Construction	3.15	0.000
Agriculture and Veterinary	3.45	0.000
Health and Welfare	1.53	0.000
Services and Others	2.75	0.000
HEI Type (Base: Public HEI)		
Private HEI	0.53	0.000
HEI Status (Base: University College)		
Comprehensive University	0.43	0.000

Specialized University	0.49	0.003
CGPA Level (Base: Low CGPA)		
Mid	2.43	0.000
High	3.00	0.000
Malay Proficiency (Base: Mid)		
High	0.89	0.000
English Proficiency (Base: Mid)		
High	1.15	0.000
ICT Skill Level (Base: Mid)		
High	1.00	0.987
Year graduated (Base: 2010)		
2011	1.15	0.000
2012	1.43	0.000
2013	1.45	0.000
2014	1.00	0.995
2015	1.96	0.000
2016	2.76	0.000
2017	4.35	0.000
2018	5.58	0.000
2019	3.45	0.000
_cons	0.58	0.000

6.3. Appendix C: Logit regressions of internship characteristics on bachelor labour market outcomes

Binary logistic regression for employment status with internship changed variable

Equation 4

$$Employment\ Status = \alpha + \beta_{i,t} Internship + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \varepsilon_{i,t}$$

Table 30 Regression results on the likelihood of being employable by internship status, individual, and institutional characteristics variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	62,759	65,078	68,638	67,733	70,100	70,070	84,638	88,237	96,440	99,535
LR chi2(21)	6,476.91	3,347.99	3,938.17	2,859.57	2,871.54	3,384.51	2,223.34	2,053.76	2,285.89	1,956.44
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.09	0.05	0.05	0.03	0.03	0.04	0.02	0.02	0.02	0.02
Log likelihood	-34,201.4	-35,296.35	-39,843.20	-41,881.68	-42,617.13	-43,075.06	-49,526.25	-49,740.15	-50,825.93	-39,687.80
Internship: No Internship ł										
Internship	0.84***	0.83***	0.73***	0.74***	0.80***	0.69***	0.77***	0.66***	0.67***	0.80***
Gender: Male ł										
Female	0.77***	0.72***	0.72***	0.78***	0.78***	0.82***	0.83***	0.85***	0.81***	0.86***
Family Income: <RM1,000 ł										
>RM1k-2k	1.39***	1.40***	1.33***	1.36***	1.33***	1.32***	1.31***	1.28***	1.28***	1.18***
>RM2k-3k	1.70***	1.55***	1.51***	1.53***	1.59***	1.59***	1.60***	1.49***	1.46***	1.34***
>RM3k-5k	1.80***	1.60***	1.48***	1.53***	1.56***	1.63***	1.55***	1.54***	1.59***	1.38***
>RM5k	2.07***	1.85***	1.60***	1.74***	1.62***	1.86***	1.64***	1.62***	1.76***	1.46***
Field of Study: Education ł										
Arts & Humanities	0.05***	0.15***	0.27***	0.34***	0.66***	0.41***	0.72***	0.68***	0.65***	1.36***

Social Sciences, Business & Law	0.07***	0.19***	0.31***	0.42***	0.78***	0.56***	1.13**	0.85***	0.82***	1.51***
Sciences, Maths & Computers	0.07***	0.17***	0.26***	0.36***	0.70***	0.46***	1.02	0.78***	0.80***	1.59***
Engineering, Manufacturing & Construction	0.09***	0.20***	0.30***	0.39***	0.67***	0.47***	1.19***	0.95	0.92*	1.61***
Agriculture & Veterinary	0.06***	0.13***	0.22***	0.32***	0.51***	0.25***	0.81**	0.53***	0.59***	1.32***
Health & Welfare	0.14***	0.32***	0.50***	0.73***	1.39***	0.91*	1.87***	1.24***	1.36***	3.12***
Services & others	0.07***	0.15***	0.26***	0.38***	0.72***	0.49***	1.01	0.89*	0.80***	1.67***
HEI Type: Public HEI ł										
IPTS	0.90***	0.90***	1.47***	1.27***	1.46***	1.15***	0.80***	0.84***	0.75***	0.62***
HEI Status: University College ł										
University	1.72***	1.07	1.23*	0.97	1.02	0.89*	0.81***	0.72***	0.61***	0.74***
Specialized University	1.33*	1.01	1.18	1.02	1.45***	1.12*	0.79***	0.76***	0.61***	1.05
CGPA Level: Low ł										
Medium	1.23***	1.26***	1.14***	1.03	1.03	1.12**	1.18***	1.27***	1.38***	1.43***
High	2.47***	2.14***	1.85***	1.41***	1.46***	1.62***	1.60***	1.81***	1.90***	1.99***
Malay Proficiency: Medium ł										
High	0.66***	0.58***	0.54***	0.72***	0.62***	0.71***	0.78***	0.81***	0.75***	0.88***
English Proficiency: Medium ł										
High	1.36***	1.33***	1.22***	1.12***	1.14***	1.38***	1.34***	1.36***	1.29***	1.16***
ICT Skill Level: Medium ł										
High	0.75***	0.85***	0.86***	0.86***	0.94*	0.82***	0.86***	0.85***	0.83***	0.85***
_cons	22.13***	18.08***	10.25***	6.70***	3.18***	4.54***	2.83***	4.51***	7.12***	4.63***

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for employment type with internship changed variable

Equation 5

$$Employment\ Type = \alpha + \beta_{i,t} Internship + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 31 Regression results on the likelihood of being in standard employment by internship status, individua, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	36,100	42,063	41,921	38,583	41,607	41,146	55,111	58,608	66,639	77,749
LR chi2(24)	3,582.49	3,764.09	4,745.74	3,910.64	4,833.71	3,724.07	4,638.17	5,429.66	5,145.39	6,162.03
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.07	0.06	0.08	0.07	0.08	0.07	0.06	0.07	0.06	0.06
Log likelihood	-23,113.79	-27,164.94	-26,682.56	-24,785.60	-26,407.33	-26,637.22	-35,870.07	-37,904.96	-43,389.64	-50,093.72
Internship: No Internship ł										
Internship	0.80***	0.73***	0.74***	0.58***	0.63***	0.62***	0.73***	0.64***	0.74***	0.73***
Gender: Male ł										
Female	0.93**	0.94**	0.94**	0.91***	0.93***	0.91***	0.95**	0.96*	0.94***	0.97*
Family Income: <RM1,000 ł										
>RM1k-2k	1.41***	1.37***	1.35***	1.34***	1.43***	1.38***	1.24***	1.25***	1.17***	1.14***
>RM2k-3k	1.61***	1.57***	1.59***	1.59***	1.86***	1.91***	1.63***	1.54***	1.40***	1.36***
>RM3k-5k	1.69***	1.49***	1.52***	1.52***	1.82***	1.82***	1.60***	1.46***	1.39***	1.31***
>RM5k	1.68***	1.49***	1.54***	1.48***	1.66***	1.62***	1.39***	1.33***	1.25***	1.25***
Field of Study: Education ł										
Arts & Humanities	0.72***	0.86*	2.06***	1.27***	3.21***	0.39***	1.21**	1.38***	1.53***	1.14*
Social Sciences, Business & Law	1.51***	2.02***	4.90***	2.65***	6.43***	1.05	2.77***	3.55***	3.29***	2.56***
Sciences, Maths & Computers	1.12*	1.75***	3.90***	1.96***	4.36***	0.86**	2.23***	2.93***	2.87***	2.36***

Engineering, Manufacturing & Construction	1.67***	2.18***	4.53***	2.64***	5.71***	0.92*	2.35***	3.14***	3.08***	2.44***
Agriculture & Veterinary	1.07	1.33*	3.05***	2.10***	4.31***	0.71***	1.58***	2.39***	1.84***	1.95***
Health & Welfare	3.04***	3.18***	7.44***	2.30***	7.16***	0.78***	1.56***	1.77***	1.53***	1.44***
Services & others	1.64***	1.95***	5.44***	2.92***	6.38***	1.20*	2.93***	3.37***	3.95***	3.14***
HEI Type: Public HEI ł										
IPTS	1.85***	1.55***	1.96***	2.33***	2.20***	1.50***	1.49***	1.45***	1.25***	1.50***
HEI Status: University College ł										
University	2.50***	2.22***	1.36**	1.75***	1.40***	1.22**	0.89**	1.01	0.79***	0.87***
Specialized University	3.03***	2.63***	1.62***	2.34***	2.04***	1.36***	0.88**	1.08	0.84***	0.97
CGPA Level: Low ł										
Medium	1.11*	1.07	1.08*	0.99	1.01	0.90*	1.08*	1.04	1.05	1.17***
High	1.48***	1.46***	1.31***	1.16**	1.27***	1.12*	1.43***	1.36***	1.36***	1.49***
Malay Proficiency: Medium ł										
High	0.68***	0.71***	0.75***	0.83***	0.71***	0.67***	0.78***	0.68***	0.77***	0.81***
English Proficiency: Medium ł										
High	1.19***	1.18***	1.16***	1.15***	1.15***	1.09**	1.15***	1.20***	1.16***	1.15***
ICT Skill Level: Medium ł										
High	0.87***	0.84***	0.88***	0.95	0.88***	0.95	0.95*	1.03	1.01	0.98
Economic Sector; Agriculture ł										
Industrial	2.38***	2.19***	2.16***	1.97***	1.99***	1.98***	2.35***	2.72***	2.46***	2.75***
Traditional Services	0.89	0.91	0.87*	0.98	0.90	0.92	0.97	1.17	1.19**	1.29***
Modern Services	1.28**	1.39***	1.32***	1.54***	1.49***	1.49***	1.48***	1.77***	1.97***	2.19***
_cons	0.26***	0.25***	0.14***	0.20***	0.10***	1.02	0.35***	0.23***	0.23***	0.19***

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for employment match with internship match changed variable

Equation 6

$$Employment\ Match = \alpha + \beta_{i,t} Internship\ Match + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \varepsilon_{i,t}$$

Table 32 Regression results on the likelihood of being in matched employment by matched internship, individual, and institutional characteristics variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	19,506	22,545	20,756	19,523	20,234	21,230	28,103	28,954	30,563	33,604
LR chi2(15)	1,398.93	1,857.68	1,940.17	1,675.88	2,288.24	2,507.73	3,791.98	3,393.73	3,652.83	4,305.31
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.06	0.07	0.08	0.08	0.10	0.10	0.11	0.10	0.10	0.11
Log likelihood	-10,491.58	-11,993.14	-10,801.73	-10,278.13	-10,545.40	-10,952.95	-14,613.58	-15,230.87	-15,797.45	-17,594.60
Internship Match: No Internship ł										
Not Match	0.35***	0.34***	0.29***	0.32***	0.33***	0.26***	0.31***	0.40***	0.39***	0.32***
Match	1.58***	1.65***	1.53***	1.61***	2.04***	1.69***	2.13***	2.28***	2.29***	1.94***
Gender: Male ł										
Female	0.78***	0.77***	0.76***	0.80***	0.80***	0.88***	0.89***	0.86***	0.82***	0.78***
Family Income: <RM1,000 ł										
>RM1k-2k	0.96	1.04	1.01	1.13*	1.03	1.00	0.98	0.95	0.98	0.96
>RM2k-3k	1.06	1.07	1.03	1.26***	1.20***	1.31***	1.01	1.03	1.12*	1.12*
>RM3k-5k	1.21**	1.13*	1.13*	1.38***	1.28***	1.35***	1.06	1.11*	1.15**	1.16**
>RM5k	1.11	1.18*	1.16*	1.39***	1.39***	1.21**	1.17**	1.08	1.12*	1.16**
HEI Type: Public HEI ł										
IPTS	1.11*	1.17***	1.05	1.07	1.15**	1.14**	1.19***	1.23***	1.28***	1.19***
HEI Status: University College ł										

University	1.37	0.69	1.42*	1.10	0.80*	1.39***	0.84**	0.78***	1.06	0.78***
Specialized University	1.70*	0.91	1.84***	1.47**	0.88	1.80***	1.15*	1.11	1.57***	1.09
CGPA Level: Low ł										
Medium	1.24**	1.19**	1.19**	1.06	0.92	1.08	1.26***	1.23**	1.14*	1.05
High	1.52***	1.32***	1.45***	1.24**	1.03	1.23**	1.40***	1.52***	1.18*	1.11
Malay Proficiency: Medium ł										
High	0.98	1.07	0.89*	1.01	1.05	0.97	0.86***	0.94	0.87***	0.86***
English Proficiency: Medium ł										
High	1.10*	1.03	1.12**	0.95	1.08*	1.01	1.14***	1.10*	1.04	1.14***
ICT Skill Level: Medium ł										
High	0.94	0.96	0.96	0.90*	0.86*	0.99	0.91*	0.90*	0.94	0.96
_cons	1.62	3.06***	1.90***	2.27***	2.92***	1.58***	2.11***	1.98***	1.74***	2.68***

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for skill level with internship changed variable

Equation 7

$$Skill\ Level = \alpha + \beta_{i,t} Internship + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 33 Regression results on the likelihood of being in high-skilled standard employment by internship status, individual, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	19,506	22,544	20,756	19,523	20,234	21,230	28,103	28,954	30,563	33,604
LR chi2(24)	3,410.73	3,968.27	3,857.56	3,657.67	3,921.47	4,201.35	5,329.45	5,691.36	6,538.08	4,354.33
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.16	0.17	0.17	0.17	0.17	0.17	0.15	0.16	0.17	0.13
Log likelihood	-8,702.13	-9,835.11	-9,254.91	-9,192.54	-9,752.24	-10,212.61	-14,561.38	-15,138.73	-16,105.71	-14,077.80
Internship: No Internship ł										
Internship	1.18***	1.25***	1.38***	1.45***	1.33***	1.19***	1.37***	1.29***	1.34***	1.30***
Gender: Male ł										
Female	0.54***	0.58***	0.68***	0.61***	0.69***	0.73***	0.69***	0.67***	0.69***	0.66***
Family Income: <RM1,000 ł										
>RM1k-2k	1.02	1.11*	1.12*	1.09	1.03	1.05	0.95	0.98	1.03	1.07
>RM2k-3k	1.18**	1.18**	1.23***	1.37***	1.42***	1.34***	1.15**	1.15**	1.36***	1.38***
>RM3k-5k	1.69***	1.52***	1.48***	1.68***	1.45***	1.65***	1.37***	1.33***	1.54***	1.58***
>RM5k	1.86***	1.99***	2.04***	2.24***	2.08***	2.08***	1.78***	1.77***	1.91***	1.81***
Field of Study: Education ł										
Arts & Humanities	0.19***	0.23***	0.57***	0.43***	1.00	0.11***	0.36***	0.55***	0.59***	1.09
Social Sciences, Business & Law	0.11***	0.11***	0.29***	0.17***	0.54***	0.07***	0.18***	0.35***	0.46***	0.73**
Sciences, Maths & Computers	0.23***	0.22***	0.68*	0.34***	1.49*	0.16***	0.41***	0.74**	0.96	1.45***

Engineering, Manufacturing & Construction	0.57***	0.61**	1.92***	0.82	3.36***	0.31***	0.82	1.60***	2.07***	2.64***
Agriculture & Veterinary	0.10***	0.08***	0.27***	0.15***	0.75	0.11***	0.16***	0.42***	0.42***	0.88
Health & Welfare	1.04	0.91	2.38***	0.92	4.21***	0.49***	0.93	1.34*	2.12***	2.64***
Services & others	0.11***	0.11***	0.26***	0.17***	0.55***	0.07***	0.21***	0.36***	0.54***	0.46***
HEI Type: Public HEI ł										
IPTS	0.99	1.18***	1.51***	1.40***	1.36***	1.58***	1.64***	1.74***	1.77***	1.63***
HEI Status: University College ł										
University	1.12	0.77	1.13	0.86	1.21*	1.47***	1.31***	1.00	1.24***	1.48***
Specialized University	1.21	0.97	1.62**	1.13	1.16	2.06***	1.75***	1.26**	1.54***	2.13***
CGPA Level: Low ł										
Medium	1.27**	1.25**	1.23**	1.20*	1.11	1.36***	1.26***	1.33***	1.30***	1.45***
High	1.45***	1.58***	1.47***	1.59***	1.47***	1.68***	1.75***	1.90***	1.88***	2.17***
Malay Proficiency: Medium ł										
High	1.32***	1.02	1.21***	1.28***	1.08	1.03	0.93	0.86***	1.00	0.82***
English Proficiency: Medium ł										
High	1.25***	1.36***	1.37***	1.36***	1.29***	1.37***	1.32***	1.36***	1.32***	1.27***
ICT Skill Level: Medium ł										
High	0.94	1.03	1.02	0.85**	1.11*	1.02	1.01	0.94	1.02	0.91*
Economic Sector; Agriculture ł										
Industrial	2.80***	2.18***	1.93***	2.30***	2.29***	3.95***	2.18***	2.43***	3.00***	1.85***
Traditional Services	1.87***	1.38*	1.32*	1.31*	1.49**	2.04***	1.31*	1.41**	1.89***	1.09
Modern Services	5.37***	4.38***	3.89***	3.79***	4.67***	6.57***	4.63***	4.79***	8.05***	3.31***
_cons	3.22**	5.77***	0.91	2.19**	0.46**	1.53*	1.16	0.77	0.21***	0.70*

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for skill level with internship duration changed variable

Equation 8

$$Skill\ Level = \alpha + \beta_{i,t} Internship\ Duration + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 34 Regression results on the likelihood of being in high-skilled standard employment by internship duration, individual, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	19,506	22,544	20,756	19,523	20,234	21,230	28,103	28,954	30,563	33,604
LR chi2(24)	3,432.68	4,010.52	3,908.61	3,679.04	3,957.86	4,255.35	5,405.56	5,758.91	6,662.71	4,402.93
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.14
Log likelihood	-8,691.16	-9,813.99	-9,229.39	-9,181.86	-9,734.05	-10,185.61	-14,523.32	-15,104.96	-16,043.40	-14,053.50
Internship Duration: No Internship ł										
1-3 months	1.08	1.13*	1.19***	1.31***	1.16**	1.03	1.18***	1.13**	1.14**	1.17**
4-6 months	1.28***	1.34***	1.56***	1.56***	1.50***	1.35***	1.55***	1.40***	1.51***	1.40***
>6 months	2.00***	3.03***	2.68***	2.00***	1.26	1.96***	1.89***	2.13***	2.58***	2.22***
Gender: Male ł										
Female	0.54***	0.58***	0.68***	0.60***	0.68***	0.72***	0.69***	0.67***	0.68***	0.66***
Family Income: <RM1,000 ł										
>RM1k-2k	1.02	1.11*	1.11*	1.09	1.03	1.05	0.95	0.98	1.03	1.07
>RM2k-3k	1.17**	1.18***	1.22***	1.36***	1.42***	1.34***	1.15**	1.15**	1.37***	1.39***
>RM3k-5k	1.68***	1.51***	1.48***	1.66***	1.45***	1.64***	1.37***	1.33***	1.53***	1.58***
>RM5k	1.85***	1.97***	2.01***	2.20***	2.07***	2.07***	1.78***	1.76***	1.89***	1.81***
Field of Study: Education ł										
Arts & Humanities	0.19***	0.22***	0.59***	0.44***	1.01	0.11***	0.38***	0.58***	0.64***	1.13

Social Sciences, Business & Law	0.10***	0.10***	0.28***	0.16***	0.50***	0.06***	0.18***	0.34***	0.46***	0.72**
Sciences, Maths & Computers	0.22***	0.21***	0.66**	0.33***	1.44*	0.15***	0.41***	0.73**	0.96	1.44***
Engineering, Manufacturing & Construction	0.55***	0.60**	1.93***	0.82	3.43***	0.31***	0.85	1.64***	2.18***	2.70***
Agriculture & Veterinary	0.10***	0.07***	0.27***	0.15***	0.72	0.10***	0.16***	0.40***	0.42***	0.86
Health & Welfare	1.03	0.89	2.37***	0.90	4.13***	0.47***	0.91	1.26	1.92***	2.40***
Services & others	0.11***	0.11***	0.25***	0.16***	0.51***	0.06***	0.20***	0.35***	0.52***	0.45***
HEI Type: Public HEI ł										
IPTS	0.99	1.16**	1.54***	1.42***	1.39***	1.63***	1.68***	1.80***	1.82***	1.64***
HEI Status: University College ł										
University	1.07	0.73	1.08	0.84	1.20*	1.46***	1.27***	1.05	1.21***	1.43***
Specialized University	1.20	0.94	1.61**	1.13	1.14	2.11***	1.73***	1.35***	1.55***	2.08***
CGPA Level: Low ł										
Medium	1.25**	1.21**	1.19*	1.18*	1.08	1.32***	1.23***	1.30***	1.26**	1.41***
High	1.41***	1.52***	1.40***	1.55***	1.14***	1.61***	1.68***	1.85***	1.80***	2.11***
Malay Proficiency: Medium ł										
High	1.30***	1.01	1.18**	1.27***	1.06	1.00	0.92*	0.84***	0.97	0.81***
English Proficiency: Medium ł										
High	1.25***	1.36***	1.38***	1.37***	1.30***	1.38***	1.33***	1.37***	1.34***	1.27***
ICT Skill Level: Medium ł										
High	0.95	1.03	1.02	0.85**	1.10	1.02	1.00	0.94	1.02	0.91*
Economic Sector; Agriculture ł										
Industrial	2.81***	2.14***	1.97***	2.31***	2.28***	4.00***	2.15***	2.41***	2.95***	1.82***
Traditional Services	1.86***	1.35*	1.34*	1.30*	1.48**	2.05***	1.29*	1.39**	1.86***	1.07
Modern Services	5.30***	4.26***	3.90***	3.77***	4.59***	6.52***	4.48***	4.66***	7.75***	3.21***
_cons	3.55**	6.67***	1.00	2.35**	0.51*	1.65*	1.26	0.76	0.23***	0.76

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for skill level with internship organisation type sector changed variable

Equation 9

$$Skill\ Level\ = \alpha + \beta_{i,t} Internship\ Sector + \ \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 35 Regression results on the likelihood of being in high-skilled standard employment by internship organisation type, individual, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	19,506	22,544	20,756	19,523	20,234	21,230	28,103	28,954	30,563	33,604
LR chi2(27)	3,477.92	4,108.92	3,945.71	3,751.67	4,020.03	4,382.23	5,587.83	5,975.26	6,738.68	4,578.46
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.17	0.17	0.18	0.17	0.17	0.18	0.16	0.17	0.17	0.14
Log likelihood	-8,668.54	-9,764.79	-9,210.83	-9,145.55	-9,702.96	-10,122.17	-14,432.19	-14,996.78	-16,005.41	-13,965.73
Internship organization type: No Internship ł										
Government	0.84**	0.82***	0.93	0.97	0.93	0.72***	0.85***	0.77***	0.90*	0.82***
GLC & MNC	1.50***	1.62***	1.62***	1.73***	1.62***	1.53***	1.68***	1.64***	1.61***	1.65***
SMEs & NGO	1.26***	1.37***	1.53***	1.61***	1.46***	1.37***	1.57***	1.44***	1.47***	1.43***
Self	1.07	0.84	1.21*	1.46***	1.09	0.97	1.01	1.09	1.02	1.14*
Gender: Male ł										
Female	0.55***	0.59***	0.69***	0.62***	0.69***	0.73***	0.70***	0.68***	0.70***	0.67***
Family Income: <RM1,000 ł										
>RM1k-2k	1.00	1.08	1.10*	1.06	1.02	1.03	0.93	0.97	1.02	1.06
>RM2k-3k	1.15*	1.15**	1.19***	1.31***	1.40***	1.28***	1.11*	1.12*	1.32***	1.34***
>RM3k-5k	1.64***	1.48***	1.45***	1.61***	1.42***	1.59***	1.34***	1.29***	1.49***	1.51***
>RM5k	1.81***	1.89***	1.99***	2.13***	2.02***	1.99***	1.72***	1.70***	1.82***	1.73***
Field of Study: Education ł										
Arts & Humanities	0.18***	0.21***	0.49***	0.38***	0.82	0.10***	0.29***	0.43***	0.49***	0.86

Social Sciences, Business & Law	0.10***	0.09***	0.24***	0.14***	0.42***	0.05***	0.14***	0.25***	0.35***	0.54***
Sciences, Maths & Computers	0.22***	0.20***	0.59***	0.30***	1.19	0.13***	0.33***	0.57***	0.77*	1.13
Engineering, Manufacturing & Construction	0.51***	0.52***	1.58**	0.68**	2.58***	0.25***	0.63***	1.18	1.59***	1.94***
Agriculture & Veterinary	0.10***	0.07***	0.24***	0.14***	0.62*	0.10***	0.13***	0.34***	0.36***	0.71*
Health & Welfare	1.07	0.92	2.30***	0.91	3.82***	0.50***	0.86	1.34*	2.06***	2.58***
Services & others	0.10***	0.10***	0.22***	0.14***	0.42***	0.05***	0.16***	0.26***	0.41***	0.33***
HEI Type: Public HEI ł										
IPTS	0.96	1.12*	1.43***	1.32***	1.29***	1.49***	1.53***	1.61***	1.65***	1.51***
HEI Status: University College ł										
University	1.10	0.75	1.11	0.83	1.18*	1.41***	1.31***	0.98	1.22***	1.45***
Specialized University	1.18	0.92	1.58**	1.07	1.12	1.96***	1.69***	1.19*	1.46***	2.00***
CGPA Level: Low ł										
Medium	1.25**	1.22**	1.21**	1.18*	1.08	1.33***	1.24***	1.31***	1.29***	1.43***
High	1.39***	1.50***	1.39***	1.51***	1.38***	1.57***	1.67***	1.80***	1.79***	2.07***
Malay Proficiency: Medium ł										
High	1.34***	1.03	1.23***	1.32***	1.11*	1.07	0.96	0.89*	1.02	0.85**
English Proficiency: Medium ł										
High	1.23***	1.35***	1.37***	1.34***	1.28***	1.35***	1.31***	1.34***	1.31***	1.26***
ICT Skill Level: Medium ł										
High	0.96	1.04	1.04	0.86*	1.11*	1.04	1.02	0.95	1.03	0.92*
Economic Sector; Agriculture ł										
Industrial	2.73***	2.13***	1.94***	2.29***	2.30***	3.87***	2.11***	2.36***	2.90***	1.86***
Traditional Services	1.85***	1.38*	1.36*	1.33*	1.52**	2.07***	1.32*	1.42**	1.88***	1.14
Modern Services	5.22***	4.24***	3.86***	3.74***	4.68***	6.37***	4.48***	4.66***	7.73***	3.31***
_cons	3.67***	7.05***	1.09	2.76***	0.60*	2.02**	1.58*	1.11	0.30***	0.97

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for income level with internship changed variable

Equation 10

$$Income\ Level = \alpha + \beta_{i,t} Internship + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 36 Regression results on the likelihood of earning above RM2,000 among bachelors in high-skilled standard employment by internship status, individual, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	15,111	17,631	15,990	14,603	14,859	15,567	19,602	19,904	20,488	27,277
LR chi2(24)	2539.24	3229.66	2715.86	1997.61	2143.92	2009.85	2569.82	2903.51	2931.39	4916.50
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.12	0.14	0.13	0.11	0.12	0.12	0.11	0.13	0.13	0.15
Log likelihood	-9142.06	-10282.96	-9173.81	-8215.43	-7960.64	-7616.06	-10167.44	-9991.82	-9488.84	-13427.59
Internship Status: No Internship ł										
Internship	0.79***	0.97	0.66***	0.57***	0.65***	0.67***	0.79***	0.75***	0.69***	0.70***
Gender: Male ł										
Female	0.54***	0.58***	0.58***	0.59***	0.59***	0.58***	0.57***	0.53***	0.55***	0.56***
Family Income: <RM1,000 ł										
>RM1k-2k	1.07	1.12**	1.09*	1.04	0.95	0.95	1.05	0.99	0.98	0.94
>RM2k-3k	1.99***	1.93***	1.92***	1.92***	1.99***	2.12***	2.01***	1.86***	1.62***	1.69***
>RM3k-5k	2.42***	2.01***	2.14***	2.27***	2.24***	2.47***	2.16***	2.03***	2.00***	1.98***
>RM5k	3.07***	3.12***	2.35***	2.70***	2.93***	2.91***	2.52***	2.45***	2.21***	2.12***
Field of Study: Education ł										
Arts & Humanities	0.37***	0.32***	0.48***	0.37***	1.37*	0.13***	0.62***	0.99	1.32*	0.96
Social Sciences, Business & Law	0.30***	0.36***	0.70**	0.58***	1.90***	0.26***	1.33**	2.16***	2.73***	2.28***
Sciences, Maths & Computers	0.49***	0.68**	1.28*	0.97	3.49***	0.51***	2.53***	3.47***	5.18***	3.21***

Engineering, Manufacturing & Construction	0.54***	0.67***	1.21	0.96	3.44***	0.38***	1.82***	2.58***	3.66***	3.29***
Agriculture & Veterinary	0.51***	0.57**	0.81	0.51*	4.50***	0.67	1.69*	2.89***	2.96***	2.02***
Health & Welfare	2.44***	3.01***	3.98***	1.37*	6.78***	0.51***	1.67***	2.64***	4.11***	2.96***
Services & others	0.28***	0.25***	0.31***	0.46***	1.55*	0.20***	0.93	1.27	2.45***	1.74***
HEI Type: Public HEI ł										
IPTS	1.53***	1.83***	2.12***	1.69***	1.86***	1.42***	1.72***	2.15***	2.55***	2.15***
HEI Status: University College ł										
Comprehensive University	2.20**	1.90**	1.80***	1.96***	1.97***	1.88***	0.88*	1.13	1.12	0.91
Specialized University	4.72***	3.63***	3.74***	3.74***	2.96***	3.01***	1.41***	2.11***	2.13***	1.73***
CGPA Level: Low ł										
Medium	1.38***	1.46***	1.27***	1.37***	1.19*	1.31**	1.33***	1.62***	1.96***	1.54***
High	3.32***	3.39***	3.03***	2.67***	2.55***	2.50***	2.63***	3.58***	4.18***	3.27***
Malay Proficiency: Medium ł										
High	0.86**	0.89**	0.89*	0.81**	0.71***	0.60***	0.58***	0.56***	0.53***	0.37***
English Proficiency: Medium ł										
High	1.42***	1.52***	1.38***	1.54***	1.48***	1.45***	1.48***	1.42***	1.65***	1.69***
ICT Skill Level: Medium ł										
High	0.89**	0.82***	0.81***	0.88**	0.82**	0.81**	0.87**	0.89*	0.82***	0.85***
Economic Sector; Agriculture ł										
Industrial	0.94	1.56**	1.69**	0.95	1.53*	2.19***	1.63**	1.39*	1.27	2.10***
Traditional Services	0.78	1.11	1.21	0.67*	1.09	1.44*	1.08	0.76	0.73	1.30*
Modern Services	1.12	2.10***	1.93***	1.01	1.75**	2.15***	1.68**	1.17	1.09	2.52***
_cons	0.63	0.34***	0.35***	1.00	0.24***	2.11**	0.94	0.59*	0.47*	0.53**

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression for income level with internship organisation type changed variable

Equation 11

$$Income\ Level = \alpha + \beta_{i,t} Internship\ organisation\ type + \beta_{i,t}\ Gender + \beta_{i,t}\ Family\ Income + \beta_{i,t}\ Field\ of\ Study + \beta_{i,t}\ HEI\ Type + \beta_{i,t}\ HEI\ Status + \beta_{i,t}\ CGPA\ Level + \beta_{i,t}\ Malay\ Proficiency + \beta_{i,t}\ English\ Proficiency + \beta_{i,t}\ ICT\ Skill\ Level + \beta_{i,t} Economic\ Sector + \varepsilon_{i,t}$$

Table 37 Regression results on the likelihood of earning above RM2,000 among bachelors in high-skilled standard employment by internship organisation type, individual, institutional, and job characteristics, variables, 2010-2019

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of observations	15,111	17,631	15,990	14,603	14,859	15,567	19,602	19,904	20,488	27,277
LR chi2(27)	2,920.21	3,671.80	3,107.04	2,383.45	2,493.49	2,287.98	2,860.34	3,230.29	3,194.25	5,378.98
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudo R2	0.14	0.15	0.15	0.13	0.14	0.13	0.12	0.14	0.15	0.17
Log likelihood	-8,951.58	-10,061.88	-8,978.22	-8,022.50	-7,785.86	-7,476.99	-10,022.18	-9,828.43	-9,357.41	-13,196.35
Internship organisation type: No Internship ł										
Government	0.49***	0.59***	0.40***	0.35***	0.50***	0.49***	0.55***	0.55***	0.52***	0.47***
GLC & MNC	1.67***	1.88***	1.28***	1.20**	1.39***	1.39***	1.42***	1.46***	1.24**	1.29***
SMEs & NGO	0.72***	0.84***	0.59***	0.53***	0.54***	0.60***	0.72***	0.67***	0.60***	0.61***
Self	1.48**	1.05	0.77*	0.47***	0.61***	0.62***	0.72***	0.62***	0.60***	0.67***
Gender: Male ł										
Female	0.55***	0.59***	0.59***	0.61***	0.61***	0.59***	0.58***	0.54***	0.55***	0.57***
Family Income: <RM1,000 ł										
>RM1k-2k	1.05	1.11*	1.09	1.03	0.96	0.94	1.05	1.00	0.98	0.94
>RM2k-3k	1.96***	1.90***	1.91***	1.89***	2.00***	2.10***	2.00***	1.86***	1.60***	1.66***
>RM3k-5k	2.37***	1.98***	2.13***	2.22***	2.23***	2.42***	2.18***	2.02***	2.00***	1.93***
>RM5k	2.94***	2.97***	2.32***	2.59***	2.87***	2.79***	2.44***	2.38***	2.12***	2.04***
Field of Study: Education ł										
Arts & Humanities	0.35***	0.29***	0.39***	0.30***	1.17	0.13***	0.53***	0.88	1.14	0.78*
Social Sciences, Business & Law	0.25***	0.30***	0.53***	0.42***	1.48*	0.21***	1.03	1.73***	2.19***	1.67***
Sciences, Maths & Computers	0.44***	0.59***	1.03	0.73*	2.78***	0.43***	1.98***	2.86***	4.28***	2.45***

Engineering, Manufacturing & Construction	0.45***	0.54***	0.89	0.70**	2.70***	0.31***	1.43**	2.11***	2.94***	2.45***
Agriculture & Veterinary	0.48**	0.53*	0.65	0.44**	3.98***	0.64	1.55*	2.64***	2.81***	1.66**
Health & Welfare	2.53***	3.08***	3.92***	1.33*	6.21***	0.51***	1.60***	2.70***	4.08***	2.90***
Services & others	0.24***	0.21***	0.24***	0.34***	1.16	0.16***	0.74*	1.04	1.96***	1.27*
HEI Type: Public HEI ł										
IPTS	1.41***	1.69***	1.94***	1.54***	1.75***	1.36***	1.64***	2.05***	2.42***	2.01***
HEI Status: University College ł										
University	2.04*	1.65*	1.72**	1.75***	1.89***	1.82***	0.85*	1.07	1.06	0.84**
Specialized University	3.06**	3.03***	3.40***	3.25***	2.80***	2.87***	1.30**	1.91***	1.93***	1.52***
CGPA Level: Low ł										
Medium	1.35***	1.42***	1.22**	1.27***	1.13	1.27**	1.30***	1.58***	1.89***	1.49***
High	3.07***	3.19***	2.70***	2.29***	2.25***	2.28***	2.40***	3.25***	3.79***	3.00***
Malay Proficiency: Medium ł										
High	0.86*	0.87*	0.89*	0.81**	0.72***	0.61***	0.59***	0.56***	0.53***	0.37***
English Proficiency: Medium ł										
High	1.38***	1.46***	1.35***	1.48***	1.40***	1.39***	1.42***	1.36***	1.59***	1.63***
ICT Skill Level: Medium ł										
High	0.92	0.84**	0.82***	0.89*	0.83**	0.83**	0.88*	0.91	0.84**	0.88**
Economic Sector; Agriculture ł										
Industrial	0.91	1.61**	1.71**	1.02	1.53*	2.15***	1.59*	1.40	1.27	2.09***
Traditional Services	0.76	1.13	1.22	0.72	1.09	1.41	1.07	0.78	0.74	1.34*
Modern Services	1.06	2.12***	1.87***	1.07	1.74*	2.09***	1.65**	1.18	1.10	2.54***
_cons	0.84	0.48*	0.51*	1.51	0.34***	2.70***	1.28	0.78	0.66	0.81

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.00

6.4. Appendix D: Logit regression for paid internship on bachelor labour market outcomes

Binary logistic regression of paid internship on employment type

Equation 12

$$
\begin{aligned}
&Employment\ Type \\
&\quad = \alpha + \beta_{i,p} Paid\ Internship + \ \beta_{i,p}\ Gender + \ \beta_{i,p}\ Family\ Income \\
&\quad + \ \beta_{i,p}\ Field\ of\ Study + \ \beta_{i,p}\ HEI\ Type + \ \beta_{i,p}\ HEI\ Status + \ \beta_{i,p}\ CGPA\ Level \\
&\quad + \ \beta_{i,p}\ Malay\ Proficiency + \ \beta_{i,p}\ English\ Proficiency + \ \beta_{i,p}\ ICT\ Skill\ Level \\
&\quad + \beta_{i,p}\ Economic\ Sector \ + \ \beta_{i,p}\ Internship\ Organisation\ Type \\
&\quad + \ \beta_{i,p}\ Year\ Graduated + \ \varepsilon_{i,p}
\end{aligned}
$$

Table 38 Regression results on the likelihood of being in standard employment by paid internship status, individual, institutional, and job characteristics variables, by internship duration

Internship Duration	1-3 months	4-6 months
Number of observations	212,291	200,408
LR chi2(36)	23,978.36	21,043.00
Prob > chi2	0.00	0.00
Pseudo R2	0.08	0.08
Log likelihood	-134,550.99	-128,368.94
Internship Paid: Unpaid Internship ł		
Paid Internship	1.20***	1.12***
Gender: Male ł		
Female	0.93***	1.02
Family Income: <RM1,000 ł		
>RM1k-2k	1.21***	1.21***
>RM2k-3k	1.37***	1.41***
>RM3k-5k	1.29***	1.32***
>RM5k	1.19***	1.31***
Field of Study: Education ł		
Arts & Humanities	0.94*	0.93*
Social Sciences, Business & Law	1.33***	2.38***
Sciences, Maths & Computers	1.25***	2.11***
Engineering, Manufacturing & Construction	1.51***	1.96***
Agriculture & Veterinary	1.26***	1.53***
Health & Welfare	1.45***	2.25***
Services & others	1.56***	2.53***

HEI Type: Public HEI ł		
IPTS	1.57***	1.53***
HEI Status: University College ł		
University	0.86***	1.03
Specialized University	0.89***	1.18***
CGPA Level: Low ł		
Medium	1.04*	1.10***
High	1.34***	1.42***
Malay Proficiency: Medium ł		
High	0.73***	0.63***
English Proficiency: Medium ł		
High	1.20***	1.23***
ICT Skill Level: Medium ł		
High	0.93***	1.00
Economic Sector; Agriculture ł		
Industrial	2.41***	1.95***
Traditional Services	0.99	0.99
Modern Services	1.52***	1.41***
Internship organisation type: Government ł		
GLC & MNC	1.62***	1.85***
SMEs & NGO	1.57***	2.02***
Others (incl. Self)	1.34***	1.52***
Convocation Year: 2010 ł		
2011	0.94*	1.00
2012	0.75***	0.84***
2013	0.75***	0.83***
2014	0.71***	0.72***
2015	0.74***	0.83***
2016	0.73***	0.86***
2017	0.69***	0.79***
2018	0.58***	0.68***
2019	0.55***	0.60***
_cons	0.41***	0.20***

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression of paid internship onto skill level

Equation 13

$$Skill\ Level = \alpha + \beta_{i,p} Paid\ Internship + \beta_{i,p}\ Gender + \beta_{i,p}\ Family\ Income + \beta_{i,p}\ Field\ of\ Study + \beta_{i,p}\ HEI\ Type + \beta_{i,p}\ HEI\ Status + \beta_{i,p}\ CGPA\ Level + \beta_{i,p}\ Malay\ Proficiency + \beta_{i,p}\ English\ Proficiency + \beta_{i,p}\ ICT\ Skill\ Level + \beta_{i,p}\ Economic\ Sector + \beta_{i,p}\ Internship\ organisation\ type + \beta_{i,p}\ Year\ Graduated + \varepsilon_{i,p}$$

Table 39 Regression results on the likelihood of being in high-skilled standard employment by paid internship status, individual, institutional, and job characteristics variables, by internship duration

Internship Duration	1-3 months	4-6 months
Number of observations	98,111	98,726
LR chi2(36)	20,143.46	17,649.52
Prob > chi2	0.00	0.00
Pseudo R2	0.19	0.15
Log likelihood	-43,405.25	-49,193.63
Internship Paid: Unpaid Internship ł		
Paid Internship	1.13***	1.19***
Gender: Male ł		
Female	0.67***	0.65***
Family Income: <RM1,000 ł		
>RM1k-2k	1.04	1.03
>RM2k-3k	1.24***	1.24***
>RM3k-5k	1.45***	1.50***
>RM5k	1.90***	1.75***
Field of Study: Education ł		
Arts & Humanities	0.43***	0.45***
Social Sciences, Business & Law	0.21***	0.29***
Sciences, Maths & Computers	0.45***	0.58***
Engineering, Manufacturing & Construction	1.30***	0.84*
Agriculture & Veterinary	0.27***	0.26***
Health & Welfare	1.19*	1.14
Services & others	0.26***	0.22***
HEI Type: Public HEI ł		
IPTS	1.45***	1.72***
HEI Status: University College ł		

University	1.14***	1.10*
Specialized University	1.39***	1.50***
CGPA Level: Low ł		
Medium	1.30***	1.13*
High	1.85***	1.35***
Malay Proficiency: Medium ł		
High	1.01	1.04
English Proficiency: Medium ł		
High	1.31***	1.34***
ICT Skill Level: Medium ł		
High	0.99	1.01
Economic Sector; Agriculture ł		
Industrial	2.80***	1.97***
Traditional Services	1.58***	1.34***
Modern Services	4.38***	5.30***
Internship organisation type: Government ł		
GLC & MNC	1.60***	1.77***
SMEs & NGO	1.31***	1.73***
Others (incl. Self)	1.06	1.28***
Convocation Year: 2010 ł		
2011	1.10*	1.06
2012	0.95	0.93
2013	0.87**	0.83***
2014	0.79***	0.76***
2015	0.69***	0.70***
2016	0.63***	0.69***
2017	0.58***	0.60***
2018	0.46***	0.54***
2019	1.22***	1.24***
_cons	1.20	1.14

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

Binary logistic regression of paid internship onto income level

Equation 14

$$Income\ Level = \alpha + \beta_{i,p} Paid\ Internship + \beta_{i,p}\ Gender + \beta_{i,p}\ Family\ Income + \beta_{i,p}\ Field\ of\ Study + \beta_{i,p}\ HEI\ Type + \beta_{i,p}\ HEI\ Status + \beta_{i,p}\ CGPA\ Level + \beta_{i,p}\ Malay\ Proficiency + \beta_{i,p}\ English\ Proficiency + \beta_{i,p}\ ICT\ Skill\ Level + \beta_{i,p}\ Economic\ Sector + \beta_{i,p}\ Internship\ organisation\ type + \beta_{i,p}\ Year\ Graduated + \varepsilon_{i,p}$$

Table 40 Regression results on the likelihood of earning above RM2,000 among bachelors in high-skilled standard employment by paid internship status, individual, institutional, and job characteristics variables, by internship duration

Internship Duration	1-3 months	4-6 months
Number of observations	75,070	71,627
LR chi2(36)	14,073.06	14,479.52
Prob > chi2	0.00	0.00
Pseudo R2	0.16	0.16
Log likelihood	-37,687.68	-39,210.91
Internship Paid: Unpaid Internship ł		
Paid Internship	1.37***	1.20***
Gender: Male ł		
Female	0.56***	0.60***
Family Income: <RM1,000 ł		
>RM1k-2k	1.02	1.04
>RM2k-3k	1.65***	1.80***
>RM3k-5k	1.80***	2.02***
>RM5k	2.19***	2.27***
Field of Study: Education ł		
Arts & Humanities	0.38***	0.57***
Social Sciences, Business & Law	0.66***	0.96
Sciences, Maths & Computers	1.00	1.98***
Engineering, Manufacturing & Construction	1.27***	1.08
Agriculture & Veterinary	1.10	1.22*
Health & Welfare	3.25***	1.22*
Services & others	0.62***	0.69***
HEI Type: Public HEI ł		
IPTS	1.80***	2.01***
HEI Status: University College ł		

University	0.80***	0.99
Specialized University	1.24***	1.73***
CGPA Level: Low ł		
Medium	1.52***	1.35***
High	3.26***	2.81***
Malay Proficiency: Medium ł		
High	0.59***	0.49***
English Proficiency: Medium ł		
High	1.50***	1.61***
ICT Skill Level: Medium ł		
High	0.89***	0.83***
Economic Sector; Agriculture ł		
Industrial	1.61***	1.56***
Traditional Services	1.11	0.93
Modern Services	1.92***	1.44***
Internship organisation type: Government ł		
GLC & MNC	2.18***	2.40***
SMEs & NGO	1.15***	1.01
Others (incl. Self)	1.18***	1.10*
Convocation Year: 2010 ł		
2011	1.29***	1.46***
2012	1.33***	1.45***
2013	1.67***	1.64***
2014	1.92***	1.72***
2015	2.52***	2.24***
2016	2.23***	2.41***
2017	2.26***	2.36***
2018	2.58***	2.64***
2019	2.21***	2.13***
_cons	0.34***	0.30***

Note: for the odds ratio significance, *refers to p-value <0.1, ** refers to p-value <0.01, and ***refers to p-value <0.001

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