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Higher learning, higher earnings?

The influence of sociodemographic factors on graduate starting pay

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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. The objective of this paper is to identify the sociodemographic factors that drive the attainment of higher starting pay among fresh young graduates at the diploma/certificate and bachelor's degree levels, utilising the Graduate Tracer Study (GTS) data collected by the Ministry of Higher Education (MOHE) from 2010 to 2020. The key takeaways are as follows:

1. Graduates with the following attributes generally have a higher chance of earning a higher starting salary (defined as being above RM2,000 monthly), compared to their peers in the same demographic category:
   i. attained a bachelor's degree, especially from a private higher education institution (IPTS),
   ii. employed in a high-skilled job with full-time employment,
   iii. worked in the industrial sector (i.e. manufacturing, mining & construction etc),
   iv. studied in the following fields: science, mathematics & computer; engineering, manufacturing & construction; and health & social,
   v. came from a family with a higher economic background and,
   vi. are male.

2. The level of qualification is found to be the most important determinant of graduate starting pay followed by employment in full-time and high-skilled jobs. Indeed, "higher learning, higher earnings" is evident as degree holders consistently outperformed graduates with diplomas and certificates. Nevertheless, the odds of earning higher pay among degree holders had declined to less than 8.0 times in recent years from around 10.0–12.0 times at the start of the decade. This indicates the rising challenges they face in attaining higher pay, compared to the diploma and certificated holders, in the past.

3. The chances of attaining higher pay among graduates from public TVET institutions are found to be improving, resulting in more comparable odds ratios relative to those from non-TVET institutions. Meanwhile, graduates from private higher education institutions are found to be persistently outperforming their counterparts in public higher education institutions with the gap widening in recent years.

4. The pay gap between gender remains similar over the years, with the odds of female graduates being in a higher income group at 0.6 times or 40% lower than that of males. This indicates that earnings differentials between gender not only affect those who have long been in the labour market but also affects new entrants like fresh graduates.

5. The chances of earning higher among graduates by family's economic backgrounds have slowly converged compared to 10 years ago on the back of a general increase in household income in Malaysia over the last decade. Nonetheless, although the chances of graduates from higher family incomes earning more than their peers from lower family incomes have receded, their ability to secure jobs with better pay persists.

6. Although higher learning generally promotes higher earnings, the long-term trend analysis found that the starting pay has improved only slightly in the last decade and the distribution of pay is still concentrated within the RM1,000–RM2,000 income bracket. Higher education levels do not always guarantee high earnings, and this could be especially the case for fresh graduates struggling to find good jobs that match their skills in a competitive job market. The challenges faced by fresh graduates underscore the deeper issues in the higher education system, labour market and economic structure that needs to be addressed in the national long-term development plan.

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1. Introduction

An investment in knowledge always pays the best interest.

Benjamin Franklin (1758)[1]

A common view shared by many is that a university degree is a pathway to a steady and well-paid job. In the Malaysian context, a survey in 2017 showed that 95% of Malaysian parents aspired for their children to go to a university to ensure they have a good start in life[2]. The perception is not unfounded but borne out by facts. Over the last ten years, the mean income of the tertiary educated workforce in Malaysia has consistently been twice of those with secondary school qualifications[3]. The gaps are even larger at three and four times when comparisons are made with those with only primary education and those with no formal education. An international study by the World Bank also found that the return to tertiary education is the highest with a 14.6% increase in earnings for each additional year of study completed, followed by primary education (11.5%) and secondary education (6.8%)[4].

An earlier study by KRI indicates that the proliferation of higher education and the expansion of the tertiary education workforce in the last four decades has contributed positively to Malaysia's GDP growth, with bi-directional causality links between economic growth to higher education[5]. While the finding is encouraging at the macro level, the impact at the individual level may not be immediate and even, as some tertiary-educated workforce in certain subgroups may outperform others. Furthermore, graduates in younger cohorts may take a longer period to see significant positive returns to higher education compared to their older counterparts. This can be manifested through higher rates of unemployment, skill-related underemployment and job mismatch in this group compared to the national averages.

These scenarios also suggest that the young and newly graduated workforce may be facing a unique set of challenges at the early stage of transitioning from education to work[6]. Undeniably, underemployment, low wages and sluggish wage growth also signal more serious structural issues of the economy beyond the control of an individual graduate. This highlights that policies aiming at addressing structural issues are not within the ambit of higher education alone.

While important, the discussions on broader structural economic issues are beyond the scope of this study. Instead, this working paper focuses on investigating the labour market outcomes of the young and newly graduated workforce and examines the influence of sociodemographic

[1] Franklin (1758)
[2] 98% of Malaysian parents aspire for their child to go to university while 91% of Malaysian parents would like their child to study at a postgraduate level. HSBC (2017).
[3] In 2021, the median salaries and wages of tertiary-educated employees was RM3,794 and secondary at RM1,797. DOS (2022d)
[4] Montenegro and Patrinos (2014)
[5] Hawati Abdul Hamid (2022a)
[6] Mohd Amirul Rafiq Abu Rahim and Shazrul Ariff Suhaimi (2022)

factors in driving the variations in the outcomes. Attention is given to this group considering that they typically face a unique set of challenges during the early stage of their transition from education to work.

This paper is organised as follows: Section 2 briefly presents an overview of higher education outputs and outlines the graduate employability scenarios in Malaysia. Section 3 provides the empirical analysis and discusses the findings. Section 4 concludes the study, highlights its limitations and discusses future work under this research track.

2. Overview of graduate employability in Malaysia

2.1. Higher education graduates

Between 2002 and 2020, Malaysian higher education institutions (HEIs) in both the public and private sectors produced an average of 250,000 graduates annually across all study fields and qualification levels. The number of graduates peaked in 2016 with a total of 371,935, before revolving at around 300,000 graduates in the subsequent years[7].

In 2020, out of 318,593 students graduated from Malaysian HEIs, around 40% were from public universities, followed by 35% from private institutions and the remaining 25% from public technical and vocational education and training institutions, Public (TVET). Public (TVET) institutions—generally comprised of polytechnics, community colleges and other skill training institutes—are public-funded higher educational institutions that offer technical and vocational courses to upper-secondary school leavers, leading to the award of diploma and certificate qualifications. For these statistics, graduates from the Malaysian Technical University Network (MTUN) who generally studied in programmes that are technical in nature, are categorised under Public University. This is following the conversion of four university colleges to university status in 2006-2007, specialising in high technology, industry-based and practical-oriented programmes. Henceforth, the four university colleges are known as Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Teknikal Malaysia Melaka (UTeM), Universiti Malaysia Pahang (UMP) and Universiti Malaysia Perlis (UniMAP).

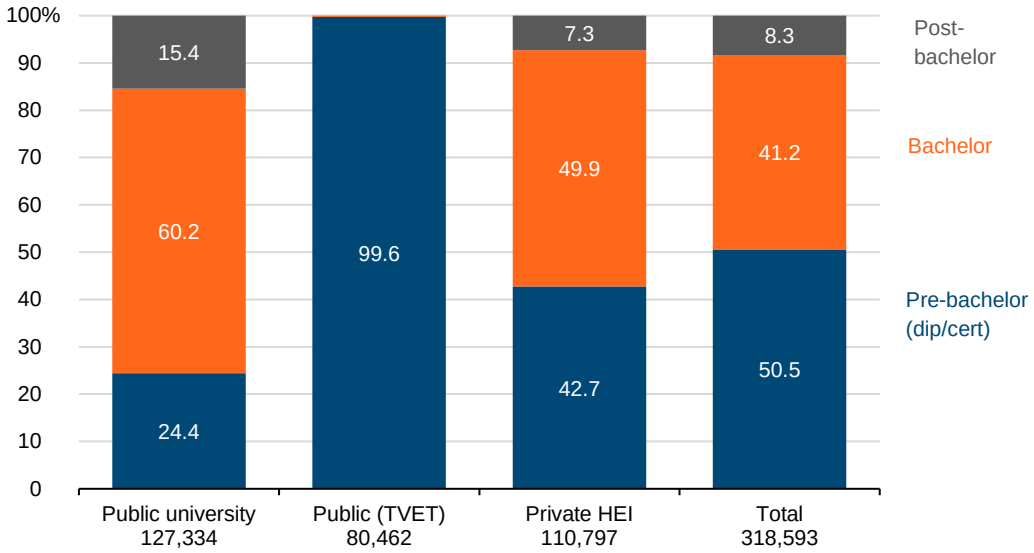
Overall, about half of the graduates were studying at the pre-bachelor's level, 41.2% at the bachelor's level, and 8.3% at the post-bachelor's level (Figure 1)[8]. Generally, private institutions produced more pre-bachelor graduates (42.7%) than public universities (24.4%), considering that private institutions usually offer a wider variety of diploma and foundation programmes with lower entry requirements and shorter course durations. Meanwhile, public universities often focus on courses at the bachelor's degree level and higher. 15.4% of graduates from public universities were at the post-graduate level. Public (TVET) institutions mostly produce graduates

[7] MOHE (various years)

[8] Note: The statistics presented here are generated from the GTS Analytics database where the data are organised based on the convocation year instead of the study completion year. As such, slight differences exist when they are compared against the annual Higher Education Statistics Reports published by the ministry (MOHE (2021b)).

at the certificate and diploma levels since these institutions commonly offer technical and vocational courses for secondary school leavers.

Figure 1: Graduates by level of qualification, 2020

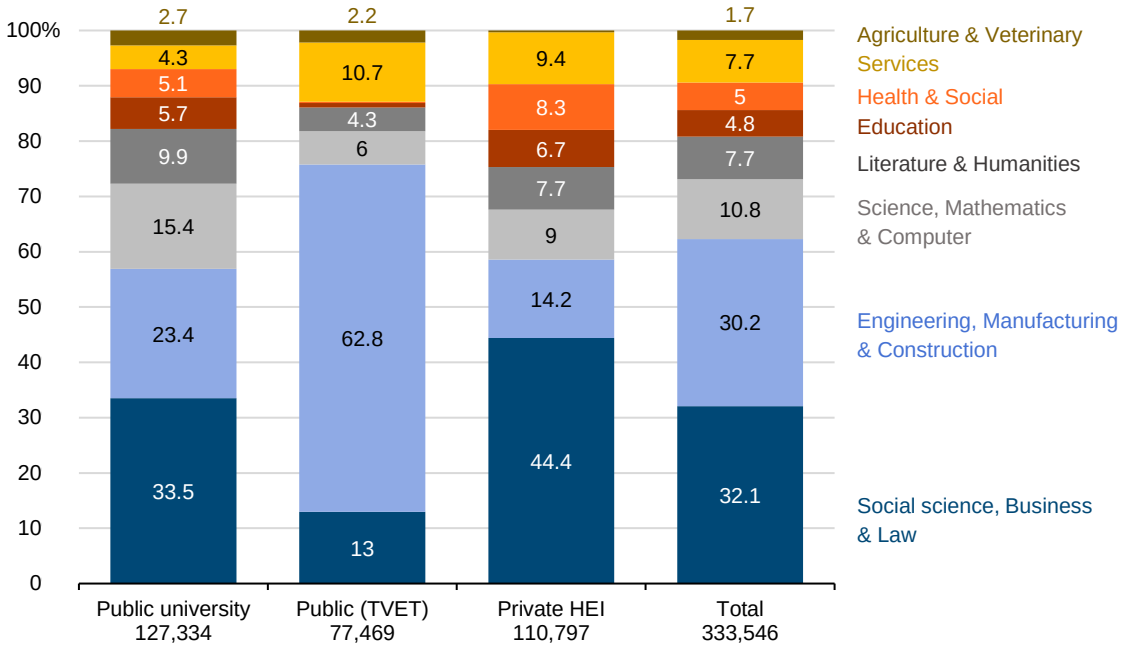


Source: MOHE (2021a), author's calculations

Figure 2 shows the number of graduates by various fields of study in 2020. Overall, 32.1% of graduates studied in the fields of *social science, business and law*; followed by *engineering, manufacturing and construction* (30.2%); while the remaining fields mostly produced less than 10% of graduates each. For example, only around 2.0% of graduates were in the *agriculture and veterinary* fields.

Besides, 62.8% of graduates from Public (TVET) were in *engineering, manufacturing and construction* considering the institutions placed a strong emphasis on hands-on learning and practical industrial-related training. In contrast, public universities and private institutions produced more graduates in the fields of *social science, business and law*, consisting of 33.5% and 44.4% respectively. Courses offered by institutions with university status typically require a stronger theoretical education with more emphasis on academic learning rather than practical skill-based learning.

Figure 2: Graduates by field of study, 2020



Source: MOHE (2021a), author's calculations

2.2. Graduate employment outcomes

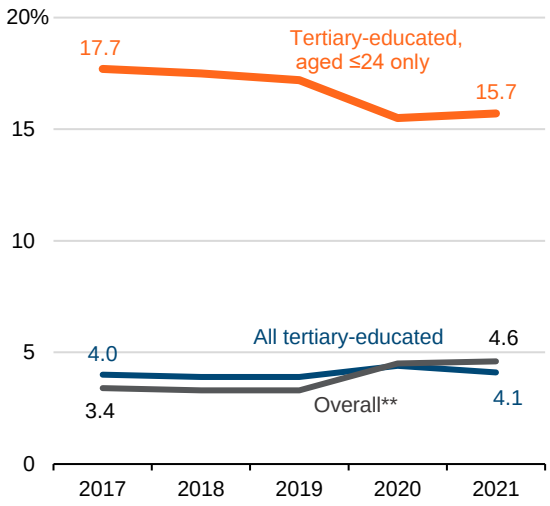
The status and achievement of graduates' university-to-work transition are commonly measured and monitored by several indicators published by the Ministry of Higher Education (MOHE) and the Department of Statistics, Malaysia (DOS). The graduate employability rate is one of the key performance indicators (KPIs) of HEIs in the context of fulfilling Malaysia's human capital development needs, as it measures graduates' marketability in the job market. The target is set at 75%, tracked by a nationally devised Graduate Tracer Study (GTS) carried out annually during university convocation (usually held between six to 12 months after study completion)[9]. The graduate employability rate is calculated by taking the sum of graduates with the following status: (1) working, (2) furthering their studies, (3) pursuing re- and upskilling programmes and (4) waiting for job placement as a percentage of total graduates for the year. The inclusion of these four categories of graduates' employment statuses results in an average employability rate of around 80% every year (Figure 4).

Although the graduate employability statistics (typically dominated by fresh and young graduates)[10] has been showing decent rates annually, the official unemployment rate for the tertiary-educated workforce in this age category has persistently been four times higher than the national average rate. Figure 3 shows that between 2017 and 2021, the unemployment rate among graduates aged 24 years and below averaged 16.7% compared to 4.1% for all graduates

[9] MOHE (2012)
[10] Around 90% of respondents covered by the GTS survey every year were aged 30 years and below

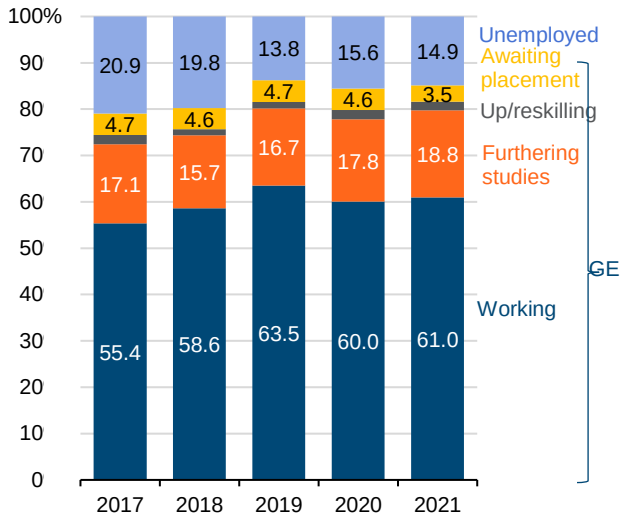
(regardless of age)[11]. The gap is also huge when compared to the national average unemployment rate which stood at 3.8% (across all levels of educational attainment) for the same period[12].

Figure 3: Unemployment rates, tertiary-educated workforce and overall, 2017-2021



Note: *Overall refers to the national unemployment rate, i.e. including tertiary and non-tertiary educated workforce
Source: DOS (2022a), DOS (2022b)

Figure 4: Graduate employability rate (GE), by employment status, 2017-2020



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

Going beyond the headline number, the decomposition of the graduate employability statistics shows that just over half of graduates managed to get a job shortly after they completed their studies. The remaining graduates included in the employability statistics are either still waiting for job placement, furthering their studies, or joining skill enhancement programmes to strengthen their human capital further. The inclusion of these three categories in the calculation arguably underscores the shortcoming in the operational definition of graduate employability in capturing the real employment outcomes in the labour market and the performance of higher institutions[13].

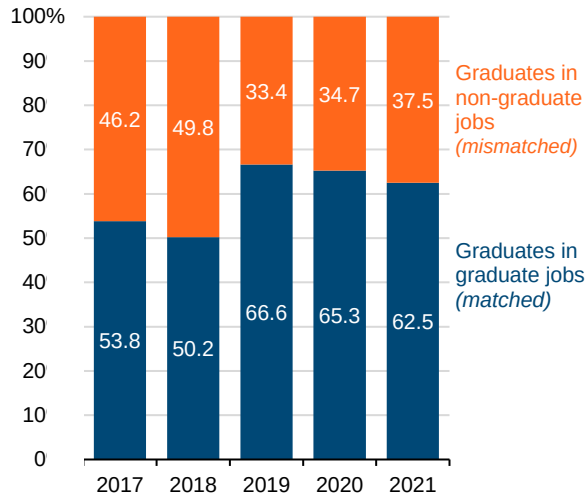
Besides that, graduates with "working" status take into account work at any level of job skills, regardless of whether the jobs matched graduates' qualifications or not. For example, graduates working in the informal sector, part-time and temporary jobs, as well as salaried jobs but at a lower skill level were counted in the statistics. This runs against the aspiration of the National

[11] DOS (2022a)
[12] DOS (2022c)
[13] Dzulkifli Abdul Razak (2022) argued that this practice tends to weaken the understanding of graduate employability by providing an escape route to manipulate the outcome. He argued that by organising training or upskilling programmes, the KPI can be upgraded accordingly (by higher education institutions) even to exceed the target set

Graduate Blueprint which targets graduates to be employed in relevant fields within six months of their graduation[14].

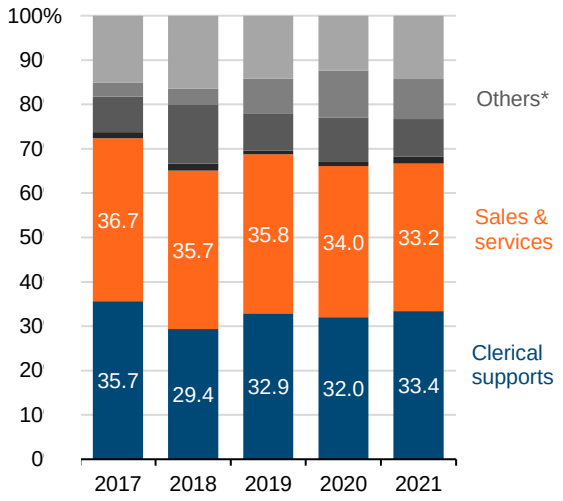
Data from GTS also indicates that between 2017 and 2021, an average of 40.0% of fresh graduates landed in jobs that did not require higher education qualifications (Figure 5). Despite some improvements in 2019, the Covid-19 pandemic reversed the achievement as the mismatch rate increased to 37.5% in 2021 compared to 33.4% in 2019 (before Covid-19)[15]. Almost 70% of graduates who were in non-graduate jobs worked as clerical support workers and sales & services workers as their fallback jobs (Figure 6). A fallback job refers to a second career choice, should one's first choice in a career not be available[16]. Given the fluctuating job market, many graduates probably were under pressure to choose a fallback option to avoid prolonged unemployment.

Figure 5: Fresh graduates, by job-skill mismatch, 2017 – 2021



Note: The data include all graduates who just completed their studies in 6-12 months, at all qualification levels,
Source: MOHE (various years), author's calculations

Figure 6: Fresh graduates in non-graduate jobs, by main job group, 2017 – 2021



Note: *Others include (1) Skilled agriculture, forestry & livestock, (2) Craft & related trades (3) Plant & machinery operators & assembler, (4) Elementary occupations & Armed forces
Source: MOHE (various years), author's calculations

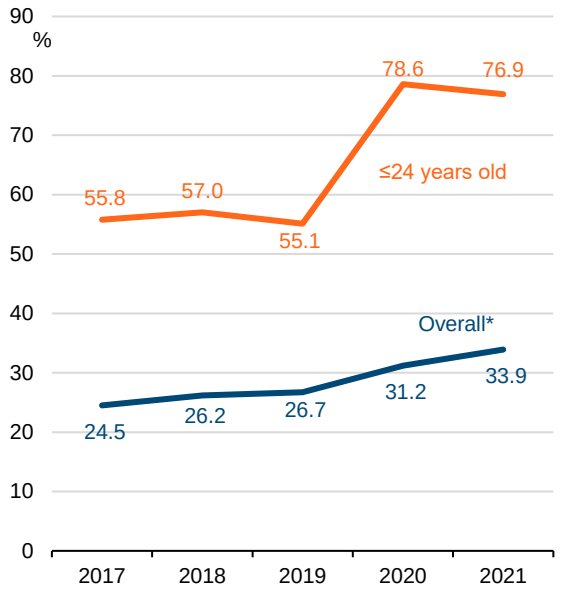
The above scenario is consistent with the Graduate Statistics published by DOS[17], noting that in 2021, 33.9% or 1.6 million out of a total of 4.8 million graduates (from all age groups) faced skill-related underemployment (an increase from 24.5% in 2017) (Figure 7). The figure also indicates that the prevalence of skill-related underemployment was significantly higher among graduates

[14] MOHE (2012), page 1
[15] Hawati Abdul Hamid (2022b)
[16] Christensen (2022)
[17] The number of graduates in the statistics published by DOS includes the estimates of overseas graduates whom had returned to Malaysia upon completion of their study, graduates who pursued further studies as well as the estimates of death. DOS (2022a). Meanwhile, the number of graduates in the statistics published by MOHE only includes graduates from local HEIs

aged 24 years and below (e.g. 2021: 76.9%, 2019: 55.1%). Similar to the GTS data, graduates who faced skill-related underemployment were largely employed as clerical support workers (41.0%), followed by service and sales workers (30.7%), craft and related trades workers (11.9%), and 9.9% in the remaining semi-skill jobs in 2021. About 6.6% were in the low-skilled category, working in elementary occupations pointing to some concerning structural issues in the labour market[18].

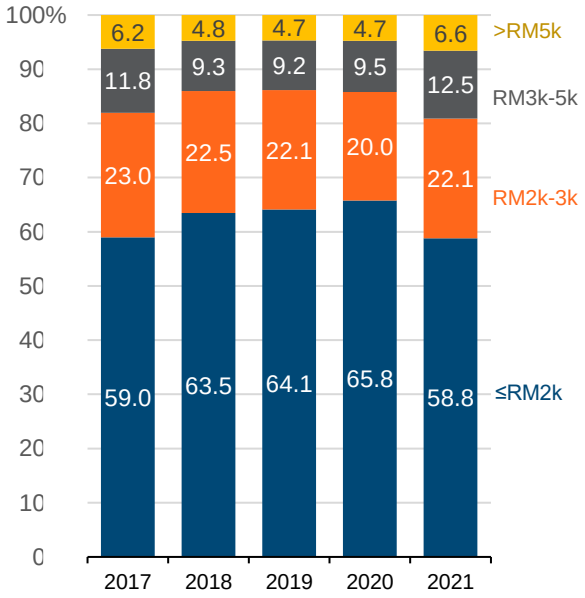
Arguably, earnings should be considered a more meaningful measure of graduates' employment outcomes. Unfortunately, Figure 8 shows that the starting pay of fresh graduates has been dismal as around two out of three graduates landed in jobs that pay RM2,000 and below in 2021. The wage growth has also been sluggish as indicated by more than half graduates earning low starting pay (RM2,000 and below) and the share has remained flat over the years.

Figure 7: Graduate skill-related underemployment, aged ≤24 and overall, 2017 – 2021



Note: *Overall refers to skill-related underemployment rate among graduates across all age groups
Source: DOS (2022a)

Figure 8: Fresh graduate earnings, by starting pay, 2017 – 2021



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

[18] DOS (2022b)

3. Sociodemographic factors and graduate starting pay

Against the backdrop of a tougher labour market for fresh graduates especially in securing good jobs, this section aims to investigate how sociodemographic factors influence graduates' labour market outcomes. As an individual's outcome is expected not to be equal, the analysis seeks to examine the attributes of graduates behind the variations in their starting pay.

3.1. Data and method

The analysis in this section utilises the micro datasets from the Graduate Tracer Study (GTS) from the year 2010 until 2020[19]. The survey is conducted by the MOHE annually on graduates from Malaysian public and private higher education institutions in conjunction with their convocation ceremonies (usually held between six to 12 months upon their study completion).

Considering the focus of this study is on fresh young graduates, only respondents aged 30 years and below are included in the analysis. Youth in Malaysia generally spend up to the age of 30 years pursuing higher education[20]. Graduates studying at postgraduate levels (masters, PhD and higher) are also excluded since their employment outcomes could distort the analysis due to differences in their profiles such as in terms of age (typically more mature students), specialised knowledge and past work experience[21].

Furthermore, the analysis only applies for graduates with *working* status and earning income, since those in the remaining employment statuses[22] were not earning any income. Between 2010-2020, this subsample represents on average, 44% of overall GTS respondents (Table 1). For example, in the year 2020 survey, there were 90.7% or 236,520 bachelor's and diploma/certificate graduates (henceforth refers as *diploma* holders) out of 260,701 total respondents, aged 30 years. The sample size is further trimmed down to 136,276 graduates only (52%), since those not working are omitted.

[19] MOHE (various years)
[20] KRI (2018)
[21] González, Zurriaga, and Llinares Insa (2019)
[22] The employment status in the GTS survey refers to: (1) Working (2) Furthering studies (3) Re-and up-skilling (4) Waiting for job placement (5) Unemployed. On average, graduates aged ≤30 years with bachelor's, diploma and certificate represents 88.0% of total GTS respondents.

Table 1: Number of respondents, overall and working graduates, 2010-2020

Year	Total GTS respondents*	Working graduates**	As % of total
2010	174,463	66,677	38%
2011	185,830	78,861	42%
2012	202,346	83,514	41%
2013	212,802	81,025	38%
2014	209,838	84,160	40%
2015	229,568	88,599	39%
2016	238,187	105,326	44%
2017	255,099	114,468	45%
2018	290,282	148,303	51%
2019	298,551	166,443	56%
2020	260,701	136,276	52%
Average	**232,515**	**104,877**	**44%**

Note: * Total GTS respondents include graduates at all levels of studies, across all age groups
** Working graduates with bachelor's, diploma and certificate, aged ≤30 only
Source: MOHE (various years), author's calculations

The logistic regression equation below captures the study objective that seeks to investigate how sociodemographic factors influence graduate's labour market outcomes in terms of starting pay.

Logistic regression model

$$income_i = \alpha + \beta_1 qualification_i + \beta_2 occskill_i + \beta_3 institutiontype_i + \beta_4 tvet_i + \beta_5 studyfield_i + \beta_6 econsector_i + \beta_7 emptype_i + \beta_8 familyincome_i + \beta_9 gender_i + \varepsilon_{it}$$

For this purpose, the monthly income including allowances (self-reported by graduates in the survey) is taken as a proxy for graduates' labour market outcomes and set as the dependent variable. To a large extent, this data can be considered as the starting salary since it is collected around the convocation period after the students just completed their studies. A logistic regression model is adopted since the income data is collected according to pre-set income brackets instead of continuous data. In the situation where the dependent variable is dichotomous or categorical in nature, a linear regression is not appropriate to be used.

To simplify the interpretation of the relationship between the dependent and independent variables, the model is further reduced to a binary logistic regression to predict two possible outcomes: the chances of having a starting pay of *≤RM2,000* (RM2,000 and below) or *>RM2,000* (above RM2,000). The RM2,000 cut-off value is selected considering that around 70% of graduates[23] fall into *≤RM2,000* income category every year (Table 3). The predictors (independent variables) represent the sociodemographic profiles of each graduate.

The descriptions and distributions of each variable are summarised in Table 2. The statistics are read as follows: For example, in 2020, the share of working graduates with a diploma and certificate qualifications was 50.5% and with a bachelor's degree was 49.5%. Meanwhile, 70.4%

[23] This percentage is slightly higher than an average of around 60% shown in Figure 9 since the latter includes respondents aged 30 years above and with a higher number of postgraduates.

were from public institutions (IPTA)[24] and 29.6% from private institutions (IPTS). The distribution for other variables across the years is self-explanatory as shown in the table.

Table 3 shows the share of graduates with *>RM2,000* starting pay. For example, in 2020, only 10.4% of graduates with diploma/certificate qualifications were having starting pay *>RM2,000*. This means, the remaining 89.6% were earning *≤RM2,000*. This contrast with graduates with a bachelor's degree where those earning *>RM2,000* were higher at 44.0%, while the remaining 56.0% were earning *≤RM2,000*.

The summary statistics in these two tables will be frequently referred to in the ensuing discussions.

[24] Including public universities and TVET institutions

Table 2: Distribution of working graduates, by sociodemographic characteristics, 2010-2020 (in percentage)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	66,677	78,861	83,514	81,025	84,160	88,599	105,326	114,468	148,303	166,443	136,276	104,877
Graduates aged ≤30	150,933	164,145	179,461	185,350	188,243	191,803	204,222	223,097	263,643	271,019	236,520	205,312
% of working to graduates aged ≤30	44.2%	48.0	46.5	43.7	44.7	46.2	51.6	51.3	56.3	61.4	57.6	51.1
Starting pay												
RM2,000 & below	76.6	74.7	74.6	73.5	72.1	71.1	69.5	70.1	70.8	70.6	73.0	72.4
Above RM2,000	23.4	25.3	25.4	26.5	27.9	28.9	30.5	29.9	29.2	29.4	27.0	27.6
Qualification level												
Diploma/certificate	42.0	42.3	45.6	47.7	45.7	49.9	43.9	45.6	52.3	50.2	50.5	46.9
Bachelor	58.0	57.7	54.4	52.3	54.3	50.1	56.1	54.4	47.7	49.8	49.5	53.1
Institution type												
IPTA	78.1	72.6	67.2	64.6	64.7	60.9	62.2	62.9	69.0	68.8	70.4	67.4
IPTS	21.9	27.4	32.8	35.4	35.3	39.1	37.8	37.1	31.0	31.2	29.7	32.6
Study stream												
Non-TVET	71.9	74.2	74.6	74.5	77.0	74.9	74.3	73.4	62.0	62.3	60.3	70.8
TVET	28.1	25.9	25.4	25.5	23.1	25.1	25.7	26.6	38.0	37.7	39.7	29.2
Study field												
Education	3.6	2.3	3.5	3.3	3.2	4.8	2.7	3.2	3.2	3.3	3.7	3.3
Arts & Humanities	6.4	7.1	7.2	6.5	6.8	7.5	7.3	7.4	7.3	8.0	8.0	7.2
Social Sciences, Business & Law	32.0	33.4	32.4	32.7	38.0	35.5	37.3	35.7	31.9	30.7	29.3	33.5
Sciences, Maths & Computing	11.3	11.5	10.8	10.2	10.0	10.9	10.7	10.6	10.5	9.9	10.0	10.6
Engineering, Manufacturing & Construction	34.4	32.6	30.4	30.7	25.8	26.3	27.3	27.8	32.8	33.2	34.7	30.5
Agriculture & Veterinary	1.1	1.1	1.1	1.0	1.4	1.4	1.6	1.8	2.0	2.0	1.7	1.5
Health & Welfare	6.1	7.0	9.1	9.6	7.5	6.6	5.4	5.4	4.4	4.8	4.3	6.4
Services & others	5.0	5.0	5.4	6.0	7.3	7.0	7.8	8.2	7.9	8.1	8.3	6.9

Economic sector												
Services	72.5	72.2	73.0	73.7	74.1	74.3	73.8	72.9	70.0	70.3	68.7	72.3
Industry	24.0	24.1	23.3	22.2	21.1	21.0	21.4	22.0	25.0	24.6	26.1	23.2
Agriculture	2.2	2.0	1.9	1.4	1.7	1.7	1.7	1.8	1.7	1.9	2.3	1.8
Others	1.4	1.7	1.8	2.7	3.1	3.0	3.2	3.3	3.3	3.2	3.0	2.7
Occupational skill												
Low skill	3.5	4.4	6.0	6.5	6.9	7.1	6.6	7.6	8.6	3.8	4.5	6.0
Semi skill	35.5	35.2	38.1	40.2	41.8	43.2	45.0	46.1	46.4	33.3	34.2	39.9
High skill	61.1	60.4	55.9	53.3	51.3	49.7	48.4	46.3	45.0	62.9	61.3	54.1
Employment type												
Self-employed	3.5	3.7	4.4	4.6	5.5	6.9	8.0	7.8	17.6	20.0	22.6	9.5
Contract/temporary	21.6	23.2	25.7	24.7	25.2	23.9	22.2	22.4	18.0	16.9	15.5	21.7
Part-time	23.3	21.8	22.3	21.8	22.1	21.5	21.7	22.3	21.2	21.4	22.4	22.0
Full-time/permanent	51.6	51.2	47.7	49.0	47.3	47.7	48.2	47.5	43.3	41.7	39.5	46.8
Family income												
≤RM1k	31.4	29.5	27.9	24.3	22.4	20.3	18.8	17.5	17.1	16.5	15.1	21.9
>RM1k-2k	34.0	34.4	33.2	33.6	32.3	32.6	31.3	31.3	31.5	30.8	29.9	32.3
>RM2k-3k	19.0	19.7	21.1	22.8	23.6	23.6	24.5	23.2	22.1	21.8	21.2	22.1
>RM3k-5k	9.4	10.0	10.8	11.9	13.4	14.1	15.1	17.0	17.8	17.8	18.9	14.2
>RM5k	6.3	6.4	7.1	7.5	8.4	9.4	10.3	11.0	11.5	13.0	15.0	9.6
Gender												
Male	42.7	43.0	43.2	42.8	41.7	42.1	42.2	40.6	44.9	44.5	45.1	43.0
Female	57.3	57.0	56.8	57.2	58.3	57.9	57.8	59.4	55.2	55.5	54.9	57.0

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

Table 3: Percentage of working graduate earning >RM2,000, 2010-2020 (in percentage)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	66,677	78,861	83,514	81,025	84,160	88,599	105,326	114,468	148,303	166,443	136,276	104,877
Starting pay												
Above RM2,000	23.4%	25.3	25.4	26.5	27.9	28.9	30.5	29.9	29.2	29.4	27.0	27.6
Qualification level												
Diploma/certificate	5.1	5.9	7.0	7.2	8.0	8.4	9.6	9.9	11.2	11.4	10.4	8.6
Bachelor	36.5	39.5	40.9	44.2	44.6	49.4	46.9	46.7	49.0	47.5	44.0	44.5
Institution type												
IPTA	21.7	23.5	23.0	23.2	24.5	26.0	26.9	25.9	22.6	22.9	20.3	23.7
IPTS	29.4	30.0	30.4	32.6	34.1	33.5	36.4	36.7	43.9	43.6	42.9	35.8
Study stream												
Non-TVET	29.6	30.3	29.9	31.4	32.1	33.7	35.6	34.5	38.3	37.8	35.7	33.5
TVET	7.3	10.9	12.4	12.3	13.7	14.6	15.8	17.3	14.4	15.4	13.8	13.4
Study field												
Education	28.0	17.9	12.6	20.2	8.6	32.9	17.8	11.6	15.9	15.1	10.6	17.4
Arts & Humanities	11.8	11.2	12.7	13.6	16.1	15.2	19.2	17.3	18.3	17.1	14.8	15.2
Social Sciences, Business & Law	19.5	21.8	23.2	25.9	25.4	28.2	31.9	32.2	34.1	33.8	31.7	28.0
Sciences, Maths & Computing	27.1	32.4	30.2	33.9	35.2	37.1	39.4	35.4	36.6	39.6	41.1	35.3
Engineering, Manufacturing & Construction	24.6	28.5	30.3	29.7	33.1	31.9	34.7	35.8	29.4	29.9	26.4	30.4
Agriculture & Veterinary	21.0	17.7	16.0	20.9	20.7	22.0	19.4	17.3	12.0	13.1	11.6	17.4
Health & Welfare	50.5	44.2	35.6	30.5	45.6	36.8	28.6	28.0	32.2	36.1	33.5	36.5
Services & others	9.6	9.6	11.8	13.4	15.5	14.4	15.5	14.8	17.5	16.0	14.9	13.9

Economic sector												
Services	23.1	24.6	24.3	25.5	27.0	28.1	29.5	28.0	28.6	28.9	26.9	26.8
Industry	25.2	29.1	30.8	32.3	34.2	34.7	37.3	39.4	34.0	33.9	29.9	32.8
Agriculture	16.4	15.1	13.9	19.3	18.2	18.4	19.1	17.3	13.1	13.7	13.7	16.2
Others	12.5	13.5	15.5	11.8	12.0	15.0	14.6	14.4	14.4	13.6	14.1	13.8
Occupational skill												
Low skill	6.7	5.4	3.8	5.8	6.0	7.6	8.1	8.8	9.1	7.8	7.0	6.9
Semi skill	8.6	8.8	9.8	10.5	11.7	12.6	14.9	15.0	16.2	11.2	9.3	11.7
High skill	32.9	36.3	38.4	41.2	44.1	47.2	49.5	49.5	48.9	43.1	41.3	42.9
Employment type												
Self-employed	13.9	14.9	13.0	12.9	11.7	13.3	12.1	12.3	15.9	15.8	14.5	13.7
Contract/temporary	4.3	4.5	5.1	5.6	6.1	6.2	6.8	5.6	8.0	8.6	8.7	6.3
Part-time	19.7	20.8	23.2	24.5	25.4	26.8	31.2	32.4	31.8	33.0	30.6	27.2
Full-time/permanent	33.7	37.3	38.6	39.3	42.5	43.5	44.2	43.1	42.1	42.4	39.3	40.5
Family income												
≤RM1k	12.2	13.6	13.9	13.5	13.6	14.5	16.4	15.4	14.1	15.7	14.1	14.3
>RM1k-2k	18.8	20.6	19.7	18.8	19.0	18.2	20.1	18.8	17.4	17.1	14.8	18.5
>RM2k-3k	33.4	35.3	34.5	35.6	37.5	37.8	38.9	37.3	36.3	35.5	32.3	35.8
>RM3k-5k	40.0	39.6	40.0	42.2	41.8	44.1	43.5	42.7	43.0	41.7	38.0	41.5
>RM5k	48.7	51.3	48.1	51.1	51.2	52.5	49.0	49.0	49.3	48.6	43.1	49.3
Gender												
Male	27.4	29.7	30.4	31.9	33.3	33.7	35.9	36.1	32.7	33.0	30.7	32.2
Female	20.3	21.9	21.7	22.5	24.1	25.5	26.6	25.7	26.4	26.5	24.0	24.1

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

The binary logistic regression model mentioned earlier was first regressed on the GTS 2020 dataset. The same regression was repeated on year 2010 until 2019 datasets to analyse the long-term trends.

The logit coefficients for the independent variables are transformed into odds ratios, representing the probability of a subgroup under the dimension of interest being in the *>RM2,000* group, relative to the "base" or "reference" group (see Box 1). This means that all results and the statistical significance shall be interpreted relative to the reference group (indicated with a symbol, "ł" next to each independent variable in Table 4. For example, the reference group for *Study field* is *education* i.e. the outcomes of graduates from *arts & humanities* field is interpreted relative to the outcome of graduates from *education*.

Generally, the odds ratios are interpreted as follows: an odds ratio value of more than 1 means graduates in the attribute category has a higher chance of being in the higher income group (*>RM2,000)* relative to the graduates in the reference group, holding other variables constant. On the other hand, a value below 1 means that there is a lower probability of graduates in the attribute category being in the higher income group compared to the reference group.

Box 1: Reference group setup[25]

There are no hard and fast rules in determining the reference group for a logistic regression. Some explanatory variables for which the reference group is can sometimes almost be automatically determined. For instance, for a variable which the outcomes are "died" and "survived", the reference level is usually set to "survived", if the research interest is focused on variables associated with the outcome, death. On the other hand, some variables have no clear reference group, but present ordered levels. In this case, the reference will be either, the start or end point or, less frequently or, the central level. Typically, this is applicable for variables assessed using Likert scales, for instance, the degree of satisfaction about some product scaled as "satisfied", "neither satisfied nor dissatisfied" or "unsatisfied". However, some variables have no ordered levels and no clear reference level. This can occur with the study field which raises the question: what field should be used as the reference? There is no clear answer to this. However, reference group selection can change the model estimation in some cases. What is important is to remember that all results (and significant effects) presented are relative to the reference level.

[25] Adapted and reproduced from Sperandei (2014)

3.2. Findings and discussions

Table 4 presents the results of the regression analysis for the 11-year period indicating most independent variables have high levels of statistical significance (at 1.0% significance level). A high degree of statistical significance indicates that an observed relationship between two (or more) variables is real and unlikely to be explained solely by chance or random factors. The 0.32 Pseudo-R^2 value indicates the "goodness of fit" of the regression model with categorical dependent variables[26].

This subsection will discuss the findings in terms of the trends over the 11-year period with some highlights of the status as of 2020. Table 4 shows that the outcomes of graduates in all dimensions under study are consistent with those of 2020, although the magnitudes may vary. The trend analysis suggest that the starting pay has improved slightly over the last decade, with convergence seen in some dimensions while diverging in others.

[26] It should be noted that unlike the ordinary least square-R^2, the log-likelihood-based Pseudo-R^2 does not represent the proportion of explained variance but rather the improvement in model likelihood over a null model. Typically, all Pseudo-R^2s are influenced to some extent by sample size, number of predictor variables, and number of categories of the dependent variable and its distribution asymmetry. Hence, an interpretation by goodness-of-fit benchmark values must explicitly consider these characteristics (Hemmert et al. (2018))

Table 4: Logit regression result, 2010-2020

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of observations	66,677	78,812	83,493	81,013	84,149	85,126	100,149	109,337	130,542	140,653	113,638
LR chi2(24)	22503.46	29473.07	31580.73	32502.21	35623.62	38612.63	41730.33	46465.31	54561.33	57101.32	44263.74
Prob > chi2	0	0	0	0	0	0	0	0	0	0	0
Pseudo R2	0.3104	0.3307	0.3335	0.3467	0.3576	0.3743	0.3357	0.3456	0.3406	0.3273	0.3242
Log likelihood	-24992.32	-29821.20	-31563.62	-30623.54	-31996.80	-32269.75	-41289.76	-43997.83	-52825.75	-58669.26	-46141.69
Qualification level: Pre-bachelor ł											
Bachelor	9.99***	11.75***	9.98***	10.52***	8.82***	9.54***	8.18***	7.85***	8.18***	7.66***	6.95***
Occupational skill: Low skill ł											
Semi skill	1.26**	1.37***	1.73***	1.25***	1.40***	1.15**	1.33***	1.23***	1.30***	1.02	0.99
High skill	3.13***	3.74***	4.54***	3.58***	3.92***	3.25***	3.73***	3.47***	3.48***	3.15***	3.31***
Institution type: IPTA ł											
IPTS	1.17***	1.45***	1.49***	1.51***	1.65***	1.33***	1.82***	2.00***	2.36***	2.36***	2.56***
Study stream: non-TVET ł											
TVET	0.76***	1.03	1.01	1.02	0.95	0.85***	1.02	1.13***	1.22***	1.21***	1.11***
Study field: Education ł											
Arts & Humanities	0.54***	0.68***	0.88	0.87*	1.60***	0.53***	1.33***	1.72***	1.16**	1.03	1.39***
Social Sciences, Business & Law	0.74***	1.08	1.39***	1.39***	2.35***	0.99	2.27***	3.21***	1.94***	2.04***	2.90***
Sciences, Maths & Computing	1.07	1.71***	1.91***	1.93***	3.39***	1.39***	2.88***	3.75***	2.45***	2.69***	4.37***
Engineering, Manufacturing & Construction	1.26***	1.79***	2.12***	1.87***	3.13***	1.19***	2.77***	3.59***	2.11***	2.30***	3.37***
Agriculture & Veterinary	1.24	1.82***	2.01***	2.34***	3.76***	1.52***	2.27***	2.95***	2.04***	2.01***	2.16***
Health & Welfare	5.16***	5.33***	5.04***	3.64***	6.44***	1.92***	2.26***	2.90***	2.10***	2.70***	3.16***
Services & others	0.77***	0.94	1.20**	1.29***	2.51***	0.97	1.66***	2.42***	1.80***	1.78***	2.74***
Economic sector: Services ł											
Industry	0.97	1.01	1.13***	1.21***	1.22***	1.21***	1.13***	1.30***	1.34***	1.26***	1.19***
Agriculture	0.81**	0.71***	0.68***	0.79**	0.79**	0.71***	0.83**	0.87*	0.76***	0.59***	0.78***
Others	1.08	0.74***	1.07	0.78***	0.71***	0.87**	0.65***	0.76***	0.82***	0.70***	0.77***

Employment type: Full-time/permanent ł											
Contract/temporary	0.53***	0.43***	0.48***	0.49***	0.44***	0.44***	0.53***	0.57***	0.58***	0.59***	0.56***
Part-time	0.13***	0.11***	0.12***	0.12***	0.11***	0.11***	0.12***	0.99***	0.14***	0.15***	0.16***
Self-employed	0.55***	0.52***	0.40***	0.32***	0.24***	0.17 ***	0.16***	0.18***	0.19***	0.16***	0.19***
Employment type: Self-employed ł (alternative reference group)											
Contract/temporary	*0.23****	*0.21****	*0.29****	*0.38****	*0.45****	*0.65****	*0.75****	*0.54****	*0.74****	*0.92**	*0.83****
Part-time	*0.96*	*0.83****	*1.24****	*1.51****	*1.85****	*2.61****	*3.33****	*3.14****	*3.07****	*3.69****	*2.96****
Full-time/permanent	*1.80****	*1.89****	*2.53****	*3.07****	*4.12****	*5.81****	*6.21****	*5.46****	*5.36****	*6.26****	*5.33****
Family income: ≤RM1k ł											
>RM1k-2k	1.25***	1.32***	1.25***	1.29***	1.24***	1.15***	1.15***	1.13***	1.17***	1.03	0.94**
>RM2k-3k	2.37***	2.35***	2.25***	2.44***	2.60***	2.60***	2.36***	2.37***	2.41***	2.15***	1.94***
>RM3k-5k	2.74***	2.54***	2.61***	2.77***	2.84***	2.90***	2.52***	2.56***	2.68***	2.37***	2.07***
>RM5k	3.54***	3.58***	2.96***	3.28***	3.49***	3.52***	2.78***	2.77***	2.87***	2.55***	2.06***
Gender: Male ł											
Female	0.60***	0.63***	0.62***	0.62***	0.64***	0.64***	0.64***	0.62***	0.62***	0.63***	0.60***
_cons	0.02***	0.01***	0.01***	0.01***	0.00***	0.01***	0.00***	0.00***	0.00***	0.00***	0.00***

Note: 1) Note: ł Denotes the reference group

2) Estimates are transformed only in the first equation to odds ratios.

3) Asterisk * refers to the level of significance. *** p<0.01, ** p<0.05, * p<0.1.

4) ǂ TVET (MTUN) graduates are classified as a separate group to see the effect of TVET qualifications from universities vs non-universities/TVET (Others) i.e. polytechnics, college communities and other public skill training institute.

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

Findings for each dimension are discussed below:

3.2.1. Qualification level

Qualification level: Pre-bachelor	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bachelor	9.99***	11.75***	9.98***	10.52***	8.82***	9.54***	8.18***	7.85***	8.18***	7.66***	6.95***

The first dimension looks at the effect of the qualification level on graduate starting pay. The logistic regression result shows that bachelor's degree holders (*bachelors*) consistently outperform graduates with diplomas and certificates (*pre-bachelors*). In 2020, *bachelors* had almost 7.0 times odds of earning *>RM2,000* compared to *pre-bachelors.* Based on a separate analysis (not shown in the table), we also found that graduates with post-graduate qualifications (master's degree and Phd) stood a greater chance of earning higher income upon graduation, relative to those at the undergraduate levels. Greater chances of getting higher starting pay among those with higher qualifications are not surprising considering that greater knowledge accumulation and skills enhancement happened as one moves up the education attainment ladder. Evidently, the higher the learning level, the higher the earnings one could get.

Nevertheless, it should be noted that the odds of *bachelors* in 2010 to 2013 were noticeably higher at around 8.0–11.0 times compared to pre-bachelors. However, their chances of earning higher pay deteriorated to less than 8.0 times in 2019 and 2020. Table 3 shows that the percentage of *bachelors* earning *>RM2,000* declined to 44.0% in 2020, after peaking at 49.0% in 2018. Meanwhile, among *pre-bachelors*, the percentage increased from 5.1% in 2010 to 10.4% in 2020[27].

The above scenario partly explains the convergence of the two groups as reflected by the declining odd ratios for *bachelors*. The Department of Statistics (DOS) reported that the monthly income for fresh degree graduates had fallen in 2020 with most of them earning around the minimum wage level (between RM1,001 and RM1,500) compared to RM2,001-RM2,500 in 2019. The economic downturn stemming from Covid-19 has somewhat resulted in a greater number of diploma and degree holders resorting to lower skills and lower pay jobs to avoid unemployment.

Sluggish wages for fresh graduates are not unique during the Covid-19 crisis alone. Looking back over a longer period, the Bank Negara Annual Report 2018 highlighted that the compounded annual growth rates (CAGR) of real starting salaries for executive positions with a diploma, basic degree, honours degree and master's degree have all contracted by -0.7%, -0.1%, -0.3% and -1.0% respectively in the eight years period between 2010 and 2018[28]. Thus, while workers with higher education generally earn better, this should not discount the fact that the real starting salaries for many fresh graduates have continuously declined between 2010 and 2018, amid the increasing cost of living. Despite the data is showing a lower prevalence of degree holders earning *≤RM2,000*

[27] Although the share improved for *pre-bachelors*, the headcount number is still small relative to *bachelors*

[28] These estimates are based on Bank Negara Malaysia's analysis using data from the Malaysian Employers Federation (MEF) Salary Survey with the caveat that the starting basic salaries do not include overtime, payments for work done on rest days and public holidays, allowances, bonuses, and other related payments (BNM (2019))

compared to diploma holders, the fact that more than half of them were not able to earn *>RM2,000* points to a lacklustre outlook for fresh graduates to jump start their career.

Higher education levels do not always guarantee higher earnings, and this could be especially the case for fresh graduates struggling to find good jobs that matched with their skills in a competitive job market. The challenges faced by fresh graduates underscore the deeper issues in the higher education system, labour market and the structure of the economy that need to be addressed by the national long-term development plan.

Considering the apparent differences in the starting pay between degree and diploma holders, it is imperative to contextualise the graduates' outcomes by these two qualification levels. As such, Table 5–Table 10 in the Appendix and Appendix 2 dissected the distribution of graduates, the percentage of graduates with *>RM2,000* starting pay and the logit regression results for diploma and degree holders as references in the ensuing discussions.

3.2.2. Occupational skill level

Occupational skill: Low skill	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Semi skill	1.26**	1.37***	1.73***	1.25***	1.40***	1.15**	1.33***	1.23***	1.30***	1.02	0.99
High skill	3.13***	3.74***	4.54***	3.58***	3.92***	3.25***	3.73***	3.47***	3.48***	3.15***	3.31***

The next analysis examines the differences in graduate starting salary according to their occupation. Here, occupations are classified into three groups based on the job skill levels namely: high, semi and low skills[29]. High-skilled jobs which are defined by the International Standard Classification of Occupations (ISCO)[30] as *managers*, *professionals* as well as *technicians and associate professionals*, typically require a graduate level qualification.

In general, the result shows that the higher the skills required by a job, the higher the pay one could get. It is not surprising to see that graduates in high-skilled jobs showed higher odds of earning *>RM2,000*, hovering at around 3.0 times than those with low-skilled jobs. After a peak of 4.5 odds in 2012, the ratios have slowly declined to 3.3 in 2020 (Table 4). High-skilled jobs typically come with higher job requirements and more specialised knowledge, which often will be compensated with better pay.

Table 2 shows that on average, 54.0% of graduates were employed in high-skilled jobs in 2010–2020, and the remaining 40.0% and 6.0% were in semi and low-skilled jobs respectively. Table 3 shows that, among the high-skilled workers, 42.9% were earning *>RM2,000* on average, meaning the remaining 57.1% were earning *≤RM2,000*. These statistics highlight at least two depressing scenarios faced by graduates. First, about half were not able to secure high-skilled and high-paying jobs. Second, about half were earning *≤RM2,000* despite working in jobs labelled as "high skill". Given that our economic activities are concentrated in services, one would think that the majority

[29] High skill – (1) Manager; (2) Professional; (3) Technicians and associate professionals
Semi skill – (4) Clerical support worker; (5) Sales and service worker; (6) Skilled worker in agriculture, forestry, farming, and fishery; (7) Vocational worker and related production; (8) Plants and machine operators, or assembly-line worker
Low-skill – (9) General worker

[30] ILO (2012)

of high-skilled with low-pay jobs would be working as *managers,* performing general managerial work in retail and services business entities. Yet, the data indicates that the occupation among degree holders skewed in the *professional* category and among diplomas in *technicians and associate professionals*.

For graduates with semi-skilled jobs, their chances of earning *>RM2,000* is also higher compared to those in low-skill jobs, i.e. ranging from 1.2 to 1.7 times between 2010 and 2018. The odds have been trending downward with statistically insignificant results for the last two years[31]. Again, this alludes to the tough job market with increasing competition even at the low- and semi-skilled jobs. Table 3 shows that the percentages of graduates working in low- and semi-skilled jobs and at the same time earning *>RM2,000,* are very small, at an average of 6.9% and 11.7% respectively in 2010–2020. However, the percentage of semi-skilled declined from 16.2% in 2018 to 9.3% in 2020, narrowing the gap between the two.

Since starting pay is differentiated by qualification level, we investigated the relationships between starting pay, occupation, and qualification. Table 7 and Table 10 in the appendix show that the odds of getting higher pay dissected by diploma and degree holders are quite similar to the odds for both groups combined (about 1.3 and 3.5 times respectively). However, the percentage of diploma holders working in high-skilled jobs is lower, at 39.8% on average (Table 5), compared to degree holders, 66.5% on average (Table 8). Meanwhile, the percentage of diploma holders earning *>RM2,000* is also lower at 8.6% on average (Table 6), compared to degree holders at 44.5% on average (Table 9).

Overall, findings from subsections 3.2.1 and 3.2.2 imply that while the starting pay of diploma and degree holders is directly differentiated by their qualification level, the qualification level is also an important factor that directly influences the type of occupation one could get. However, the high prevalence among degree holders (and more so among diploma holders) working in low-skilled jobs and earning low starting pay even with jobs labelled as "high skill", is a cause of concern, especially considering the significant investment they have made in higher education.

The next seven subsections look further at the following dimensions: (1) educational profiles – institution type, study stream and study field; (2) job profiles – job's economic sector and employment type; and (3) individual profiles – family income and gender.

[31] Statistical insignificance means that there are not enough observations to conclude that the association between getting higher pay and semi-skilled jobs is not due to chance alone. The occurrence of semi-skill jobs influencing high starting pay is not large enough beyond the level of significance.

3.2.3. Institution type: Public vs Private

Institution type: IPTA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
IPTS	1.17***	1.45***	1.49***	1.51***	1.65***	1.33***	1.82***	2.00***	2.36***	2.36***	2.56***

Comparing the outcomes of graduates from public and private higher education institutions, the results suggest that graduates from private higher education institutions (*IPTS*) persistently outperformed their counterparts in public higher education institutions (*IPTA)* across years. The odds of the former group earning *>RM2,000* was 1.2 times in 2010 and the chances doubled in more recent years.

Table 3 also indicates that among *IPTA* graduates, only 23.7% on average were earning *>RM2,000*, compared to 35.8% among *IPTS* graduates (highest percentage in 2018: 43.9%). The trend in the share of graduates earning *>RM2,000* between the two sectors started to decouple in 2018 with the share among *IPTS* graduates peaking at 43.9%, while among *IPTA* shrank. The shrinking trend for *IPTA* could be due to the inclusion of TVET graduates from the vocational colleges and public skill training institutes (*Institut Latihan Kemahiran Awam,* ILKA)—who mostly studied at the diploma/certificate levels)— in the survey from 2018 onwards.

Dissecting the performance of *IPTA* and *IPTS* by qualification levels, Table 7 indicates that the odds of *IPTS–diploma* getting higher pay were lower compared to *IPTA–diploma* at the start of the decade. However, it became more comparable, if not higher in the last few years. On the other hand, the odds of *IPTS–degree* getting better pay have always been higher than *IPTA–degree* (Table 10). In terms of the share of graduates earning *>RM2,000* by qualification level, Table 6 and Table 9 indicate that the shares have always been higher among graduates from *IPTS* (consistent with Table 3). Nevertheless, the gaps have been wider between *IPTA–IPTS degree* holders, compared to between *IPTA–IPTS diploma* holders.

Apparently, the gap in the starting pay of the two groups can be seen since 2010. This observation is consistent with the findings of Soon et al. (2021) through their Public-Private University Worth Parity Index[32]. The study they defined "worth" as the proportion of the returns to higher education to costs. It asserted that IPTA education has "higher worth" in terms of better skills' value-added for its graduates, but "lower worth" in terms of salaries. Mohd Zaidi Hajazi (2017)[33] argues that although the general role of higher education is to provide knowledge to students, as public universities commonly do, private universities often put more emphasis on commercial values, which could help explain the differences in the starting pay.

On the other hand, Jomo (2014)[34] argued that private investments in education have tended to offer relatively low-cost offerings leading to credentials associated with high remuneration (e.g. in Law and Accountancy), rather than less profitable higher cost offerings (e.g. Engineering courses) needed for accelerating industrialisation. He noted that the private higher education market

[32] Soon, Lim, and Ismail (2021)
[33] Mohd Zaidi Hajazi (2017)
[34] Jomo (2014)

structure has changed considerably over the last three decades—at an unnecessarily high cost to Malaysian students who pay far more than is necessary to acquire the desired credentials.

In this regard, our future research will involve investigating the performance of graduates produced by both education providers over a longer time horizon. This is considering that the situation shown by the GTS dataset is limited to around six months to one year after study completion. Future studies could also look at other factors like the contents and quality of courses offered, available supporting ecosystems like career guidance, internship and industrial placement in both types of institutions to elucidate the situations on the ground.

3.2.4. Study stream: TVET vs non-TVET

Study stream: Non-TVET	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TVET	0.76***	1.03	1.01	1.02	0.95	0.85***	1.02	1.13***	1.22***	1.21***	1.11***

A comparison was also made between graduates with technical and vocational education and training (*TVET*) and *non-TVET*[35]. The objective here is to statistically quantify the differences in the employment outcomes of graduates who studied in programmes that are technical in nature versus academic. Following the classification adopted by the MOHE, *TVET* here refers to graduates who study at the certificate, diploma and bachelor's degree level at public technical and vocational institutions namely: the technical public universities (Malaysian Technical University Network, MTUN), polytechnics, college communities, vocational colleges and other public skill training institutes[36].

Table 2 shows that on average, *TVET* represents about 30% of total working graduates, while the remaining 70% are *non-TVET* in IPTS and IPTA in 2010–2020. The statistics in Table 3 indicate that on average, only 13.4% of *TVET* were earning *>RM2,000*, while among *non-TVET*, the percentage was higher at 33.5%.

As can be seen in Table 3, the odds of *TVET* earning *>RM2,000* was lower compared to *non-TVET* back in 2010. However, the chances of the two groups getting higher starting pay have become more comparable in recent years. Analysing the data deeper by qualification levels suggests that the improvement in the odds of *TVET* can be associated with the policies that strive to strengthen TVET education including promoting higher TVET qualifications.

Table 7 indicates that there have been improvements in the odds of *TVET–diploma* getting higher pay from 0.3 in 2010 to 0.8 in 2020[37], although the odds continue to be lower relative to *non-TVET–diploma*. Behind this progress is the greater share of *TVET–diploma* earning *>RM2,000,* rising from 3.4% in 2010 to around 10.0% in the last two years (Table 6). However, the gaps between the two groups stay the same since the share of earning *>RM2,000* among *non-TVET–diploma* also increased.

[35] Non-TVET here refers to graduates from public universities (excluding MTUN) and private institutions
[36] Private HEIs offering technical/practical courses in nature are not included under this classification
[37] Most *TVET–diploma* was graduates from polytechnics, community colleges and other training institutes

On the other hand, at the degree level, *TVET–degree* initially had a slightly lower chance of earning a higher income (0.98 times) than *non-TVET–degree,* with statistical insignificance. However, from 2011 onwards, *TVET–degree* was showing slightly higher odds of earning higher income compared to *non-TVET–degree* (Table 10). It is worth highlighting that *TVET–degree* graduates were mostly from the MTUN[38]. Table 9 shows that the share of *TVET–degree* earning *>RM2,000* is higher than *non-TVET–degree*, at 51.3% and 43.9% on average respectively. The shares among *TVET–degree* have also risen in parallel with the trend among *non-TVET–degree,* hence narrowing the gap between the two groups.

This suggests that, although we saw earlier that *TVET–diploma* faring lower than *non-TVET–diploma,* the effects of MTUN graduates would have offset the underperformance of graduates from polytechnics and community colleges. Essentially, this finding supports our first result that shows higher qualifications increase the chances of getting a higher starting pay. It also highlights the positive result of the formation of MTUN as a pathway for TVET students to pursue education at the degree level and higher. Other than that, as technology advances employers are probably also looking for employees with high technical and practical skills and not just high academic performance alone, hence giving TVET degree holders an added advantage.

The underperformance of TVET graduates in the earlier years could be due to challenges and unaddressed issues of the TVET system at the time, such as the uncoordinated governance of TVET, fragmented TVET delivery, lack of recognition for the industries, and competency gaps among TVET instructors[39]. Some of these issues remain today, but there has been significant progress in TVET delivery in Malaysia.

It is somewhat a consensus view at the policy level in Malaysia that TVET education is a vehicle that could provide good employment opportunities, as manifested by the efforts made by the government to strengthen TVET education [40]. In the 12th Malaysia Plan (RMK12), TVET has been identified as one of the 14 drivers of change, with various strategies being drawn up. These include revamping the governance of TVET, promoting TVET as a brand, improving the quality of TVET programs and creating a database related to TVET pathways and career matching[41]. Undeniably, this is a good direction, supported by the higher employability rate for *TVET* graduates. For example, in 2020 *TVET* recorded an 87.6% employability rate compared to *non-TVET* (82.4%)[42].

However, these headline statistics may not necessarily mean that *TVET* graduates are facing better employment opportunities along their career trajectory compared to their *non-TVET* counterparts. Our study found that while *TVET* graduates stand a better prospect to get a job[43], low starting pay is still a course of concern. Among *TVET–diploma*, more than 90% earned *≤RM2,000* (Table 3).

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[38] For the period between 2010-2020, 92.4% of TVET (MTUN) graduates were bachelor's degree holders, while among other TVET graduates 99.6% were diploma/certificate holders (statistics among working graduates aged ≤30 with bachelor's degree and below only)

[39] 11thMP, EPU (2021)

[40] Berita Harian (2022)

[41] 12thMP, EPU (n.d.)

[42] Hawati Abdul Hamid (2022b)

[43] TVET graduate employability rate consistently achieved above 85.0% after 2015

Nevertheless, our study found that having a bachelor's degree in TVET would boost their starting pay.

Still, there are gaps in the literature about how promising TVET education is in terms of career development and salary growth. The issue is compounded by the common perception that TVET qualification is an inferior education pathway and will only lead to graduates pursuing low-skilled jobs. Although preliminary findings indicate that the outcomes of TVET graduates are improving, evidence of their career progression is still limited. Graduates, regardless of TVET or non-TVET, may take a longer time to progress in their career and it is yet clear to see whether TVET could outperform non-TVET graduates long after graduation.

The question that could pave our way into further research is: to what extent does TVET education guarantee career progression and high future income growth? Realistically, it could be pointless to start one's career with a higher pay only to remain in the same income bracket for the rest of one's employment. Career progression is typically a challenge for jobs like e-hailing drivers where the income generation potential is constrained by limited working hours. In essence, further study needs to be done to determine the performance of graduates from different types of disciplines and institutions in a longer time horizon.

3.2.5. Study field

Study field: Education	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Arts & Humanities	0.54***	0.68***	0.88	0.87*	1.60***	0.53***	1.33***	1.72***	1.16**	1.03	1.39***
Social Sciences, Business & Law	0.74***	1.08	1.39***	1.39***	2.35***	0.99	2.27***	3.21***	1.94***	2.04***	2.90***
Sciences, Maths & Computing	1.07	1.71***	1.91***	1.93***	3.39***	1.39***	2.88***	3.75***	2.45***	2.69***	4.37***
Engineering, Manufacturing & Construction	1.26***	1.79***	2.12***	1.87***	3.13***	1.19***	2.77***	3.59***	2.11***	2.30***	3.37***
Agriculture & Veterinary	1.24	1.82***	2.01***	2.34***	3.76***	1.52***	2.27***	2.95***	2.04***	2.01***	2.16***
Health & Welfare	5.16***	5.33***	5.04***	3.64***	6.44***	1.92***	2.26***	2.90***	2.10***	2.70***	3.16***
Services & others	0.77***	0.94	1.20**	1.29***	2.51***	0.97	1.66***	2.42***	1.80***	1.78***	2.74***

As expected, there are also variations in the starting salaries of graduates from different fields of study. Across all study fields, on average, around 50% of graduates were already working at the time of the survey, around 25% were still looking for a job while the remaining were either furthering their study/training or waiting for job placement.

Setting *education* as the reference field, the analysis found that graduates in all fields of study outperformed *education*. Furthermore, in 2020, *science, mathematics, & computer studies* graduates (which represent 10.0% of working graduates) have the greatest odds of earning higher, i.e. 4.4 times relative to *education*. Thus, it is no surprise to see *science & technology* being one of the industries with the highest median salary growth for entry-level jobs in Malaysia between 2020 and 2021 (+11.1%), according to the 2022 Salary Report by JobStreet[44]. With the rise of automation and digitalisation as we move towards the Fourth Industrial Revolution (4IR), it is the right

[44] JobStreet (2022)

direction that Malaysia is aiming to increase student enrolment in *science, technology, engineering & mathematics* (STEM) from 47.18% in 2020 to 60% in 2030[45].

Besides the above-mentioned fields, graduates in *engineering, manufacturing, & construction* which represent 34.7% of working graduates in 2020, were also found to be having better chances of getting higher pay (at 3.4 times that of *education*). Concomitantly, these three specialisations (*engineering, building & construction, manufacturing*) were on the list of the top 10 salaries in Malaysia by specialisation and position level based on the 2022 Salary Report by JobStreet. In fact, *engineering* has the highest median salary growth among all specialisations at around 5.0% between 2020 and 2021.

Long-term trends indicate that graduates from *sciences, mathematics, & computing*; and *engineering, manufacturing, & construction* had 1.1[46] and 1.3 chances of earning higher starting pay relative to *education* in 2010. Fast forward to 2020, the odds of these two disciplines increased to 4.4 and 3.4 respectively, in tandem with higher median salary growth for the sectors[47]. Furthermore, the probability of earning higher for graduates in *arts & humanities; social sciences, business & law*; and *services & others* have also increased over time compared to *education*.

Meanwhile, the trend for *health & welfare* was found to be more volatile during the decade. Graduates from that discipline had 5.2 times the chance of being paid higher in 2010. It then peaked at 6.4 times in 2014 before tapering at around 2.0 to 3.0 times in recent years. Although the result shows that the chances of *health & welfare* graduates earning higher have fluctuated over time, their earning potentials are still higher than *education.* The median salaries and wages for *human health and social work activities* have been higher (2021: RM4,193) than the national median (2021: RM2,250), with a CAGR of 6.0% between 2010–2020.

Overall, it can be concluded that in recent years, the probabilities of graduates from all fields getting higher starting pay are greater compared to those in *education*. As highlighted earlier, in logistic regression, the odds ratio is sensitive to the choice of reference group. Hence, results may be different when another study field is set as the reference. Hence, this should be taken into account when interpreting the results.

[45] The Star (2021)
[46] But not statistically significance
[47] DOS (2022d)

3.2.6. Economic sector

Economic sector: Services	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Industry	0.97	1.01	1.13***	1.21***	1.22***	1.21***	1.13***	1.30***	1.34***	1.26***	1.19***
Agriculture	0.81**	0.71***	0.68***	0.79**	0.79**	0.71***	0.83**	0.87*	0.76***	0.59***	0.78***
Others	1.08	0.74***	1.07	0.78***	0.71***	0.87**	0.65***	0.76***	0.82***	0.70***	0.77***

Statistics in Table 2 indicate that between 2010 and 2020, around 70% of graduates were working in *services*, followed by 23.0% in *industry*, and 4.5% in *agriculture and others*. This is somewhat consistent with the national statistics of employed persons by sector that show in 2020, 64.5% of employed persons were in *services* and 24.8% were in *industry* [48].

Despite the workforce size, the majority of graduates in *services* were facing a slightly lower chance of getting a higher starting pay compared to graduates in *industry* (1.2 odds in 2020). Furthermore, graduates in *agriculture* also performed lower than those in *services*, more so relative to *industry*. Across all sectors, Table 3 indicates that less than 40% of graduates were earning *>RM2,000*, with the smallest share being among those in *agriculture*.

These findings further confirm Bank Negara's analysis which revealed that Malaysian employees in the majority of economic sectors are compensated less than those in benchmark economies[49]. The case is especially true for the *wholesale & retail trade*, *food & beverage*, and *accommodation* which are considered "traditional" services[50]. Wages and productivity levels of "traditional" services are not only low, but they also have higher shares of informal and non-standard workers not covered by social protection[51].

Long-term trends indicate that between 2010 and 2020, the performance of graduates in *agriculture* remained flat with a lower likelihood of earning higher than those in *services* (around 0.7 to 0.8 odds). This is consistent with the national statistics showing that despite the increase in the median salaries and wages for skilled agriculture workers from RM600 in 2010 to RM1,695 in 2021, the level remains below RM2,000[52].

Besides that, trend analysis indicates that the chances of getting higher pay for graduates in *industry* had been higher than *services* since 2012. This could reflect the situation in the services sector which has been dominated by traditional services like *wholesale & retail*, *food & beverages* and *accommodation* with low productivity and low paying jobs[53]. However the broad categorisation of the services sector has limited this study to distinctly differentiate the outcomes between those in modern and traditional services activities.

[48] DOS (2022b)
[49] The study has also adjusted for productivity
[50] Bank Negara Malaysia (2018)
[51] KRI (2020)
[52] DOS (2022d)
[53] KRI (2020)

3.2.7. Employment type

Employment type: Full-time/permanent	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Contract/temporary	0.53***	0.43***	0.48***	0.49***	0.44***	0.44***	0.53***	0.57***	0.58***	0.59***	0.56***
Part-time	0.13***	0.11***	0.12***	0.12***	0.11***	0.11***	0.12***	0.99***	0.14***	0.15***	0.16***
Self-employed	0.55***	0.52***	0.40***	0.32***	0.24***	0.17***	0.16***	0.18***	0.19***	0.16***	0.19***
Employment type: Self-employed (alternative reference group)											
Contract/temporary	0.23***	0.21***	0.29***	0.38***	0.45***	0.65***	0.75***	0.54***	0.74***	0.92*	0.83***
Part-time	0.96	0.83***	1.24***	1.51***	1.85***	2.61***	3.33***	3.14***	3.07***	3.69***	2.96***
Full-time/permanent	1.80***	1.89***	2.53***	3.07***	4.12***	5.81***	6.21***	5.46***	5.36***	6.26***	5.33***

The analysis based on the employment type again reveals an expected finding. For this dimension, we first set *full-time/permanent* employment as the reference group to compare the outcomes of *contract/temporary, part-time* and *self-employed* workers. Table 2 shows that the share of *self-employed* has risen from 3.5% in 2010 to 22.6% in 2020. Around 40–50% of the graduates were in *full-time/permanent* jobs every year, while the remaining were in *contract* and *part-time* jobs.

Table 3 shows that on average, 40.5% of *full-time/permanent* workers were earning *>RM2,000* between 2010–2020, while the average share among *part-timers* was 27.2%. The average shares were even lower among *self-employed* and *contract* workers*;* at 13.7% and 6.3% respectively.

The long-term trend clearly indicates that *full-time/permanent* always had a better chance of earning higher compared to *contract/temporary, part-time,* and *self-employed*, (indicated by odd-ratios of less than 1 across all years).

Over the decade, the odds of *contract/temporary* earning higher pay ranged between 0.4 and 0.6 times compared to *full-time/permanent*. It is the same for *part-time,* with the odds even lower at around 0.1 times. Furthermore, the odds for *self-employed* is also lower at around 0.55 times than that of *full-time/permanent* in 2010. The odds were even lower from 2014 to 2020, at around 0.2 times. Amid this trend, there has been a rise in the platform and gig economy which promoted informal and non-standard employment such as e-hailing drivers. However, this usually comes at the expense of job stability and security.

We also calculated the odd-ratios by setting *self-employed* as the reference group. The result is consistent when comparing *self-employed* and *full-time/permanent* i.e. the latter fared better than the former. However, it was found that the odds of earning *>RM2,000* is greater for *part-time* compared to *self-employed.*

3.2.8. Family income

Family income: ≤RM1k	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
>RM1k-2k	1.25***	1.32***	1.25***	1.29***	1.24***	1.15***	1.15***	1.13***	1.17***	1.03	0.94**
>RM2k-3k	2.37***	2.35***	2.25***	2.44***	2.60***	2.60***	2.36***	2.37***	2.41***	2.15***	1.94***
>RM3k-5k	2.74***	2.54***	2.61***	2.77***	2.84***	2.90***	2.52***	2.56***	2.68***	2.37***	2.07***
>RM5k	3.54***	3.58***	2.96***	3.28***	3.49***	3.52***	2.78***	2.77***	2.87***	2.55***	2.06***

The model also examines graduates' chances of earning higher starting pay according to their economic background, proxied by their family income[54]. The result shows that graduates from families with *>RM2,000* monthly income have greater odds of earning higher upon graduation. More specifically, those from families within the income brackets of *RM2,001–RM3,000, RM3,001–RM5,000*, and *>RM5,000* have around 2.0–3.0 times odds of earning a higher pay compared to those from *≤RM1,000* families. The outcomes for those from *RM1,001-RM2,000* families are quite comparable with those from *≤RM1,000* families.

Behind this trend, Table 2 indicates that the shares of graduates from *≤RM1,000* families have declined over the years from 31.4% in 2010 to 15.1% in 2020. Meanwhile, the shares of graduates from *>RM5,000* families have also increased from 6.3% to 15.0% during the same period. This could be attributable to the general increase in household income in Malaysia over the last decade, where median income has risen from RM1,704 in 2010 to RM5,873 in 2019.

Comparison over the years suggests that the chances of earning higher pay among graduates across all economic backgrounds have slowly converge compared to 10 years ago. For example, graduates from *>RM5,000* families had a 3.5 greater chance of earning more than those from *≤RM1,000* families in 2010. However, the odds have declined to only 2.1 times in 2020. These findings might indicate that the advantages experienced by graduates from higher economic background matters more in 2010–2011 than in 2020. Nonetheless, although the chances of these graduates earning more than their peers from lower income backgrounds have considerably reduced, their ability to secure jobs with better pay persists.

Table 3 shows that the shares of these two groups earning above RM2,000 have remained roughly the same over time i.e. at around 14% among graduates from *≤RM1,000* families and 50% among graduates from *>RM5,000* families. The table also shows that the higher the family's income, the greater the share of graduates earning above RM2,000. Our analysis found that graduates from *>RM5,000* families with *>RM2,000* starting pay were skewed towards those who worked in high-skilled and full-time jobs, studied at the bachelor's degree level in non-TVET courses, with a slightly higher percentage from IPTS.

The disparity in outcomes found in this study could also suggest the advantages one possesses being born into a family with a better economic standing which led to higher earning potential. This includes family connections, financial support to hunt and/or wait longer for better jobs, ability to

[54] It should be noted that within the samples, the working respondents from families earning above RM5,000 comprised only 6-15%, while the remaining 85–94% earning below RM5,000 (Table 2). This is markedly different from the household income distribution published by DOS showing for example, for 2019, the income threshold for top 20% households is at RM10,971.

accept unpaid work experiences to start at a higher level later on, and financial capacity to relocate to new areas for better-paying jobs (geographical mobility). There is an established body of literature suggesting poorer employment opportunities and outcomes among low socio-economic status groups such as immigrants, minority ethnic groups, regional, indigenous people, or children from working class families[55]. Research of more than 5,000 people in the United Kingdom done by Totaljobs and the Social Mobility Foundation reveals that those from lower socioeconomic backgrounds earn less than half of what their more privileged peers do in their first job after full-time education[56].

A Malaysia-based study comparing the status of working adults born between 1945 and 1960 and their adult children born between 1975 and 1985 by KRI found that while today's generation has a generally higher standard of living, progress has slowed, and social mobility is increasingly constrained due to lacklustre economic growth and the erosion of education and skill premiums[57]. The Covid-19 crisis caused by the current pandemic would likely have made the social mobility prospects for our younger generation even more challenging. Children from low-income families today face more difficulties in climbing the income ladder compared to those in the past, given the structural changes in Malaysian society and the current socioeconomic and educational policies that place greater emphasis on meritocracy.

3.2.9. Gender

Gender: Male	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Female	0.60***	0.63***	0.62***	0.62***	0.64***	0.64***	0.64***	0.62***	0.62***	0.63***	0.60***

Another important dimension that deserves attention is the pay gap between gender. The result shows that the odds of female graduates being in a higher income group is 0.6 times or 40% lower than that of male graduates, and this has remained so over the years (Table 4). The results are roughly the same for graduates with a diploma and a degree (Table 7 and Table 10).

This finding shows that earnings differentials from the gender perspective remain in Malaysia, more so among fresh graduates. Despite females outnumbering males in higher education, improving females' participation in higher education is evidently a necessary but insufficient condition to promote economic empowerment among females. Data at the national level shows that in 2020, the mean and median monthly salaries and wages for males are higher than for females by 2.6% and 3.7% respectively[58].

The finding from this study suggests that gender earnings differentials do not only affect those who have long been in the labour market, but also affect new entrants like fresh graduates. Generally, females are often impacted by income discrimination due to the motherhood penalty (i.e. childcare responsibilities and unpaid domestic work)[59]. Often, they might be reluctant to take up positions

[55] Bui, Nguyen, and Cole (2019), see Chapter 14:Graduate Employability: Beyond the Skills Agenda, by Thi Tuyet Tran
[56] Totaljobs (n.d.)
[57] KRI (2019)
[58] DOS (2021)
[59] Swift (2021)

with higher pay for better time flexibility to manage households, pressured by gender stereotypes (intentionally or unintentionally) transmitted throughout their society.

While we might presume that this is not the case for many fresh graduates since most of them may yet to be tied to marriage and childcare duties upon their graduation, our results still show an income disparity between male and female graduates. A possible reason behind this might be that there is a common perception among employers that women's work performance will be impacted by future family responsibilities (i.e. maternity leave, childcare duties) as they progress further into their careers in the years to come. Nonetheless, further study is required to understand the barriers that female fresh graduates might face in the labour market.

4. Conclusion

This study focuses on the labour market outcomes of fresh young graduates, considering the unique challenges they faced at the early stage of transitioning from education to work. Taking the self-reported monthly income as a proxy for their employment outcomes upon graduation[60], this study helps to identify the sociodemographic factors that drive the attainment of better starting pay.

The logistic regression analysis suggests that, in 2020 graduates who have the following attributes generally have higher likelihood of earning a higher starting salary (defined as being above RM2,000 monthly):

1. Attained a bachelor's degree, with 7.0 times odds than diploma and certificate holders,
2. Worked in high-skilled jobs, with 3.3 times odds than those in low-skilled jobs,
3. Worked in full-time/permanent job, with 5.3 times odds than self-employed,
4. Employed in the industry sector (i.e. manufacturing, mining, construction, energy and water) with 1.2 times odds than those in the services sector,
5. Obtained a qualification from IPTS, with 2.6 times odds than those from IPTA,
6. Studied in a TVET programme, but with only a slightly higher odds at 1.1 times than those studied in a non-TVET programme,
7. Generally studied in the following fields: Science, Mathematics & Computer; Engineering, Manufacturing & Construction; and Health & Social; with 4.4-, 3.4- and 3.2-times odds respectively than the Education field,
8. Came from a family with better economic backgrounds, with around 2.0 times odds than those from a family with income RM1,000 and below,
9. Are males, with 1.7 times odds than females (or odds for female lower at 0.6 times compared to male)

The long-term analysis for the period between 2010 and 2020 found that the outcomes of graduates in all dimensions are consistent with that of 2020, although the magnitudes may vary. The trend analysis suggest that graduate starting pay has improved slightly over the last decade, with convergence seen in some dimensions while diverging in others. For example, there has been notable improvement in the outcomes of graduates from public TVET institutions compared to

[60] Usually around six to 12 months after study completion

non-TVET with the pay gap between the two narrowing. Meanwhile graduates from private institutions continue to outperform their counterparts in the public higher education institutions.

Graduates from families with better economic standing have a greater chance of getting higher starting pay compared to those from lower income families. However, comparison over the years suggest that the chances of all graduates to earn higher pay across economic backgrounds have slightly converged compared to a decade ago. These findings might imply that the advantages experienced by graduates from higher economic background matters more in 2010-2011 than in 2020. Nevertheless, although the extent to which these graduates could earn more compared to their peers from lower income backgrounds has considerably reduced, their ability to secure jobs with better pay persist.

The study also finds that female fresh graduates experience worse labour market outcomes than males, consistent with other studies that highlight persistence gender gap. Despite females outnumbering males in higher education, improving females' participation in higher education is a necessary but insufficient condition to promote economic empowerment among females.

However, several questions remain. Since the analysis utilising GTS data captures the outcomes of the tertiary-educated workforce quite immediately after graduation, our future research would entail investigating the performance of graduates in a longer time horizon. Further research is also required to investigate the relationship between family background and graduates' performance and how it is changing the upward mobility of the Malaysian society.

Additionally, this study only looked at graduates' sociodemographic backgrounds to explain the likelihood of them landing a good job with decent starting salary among Malaysian-citizen students studying in higher education institutions based in Malaysian and do not include those studying abroad. The "goodness of fit" of the regression model—measured by the Pseudo-R2 of around 0.31 to 0.38 for 2010 until 2020— suggests that the model could only explains around 30% of the variations in graduate starting pay. Other contributing factors like the quality of the courses they attended, internship and industrial placement, graduate's own assessment of the relevance of their field of study with the job and other macroeconomic factors were not taken into account in the model. Self-reporting incomes for both the graduates' pay and their family income could also be subjected to under (or over) reporting issues.

As the interest is on graduates' starting pay, the study does not cover the scenarios of unemployment or graduates who were still looking for a job upon graduation. There could be situations where, for example, graduates from certain fields looking to enter into a more competitive job sector may end up being unemployed slightly longer, while those who were earning higher pay were those who managed to secure an employment.

5. Appendices

5.1. Appendix 1 – Pre-bachelors (Diploma/certificate holders)

Table 5: Distribution of working graduates with pre-bachelor certificate, by sociodemographic characteristics, 2010-2020 (in percentage)

Year (Diploma)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	27,987	33,392	38,060	38,649	38,458	44,249	46,235	52,238	77,555	83,615	68,880	49,938
Graduates aged ≤30	74,843	83,784	93,212	98,049	97,487	102,323	95,877	110,822	143,555	149,808	133,427	107,562
% of working to graduates aged ≤30	37.4%	39.9	40.8	39.4	39.4	43.2	48.2	47.1	54.0	55.8	51.6	46.4
Starting pay												
RM2,000 & below	94.9	94.1	93.0	92.8	92.0	91.6	90.4	90.1	88.8	88.6	89.6	90.8
Above RM2,000	5.2	5.9	7.0	7.2	8.0	8.4	9.6	9.9	11.2	11.4	10.5	9.2
Institution type												
IPTA	77.4	67.5	62.5	60.8	59.5	58.3	57.3	59.5	74.2	73.9	76.0	67.2
IPTS	22.6	32.5	37.5	39.2	40.5	41.8	42.7	40.5	25.8	26.1	24.0	32.8
Study stream												
Non-TVET	39.6	46.7	52.5	53.9	58.0	57.9	51.9	53.4	35.5	34.6	31.2	44.6
TVET	60.5	53.3	47.5	46.1	42.0	42.1	48.2	46.6	64.5	65.4	68.8	55.4
Study field												
Education	1.3	1.4	2.4	1.6	3.1	3.3	2.4	3.0	3.0	3.4	3.6	2.8
Arts & Humanities	5.6	6.6	6.6	7.0	7.0	7.2	7.1	7.0	6.8	6.9	6.8	6.8
Social Sciences, Business & Law	23.5	24.8	25.8	24.2	33.1	31.0	30.7	29.1	23.1	22.3	20.8	25.6
Sciences, Maths & Computing	8.2	8.0	8.5	7.5	7.7	8.7	7.6	8.7	7.8	6.6	5.9	7.6
Engineering, Manufacturing & Construction	45.7	41.3	35.0	36.3	28.6	29.6	32.3	30.8	40.7	41.3	44.4	37.5
Agriculture & Veterinary	0.8	1.0	1.1	1.0	1.5	1.6	1.7	2.2	2.6	2.7	2.1	1.9
Health & Welfare	6.6	8.3	12.2	13.4	7.4	7.5	5.4	5.6	4.1	4.5	3.3	6.4
Services & others	8.5	8.5	8.4	9.0	11.8	11.2	12.9	13.7	12.0	12.3	13.2	11.5
Economic sector												
Services	68.4	69.3	70.6	72.1	72.7	72.9	71.9	71.8	65.9	66.1	63.9	68.9
Industry	27.5	26.5	25.1	23.3	21.8	21.6	22.3	22.1	27.8	27.8	29.9	25.5

Agriculture	2.3	2.3	2.2	1.3	1.7	1.7	1.8	2.1	2.1	2.1	2.5	2.0
Others	1.8	2.0	2.1	3.3	3.8	3.8	3.9	4.0	4.2	4.0	3.7	3.5
Occupational skill												
Low skill	4.2	6.1	8.9	9.6	9.8	10.4	9.9	11.3	12.0	6.0	7.0	8.8
Semi skill	45.6	45.7	48.6	51.0	54.1	55.0	57.7	58.2	56.3	44.7	46.4	51.4
High skill	50.2	48.2	42.4	39.4	36.1	34.6	32.3	30.5	31.7	49.4	46.7	39.8
Employment type												
Self-employed	4.8	5.0	5.5	5.4	6.6	8.2	10.0	9.6	21.0	22.3	25.2	13.7
Contract/temporary	26.9	28.9	30.2	29.2	29.4	29.1	27.1	26.6	20.1	19.4	17.3	24.4
Part-time	22.1	20.3	20.9	20.3	20.5	20.4	18.7	19.0	18.2	18.6	18.9	19.5
Full-time/permanent	46.2	45.8	43.4	45.1	43.5	42.4	44.2	44.9	40.8	39.8	38.7	42.4
Family income												
≤RM1k	39.9	36.1	32.8	28.8	26.4	23.6	21.9	20.9	20.4	19.3	18.0	24.2
>RM1k-2k	36.6	38.0	37.6	39.7	38.3	39.2	38.0	38.3	38.5	38.5	37.8	38.3
>RM2k-3k	14.6	15.8	18.1	19.6	20.9	21.7	22.7	22.1	21.0	21.3	20.6	20.3
>RM3k-5k	5.9	7.0	7.7	8.1	9.9	10.3	11.5	12.9	13.8	13.9	15.5	11.5
>RM5k	3.1	3.2	3.8	3.7	4.6	5.3	5.9	6.0	6.3	7.1	8.2	5.7
Gender												
Male	48.3	47.9	46.3	45.4	44.1	44.1	45.9	43.6	51.0	50.7	52.3	47.9
Female	51.7	52.1	53.7	54.6	55.9	55.9	54.1	56.4	49.0	49.3	47.7	52.1

Table 6: Percentage of working graduates with pre-bachelor certificate earning >RM2,000, 2010-2020 (in percentage)

Year (Diploma)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	66,677	78,861	83,514	81,025	84,160	88,599	105,326	114,468	148,303	166,443	136,276	104,877
Starting pay												
Above RM2,000	5.1%	5.9	7.0	7.2	8.0	8.4	9.6	9.9	11.2	11.4	10.4	8.6
Institution type												
IPTA	4.5	5.1	6.2	5.8	6.0	7.5	8.7	8.9	9.7	10.5	9.3	7.5
IPTS	7.2	7.6	8.3	9.5	11.1	9.7	10.8	11.4	15.4	13.9	14.1	10.8
Study stream												
Non-TVET	7.9	7.6	8.1	8.7	9.5	9.4	11.0	11.0	14.2	13.9	12.8	10.4
TVET	3.4	4.4	5.8	5.5	6.0	7.1	8.0	8.7	9.5	10.1	9.4	7.1
Study field												
Education	0.6	2.9	3.0	3.7	4.7	4.4	4.9	3.4	9.9	5.8	5.9	4.5
Arts & Humanities	3.3	4.8	6.8	6.3	11.0	9.6	12.7	11.5	11.5	11.0	9.7	8.9
Social Sciences, Business & Law	3.9	4.8	5.2	6.1	6.6	7.2	8.4	9.4	10.8	11.4	10.4	7.6
Sciences, Maths & Computing	2.5	4.4	4.1	6.8	6.7	8.9	9.1	8.9	8.7	11.2	9.4	7.3
Engineering, Manufacturing & Construction	5.3	6.5	8.2	7.1	8.2	8.5	10.6	11.7	11.9	12.0	11.3	9.2
Agriculture & Veterinary	10.4	7.0	9.0	6.8	3.8	5.4	4.6	4.2	4.7	5.7	3.3	5.9
Health & Welfare	15.3	10.7	10.3	10.4	11.4	13.3	12.6	9.8	13.3	18.5	15.5	12.8
Services & others	3.7	4.3	6.4	7.4	10.2	8.8	8.5	9.4	11.9	9.9	9.7	8.2
Economic sector												
Services	5.1	5.8	6.7	7.2	8.1	8.4	9.3	9.4	10.4	10.9	9.9	8.3
Industry	5.1	6.2	7.9	7.6	8.6	9.2	11.3	12.3	13.9	13.3	12.2	9.8
Agriculture	7.6	6.6	6.9	8.1	5.3	5.5	6.5	8.9	5.5	7.2	7.1	6.8
Others	4.6	4.0	5.8	4.5	4.4	5.0	5.4	6.0	7.4	8.1	7.7	5.7
Occupational skill												
Low skill	1.8	1.9	2.0	2.8	3.2	3.3	3.4	4.5	4.7	5.8	5.9	3.6
Semi skill	2.3	2.9	3.6	3.7	4.9	4.9	5.7	6.7	7.8	6.4	6.1	5.0
High skill	8.0	9.3	12.0	12.8	13.9	15.1	17.9	17.8	18.8	16.3	14.8	14.3

Employment type												
Self-employed	10.2	11.2	10.0	9.5	8.5	8.7	8.8	8.8	9.0	10.0	10.1	9.5
Contract/temporary	1.8	1.1	1.4	1.5	1.7	2.8	3.3	2.5	3.4	3.9	3.1	2.4
Part-time	4.3	5.2	6.6	7.3	7.6	9.5	10.9	11.1	12.3	13.1	11.6	9.0
Full-time/permanent	7.0	8.7	10.7	10.6	12.4	11.7	13.0	14.1	15.6	15.0	13.4	12.0
Family income												
≤RM1k	2.8	3.0	3.9	3.7	3.4	3.9	4.4	4.6	5.1	5.7	5.6	4.2
>RM1k-2k	4.3	4.9	5.6	5.4	6.0	5.7	6.5	6.8	7.4	7.4	6.6	6.1
>RM2k-3k	9.6	10.4	11.2	11.7	12.8	12.7	13.9	14.4	16.5	16.8	14.3	13.1
>RM3k-5k	10.8	11.8	12.9	13.3	13.6	14.2	16.0	15.7	18.5	17.1	16.2	14.6
>RM5k	14.7	15.1	14.9	16.4	17.5	19.9	19.5	20.0	20.3	20.9	18.0	17.9
Gender												
Male	6.6	7.6	9.4	9.3	10.4	10.8	12.4	13.5	14.3	14.1	13.2	11.1
Female	3.8	4.3	4.9	5.4	6.2	6.5	7.1	7.2	7.9	8.5	7.4	6.3

Table 7: Logit regression result for graduates with pre-bachelor certificate, 2010-2020

Year (Diploma)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of observations	27,987	33,376	38,047	38,640	38,447	42,404	43,527	49,546	67,080	68,873	55,945
LR chi2(24)	1809.91	2177.05	2766.34	2864.03	3140.37	3141.88	3561.36	4261.35	5937.28	5292.02	3945.83
Prob > chi2	0	0	0	0	0	0	0	0	0	0	0
Pseudo R2	0.1595	0.1452	0.1436	0.143	0.1463	0.1298	0.131	0.134	0.1282	0.1091	0.1078
Log likelihood	-4769.97	-6410.71	-8248.16	-8585.00	-9160.45	-10528.00	-11814.72	-13773.67	-20185.99	-21616.13	-16335.49
Occupational skill: Low skill ł											
Semi skill	1.26	1.58***	1.61***	1.17	1.27**	1.38***	1.55***	1.31***	1.49***	1.05	1.03
High skill	3.61***	3.90***	4.02***	3.40***	3.02***	3.67***	4.24***	3.16***	3.11***	2.38***	2.12***
Institution type: IPTA ł											
IPTS	0.51***	0.70***	0.90	1.16**	1.44***	0.82***	0.69***	1.03	1.37***	0.81***	1.58***
Study stream: non-TVET ł											
TVET	0.33***	0.39***	0.58***	0.73***	0.76***	0.63***	0.49***	0.66***	0.84***	0.59***	0.80***
Study field: Education ł											
Arts & Humanities	4.27**	1.30	1.89***	1.60**	2.16***	2.18***	3.03***	4.04***	1.10	1.67***	2.09***
Social Sciences, Business & Law	7.48***	1.85**	2.02***	2.45***	2.05***	2.34***	2.79***	4.37***	1.21**	1.97***	2.38***
Sciences, Maths & Computing	4.66**	1.66*	1.46*	2.11***	1.74***	2.34***	2.62***	3.81***	0.96	1.98***	2.32***
Engineering, Manufacturing & Construction	8.80***	2.28***	2.38***	1.98***	1.88***	2.00***	2.79***	4.27***	1.06	1.76***	2.72***
Agriculture & Veterinary	11.74***	2.34**	3.34***	3.30***	1.35	1.87***	1.50	1.67**	0.80	1.09	0.96
Health & Welfare	27.44***	3.41***	3.70***	2.99***	2.32***	3.21***	3.16***	2.88***	1.09	2.88***	2.94***
Services & others	7.82***	1.50	2.22***	2.32***	2.46***	2.68***	2.52***	3.92***	1.28***	2.07***	2.42***
Economic sector: Services ł											
Industry	0.97	0.85***	0.92	0.95	0.97	0.95	1.02	1.07*	1.30***	1.19***	1.19***
Agriculture	1.33	1.09	0.90	1.18	0.84	0.85	1.05	1.43***	0.80	0.89	0.84
Others	1.41	0.84	1.13	0.80	0.75**	0.79*	0.72***	0.83*	0.89	0.91	0.90

Employment type: Full-time/permanent ł											
Contract/temporary	0.62***	0.57***	0.61***	0.70***	0.62***	0.79***	0.80***	0.77***	0.8***	0.89***	0.86***
Part-time	0.29***	0.15***	0.15***	0.17***	0.15***	0.26***	0.30***	0.19***	0.24***	0.28***	0.24***
Self-employed	2.01***	1.54***	1.07	1.05	0.66***	0.51***	0.51***	0.46***	0.39***	0.53***	0.58***
Employment type: Self-employed ł (alternative reference group)											
Contract/temporary	0.14***	0.10***	0.14***	0.16***	0.23***	0.52***	0.59***	0.42***	0.63***	0.54***	0.41***
Part-time	0.31***	0.37***	0.57***	0.66***	0.94	1.55***	1.60***	1.68***	2.04***	1.68***	1.46***
Full-time/permanent	0.49***	0.65***	0.94	0.95	1.51***	1.97***	1.99***	2.18***	2.56***	1.90***	1.71***
Family income: ≤RM1k ł											
>RM1k-2k	1.28***	1.42***	1.27***	1.25***	1.46***	1.24***	1.27***	1.26***	1.26***	1.15***	0.96
>RM2k-3k	3.13***	3.12***	2.59***	2.81***	3.21***	2.92***	2.78***	2.77***	2.94***	2.71***	2.18***
>RM3k-5k	3.51***	3.58***	2.95***	3.27***	3.60***	3.36***	3.16***	2.93***	3.25***	2.76***	2.44***
>RM5k	4.60***	4.46***	3.41***	3.86***	4.44***	4.40***	4.02***	3.78***	3.69***	3.49***	2.72***
Gender: Male ł											
Female	0.55***	0.61***	0.55***	0.59***	0.63***	0.64***	0.64***	0.62***	0.54***	0.60***	0.57***
_cons	0.01***	0.03***	0.02***	0.02***	0.01***	0.01***	0.01***	0.01***	0.02***	0.03***	0.02***

5.2. Appendix 2 – Bachelors (Degree holders)

Table 8: Distribution of working graduates with bachelor's degree, by sociodemographic characteristics, 2010-2020 (in percentage)

Year (Degree)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	38,690	45,469	45,454	42,376	45,702	44,350	59,091	62,230	70,748	82,828	67,396	54,939
Graduates of aged ≤30	76,090	80,361	86,249	87,301	90,756	89,480	108,345	112,275	120,088	121,211	103,093	97,750
% of working to graduates aged ≤30	50.8%	56.6	52.7	48.5	50.4	49.6	54.5	55.4	58.9	68.3	65.4	56.2
Starting pay												
RM2,000 & below	63.5	60.5	59.1	55.9	55.4	50.6	53.1	53.3	51.0	52.5	56.0	55.0
Above RM2,000	36.5	39.5	40.9	44.2	44.6	49.4	46.9	46.7	49.0	47.6	44.0	45.0
Qualification level												
Diploma/certificate												
Bachelor	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Institution type												
IPTA	78.6	76.4	71.1	68.1	69.1	63.5	66.1	65.7	63.2	63.8	64.6	67.4
IPTS	21.4	23.6	28.9	31.9	30.9	36.5	34.0	34.3	36.8	36.2	35.4	32.7
Study stream												
Non-TVET	95.4	94.3	93.1	93.3	92.9	91.9	91.9	90.2	91.1	90.2	90.1	91.9
TVET	4.7	5.7	6.9	6.7	7.1	8.1	8.1	9.8	8.9	9.8	9.9	8.1
Study field												
Education	5.2	3.0	4.4	4.9	3.3	6.4	2.9	3.4	3.4	3.2	3.9	3.9
Arts & Humanities	7.0	7.5	7.8	6.0	6.7	7.8	7.5	7.7	8.0	9.2	9.2	7.8
Social Sciences, Business & Law	38.3	39.8	38.0	40.5	42.2	40.0	42.5	41.3	41.6	39.1	38.0	40.1
Sciences, Maths & Computing	13.6	14.0	12.8	12.7	12.0	13.1	13.1	12.3	13.5	13.2	14.1	13.2
Engineering, Manufacturing & Construction	26.3	26.2	26.5	25.6	23.4	23.0	23.4	25.2	24.1	24.9	24.8	24.8
Agriculture & Veterinary	1.3	1.2	1.2	1.1	1.3	1.1	1.5	1.4	1.3	1.4	1.4	1.3
Health & Welfare	5.8	5.9	6.5	6.1	7.5	5.7	5.5	5.3	4.8	5.2	5.4	5.7
Services & others	2.5	2.4	2.8	3.3	3.6	2.8	3.8	3.5	3.3	3.8	3.3	3.3

Economic sector												
Services	75.4	74.4	75.0	75.2	75.3	75.7	75.2	73.8	74.5	74.6	73.6	74.7
Industry	21.5	22.3	21.9	21.2	20.6	20.5	20.7	22.0	21.9	21.3	22.1	21.5
Agriculture	2.1	1.8	1.7	1.5	1.6	1.6	1.6	1.6	1.4	1.7	2.0	1.7
Others	1.0	1.5	1.4	2.1	2.5	2.3	2.5	2.7	2.3	2.4	2.3	2.1
Occupational skill												
Low skill	2.9	3.1	3.5	3.7	4.5	3.8	4.1	4.6	5.0	1.8	2.1	3.5
Semi skill	28.1	27.4	29.3	30.3	31.5	31.6	35.3	36.1	35.9	22.4	22.4	30.0
High skill	69.0	69.4	67.2	66.0	64.1	64.6	60.7	59.4	59.1	75.8	75.5	66.5
Employment type												
Self-employed	2.6	2.8	3.4	3.8	4.6	5.7	6.4	6.3	13.8	17.7	19.9	9.2
Contract/temporary	17.7	19.0	21.9	20.6	21.6	18.7	18.3	18.9	15.6	14.4	13.7	17.7
Part-time	24.2	23.0	23.4	23.1	23.4	22.7	24.0	25.2	24.4	24.3	26.1	24.1
Full-time/permanent	55.5	55.2	51.3	52.5	50.4	52.9	51.3	49.6	46.1	43.6	40.3	48.9
Family income												
≤RM1k	25.2	24.6	23.7	20.1	19.0	17.1	16.4	14.7	13.4	13.7	12.3	17.3
>RM1k-2k	32.2	31.8	29.5	28.0	27.3	26.0	26.1	25.4	23.9	23.1	21.8	26.2
>RM2k-3k	22.2	22.6	23.6	25.7	25.9	25.6	26.0	24.3	23.3	22.4	21.7	23.8
>RM3k-5k	11.9	12.2	13.4	15.3	16.3	17.8	17.9	20.5	22.2	21.7	22.3	18.2
>RM5k	8.5	8.8	9.9	11.0	11.6	13.5	13.7	15.3	17.3	19.0	21.9	14.6
Gender												
Male	38.7	39.4	40.6	40.4	39.6	40.2	39.3	38.0	38.2	38.2	37.8	39.0
Female	61.3	60.6	59.4	59.6	60.4	59.8	60.7	62.0	61.8	61.8	62.2	61.1

Table 9: Percentage of working graduates with bachelor's degree earning >RM2,000, bachelors, 2010-2020 (in percentage)

Year (Degree)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average
Number of working graduates	66,677	78,861	83,514	81,025	84,160	88,599	105,326	114,468	148,303	166,443	136,276	104,877
Starting pay												
Above RM2,000	36.5%	39.5	40.9	44.2	44.6	49.4	46.9	46.7	49.0	47.5	44.0	44.5
Institution type												
IPTA	33.9	35.4	35.4	37.5	37.9	42.9	39.3	38.8	39.2	37.5	33.6	37.4
IPTS	46.3	52.7	54.4	58.4	59.5	60.6	61.7	61.7	65.9	65.3	62.9	59.0
Study stream												
Non-TVET	36.1	38.5	40.2	43.4	44.0	49.0	46.4	46.1	48.6	47.1	43.8	43.9
TVET	44.5	55.3	50.6	54.7	52.3	53.1	52.1	51.8	53.4	51.5	45.0	51.3
Study field												
Education	32.8	23.2	17.0	25.2	11.7	47.4	26.2	17.8	21.7	24.9	15.2	23.9
Arts & Humanities	16.8	15.4	16.9	21.3	20.5	20.3	24.0	21.7	24.6	21.8	18.7	20.2
Social Sciences, Business & Law	26.4	29.6	33.5	36.7	37.8	44.4	45.2	45.8	48.2	46.8	43.7	39.8
Sciences, Maths & Computing	37.8	44.2	44.6	48.5	50.6	55.9	53.1	51.1	54.2	54.0	54.7	49.9
Engineering, Manufacturing & Construction	48.9	53.9	54.9	58.9	58.6	61.9	60.7	60.6	61.8	59.8	54.1	57.7
Agriculture & Veterinary	25.4	24.4	21.2	32.7	36.8	45.6	32.9	35.3	28.4	27.2	24.4	30.4
Health & Welfare	79.5	78.8	75.3	71.2	73.7	67.3	41.1	43.9	50.0	51.3	44.6	61.5
Services & others	23.9	23.1	25.0	28.2	30.2	36.5	34.2	32.5	39.3	36.1	35.9	31.4
Economic sector												
Services	35.0	37.4	38.2	41.5	42.3	47.0	44.6	43.3	46.2	45.1	42.0	42.0
Industry	43.9	49.0	52.7	57.0	57.0	61.7	59.2	62.2	62.0	61.0	54.4	56.4
Agriculture	23.3	22.8	21.5	28.1	29.6	31.7	30.3	26.9	26.2	21.6	21.8	25.8
Others	22.4	22.9	27.8	22.3	21.8	31.5	25.6	25.0	28.7	22.9	24.9	25.1
Occupational skill												
Low skill	11.7	10.4	7.7	12.8	11.1	19.1	17.1	17.8	20.3	14.2	10.6	13.9
Semi skill	16.0	16.0	18.4	20.9	21.4	26.0	26.5	26.0	30.0	20.4	16.0	21.6
High skill	45.9	50.1	52.4	56.6	58.3	64.2	62.4	63.0	66.0	59.8	57.3	57.8

Employment type												
Self-employed	19.0	19.7	17.0	17.2	15.4	20.0	16.2	16.8	27.5	23.3	20.4	19.3
Contract/temporary	7.0	8.2	9.3	11.0	11.2	11.5	10.8	9.3	14.5	14.9	16.0	11.3
Part-time	29.8	30.9	35.6	38.2	38.5	42.4	43.5	45.8	47.8	48.4	44.6	40.5
Full-time/permanent	49.7	54.8	58.4	61.7	64.5	68.9	65.2	65.2	67.8	67.7	64.6	62.6
Family income												
≤RM1k	23.0	24.9	25.5	26.3	25.4	28.9	29.0	28.2	29.1	29.8	26.9	27.0
>RM1k-2k	30.7	34.2	34.8	36.1	34.4	36.9	35.7	34.1	35.2	33.4	29.2	34.1
>RM2k-3k	44.7	48.1	49.4	52.1	54.2	59.0	56.0	54.7	55.8	53.5	49.8	52.5
>RM3k-5k	50.4	51.3	53.2	56.2	56.2	61.5	57.4	57.0	59.6	57.5	53.4	55.8
>RM5k	57.7	60.9	58.8	61.9	62.4	65.1	58.9	58.5	60.9	59.0	52.6	59.7
Gender												
Male	46.2	49.5	50.4	55.1	54.7	58.7	57.3	57.9	59.7	58.2	55.4	54.8
Female	30.4	33.0	34.4	36.7	38.0	43.1	40.2	39.8	42.5	41.0	37.0	37.8

Table 10: Logit regression result for graduates with bachelor's degree, 2010-2020

Year (Degree)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of observations	38,690	45,436	45,446	42,373	45,702	42,722	56,622	59,791	63,462	71,780	57,693
LR chi2(24)	11025.3	15055.22	15706.99	14930.81	18199.01	16813.62	20503.4	23262.71	23871.82	27550.26	21463.36
Prob > chi2	0	0	0	0	0	0	0	0	0	0	0
Pseudo R2	0.2171	0.2469	0.2554	0.2567	0.2897	0.2839	0.2615	0.2811	0.2714	0.2769	0.269
Log likelihood	-19884.58	-22956.77	-22890.6	-21615.18	-22312.72	-21204.36	-28946.73	-29744.13	-32043.81	-35978.55	-29156.34
Occupational skill: Low skill ł											
Semi skill	1.27**	1.30***	1.84***	1.33***	1.51***	1.04	1.24***	1.22***	1.24***	1.23**	1.28**
High skill	3.12***	3.74***	4.93***	3.79***	4.47***	3.05***	3.51***	3.67***	3.78***	4.71***	5.86***
Institution type: IPTA ł											
IPTS	1.35***	1.61***	1.64***	1.56***	1.67***	1.46***	1.99***	2.16***	2.57***	2.75***	2.70***
Study stream: non-TVET ł											
TVET	0.98	1.37***	1.19***	1.28***	1.15***	1.00	1.15***	1.30***	1.33***	1.32***	1.14***
Study field: Education ł											
Arts & Humanities	0.52***	0.61***	0.73***	0.72***	1.28**	0.35***	0.99	1.27***	1.19**	0.83***	1.13
Social Sciences, Business & Law	0.69***	1.01	1.29***	1.27***	2.43***	0.80***	2.07***	2.91***	2.35***	1.93***	2.88***
Sciences, Maths & Computing	1.06	1.68***	1.92***	1.88***	3.87***	1.24***	2.81***	3.62***	3.33***	2.71***	4.69***
Engineering, Manufacturing & Construction	1.22***	1.74***	2.08***	1.91***	3.61***	1.11*	2.77***	3.42***	2.81***	2.41***	3.33***
Agriculture & Veterinary	1.16	1.75***	1.66***	2.24***	4.81***	1.62***	2.46***	3.51***	2.95***	2.27***	2.47***
Health & Welfare	6.69***	8.63***	7.92***	5.58***	10.84***	2.09***	2.13***	3.35***	3.25***	2.85***	3.32***
Services & others	0.62***	0.73***	0.78**	0.88	1.71***	0.55***	1.29***	1.63***	1.50***	1.22***	2.33***
Economic sector: Services ł											
Industry	0.97	1.04	1.19***	1.30***	1.32***	1.33***	1.16***	1.40***	1.36***	1.30***	1.20***
Agriculture	0.68***	0.63***	0.61***	0.70***	0.78**	0.67***	0.77***	0.69***	0.75***	0.49***	0.78***
Others	0.96	0.72***	1.00	0.76***	0.68***	0.90	0.61***	0.73***	0.76***	0.57***	0.69***

Employment type: Full-time/permanent ł											
Contract/temporary	0.53***	0.42***	0.47***	0.44***	0.40***	0.36***	0.48***	0.52***	0.48***	0.48***	0.46***
Part-time	0.10***	0.10***	0.10***	0.11***	0.09***	0.08***	0.09***	0.08***	0.11***	0.11***	0.13***
Self-employed	0.30***	0.29***	0.22***	0.18***	0.15***	0.10***	0.10***	0.12***	0.12***	0.08***	0.10***
Employment type: Self-employed ł (alternative reference group)											
Contract/temporary	*0.35****	*0.35****	*0.48****	*0.60****	*0.64****	*0.76****	*0.92*	*0.67****	*0.92*	*1.31****	*1.23****
Part-time	*1.77****	*1.48****	*2.15****	*2.46****	*2.76****	*3.47****	*4.76****	*4.41****	*4.18****	*5.74****	*4.38****
Full-time/permanent	*3.35****	*3.49****	*4.58****	*5.53****	*6.83****	*9.52****	*10.07****	*8.49****	*8.66****	*11.93****	*9.58****
Family income: ≤RM1k ł											
>RM1k-2k	1.21***	1.29***	1.23***	1.32***	1.18***	1.13***	1.13***	1.11***	1.14***	1.01	0.95
>RM2k-3k	2.18***	2.16***	2.11***	2.33***	2.43***	2.48***	2.26***	2.26***	2.19***	1.96***	1.88***
>RM3k-5k	2.52***	2.30***	2.45***	2.62***	2.61***	2.70***	2.35***	2.46***	2.46***	2.23***	1.95***
>RM5k	3.25***	3.31***	2.74***	3.12***	3.21***	3.24***	2.52***	2.55***	2.58***	2.27***	1.89***
Gender: Male ł											
Female	0.61***	0.65***	0.65***	0.63***	0.65***	0.65***	0.62***	0.61***	0.65***	0.63***	0.60***
_cons	0.09***	0.06***	0.03***	0.04***	0.01***	0.07***	0.02***	0.02***	0.02***	0.01***	0.01***

6. References

11thMP, EPU. 2021. "Strategy Paper 09 (Eleventh Malaysia Plan, 2016-2020) - Transforming Technical and Vocational Education and Training to Meet Industry Demand." Putrajaya: Economic Planning Unit. https://www.epu.gov.my/sites/default/files/2021-05/Strategy%20Paper%2009.pdf.

12thMP, EPU. n.d. "Twelth Malaysia Plan, 2021-2025." Putrajaya: Economic Planning Unit.

Berita Harian. 2022. "TVET Asas Bina Kemampanan Ekonomi Malaysia." Berita Harian. 2022. https://www.bharian.com.my/bisnes/lain-lain/2022/02/920941/tvet-asas-bina-kemampanan-ekonomi-malaysia.

BNM. 2019. "Bank Negara Malaysia Annual Report 2018." Kuala Lumpur: Bank Negara Malaysia. https://www.bnm.gov.my/-/bnm-annual-report-2018.

Bui, Hong TM, Hoa TM Nguyen, and D Cole. 2019. *Innovate Higher Education to Enhance Graduate Employability*. London, UK: Routledge.

Christensen, Tricia. 2022. "What Is a Fallback Career?" Practical Adult Insights. 2022. http://www.practicaladultinsights.com/what-is-a-fallback-career.htm.

DOS. 2021. "Salaries and Wages Survey Report, 2020." Putrajaya: Department of Statistics, Malaysia. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=157&bul_id=VDRDc0pGZHpieEUwMDNFWHVHSnpkdz09&menu_id=Tm8zcnRjdVRNWWlpWjRlbmtlaDk1UT09#:~:text=In%202020%2C%20the%20number%20of,%2C442%20to%20RM2%2C062.

———. 2022a. "Graduate Statistics, 2021." Putrajaya: Department of Statistics, Malaysia.

———. 2022b. "Labour Force Survey Report, 2021." Putrajaya: Department of Statistics, Malaysia. https://www.dosm.gov.my/v1/index.php?r=column/pdfPrev&id=TlVMbEtBVXBGTi80VjdqZ1JUdVRHdz09#:~:text=Labour%20force%20participation%20rate%20(LFPR,3.3%20per%20cent%20in%202019.

———. 2022c. "National Account Time Series Statistics." Putrajaya: Department of Statistics, Malaysia. https://www.dosm.gov.my/v1/uploads/files/3_Time%20Series/Malaysia_Time_Series_2020/01_Akaun_Negara.pdf.

———. 2022d. "Salaries and Wages Survey Report, 2021." Putrajaya: Department of Statistics, Malaysia. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=157&bul_id=SzNvU0ZhaGpCMUROVlpCdTU1WWJSdz09&menu_id=Tm8zcnRjdVRNWWlpWjRlbmtlaDk1UT09.

Dzulkifli Abdul Razak. 2022. "Little Clarity to Graduate Employability Criteria." NST Online. 2022. https://www.nst.com.my/opinion/columnists/2022/07/816725/little-clarity-graduate-employability-criteria.

Franklin, Benjamin. 1758. *The Way to Wealth: Ben Franklin on Money and Success*. Kathartika.

González, Pilar, Rosario Zurriaga, and Lucía Llinares Insa. 2019. "Workers and Postgraduate Student Perceptions of Employability." In , 8255–59. https://doi.org/10.21125/edulearn.2019.2045.

Hawati Abdul Hamid. 2022a. "Malaysian Higher Education and Economic Growth: A Causality Analysis."

———. 2022b. "Memahami Statistik Kebolehpasaran Graduan." https://www.krinstitute.org/Views-@-Memahami_Statistik_Kebolehpasaran_Graduan.aspx.

Hemmert, Giselmar AJ, Laura M. Schons, Jan Wieseke, and Heiko Schimmelpfennig. 2018. "Log-Likelihood-Based Pseudo-R 2 in Logistic Regression: Deriving Sample-Sensitive Benchmarks." *Sociological Methods & Research* 47 (3). Sage Publications Sage CA: Los Angeles, CA:507–31.

HSBC. 2017. "Global Report: The Value of Education." https://www.hsbc.com/-/files/hsbc/media/media-release/2017/170628-the-value-of-education-higher-and-higher-global-report.pdf.

ILO. 2012. "International Standard Classification of Occupations (ISCO)." chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_172572.pdf.

JobStreet. 2022. "Salary Report 2022: The Big Reveal." Kuala Lumpur: JobStreet. https://www.jobstreet.com.my/en/cms/employer/case-study/salary-report-2022-the-big-reveal/.

Jomo, KS. 2014. "'Malaysia Incorporated': Corporatism a La Mahathir." *Institutions and Economies*, 73–94.

KRI. 2018. "The School-to-Work Transition of Young Malaysians." 2018. https://www.krinstitute.org/Publications-@-The_School-To-Work_Transition_of_Young_Malaysians.aspx.

———. 2019. "A Rising Tide Lifts All Boats? Intergenerational Social Mobility in Malaysia." Kuala Lumpur: Khazanah Research Insitute. http://www.krinstitute.org/Discussion_Papers-@-A_Rising_Tide_Lifts_All_Boats%5E_Intergenerational_Social_Mobility_in_Malaysia.aspx.

———. 2020. "Work in an Evolving Malaysia." 2020. https://www.krinstitute.org/Publications-@-Work_in_an_Evolving_Malaysia.aspx.

Mohd Amirul Rafiq Abu Rahim and Shazrul Ariff Suhaimi. 2022. "Fresh Graduate Adversities: A Decade's Insight on the Graduate Tracer Study." 2022. https://www.krinstitute.org/Working_Paper-@-Fresh_Graduate_Adversities-;_A_Decade%E2%80%99s_Insight_on_the_Graduate_Tracer_Study.aspx.

Mohd Zaidi Hajazi. 2017. "Strategi Menghasilkan Generasi Cemerlang Melalui Pendidikan: Peranan Universiti." *PROCEEDING IAIN Batusangkar* 1 (2):15–22.

MOHE. 2012. *The National Graduate Employability Blueprint 2012-2017*. Ministry of Higher Education Malaysia.

———. 2021a. "Graduate Tracer Study Report, 2020." Putrajaya: Ministry of Higher Education.

———. 2021b. “Statistik Pendidikan Tinggi, 2020.” Putrajaya: Ministry of Higher Education. https://www.mohe.gov.my/muat-turun/penerbitan-jurnal-dan-laporan/lkpg/2020-1.

———. various years. “Graduate Tracer Study Microdata, 2010-2020.” Putrajaya: Ministry of Higher Education. http://graduan.mohe.gov.my/AnalitikSKPG/.

———. various years. “Statistik Pendidikan Tinggi.” Putrajaya: Ministry of Higher Education. https://www.mohe.gov.my/muat-turun/statistik.

Montenegro, Claudio E., and Harry Anthony Patrinos. 2014. *Comparable Estimates of Returns to Schooling around the World*. Policy Research Working Papers. The World Bank. https://doi.org/10.1596/1813-9450-7020.

Soon, Jan-Jan, Hock-Eam Lim, and Russayani Ismail. 2021. “Of Higher Salaries and Superior Skills: Comparing the Worth of Public and Private University Education.” *Journal of Education and Work* 34 (2). Taylor & Francis:217–31.

Sperandei, Sandro. 2014. “Understanding Logistic Regression Analysis.” *Biochemia Medica* 24 (1). Croatian Society for Medical Biochemistry and Laboratory Medicine:12. https://doi.org/10.11613/BM.2014.003.

Swift, Jayne. 2021. “What Causes the Wage Gap?” *Gender Policy Report* (blog). February 24, 2021. https://genderpolicyreport.umn.edu/what-causes-the-wage-gap/.

The Star. 2021. “Malaysia Needs to Increase Percentage of Students in STEM, Says Adham Baba | The Star,” 2021. https://www.thestar.com.my/news/nation/2021/10/09/malaysia-needs-to-increase-percentage-of-students-in-stem-says-adham-baba.

Totaljobs. n.d. “Boosting Opportunity in the Workplace.” United Kingdom: Totaljobs. Accessed August 16, 2022. https://www.totaljobs.com/file/general/TJ_SMF_CAMPAIGN-Social-mobility-guide.pdf.