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WORKING HERE OR THERE? ASSESSING THE IMPACT OF JOB LOCATION ON SKILL MISMATCH AMONG YOUNG ENTRY-LEVEL WORKERS

[*1]Muhammad Adib Jamala,b*, Muhammad Daaniyall Abd Rahman[a,b,] Chakrin Utita, Nur Azreen Mokhyi[a,b]

[a]School of Business and Economics, Universiti Putra Malaysia, 43400 Serdang, Malaysia
[b]Centre for Future Labour Market Studies (EU-ERA), 43000 Putrajaya, Malaysia

*** Corresponding author's email:** adibjamal99@gmail.com

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ABSTRACT

The mismatch between the skills acquired by graduates from higher learning institutions and the areas of employment they enter is an important issue and should concern policymakers. This situation reflects inefficiency in the labor market, which can be caused by various factors. Among them may be the oversupply of graduates in a particular field in the labor market, or the expertise obtained not aligning with the needs of the industry. This situation can lead to the problem of skilled workers being underutilized in the labor market. As highly skilled human capital is a crucial input to both innovative activity and economic growth, their movements after graduation can potentially affect the dynamics of local development and therefore deserve thorough investigation.

The main objective of this study is to determine the factors that influence skill mismatch with actual jobs offered among graduates from higher education institutions (HEIs) in Penang. This study adopted a survey approach with 185 university graduates from two public universities in Penang who graduated between the years 2019-2021. Descriptive analysis and logistic regression methods have been used to examine the relationship between salary, job location, and other variables such as family, friends, or hometown to the skill mismatch of these young workers. Results indicate that graduates from programs in Science,

Mathematics, and Computer Sciences, and Engineering can find regular jobs that match their field of study. Interestingly, more than three-quarters of graduates from universities in Penang successfully get jobs under the Skilled Workers category. There are only 21% employed in the semi-skilled category and only 4% in the low-skilled category. Graduates working in the sector in the skilled worker's category receive higher salaries compared to graduates working in semi-skilled and low-skilled categories.

INTRODUCTION

As per the theory of endogenous growth, economic growth is significantly influenced by the knowledge, skills, and technological innovation of the population (Romer, 1990). Furthermore, Naess (2020) acknowledged the pivotal role of human capital in development, stating that it serves as the 'engine of growth'. This effect is particularly associated with skilled labor in the output-production process. Research has shown that skilled human capital usually acquires their knowledge and skills from higher education institutions (HEIs).

According to the UNESCO National Commission Country Report Template - WHEC 2022, there were 1,207,131 students enrolled in higher education institutions (HEIs) across Malaysia in 2021. Out of that number, 590,254 students were enrolled in public universities; 517,580 in private HEIs; 84,566 in polytechnics, and 14,741 in community colleges. The increasing supply of educated and skilled workers is undoubtedly due to the fact that education has been playing a pivotal role in enhancing individuals' productivity and standard of living (Sun et al., 2020).

The role of HEIs is pivotal in providing an adequate high-skilled labor supply. At the same time, the employment demand from the industry needs to be fulfilled by channeling the right workforce needed by industry skill requirements. Having a precise match between the workforce and industry prerequisites indicates efficient labor market interaction. However, reality manifests that friction in the labor market is somewhat inevitable, particularly for the entry-level workforce, which mostly suffers from skill mismatches. This situation creates the issue of over-education, which refers to the extent to which an individual possesses an education level that exceeds the requirements of a particular job (Zakariya, 2013; Zakariya & Md. Noor, 2014). This often results in differences in the cost and benefit for university graduates when choosing their first job. It is therefore essential to explore the underlying motivations and factors that lead to skill mismatch among graduates in Malaysia. However, research on skill mismatch in Malaysia is scarce, with most studies in Malaysia focusing on university graduates' employability (Paramjit Sigh et al., 2014; Samuel & Ramayah, 2016) and soft-skills requirement (Ali et al., 2014).

Conducting a comprehensive investigation into the issue of skill mismatch among young entry-level workers in Penang is essential for several reasons. Firstly, as one of Malaysia's primary economic centers, Penang's economy plays a significant role in Malaysia's overall economic growth. In 2021, Penang recorded the highest GDP growth among all states in Malaysia, indicating a remarkable recovery of economic sectors in Penang after the pandemic crisis. Secondly, despite operating under a "full-employment" condition with unemployment rates below 3%, Penang's labor market faces a persistent shortage of skilled workers. Given the importance of Penang's economy to the performance of the national economy, any ongoing skill mismatch among young entry-level workers could affect growth and economic performance.

LITERATURE REVIEW

Studies on mismatch incidence in Malaysia have focused on graduates, with the main finding being that around 31-35% of graduates were employed in jobs that do

not correspond to their field of study (Lim, 2011). Lim (2011) noted that a large portion of mismatched graduates were from social sciences backgrounds.

Within the realm of demographic factors, gender has emerged as a salient determinant of skill mismatch. Gender has also emerged as a pivotal factor in skill mismatch. Robst (2007) adopted an innovative approach by scrutinizing why men and women accept mismatched jobs in the United States. His study found that men were observed to be more inclined to accept mismatched jobs due to considerations such as remuneration, promotional opportunities, or shifts in career interests.

The literature on over-education shows that having qualifications more than is actually required in a job implies a lower wage than working in an occupation that fits the educational level (Lim, 2011). Over-educated workers also have a lower wage growth rate than adequately educated workers (Verhaest and van der Velden 2013; Naess, 2020). Skill mismatches occur because employers do not have much information about the productivity level of applicants, whereas job seekers may misinterpret job requirements and lack knowledge about job characteristics (Zakariya, 2014). A penalty for skill mismatch is also observed in the case of non-monetary outcomes such as occupational status, such as permanent versus contract employment (Urbanski, 2022).

According to human capital theory (Becker, 2009), an employee's productivity level is directly determined by his or her individual skills. In order to increase their labor productivity, people can invest in human capital such as general education or vocational training. As employers pay their workers according to individual productivity, people's wages will rise depending on their productivity, while productivity is influenced by the level of education and skills.

METHODOLOGY

This study aims to uncover the factors that influence skill mismatch among young entry-level workers in Penang, encompassing job location, salary, and sector type. To achieve this goal, a comprehensive survey with graduates from two public universities in Penang was conducted from December 10th to December 16th, 2022. The main purpose of the survey was to determine the factors that attract graduates from public universities in Penang to stay in Penang to work after graduation. The survey also explored employment characteristics among graduates. Out of 385 responses collected, 185 respondents were used for this study. Descriptive analysis and model testing were used to study the behaviors of graduates and the prevailing labor market conditions in Penang. The study focused on graduates who have first-degree and master's degree qualifications. To design the research questionnaire, this study followed questionnaires that have been used by previous researchers such as Ma et al. (2016) and Sun et al. (2020).

The sample was further restricted due to theoretical reasoning. Graduates who became self-employed in their first significant job or started a second non-constitutive course of studies are excluded from the analyses. Skill mismatch is also based on a subjective measurement for the same reasons as indicated above. An objective assessment of skill mismatch seems to be quite arbitrary, as fields may apply to several different occupations, and one has to decide whether the field of study and a job are related or unrelated.

Based on the ISCED-97 classification (UNESCO, 1997), the field of study as a central independent variable is coded into ten categories: education, arts, humanities, social/behavioral sciences, business/economics, law, science/mathematics, engineering, agriculture, and health/welfare.

RESULTS

Hypothesis 1: The more specific the study program (field of study), the smoother graduates' transition from higher education to work.

This study assumes that graduates who work permanently are those who work based on their graduation qualifications, while those who work on a 'contract, temporary, and part-time' basis are considered graduates who work mismatched with their qualifications. This assumption arises because employers are assumed to be unsure of the suitability of the job with the qualifications of the graduates. Table 1 shows the field-specific risks of having a skill mismatch in the first significant job. Graduates from the field of study "Arts and Humanities" by far have the highest share of employees working in an occupation that does not fit their field of study: 48% of them are mismatched in their first significant job. Verhaest and van der Velden (2013) and Naess (2020) also found that credential mismatch (mismatch between formal education requirements and job requirements) was most common in the arts and humanities.

Graduates with the qualification of "Education" also face strong difficulties in finding an adequate occupation according to their acquired degree. Almost 80% of them cannot use their field-related skills. This factor may be due to the placement factor of graduate teachers, which takes more than a year after their graduation.

Interestingly, graduates from Science, Mathematics, and Computer Sciences (72% have permanent jobs), Services (71% have permanent jobs), and Engineering, Architecture, and Construction (68% have permanent jobs) are quite able to find regular jobs that match their field of study. The degree of the practicability of study contents in certain occupations in the labor market can influence job opportunities for graduates. The more specific the preparation or the narrower the occupational profile of a study program, the less additional training employers have to invest in graduates' job-specific skills. Thus, high occupational specificity should improve the match between employer and employee. Instead, students graduating in more general study programs normally lack specific occupational skills and require more cost-intensive on-the-job training. Thus, they are ranked lower in the labor queue than their peers with specific occupational skills and have more difficulties in finding a (matching) job.

Hypothesis 2: Skilled workers will get higher income compared to semi-skilled and low-skilled workers.

Skill categorization is made based on a MASCO classification, whereas Managers, Professionals, and Technicians are categorized as skilled workers; Clerical, Service, and Sales workers, Skilled agricultural and fishery, Plant and machine operators and assemblers, Craft and trade-related workers as Semi-Skilled; and Elementary occupation as Low Skilled workers. Table 2 shows more than three-quarters of graduates from universities in Penang successfully got jobs under the Skilled Workers category. There are only 21% employed in the semi-skilled category and only four percent in the low-skilled category.

Table 1 shows the field of study and status of employment

Field of Study		Status of Employment				Total
		Permanent	Contract	Temporary	Part-time	
Arts and Humanities	Count	12	7	3	1	23
	% within Field of Study	52.2%	30.4%	13.0%	4.3%	100.0%
Social Sciences and Business	Count	28	9	3	6	46
	% within Field of Study	60.9%	19.6%	6.5%	13.0%	100.0%
Science, Mathematics and Computer Sciences	Count	21	7	0	1	29
	% within Field of Study	72.4% (1)	24.1%	0.0%	3.4%	100.0%
Education	Count	4	8	4	2	18
	% within Field of Study	22.2%	44.4%	22.2%	11.1%	100.0%
Engineering, Architecture and Construction	Count	28	6	4	3	41
	% within Field of Study	68.3% (3)	14.6%	9.8%	7.3%	100.0%
Services	Count	12	5	0	0	17
	% within Field of Study	70.6% (2)	29.4%	0.0%	0.0%	100.0%
Healthcare	Count	5	3	0	0	8
	% within Field of Study	62.5%	37.5%	0.0%	0.0%	100.0%
Total	Count	110	45	14	13	182
	% within Field of Study	60.4%	24.7%	7.7%	7.1%	100.0%

Graduates working in the sector in the skilled worker's category receive higher salary remuneration than graduates working in semi-skilled and low-skilled categories. Table 3 shows the average salary rate of graduates working in the skilled workers category earning an average monthly salary of RM2,946, followed by semi-workers RM2,029, and low-workers RM1,730.

Table 2 shows the type of jobs with skill categorization based on MASCO classification

	Frequency	Percent	Valid Percent	Cumulative Percent
Managers	10	5.4	5.4	5.4
Professionals	75	40.5	40.5	45.9
Technicians	54	29.2	29.2	75.1
Clerical	9	4.9	4.9	80.0
Services (salesman)	27	14.6	14.6	94.6
Traders	1	.5	.5	95.1
Machine operators	2	1.1	1.1	96.2
Elementary occupations	7	3.8	3.8	100.0
Total	185	100.0	100.0	

Table 3 shows the mean salary by type of occupations

	N	Mean monthly salary	Std. Deviation	Mean monthly salary	Minimum	Maximum
Managers	10	2,900.00	1241.86	2,946.00	1100.00	5000.00
Professionals	75	3,063.40	1495.19		1000.00	10000.00
Technicians	54	2,790.92	861.79		1500.00	5500.00
Clerical	9	1,944.00	615.56	2,029.00	1500.00	3296.00
Services (salesman)	27	2,119.25	745.14		1000.00	3500.00
Traders	1	1,730.00	.		1730.00	1730.00
Machine operators	2	1,350.00	212.13		1200.00	1500.00
Elementary occupations	7	1,730.00	278.62	1,730.00	1500.00	2200.00
Total	185	2,706.60	1217.67		1000.00	10000.00

Hypothesis 3: Factors influencing skill mismatch among graduates in Penang.

To determine the factors influencing skill mismatches, this study conducts Logistic Regression Analysis of Skill Mismatch Among Graduates. As shown in the Logistic regression (Table 4), the impact of INCOME is prominent ($p = 0.000 < 0.05$). Graduates who work in sectors offering higher income are less likely to experience skill mismatches (negative sign). Additionally, the effect of JOB LOCATION is significant. A city with a good standard of living attracts larger inflows of university graduates and can offer them jobs suitable to their qualifications. However, the influence of the job sector and demographic factors (age and gender) is not significant.

In line with Penang's position as a state with many industries and tourist attractions, the industrial sector and tourism sector in Penang are able to offer jobs to graduates in accordance with their qualifications.

Table 4 shows the Logistic Regression Analysis of Skill Mismatch Among Young Entry-Level Workers (graduates)

N=185	B	S.E.	Wald	df	Sig.	Exp(B)
Income	-3.439	0.673	26.075	1	0.001	0.032
Job Location (1-Penang, 0-Outside Penang)	-0.749	0.416	3.236	1	0.072	0.473
Job Sector (1-Service Sector, 0-Other Sectors)	0.459	0.426	1.163	1	0.281	1.582
Age (1 - 21 until 29 years old, 0 - Others)	-0.893	0.893	1.000	1	0.317	0.409
Gender (1 - Male, 0 - Female)	-0.514	0.434	1.402	1	0.236	0.598
Constant	26.577	5.461	23.688	1	0.001	3.487E+11

CONCLUSION

The characteristics of the sample reveal that graduates from 'soft fields' such as Arts and Humanities are predominantly disadvantaged at labor market entry. In comparison to 'hard fields' programs such as Science, Mathematics, Computer Science, and Engineering, they take longer to find their first significant job, are more often over-educated, and have a higher risk of being mismatched in this first occupation.

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