The Association of Gender and Education Field Factors with The Employment Pattern of Degree Alumni: A Case Study of A Malaysian Public University

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Abstract

Job employability is one of the leading indicators in evaluating the effectiveness of a university's educational strategies to offer quality academic programs and meet job market expectations. In the context of a Malaysian Public University (MPU), job employability is critical in ensuring the government's aspiration of achieving positive productivity, good market growth, and an increase in community involvement through structurally sound employment of graduates. As such, this study is carried out to investigate the job employability trend among alumni. Analysis was carried out on the undergraduate degree data of 13,512 respondents from 2006 to 2018 by extracting them from the Malaysian Ministry of Higher Education's university tracer study system (*SKPG2*). Several hypotheses were developed and tested using the Chi-Square test and Cross-tabulation technique using SPSS 22.0. All the tested hypotheses produced significant results. Several comparisons of two situations, namely during the convocation and the *SKPG2* exercise, show the occurrence of a job transition trend among alumni from private jobs and owned businesses to government jobs. Also, the average salary received by these respondents was mostly below RM3,000, which falls into the B2 group of Malaysia's B40 household income category. It is concerning that there has been a significant decline in alumni business participation after graduation, indicating the need for fresh activities to realize the university's goal. It is hoped that this research will assist university administrators in reviewing and reframing their approaches to pursuing institutional goals.

Keywords: job employability, gender, personal income, postgraduation, career improvement

1. Introduction

Presently, there is a vital need to assess the higher education institution's (HEI) holistic curriculum by entrenching the required employability elements to ensure the employability potential of their graduates. A curriculum that addresses the required skillsets of graduates will ensure that they are marketable, competitive, and can secure jobs offered by prospective employers (UNESCO, 2012; Qenani et al., 2014; Marquez-Ramos & Mourelle, 2019; Kementerian Pengajian Tinggi, 2021). This will indubitably reflect positively on the university's image and reputation, making the university the institution of choice among employers and industries in general.

Investing in people through education is considered a future investment in improving the socioeconomic of the nation's growth (Marquez-Ramos & Mourelle, 2019). The high expectation among students and parents is to get the best knowledge and learning experience to fulfill their future job dreams. However, subject to UNESCO (2012), in some economies with limited employability and advancements in digital technologies, mainly the Internet and its applications, venturing into entrepreneurship practices can be seen as another opportunity for new graduates to be self-employed. Obtaining jobs has increasingly become more competitive because employers no longer select candidates based on intellect or academic qualifications per se; the job seekers' attitude as well as their ability to manage themselves and others are equally, if not more, important criteria for job selection (UNESCO, 2012). The graduates constantly need to further improve their skills and must be willing to learn new technologies and knowledge brought about by the dynamic changes and realities of the contemporary labor market. In Malaysia, the government has allocated a substantial amount of its annual budget to the education and training sectors, with the HEIs receiving more than the other sectors. Given the sizeable monetary provision, public HEIs are expected to not only produce work-ready graduates but also alumni who will be employed as soon as possible upon the completion of their studies. This makes job employability among graduates crucial and has become a part of the university's performance indicator. *Pelan Strategik Kebolehpasaran Graduan* (*PSKG*) 2021 – 2025 (The National Graduate Employability Strategic Plan) lays out four main strategies to improve graduates' employability. The strategies are first to strengthen talent excellence including to improve graduates' English proficiency; second is to expand graduates' employability to encourage entrepreneurship and gig economy. The strategy also emphasizes on national KPI of graduates' employability for each HEI to reach a minimum of 80%; third is to strengthen teaching and learning activities by providing activities that align with industries requirement and technology waves. The teaching experts also include lecturers with industry certified skills or to have industries players in classrooms; and fourth is to empower academia-industry strategic relations through Strategic Internship Program, the embedment of professional certification into the academic curriculum and to improve the employer satisfaction index (Kementerian Pengajian Tinggi, 2021). The universities need to ensure the quality and relevance of the offered academic programs to meet current labor market requirements (Yusof & Jamaluddin, 2015; Kementerian Pengajian Tinggi, 2021; Bhatti et. al., 2023). Thus, it will indirectly contribute to the individual's income, whether it suits the qualification or not (Yusof & Jamaluddin, 2015). Other related studies in higher education include Mohammad Suhaimi et al. (2019), which examined timely graduation rates, and Tarmizi et al. (2019), which investigated student attrition and its contributing factors.

The university where this study was carried out happens to be the biggest public university in Malaysia, with an annual enrolment of no less than 180,000 students. The focus of this university is on the national social re-engineering of the Malaysian community through tertiary education. Currently, the university offers more than 500 academic programs from pre-diploma to Doctor of Philosophy levels in the fields of social sciences and management, art, science, and engineering through its faculties and academies. The majority of the university's annual student intake is mainly female compared to male, with a ratio of 60:40. With this population, it will have direct and indirect impacts on the nation in the context of society and the national economy. The undergraduate degree program intake contributes almost 30% of the 50,000 annual student intake (approx.) of the university and is offered especially to potential students coming from varying qualification entries such as i) the internal diploma conversion program, ii) other qualified HEI diploma programs, iii) matriculation programs, and iv) STPM (*Higher Education Certification of Malaysia*). Generally, undergraduate degree programs are conducted for three to four years, depending on the qualification and academic programs. The comprehensive academic life cycle of this university and its data attributes were analysed in Malik et al., (2023). Yusof and Jamaluddin (2015) reported that this university has constantly produced more than 30% of the national manpower since 2005 and is considered the biggest national human capital stakeholder compared to other public higher learning institutions. Graduates' dynamic involvement and career development direction in the labor force signifies the university's academic excellence capability in producing competitive graduates of sound ethical standing. Therefore, this study aims to investigate the association between individual factors and future career enhancement among MPU's undergraduate degree holders upon their graduation and future career development and improvement.

2. Related Studies

From the perspective of HEIs, their main effort is concentrated on ensuring quality in fulfilling job market employment (Clarke, 2008; Harvey, 2012; Tomlinson, 2012). The dimensions of employment skills and employment quality of the job employability dimension should be focused on by the job employability stakeholders (Harvey, 2001; ILO, 2018). The earlier dimension emphasizes mainly the role of HEIs as the main stakeholder in fulfilling the required skills of the labor market ecosystem. Meanwhile, the latter reflects the outcome of employability, which can be translated into four main factors: nominal monthly income, working time, social security, and the job employer's agreement. Any improvement initiative for employability skills should be comprehensively planned and implemented by HEIs in the context of this labor market appreciation and acceptance. Nevertheless, the HEIs should not be seen as only the sole knowledge and training providers but require the involvement of employment collaborators such as industries, government agencies, and communities in contributing to a complete employment ecosystem (Tomlinson, 2012; ILO, 2018; Kementerian Pengajian Tinggi, 2021).

The government's involvement through various economic, fiscal, and other policies in stimulating the economy becomes a catalyst for the employment ecosystem by creating job opportunities (UNESCO, 2012; ILO, 2018). Economy incentives and policies, together with government-based infrastructure and facility investments, will encourage more investments and the participation of industrial players in the economy, which will increase employability demand opportunities (ILO, 2018). The government's long-term economic projection and the future nation's economic direction require HEIs to be proactive in preparing and developing future graduates to realize the projected future demand of the job market.

Technological advancement and globalization have resulted in job markets becoming more sophisticated, which, in turn, intensifies employability competition among graduates. Technological adaptation by the private and government sectors also contributed to the lesser number of employees required by these organizations. Thus, it will lead to more demanding multitasking and problem-solving skills among employees in doing their jobs (Tomlinson, 2012). The ability to improve skills and knowledge among these graduates is important in ensuring their future career enhancement. Although the government's jobs can provide better employment security and stability compared to those in the private sector, the average income for these jobs is generally much lower than what the private sector can offer.
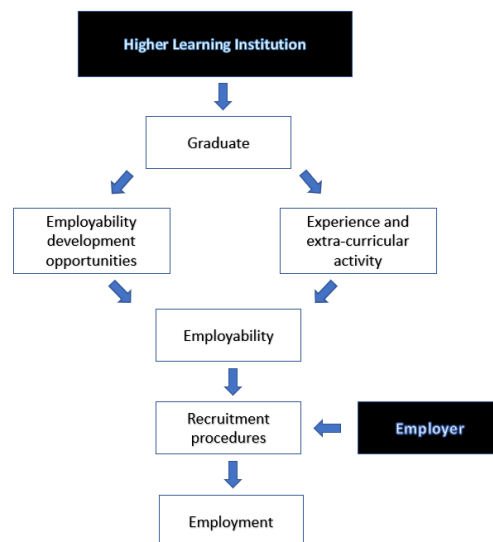

Figure 1: Employability-Development-Employment Model by Harvey (2012)

As in Figure 1, Harvey (2012) suggested two main scopes of HEIs' role in preparing their graduates' readiness to join the job market: i) employability development, and ii) experience and extracurricular

programs. The first scope is subjected to the academic and skills programs of HEIs that focus on class-based knowledge learning of the academic areas. Meanwhile, the latter scope reflects the exposure and experience that can be gained through non-class-based academic activities. Thus, it is important to shape the graduates' maturity and creativity by exposing them to experience, not only specifically working experience through industrial internships but also social-community activities, etc. entrepreneurial thinking, innovative endeavors, and creative elements should be included throughout the process of knowledge diffusion in cultivating a creative culture, personality, and attitude among the graduates, regardless of their background. However, both scopes will be influenced by individual characteristics or factors (Crossman & Clarke, 2009). This is one of the main factors of the *Employability Dimension* displayed in Figure 2 (Clarke, 2008) and subjects to the quality of a person such as academic background, skills and experience, demography, and attitude and talent (Clarke, 2008; UNESCO, 2012; Yusof & Jamaluddin, 2015). Other external factors consist of labor market and organization factors that are directly influenced by the current economic, political stability, and job market environment (Clarke, 2008; Tomlinson, 2012). As described by Clarke (2008), the elements of labor market factors are labor demand and supply, job location, skill changes, and competition. Meanwhile, job categories, technologies, and organizational practices represent the elements of the organizational factors. The employability opportunity of a graduate largely depends on the supply and demand of the labor market, which will precisely influence his or her income, subject to the knowledge and skills received (Crossman & Clarke, 2009).
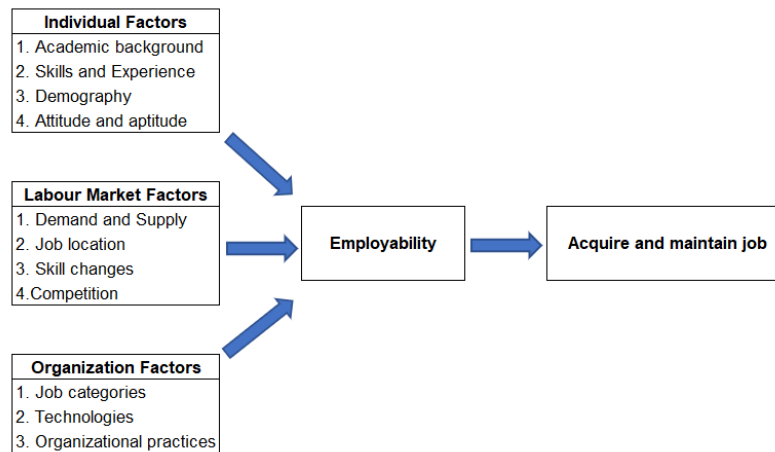

Figure 2: Employability Dimensions Model by Clarke (2008)

Instead of depending on employment based on job market demands, the entrepreneurship route can be a better option for graduates. To achieve this effort, the Malaysian government has also initiated and offered multiple cross-discipline courses and entrepreneurship programs (UNESCO, 2012). Entrepreneurship encouragement initiatives and programs are conducted by various agencies, including HEIs, for undergraduates to be involved in entrepreneurial activities and businesses regardless of their study areas. However, these initiatives to espouse entrepreneurial intentions and entrepreneurship will fail if they do not take those programs seriously. Past studies have shown that students who are exposed to the possibilities of delving into their craftsmanship, starting their businesses, or engaging in other social enterprises are those who are likely to succeed (Mair & Lanuza, 2005; UNESCO, 2012; Yusof & Jamaluddin, 2015). This therefore suggests the need for individual students to have their careers planned out as early as possible.

According to Kaya and Ceylan (2014) and Gyansah and Guantai (2018), a career path is important for an employee's career enhancement after a certain period as it indicates the employment progress either within his or her organization or to change to other options of employability. This is due to the repertoire of knowledge, skill, experience, value, and personal quality that an individual would have built up and amassed during his or her tenure of employment, subject to the position and job responsibility (Kaya & Ceylan, 2014). Further professional growth and subsequent career advancement lie in the ability and

desire of the individual to advance his or her knowledge and skills. The tendency to change jobs can be influenced by several factors, including those prompted by organizational shifts due to business actions such as retrenchment, merging, etc., job security and stability-related issues, or economic uncertainty (Kaya & Ceylan, 2014; Gyansah & Guantai, 2018).

Therefore, the investigation of the interval period between the time of convocation (graduation) and the post-graduation period is crucial to understanding the employability and career enhancement progress among the graduates, especially in the context of education or specialization field, gender, job sector, and income. It will reflect the career enhancement opportunities of the HEIs' graduates and observe the job market reaction and future employment direction pattern among these graduates. In this study, the researchers developed nine hypotheses to be tested, subject to the observed factors from the discussed graduate employability issues:

H_1: *Gender* and *Job Group* are related among the MPU alumni during the convocation

H_2: *Gender* and *Job Group* are related among the MPU alumni after *SKPG2*

H_3: *Gender* and *Working sector* are related among the MPU alumni during the convocation

H_4: *Gender* and *Working sector* are related among the MPU alumni after *SKPG2*

H_5: *Educational Field* and *Job Group* are related among the MPU alumni during the convocation

H_6: *Educational Field* and *Job Group* are related among the MPU alumni after *SKPG2*

H_7: *Educational Field* and *Working sector* are related among the MPU alumni during the convocation

H_8: *Educational Field* and *Working sector* are related among the MPU alumni after *SKPG2*

H_9: *Education Field* and *Monthly income* are related among the MPU alumni after *SKPG2*

3. Methodology

This study employs a quantitative approach. The data was supplied by the Data Unit of the Malaysian Ministry of Higher Education (MoHE). The data was extracted from *Sistem Kajian Pengesanan Graduan 2* (*SKPG2*), or the ministry's tracer study system, which can be accessed from MoHE's website by the HEIs' graduates and alumni. The main purpose of this system is to survey the job status and employability of the graduates after completing their studies at the university and update their latest career development. This tracer study system can be divided into two main segments: i) *SKPG1*, which collects employment data during the university's convocation; and ii) *SKPG2*, a continuation of *SKPG1*, where the employment data reported has been updated by the graduates voluntarily. There is no time limitation for updating *SKPG2*. This system also covers all non-TVET (*Technical and Vocational Education and Training*) public and private higher learning institutions. This system caters to all levels of education, starting with certification, diploma, degree, postgraduate programs, and professional certifications. Another part of this system, known as SKPG-TVET, is designated for TVET-based public skill training institutions such as Polytechnics and other training providers.

For this study, the data in use were extracted from 2006 to 2017. The data cleaning process was the most time-consuming since the supplied data format needed to be recoded. The issue of missing data is quite high because most of the questions in the survey were *open-ended question* formats that allowed the respondents to skip answering some specific questions. Only 13,512 respondents with undergraduate degrees were used in this study.

4. Analysis and Results

The data in this study are non-parametric with the normal or ordinal level of measurement; thus, the Chi-square test for independence was applied to analyze the data. Exploration of the independence of gender with job group by the graduates was conducted during convocation and SKPG2. The analysis was carried out using SPSS 22.0 and Microsoft 365. In simplifying the analyses, the alumni's education field has been categorized into several categories according to the work nature similarity or

specialization or generalization of academic areas as follows: i) *Management, Law, and Social Science*; ii) *Pure Science*; iii) *Architecture and Engineering*; iv) *Computer Science*; and v) *Education*.

Table 1: Job group classification

Category of Job Group	Type of profession (Examples)
Administrative & Professional	- Managerial/legal/education, etc. - Professional skills or certification-related - Defense and security-related
Support	- General support - Clerical related - Specific skills related to agriculture and forestry - Computer Science
High skills	- Engineering and architecture-related - Medical and science-based professions - Art-based professions

In the meantime, as in Table 1, Job Group is referred to as the general-level management authority or expertise of the alumni's job and has been divided into three categories, such as i) *Administrative & Professional*, ii) *Support*, and iii) *High Skills*. For working sectors, only four general sector categories were used to determine the sectors the alumni belong to, namely i) *Government*, ii) *Private company*, iii) *Owned businesses*, and iv) *Others* (e.g., assisting a family's business, further study, etc.).

As shown in Table 2, most of the alumni during the convocation were working in the job group of *Administrative & Professional* with 7,455 respondents representing 55.2%, while 37%, or 4,998 respondents, were working in the job group labeled as *Support*. Only 7.8% were working in the job group classified as *High Skills*. Involvement in *High Skills* job group was relatively low for all streams of education. However, for computer science graduates, almost one-third were working in the *Support* job group due to their unique specialization, mainly in supporting and developing technology-related systems. From the perspective of gender distribution, more than half of the male and female alumni populations were working in the *Administrative & Professional* job groups during the convocation. In the same vein, more females (42.70%) were involved in the *Support* job group compared to male alumni (24.5%). Employment in the *High Skills* job group was relatively low for both genders.

Table 2: Crosstabulation Table of Gender and Job group during convocation and SKPG2

			During convocation			SKPG2		
			Gender		Total	Gander		Total
			Male	Female		Male	Female	
Job Groups	Administrative & Professional	Count	2736	4719	7455	3079	5350	8429
		% within gender	64.40%	50.90%	55.20%	72.5%	57.7%	62.40%
	Support	Count	1024	2956	4998	882	3610	4192
		% within gender	24.50%	42.70%	37.00%	20.8%	39.0%	33.20%
	High skills	Count	469	590	1059	286	305	591
		% within gender	11.00%	6.40%	7.80%	6.7%	3.3%	4.40%
	Total	Count	4247	9265	13512	4247	9265	13512
		% within gender	31.40%	68.60%	100.00%	31.40%	68.60%	100.00%

Notes: Regardless of all education fields

Meanwhile, post-graduation *SKPG2* data shows a significant increment in the *Administrative & Professional* job group for all education fields, with a subsequent increase for male alumni from 2,736 persons during the convocation to 3,079 persons. While employment in the job category of *Support* displays a declining trend for both genders. In addition, the overall *High Skills* job group had significantly reduced from 1,059 during convocation to 591 persons for both genders during *SKPG2*. It was found that most male alumni of this job group had been promoted to the *Administrative & Professional* job group, while most female alumni jobs were concentrated in the *Support* job group. The incremental number in this job group may be due to job transitions that occurred primarily in the

government sector, as shown in Table 3, with a high possibility that these graduates have accepted any lower-grade government posts that are not equivalent to degree qualification or are still under probation status. The promotion time frame is varied among organizations, subject to the organization's practices, job requirements, etc.

Table 3: Cross-tabulation Table of *Gender* and *Working Sector* during convocation and *SKPG2*

			During convocation			SKPG2			SKPG2-Convocation		
			Gender		Total	Gender		Total	Male dif	Female dif	Overall dif
			Male	Female		Male	Female				
Working Sector	Government	Count	1088	2212	3300	1621	3124	4745	**533**	**912**	**1445**
		% within gender	25.6%	23.9%	24.4%	38.2%	33.70%	35.1%			
	Private	Count	2921	6401	9322	2559	5997	8556	-362	-404	-766
		% within gender	68.8%	69.1%	69.00%	60.3%	64.7%	63.30%			
	Owned Business	Count	190	542	732	33	82	115	-157	-460	-617
		% within gender	4.50%	5.8%	5.40%	0.8%	0.9%	0.90%			
	Others	Count	48	110	158	34	62	96	-14	-48	-62
		% within gender	1.10%	1.20%	1.20%	0.8%	0.7%	0.70%			
	Total	Count	4247	9265	13512	4247	9265	13512			
		% of Total	31.40%	68.60%	100.00%	100.00%	100.00%	100.00%			

Notes: Regardless of all education fields

As shown in Table 3, the pattern shows that almost 70% of the alumni were working in the *Private* sector, followed by the *Government* sector (24.4%), 5.4% *Owned businesses*, and 1.2% *Others*. However, there is an indication of a job transition, mainly to the Government sector, after post-graduation. The data for SKPG2 shows that the reduced number of alumni involvement in the Private sector, Owned businesses, and other working sectors resulted in an obvious increase in the government employment sector. It can be interpreted that the majority of alumni intended to join the government sector rather than the private sector or own their businesses.

The job shifting pattern occurred subject to the percentage variance, where during the convocation, the majority of alumni were working in the private sector, which represents 69% compared to other job sectors and had reduced to 63.3% during *SKPG2*. Job security and stability, entitlement to facilities, and privileges are among the potential justifications for them to choose any government job. This changing pattern may take a longer time since the process of joining the government sector could consume more time with job regulations and procedures to be followed. The self-employed or owned business sector has shown a tremendous reduction in percentage, from 5.4%, or 732 respondents, during the convocation to 0.9%, or 115 respondents, during the *SKPG2* exercise.

On the other hand, Tables 4 and 5 represent the cross-tabulation based on the *Education Field* against the *Job Group* and *Working sector* of the MPU alumni. As shown in Table 4, the pattern of overall alumni from all education fields shows an incremental pattern in the *Job Group* of *Administrative & Professional* after postgraduation. *Management, Law, & Social Science* have dominated this transition. Most of the alumni from this education field were working in the *Administrative & Professional* job group (48.2%). Meanwhile, 46.1% were working in the *Job Group* of *Support* and only 5.6% were in the *Job Group* of *High Skills* during the university convocation. However, after the *SKPG2* exercise, its percentage had increased to 55.4%, while the *High Skills* job group had reduced to 2.1%. The lowest transition from the *High Skills* job group is from those who are from the *Architecture & Engineering* fields, as the job nature of this field is more technical and professional-skilled. Employment of *Education* field alumni in the government sector is high. Since the Malaysian government provides free education from the primary to the upper secondary level of education, this sector has become a major source for the employability of *Education* graduates. Furthermore, there is a control admission and quota by the Education Ministry for each involved university in offering education-based academic programs according to the ministry's planning by subject matter, reducing the excess possibility of *Education* graduates produced by these universities. The job transition from other job groups by the *Education* graduates may be caused by their involvement in other temporary jobs while waiting for the ministry's job placement. In general, the degree qualifications in the Malaysian government can be categorized as *Administrative & Professional*.

As shown in Table 5, the involvement of MPU alumni in the private sector was relatively high, with a total of 68.99% and 63.32% for the periods of convocation and *SKPG2*. However, it shows an employment reduction in the private sector and an increment in the government sector. In all educational streams, the *Education* stream has shown an exception due to their job nature, followed by graduates from the *Pure Science* stream, with almost 50% of them working in the government sector. It is a high possibility that most of the professions offered by the government are considered specific areas; for example, forestry-related jobs, microbiologists, forensics, etc., may not be largely applicable in the private sector. At the same time, the percentage of alumni with owned businesses dropped, with an obvious decrease after postgraduation (*SKPG2*), mostly those who were from the *Management, Law & Social Science* cluster.

The degree of entrepreneurial tendency among the graduates is low. The aim of the entrepreneurial university is not achievable and is insufficient for entrepreneurship education to inspire entrepreneurial characteristics and spirit among students.

Table 4: Cross-tabulation Table of *Educational Field* and *Job Group* during convocation period and *SKPG2*

			During convocation						SKPG2						SKPG2 - Convocation				
			Educational Field					Total	Educational Field					Total	MLSS dif	PS dif	A&E dif	CS dif	Edu dif
			Management, Law & Social Science	Pure Science	Architecture & Engineering	Computer Science	Education		Management, Law & Social Science	Pure Science	Architecture & Engineering	Computer Science	Education						
Job Group	Administrative & Professional	Count	4168	795	1508	645	339	7455	4790	970	1565	730	374	8429	622	175	57	85	35
		% within educational field	48.20%	56.90%	75.70%	59.70%	84.10%	55.20%	55.40%	69.40%	78.60%	67.60%	92.80%	62.40%					
		% of Total	30.80%	5.90%	11.20%	4.80%	2.50%		35.40%	7.20%	11.60%	5.40%	2.80%						
	Support	Count	3987	415	262	285	49	4998	3666	332	209	261	24	4492	-321	-83	-53	-24	-25
		% within educational field	46.10%	29.70%	13.20%	26.40%	12.20%	37.00%	42.40%	23.80%	10.50%	24.20%	6.00%	33.20%					
		% of Total	29.50%	3.10%	1.90%	2.10%	0.40%		27.10%	2.50%	1.50%	1.90%	1.20%	33.20%					
	High Skills	Count	486	187	221	150	15	1059	185	95	217	89	5	591	-301	-92	-4	-61	-10
		% within educational field	5.60%	13.40%	11.10%	13.90%	3.70%	7.80%	2.10%	6.80%	10.90%	8.20%	1.20%	4.40%					
		% of Total	3.60%	1.40%	1.60%	1.10%	0.10%		1.40%	0.70%	1.60%	0.70%	1.00%	4.40%					
Total		Count	8641	1397	1991	1080	403	13512	8641	1397	1991	1080	403	13512					
		% within educational field	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%					
		% of Total	64.00%	10.30%	14.70%	8.00%	3.00%		64.00%	10.30%	14.70%	8.00%	3.00%						

Note: Regardless of gender

Table 5: Cross-tabulation Table of *Educational Field* and *Working Sectors* during convocation period and *SKPG2*

		During convocation						SKPG2						SKPG2 - Convocation				
		Educational Field					Total	Educational Field					Total	MLSS dif	PS dif	A&E dif	CS dif	Edu dif
Working Sector		Management, Law & Social Science	Pure Science	Architecture & Engineering	Computer Science	Education		Management, Law & Social Science	Pure Science	Architecture & Engineering	Computer Science	Education						
Government	Count	2046	504	231	252	267	3300	2953	695	418	339	340	4745					
	% within educational field	23.68%	36.03%	11.60%	23.33%	66.25%	24.42%	34.17%	49.75%	20.99%	31.39%	84.37%	35.12%	907	191	187	87	73
	% of Total	15.14%	3.73%	1.71%	1.87%	1.98%		21.85%	5.14%	3.09%	2.51%	2.52%	35.12%					
Private	Count	5987	794	1643	781	117	9322	5525	693	1545	734	59	8556					
	% within educational field	69.29%	56.84%	82.52%	72.31%	29.03%	68.99%	63.94%	49.61%	77.60%	67.96%	14.64%	63.32%	-462	-101	-98	-47	-58
	% of Total	44.31%	5.88%	12.16%	5.78%	0.87%		40.89%	5.13%	11.43%	5.43%	0.44%	63.32%					
Owned Business	Count	489	84	104	41	14	732	89	3	18	3	2	115					
	% within educational field	5.66%	6.01%	5.22%	3.80%	3.47%	5.42%	1.03%	0.21%	0.90%	0.28%	0.50%	0.85%	-400	-81	-86	-38	-12
	% of Total	3.62%	0.62%	0.77%	0.30%	0.10%		0.66%	0.02%	0.13%	0.02%	0.01%	0.85%					
Others	Count	119	15	13	6	5	158	74	6	10	4	2	96					
	% within educational field	1.38%	1.07%	0.65%	0.56%	1.24%	1.17%	0.86%	0.43%	0.50%	0.37%	0.50%	0.71%	-45	-9	-3	-2	-3
	% of Total	0.88%	0.11%	0.10%	0.04%	0.04%		0.55%	0.04%	0.07%	0.03%	0.01%	0.71%					
Total	Count	8641	1397	1991	1080	403	13512	8641	1397	1991	1080	403	13512					
	% within educational field	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%					
	% of Total	63.95%	10.34%	14.74%	7.99%	2.98%		63.95%	10.34%	14.74%	7.99%	2.98%	100.00%					

Note: Regardless of gender

Table 6: Cross-tabulation Table of *Educational Field* and *Monthly Income* after *SKPG2*

			Educational Field					Total
			Management, Law, Social Science	Pure Science	Architecture & Engineering	Computer Science	Education	
Monthly Income	RM1000 and below	Count	306	50	29	25	7	417
		% within educational field	3.54%	3.58%	1.46%	2.31%	1.74%	3.09%
		% of Total	2.26%	0.37%	0.21%	0.19%	0.05%	
	RM1001 – RM2000	Count	2488	302	332	199	20	3341
		% within educational field	28.79%	21.62%	16.68%	18.43%	4.96%	24.73%
		% of Total	18.41%	2.24%	2.46%	1.47%	0.15%	
	RM2001 – RM3000	Count	3305	440	871	398	72	5086
		% within educational field	38.25%	31.50%	43.75%	36.85%	17.87%	37.64%
		% of Total	24.46%	3.26%	6.45%	2.95%	0.53%	
	RM3001 – RM4000	Count	1557	286	474	272	160	2749
		% within educational field	18.02%	20.47%	23.81%	25.19%	39.70%	20.34%
		% of Total	11.52%	2.12%	3.51%	2.01%	1.18%	
	RM4001 – RM5000	Count	616	194	171	116	96	1193
		% within educational field	7.1%	13.9%	8.6%	10.7%	23.8%	8.8%
		% of Total	4.6%	1.4%	1.3%	0.9%	0.7%	
	RM5001 – RM10000	Count	338	121	107	68	45	679
		% within educational field	3.91%	8.66%	5.37%	6.30%	11.17%	5.03%
		% of Total	2.50%	0.90%	0.79%	0.50%	0.33%	
	RM10001 dan above	Count	31	4	7	2	3	47
		% within educational field	0.4%	0.3%	0.4%	0.2%	0.7%	0.3%
		% of Total	0.2%	0.0%	0.1%	0.0%	0.0%	
		Overall total	8641	1397	1991	1080	403	13512

The cross-tabulation table for the *Education* field and the monthly income of the *SKPG2* exercise are shown in Table 6. The monthly income for most alumni was within the range of RM2001–RM3000 (37.6%), followed by the range of RM1001–RM2000 (24.73%) and RM3001–RM4000 (20.34%). Except for alumni from the *Education* field, other educational fields' monthly income ranged between RM2001 and RM3000. *Education* alumni income is higher with a range of RM3001–RM4000 since most of them have joined the government sector as educators and have been receiving a salary plus allowances approximately within this category of income. The distribution shows that, after postgraduation, most of their monthly income can be considered in the B2 group of the B40 national household classification or below RM3000 per month, which represents more than 60% of the 13,512 *SKPG2* respondents.

To test the hypotheses, the Chi-square (χ^2) test for independence was applied to analyze the data of this study in testing the hypotheses stated in the study, as the data of the study is classified as non-parametric with a nominal or ordinal level of measurement. The exploration of the independence of *Gender* with *Job Group* and *Working Sector* by the graduates was conducted for convocation feedback and *SKPG2*.

Table 7: *Gender*, Chi-square test of independence

	During convocation			SKPG2		
	χ^2	p-value	Phi & Cramer's V	χ^2	p-value	Phi & Cramer's V
Job group	436.967(2)	0.000	0.180	470.543(2)	0.000	0.187
Working sector	13.926(3)	0.000	0.032	26.729(3)	0.000	0.044

*Significant p < 0.05

Table 7 presents the results of Chi-square tests for independence between *Gender* and *Job Group*. The data did not violate the assumption of the chi-square test as the expected counts were greater than 5. A chi-square independence test revealed there is a significant association between *Gender* and *Job Group* for the convocation feedback, hypothesis H_1, $\chi^2(2, n = 13512) = 436.967, p = 0.000, phi = 0.180$ and hypothesis H_2, *SKPG2* period, $\chi^2(2, n = 13512) = 470.543, p = 0.000, phi = 0.187$. There was a small effect between these variables. There was a significant association between *Gender* and *Working Sector* for the convocation feedback, hypothesis H_3, $\chi^2(3, n = 13512) = 13.926, p = 0.000, phi = 0.032$ and *SKPG2* period, hypothesis H_4, $\chi^2(2, n = 13512) = 26.729, p = 0.000, phi = 0.044$, with a very small effect association.

Table 8: Education Field, Chi-square test of independence

	During convocation				SKPG2			
	χ^2	p-value	Phi	Cramer's V	χ^2	p-value	Phi	Cramer's V
Job group	1110.451(8)	0.000	0.287	0.203	1267.437(8)	0.000	0.306	0.217
Working sector	702.138(12)	0.000	0.228	0.132	765.796(12)	0.000	0.238	0.137

*Significant p < 0.05

The analysis of the Chi-square independence test on the association between *Education Field, Job Group,* and *Working Sector*, respectively, are presented in Table 8. The results revealed there is a significant association between the education field and job group for the convocation feedback, hypothesis H_5, $\chi^2(8, n = 13512) = 1110.451, p = 0.000, phi = 0.287, Cramer's V = 0.203$ and hypothesis H_6, *SKPG2* period, $\chi^2(8, n = 13512) = 1267.437, p = 0.000, phi = 306, Cramer's V = 0.217$. There was a slight moderate effect between these variables. There was a significant association between the *Educational Field* and *Working Sector* for the convocation feedback, hypothesis H_7, $\chi^2(12, n = 13512) = 702.138, p = 0.000, phi = 0.228, Cramer's V = 0.132$ and hypothesis H_8, *SKPG2* period, $\chi^2(12, n = 13512) = 765.796, p = 0.000, phi = 0.238, Cramer's V = 0.137$, with a very slight moderate effect association. All the data has not violated the assumption of the chi-square test as the expected counts were greater than 5.

Table 9: *Education Field*, Chi-square test of independence

	SKPG2			
	χ^2	p-value	Phi	Cramer's V
Monthly Income	694.022(24)	0.000	0.227	0.113

*Significant p < 0.05

To test the hypothesis of H_9, the analysis of the chi-square independence test on the association between *Education Field* and *Monthly Income* for *SKPG2* is presented in Table 9. The results revealed there is a significant association between the *Education Field* and *Monthly Income* for the *SKPG2* period, $\chi^2(24, n = 13512) = 694.022, p = 0.000, phi = 227, Cramer's V = 0.113$, providing a significant association between *Educational Field* and *Monthly Income* of the alumni with a slight moderate effect between these variables.

5. Conclusion

Gender and *Education Field* factors are strongly correlated with their post-graduation job enhancement. This situation occurred within their organization, from a specific or specialized role to a managerial position. However, only a small portion of the alumni had been promoted to the *Administrative and Professional* levels from the support roles of the organization. Most of them can be seen as trapped in their current position after their postgraduate degrees, and it takes a longer time for them to be promoted to the higher level of their organization's hierarchy. This scenario may contribute to the job transition of the alumni, where some of the alumni, especially females, have chosen to change their jobs from the private sector to the government sector. The primary reason for the alumni's shift is to take advantage of a more stable job offer from the government, even though the pay is not as good as it would be in the private sector and their prior position in the private sector may have only been short. This tendency to change jobs can also be linked to individuals who began their careers as business owners, either to work for the government or the private sector. There has been a significant decline in participation, from 732 individuals at convocation to only 115 following the *SKPG2* exercise. This decline is likely due to the unpredictability of the economy, fierce rivalry among firms, and the incapacity of these individuals to maintain their operations.

From the perspective of HEIs, it is necessary to review their curriculum from a holistic perspective to ensure the ability of the graduates to be competitive and excel not only in their profession but also in a social context. The managerial and social elements should be embedded into the curriculum, especially non-managerial academic programs. They need to be prepared to join the job market and to perform their job effectively in the organization. Continuous life-long learning programs can be offered to the alumni by HEIs to upgrade them with new skills and knowledge through university-alumni collaboration initiatives. As a part of the government's initiative for the entrepreneurship effort among the graduates, HEIs should review their approaches to encourage more graduates' participation in ventures into business. Entrepreneurial-innovation initiatives and experiences through extracurricular, business incubator programs, and national business chamber linkages can be formulated and applied at the early stage of business initiation to the graduates during their study at the university. It is crucial to equip them with business skills, knowledge, a business network, and actual business experiences for their future business engagement.

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