

Relationship of Academic Performance and Academic Self-Concept with Career Decision-Making among UPM Undergraduate Students

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Abstract: Choosing the right career paths relevant to their future is probably one of the most challenging decisions confronting the majority of adolescents. Hence, recognition of the factors affecting students' career decisions is more important than ever. This study aimed to investigate the effects of academic performance and academic self-concept in relation to career decision-making among UPM undergraduate students. A quantitative research design using a questionnaire was utilised. The questionnaire, one touching on academic self-concept and the other on career decision-making, was disseminated to the respondents via emails and through social network services in the form of Google Forms. For data on academic performance, the researcher based it on the students' current Cumulative Grade Point Average (CGPA) results. The Multi-stage cluster sampling method was employed to a total of 171 final-year undergraduates from Universiti Putra Malaysia (UPM). The data were analysed using SmartPLS 3. The result of partial least squares structural equation modelling (PLS-SEM) revealed that the students' academic self-concept directly and significantly affects their career decision-making. However, there is no direct relationship between academic performance and career decision-making. This study found that developing students' academic self-concept can assist them to decide on their career paths.

Keywords: Academic achievement, Academic self-concept, Career choice, Higher education

1. Introduction

Career decision-making (CDM) is a process that examines how individuals make decisions or the circumstances of the career that lead to their choices (Swanson & D'Achiardi, 2005; Levin et al., 2020). Lau et al. (2019) suggest that students should decide their careers well before they start looking for employment. However, making decisions on a career is a huge challenge and a significant dilemma, especially for undergraduate students (Kulcsár, Dobrea & Gati, 2020). Furthermore, it is regarded as a critical period for making significant career decisions, such as career preference and dedication to a particular career path.

Difficulties in making a career choice during the school-to-work transition are common problems for university students, particularly in the current pandemic situation affecting the global economy which could have a significant effect on graduate students entering the job market. (Presti et al., 2021; Muda & Fook, 2020). According to Abdul Wahab (2017), most graduates in Malaysia at the

ages of 22 to 27 face a burdensome transition from education to work. Students also experienced challenges and difficulties deciding on a career (Kulcsár et al., 2020), and some are not even satisfied with their selected careers (Khan & Rehman, 2018). For example, students will end up making wrong career choices such as pursuing science-related careers over careers in the art field or working over and underqualified.

Data from graduates' trace study (MOE, 2019) shows 62,911 or 43% of employment mismatches involved graduates with Bachelor's degrees. According to the Organisation for Economic Co-operation and Development (OECD) (2019), graduate mismatch in the labour market occurred when they are employed in a position which was different from what they are specialised in and not commensurate with their education levels. Bian (2020) posits that mismatch can eventually contribute to a wage penalty, and students tend to regret their study program. Bian (2020) adds that specialisation and education level can impact one's possibility of being underemployed. Analysis done by Shahidan et al. (2019) highlights that the number of overeducated-graduates employment in the Malaysian labour market is increasing, and the majority of graduates are in job classifications as clerks and sales workers.

Beside mismatch and underemployment, students also worry about being jobless after graduating. Data from the Department of Statistics Malaysia (2020) show that unemployment rate in August 2020 was 4.7% which is an increase of 1.4% since February 2019. In terms of numbers, unemployed individuals in Malaysia totalled 516,400, out of which 162,000 are graduates. This phenomenon makes university students more concerned about their career opportunities after graduating.

It can be very simple or difficult to make career decisions depending on the students' preparations, commitment, and perseverance (Fook & Balaraman, 2018). Knowing where they are and where they want to be will make it easier for making career decisions. There are many important factors to be considered and explored before choosing career paths for undergraduate students. This exploration has drawn attention to the various barriers affecting their educational, career advancement, and goals.

In attempts to understand the CDM among university students, it has been discussed over the past decades (for example Peng & Herr, 1999; Rubinton, 1980). According to Abdullah et al. (2018), the most common factors studied were related to self-efficacy (Hamzah et al. 2021), personality (He et al., 2020), emotions, and difficulties (Farnie et al., 2018). However, there are a limited number of empirical studies on the relationship between academic prospects and CDM (Ahmed & Bruinsma, 2006; Gwelo, 2019).

Although the relationship between academic achievement and academic self-concept (ASP) has been extensively researched, there is a lack of quantitative study examining the influence of academic achievement and ASP on CDM. Hence, this study aimed to investigate the effects of academic performance (AP) and ASP on undergraduates' CDM.

2. Conceptual framework and Hypothesis

2.1 The Effect of Academic Performance (AP) on Career Decision-Making (CDM)

Academic performance (AP) is one of the leading factors in measuring educational goals, and it is the most common indicator of achievement in the academic context (Benitez, 2017). In the employment setting, AP is one of the primary considerations of employability decisions (Mendoza & Hontiveros, 2017). Other qualities being considered during the employment process to include qualifications, technical skills, attitude, effort (Ballafkih, 2017), non-technical skills, and employability skills (Kamaliah et al., 2018). Scholars have pointed out that AP is a valuable predictor for employers to make recruiting decisions in the early-stage selection (He, 2016).

Several studies have found an association between AP and students' career decisions (Choi & Kim, 2013; Igere, 2017). Negru-Subtirica and Pop (2016) conducted a study among undergraduates in North-Western Romania that found a positive correlation between career concerns and AP. The data used in that study were based on the students' grade point average (GPA) three times over an academic year. Meanwhile, Choi and Kim (2013) examined the relationship between students' learning and career preparations of Korean and American university students of hospitality and tourism programmes. The study found that the magnitude of a student's AP, self-efficacy, CDM and career-preparation behaviors

influences students' learning and career behavior. In other words, AP contributed to the decision-making skills on career (Ozcan, 2017).

However, previous studies have shown a weak relationship between AP and CDM (Talib & Aun, 2009). The results indicated that university students with higher AP have higher job indecision levels and are more likely undecided. This is because they tend to be more concerned about their career options since most of them have not settled on their future careers. Thus, they feel a greater need for career and self-exploration in making career decisions.

On the other hand, students with lower academic achievements tend to be more concerned about making career decisions. They are more likely to seek guidance from experts to improve their self-esteem and confidence during the recruitment and selection process since they lack AP. This highlights the importance of recognizing and comprehending the relationship between a student's AP and their CDM (see the conceptual model in fig. 1). As such, the following hypothesis is postulated:

H₁. Academic performance (AP) has a direct effect on career decision-making (CDM).

2.2 The Effect of Academic Self-Concept (ASP) on Career Decision-Making (CDM)

Academic self-concept (ASP) was one of the main elements of cognitive motivation analysis because of its supposed overt and indirect effect on the academic achievements of students (Bong & Clark, 1999; Roslan et al., 2021). According to Trautwein and Moller (2016), ASPs correspond to personal self-confidence about educational abilities and shortcomings, while self-concepts are abstract assumptions about the qualities that characterize individuals. Other scholars also viewed ASP as students' knowledge and perceptions regarding their levels of competencies in academic skills and performances (Wigfield & Karpathian, 1991; Cooper et al., 2018; Khairina et al., 2020). Generally, the way students think of themselves as learners is referred to as their ASP (Guay et al., 2010). Super (1963) posits that the development and implementation of occupational self-concepts through the integration of one's abilities, personality, needs, values, interests, and traits is fundamental to career choice and development processes (Brown, 2012; Osipow, 1987).

Furthermore, Super's theoretical underpinnings suggest that psychological aspects like self-concept are related to the career development process (Hartung, 2013; Super, 1990). Super proposed that at the second stage, adolescents engage in an active process of exploring the world of work and making tentative decisions regarding their choice of careers. This process with self-concept will lead to more realistic career goals. In other words, self-concept is a root for CDM related to career preferences.

Recent research by Krannich et al. (2019) investigated the correlation between students' level of perceived challenge and students' career aspirations. The sample consisted of Swiss students completing assessments on the perceived challenge, ASP, career aspirations, and academic trait boredom. The result shows that over-challenged students negatively affect ASP, while under-challenged students have a positive impact on ASP. It may have contributed to an increased intention to start a career in a similar area.

Several studies showed a significant relationship between self-concept and career maturity, including CDM. Istiana (2017) and Zahra and Malik (2018) reveal that the more positive the self-concept, the more mature CDM ability the students can possess. Moreover, Wolff et al. (2018) posit that students' achievement and aspirations are strongly influenced by their ASP. A study conducted by Burger and Naudé (2019) shows that, during the entry and integration stages of students' academic success, ASP explains the most variance. As students feel confident about their talents and achievements, they experience an intensified desire to excel in their studies, resulting in higher exam scores. Moreover, it is beneficial to understand the mechanisms associated with the formation of ASP, and this may lead to better CDM. Thus, exploring ASP among graduates, especially those who are in their final year of study, will help to provide a better understanding of their career development. In that regard, the current study suggests the following hypothesis and the conceptual model (see Fig. 1):

H₂. Academic self-concept (ASP) has a direct effect on career decision-making (CDM).

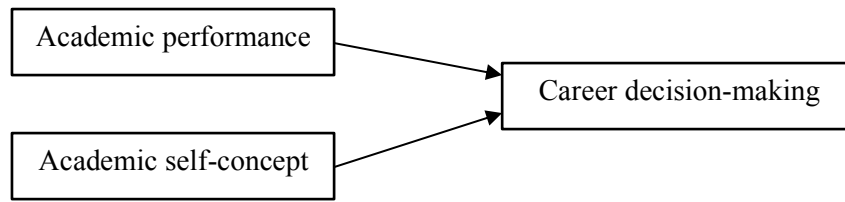


Fig. 1 The conceptual model

3. Methodology

In this study, a quantitative method was employed using the questionnaire survey technique as the primary way to collect data. A Partial Least Squares Structural Equation Modeling (PLS-SEM) approach was utilised to investigate the structural relationships among the students' AP and ASP with their CDM.

4. Respondents

The study sample comprised final year students studying Bachelor programmes at Universiti Putra Malaysia (UPM) in the 2019/2020 session. A total of 107 students were required for the study based on the minimum sample size calculation using the G*Power software, and the medium effect size selected was 0.15. A Multi-stage cluster sampling technique was conducted to select randomly six faculties out of the 15 faculties in UPM. First, all the faculties were divided into three fields (science, social science, and technical). The faculties were then selected randomly from each field with a ratio: science = 2 faculties, social science = 3 faculties, and technical = 1 faculty to represent the population of the students' field in UPM. The selected faculties were (i) Science, (ii) Food Science and Technology, (iii) Educational Studies, (iv) Human Ecology, (v) Modern Language and Communication, and (iv) Design and Architecture. The online survey form was distributed randomly to 300 final-year students in each of the six faculties. The response rate, complete with answers from the survey was 171/300 (57%). Table 1 shows 171 students participating in the study, with 42 of them males (24.6%) and 129 females (75.4%). Meanwhile, based on the cumulative grade point average (CGPA), 38 students (22.2%) had CGPA of 3.75 to 4.00, 57 students (33.3%) 3.50 to 3.74, 65 students (38%) 3.00 to 3.49, 10 respondents (5.9%) 2.25 to 2.99 and the lowest range of 2.00 to 2.24 has only one student (0.6%).

Table 1. Profile of Participants

Profile		Frequency (<i>n</i>)	Percentage (%)
Gender	Male	42	24.6
	Female	129	75.4
Faculty	Educational Studies	32	18.7
	Science	28	16.4
	Human Ecology	29	17.0
	Design and Architecture	30	17.5
	Modern Language and Communication	27	15.8
	Food Science and Technology	25	14.6
CGPA	3.75 - 4.00	38	22.2
	3.50 - 3.74	57	33.3
	3.00 - 3.49	65	38.0
	2.25- 2.99	10	5.9
	2.00 - 2.24	1	0.6

4.1 Measures

Two instruments of the questionnaire were used, focusing on ASP and CDM. AP was based on the students' CGPA results.

4.1.1 Academic performance (AP)

AP refers to the average score earned by students throughout the course and calculated as the cumulative grade point average (CGPA). The scores obtained from mid-term and final exams include other assessment components such as continuous tests, quizzes, presentations, and individual and group projects. Due to the Covid-19 pandemic, UPM started conducting e-assessment of all students beginning March 2020 (CADE, 2020). The assessment was based on students' online tasks, including quizzes, assignments, presentations, and forum and group projects. The mid-year exam and final exams were also conducted online. All of the tasks and exams are taken by the students would be reflected in their final score results. The CGPA result was identified based on the CGPA range (See Table 1).

4.1.2 Academic Self-Concept (ASP)

The students' self-concept was measured using the ASP scale by Liu and Wang (2005). Liu and Wang report that their questionnaire has satisfactory internal consistencies of $\alpha = 0.82, 0.71,$ and $.76,$ respectively. Findings from a pilot test also show Cronbach's alpha value at $0.854.$ This questionnaire has two subscales related to academic confidence and academic effort. Each of the subscales consists of 10 items in the form of a 5-point Likert scale ranging from 1 = strongly agree to 5 = strongly disagree.

4.1.3 Career Decision-Making (CDM)

The CDM scale used for this study is a valid and reliable instrument developed by Osipow (1987). It consists of two subscales to measure students' career decisions related to their certainty and uncertainty of education and occupational choices. Eighteen items were used for this study and self-rated responses in the form of a 5-point Likert scale, ranging from 1 = not at all like me to 5 = exactly like me, was used as a scored item. Osipow (1987) reports that this questionnaire has good validity and reliability, with the test-retest correlations for the overall score at 0.902 and $0.819,$ respectively. Other studies using this scale have also reported the coefficients to be in the range of 0.70 to 0.90 (Garis & Niles, 1990). Besides, a pilot test conducted also shows this questionnaire to have a good internal coefficient ($\alpha = 0.758$).

4.2 Procedure and Analysis

Data for this study was collected via a questionnaire using Google Forms. The links to these forms were distributed to the final-year students from six faculties in UPM. The links were shared with the students personally and with groups of students using emails and social network services such as 'WhatsApp' and 'Telegram'. The online survey method was preferred because the Covid-19 pandemic made the face-to-face method unsafe. Participation in this research was entirely voluntary and all respondents filled out questionnaires anonymously.

SPSS version 25 was used to calculate the mean, standard deviation (SD), and correlation coefficients between the variables. For partial least squares structural equation modeling (PLS-SEM), the SmartPLS 3 software was selected to determine the validity, reliability, and path coefficients between the variables. PLS-SEM was considered for this study because it involved analysis from a prediction perspective, the path model includes a formatively measured construct, and a small sample size are accepted (Hair et al., 2019). In this analysis, PLS-SEM focused on two main processes: (i) the measurement model, and (ii) the structural model.

5. Results

The matrix correlation results (Table 2) displayed that ASP has a significant and positive relationship with CDM ($r = 0.465$, $p \leq 0.01$). However, AP has no significant relationship with CDM ($r = 0.07$, $p \geq 0.01$).

Table 2. Relationship between AP and ASP with CDM

Construct	Mean	SD	1	2	3
1- AP	-	-	1		
2- ASP	3.628	0.499	-	1	
3- CDM	2.872	0.582	0.07	0.465**	1

** $p < 0.01$

5.1 The Measurement Model

The measurement model in PLS-SEM was evaluated for reliability, convergent validity, and discriminant validity using Cronbach's alpha and Rho_A. Table 3 displays the result of Cronbach's alpha, Rho_A, composite reliability (CR), and average variance extracted (AVE). The values of Cronbach's alpha for ASP and CDM are 0.851 and 0.841, respectively. The values of Rho_A for ASP and CDM are 0.856 and 0.881, respectively. All Cronbach's alpha values are > 0.70 and the Rho_A values > 0.5 . To get these acceptable results, several items were removed or extracted. If the items were retained, they would increase the CR and AVE values beyond the threshold values (Hair, et al. 2017).

The CR value was measured to assess the internal consistency reliability of the constructs. The results, depicted in Table 3, show that the values for ASP and CDM are 0.889 and 0.877, respectively. All the CR values are greater than the recommended 0.7 and are considered acceptable. The findings of CR reveal that the model possessed an adequate level of reliability (Hair et al., 2011) and demonstrated the suitability of the scales used in this study. The AVE values of the latent variables for ASP and CDM are 0.573 and 0.574, respectively. All these values are > 0.5 , which is an acceptable level of convergent validity (Hair et al., 2017).

Table 3. Reliability and validity

Construct	Cronbach's Alpha	Rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
AP	1	1	1	1
ASP	0.851	0.856	0.889	0.573
CDM	0.841	0.881	0.877	0.547

To measure the degree of each latent variable that is divergent from other constructs, the Fornell-Larcker criterion was applied to verify and confirm the discriminant validity (Hair et al. 2017). Table 4 shows that the diagonal values are greater than non-diagonal ones. It means no issues regarding discriminant validity are found in the model.

Table 4. Measurement model: Discriminant validity

	Fornell-Larcker Criterion			HTMT		
	AP	ASP	CDM	AP	ASP	CDM
AP	1					
ASP	0.34	0.757		0.382		
CDM	0.115	0.527	0.739	0.137	0.556	

Another selection criteria known as the Heterotrait-Monotrait (HTMT) ratio was also calculated as an even more preferable way of determining discriminatory validity. To obtain discriminant validity, the values of HTMT should be between 0.85 and 0.90 (Henseler et al., 2012). The results in Table 3 show that all the values under the HTMT criterion are < 0.85 .

5.2 The Structural Model

The assessment of the structural model was used to test the hypotheses in the proposed conceptual framework, which included the relationship of AP and ASP with CDM (Fig. 2). The parameters of the coefficient of determination (R^2 values) and path coefficients (beta values) were used to assess how far the data supported the hypothesized relationships. To understand whether the path coefficient is significant for the hypothesized relationships, PLS bootstrapping path-analysis was used to discover the path correlation of the variables.

The estimated path coefficients from the PLS analysis were shown in Figure 2. Based on the results, only hypothesis H_2 was supported, and hypothesis H_1 was rejected (Table 5). Based on the estimated path coefficients and the t-test statistics scores displayed in Table 5, ASP demonstrated a direct, positive, and statistically significant effect on CDM (H_2 $p < 0.05$). Meanwhile, AP had a direct, negative, and not statistically significant effect on CDM (H_1 $p > 0.05$).

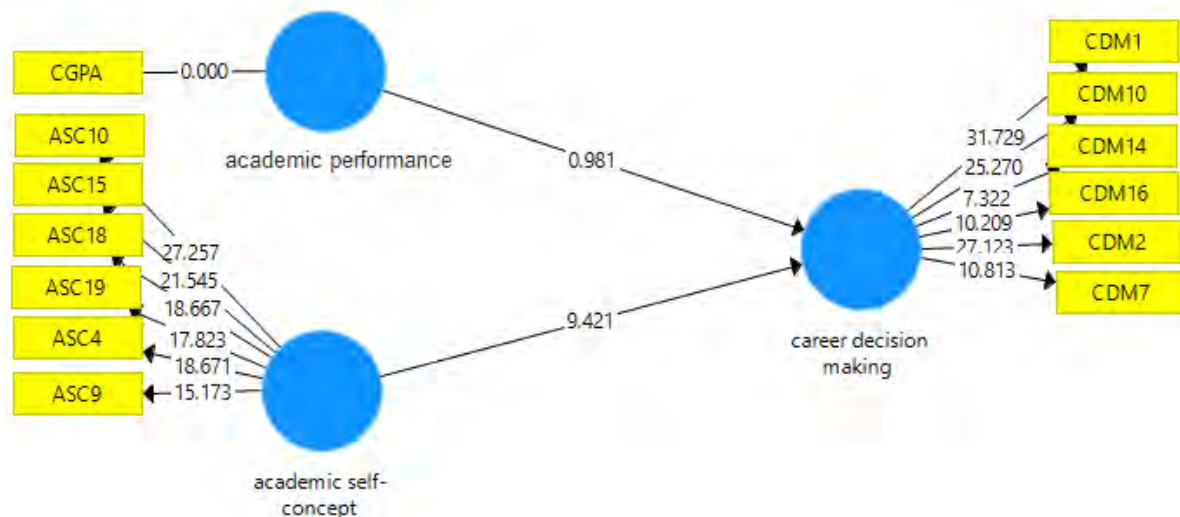


Fig. 2 Structural model for career decision-making (CDM)

The latent endogenous variable determination coefficient (R^2) can be applied to assess the success of the proposed model. In the proposed model, the ASP explained 27.3% of the variation in CDM. Hair et al. (2014) also suggest reporting the predictive validity (Q^2). The model has a predictive quality if the cross-redundancy value exceeds 0, or the model's Q^2 cannot be obtained (Fornell and Cha, 1994). Table 5 shows the cross-validated redundancy is 0.128 for ASP; hence, it is regarded as a predictive model.

Table 5. Path analysis of bootstrapping

	Beta	t-value	P Values	Bias corrected bootstrap (95%)		Decision
				UL	LL	
AP \square CDM	-0.073	0.981	0.327	-0.217	0.076	Rejected
ASP \square CDM	0.551	9.421	0.000	0.429	0.656	Supported
	R^2	Q^2				
	0.273	0.128				

6. Discussion

The purpose of this study is to look at the effects of academic performance (AP) and academic self-concept (ASP) on career decision-making (CDM) among UPM undergraduate students. The study hypothesized that AP and ASP are related to CDM. The output model from PLS-SEM analysis showed that ASP has a positive significant relationship and a direct effect on CDM. Meanwhile, AP shows no significant and indirect effect on CDM.

Based on the findings that are related to AP, the findings are not in line with studies done by Choi and Kim (2013), Negru-Subtirica and Pop (2016), and Ozcan (2017). They found that AP contributed to career decision-making skills. However, Choi and Kim (2013) postulate that students' career behaviors vary depending on the magnitude of their AP. But there is no absolute answer whether AP affects CDM. For instance, correlational research by Akter and Siraj (2018) asserts that the APs of students is an insignificant factor for them to pursue careers related to their fields of study. The findings also align with the study by Talib and Aun, (2009) and Basammula (2019). They believe that career decisions are not related or have a weak relationship to AP.

Thus, the findings of this present study mean that some students lack the academic skills or work habits necessary to excel in some majors that need more preparation than others. These students will find better suitability in a less intensive and demanding classroom. This influences students' career paths. Beggs et al. (2008) also highlight that some students are driven to work in rather labour-intensive fields, but do not have the intelligence to execute the tasks required for their chosen fields. These students seek support from tutors, teachers, and special exceptions while taking tests and completing homework. These students are given every opportunity to excel and work in their fields.

Another finding of this study is the significant relationship between ASP and CDM. The findings show that students who have stronger ASP and can handle, conduct, and solve academic problems possess high abilities in CDM and are comfortable with their career choices. These findings support Super's theory that self-concept as a psychological factor plays a significant role in students' career development (Hartung, 2013; Super, 1990). Based on Super's explanation, self-concept in relation to career development changes across time, according to the life stage. In this present study, the final year students are at the adolescent stage and have started thinking about their career choices and career planning based on their academic fields. They will be actively exposed to the career world and engage enthusiastically with the careers of their dreams. This process will make the path to their career goals more realistic. Similarly, Weng and McElroy (2010) also note that students with higher self-concept tend to crystallise their career goals further.

Self-concepts refer to the student's perception of themselves, which may be positive or negative. It will affect their choice of careers and level of satisfaction (Super, 1990), consequently impacting their future employment. In this study, a positive self-concept will lead to making successful career decisions. However, if the students lack self-concept, it may cause indecision and indecisiveness in the career decision process. Students with a strong and optimistic self-concept are more likely to find work after graduation than those with a weak self-concept, according to Rätty et al. (2020). In addition, students' development of self-concept throughout their studies including involvement in career-related courses, career counselling, and skills development programs, will significantly lower the chance of experiencing career mismatch, either being overqualified or under-qualified.

To nurture students' capabilities in CDM, universities need proper regulations, especially those related to the students' abilities. The optimal development of student's abilities can be viewed as giving psychological support, including self-concept. This can be developed through designing interventions and programs that promote the crystallisation of self-concept that can enhance students' CDM. Besides, promoting effective mentoring in higher education (Chong & Thi, 2021) will benefit students in dealing with self-concept and students' career decisions. According to Lau (2019), universities should be concerned not only with students' labor market preparation but also about their intellectual identities, which include talents such as quantitative and critical reasoning, as well as the capacity to develop new skills, which are still highly valued by students. Over time, this process can lead students with positive self-concepts to make the right career decisions.

7. Conclusion

In conclusion, this study found that ASP is an essential factor in students' CDM. Students who developed ASP tend to prepare and plan their careers before graduating. In order to improve students' career decisions, promoting self-concept is important in higher education settings by allowing organisations to provide interventions, assessments and coaching related to developing self-concept. This can lead to more mature career selection abilities, especially for undergraduates. This study contributes to the theoretical framework in regards to the influence of the self-concept as a factor for enhancing students' CDM. Besides, this study also provided universities and educators with career development information in supporting the student with their needs in preparing themselves in the transition from school-to-work. Therefore, attention to developing self-concept is crucial for unleashing students' potential for better decision-making on their career paths.

8. Co-Author Contributions

SNMZ made substantial contributions to the concept and design of this study by collecting data and preparing the first draft. AAMR and MAMA contributed to the conception and design of the study and approved the final version of the manuscript. NMA analysed and interpreted the data and helped in drafting and revising the manuscript.

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