Exploring the Mediating Role of Students' Satisfaction Towards Personal Record Building in the Influence of Self-regulated Learning Strategies on Employability Skills

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Abstract: The issue of employability skills has always been the agenda of stakeholders like the government, universities, and employers in the industry. Dynamic changes to the employability skills needed at workplace require stakeholders to find ways to stay relevant. As an approach to develop desired employability skills, the Personal Record Building (PRB) system was introduced by a technical university. Like ePortfolio, the PRB system mainly relies on students' ability to self-regulate and record their participation and accomplishment in students' activities through a merit system. Therefore, it is crucial to explore the relationship between students' satisfaction towards the PRB, self-regulated learning strategies and employability skills. The objectives of this study are to investigate the influence of self-regulated learning strategies like goal setting, help-seeking and self-monitoring on employability skills and to examine the role of students' satisfaction towards PRB as a mediator in the relationship between self-regulated learning strategies and employability skills. This study collected data from 159 final year students at a selected technical university through a quantitative method. The data was analysed using SmartPLS structural model assessment. It was discovered that goal setting, self-monitoring and help-seeking strategies significantly influence employability skills. However, students' satisfaction towards PRB system only mediates the relationship between help-seeking strategies and employability skill. The findings could help universities to assess and improve their services and the PRB system, which would benefit students in developing their self-regulated learning strategies and consequently, their employability skills.

Keywords: Employability skills, Personal record building, Self-regulated learning, Students' satisfaction.

1.   Introduction

Technical and vocational training (TVET) conventionally focuses on technical skills, but concerns are building on the need of soft skills to stay relevant in the 21st century workplace. Soft skills were reported to be essential factors for employment among TVET graduates (Halik Bassah, 2022; Abdul Karim and Maat, 2019). Furthermore, technical, vocational, and soft skills are included in the sort-after skills by employers (Institute of Labour Market Information and Analysis (ILMIA) (2019). However, the growing skills gaps among students is alarming. Musa (2020) and Hanapi et al. (2019) found that skills mismatch among TVET graduates are concerning. Academician and industry

players concurred that the skills acquired by graduates do not match the demand from the industry (D'Silva, 2020; Mustapha, 2017).

To identify the contemporary employability skills, eight employability frameworks from the United States, United Kingdom, Australia, and Malaysia, six common soft skills were identified and compared. The result of the comparison reported that a quality TVET graduate should be able to potentially demonstrate competence in communication skills, teamwork, critical thinking and problem –solving, lifelong learning, professional ethics and entrepreneurship. An inventory called SES-KIT was developed as part of the instrument used in this study based on the comparison of eight employability frameworks. Further description can be found in the 'Measurement and Instrument' section. To keep up with the era of digitalization and help students to grow relevant employability skills, universities should review their approach in developing desired employability skills.

To enhance the development of employability skills, particularly soft skills, a private technical university designed a system called Personal Record Building (PRB). It is a system resembling portfolio, where students are encouraged to participate and record their activity involvement and achievement; and points will be rewarded accordingly upon graduation in a form of a transcript. The concept of PRB introduced by the TVET university utilizes the academic and non-academic activities, where learning can take place both in and outside the classroom. Beckett and Hager (2002) supported the use of informal learning environment to encourage students to learn the skills as highlighted in this study. In studies concerning the contribution of academic and non-academic activities Kember et al. (2017) found that formal and informal learning settings could develop employability skills. While Bridgstock (2009) recommended higher learning institutions to incorporate teaching, learning and assessment of skills like communication, critical thinking, problem-solving and teamwork in the curriculum, Khandu (2014) argued that it is impossible for TVET as its curriculum is already compact. Hence, it is ideal to nurture employability skills by encouraging and involving students in both formal and non-formal learning settings that are not embedded in their curriculum.

Students in the TVET university have been using the PRB since 2015. At the time when this study took place, final year students from the 2019 cohort were selected as samples. They were the fourth cohort to graduate with a transcript generated by the PRB system. Since the PRB is a new approach, no study has been done towards its effectiveness in developing employability skills. Little is known of students' readiness and satisfaction towards the system. Thus, as a new system, investigating the users' satisfaction is vital. The acceptance and use of the PRB system might be seen in students' satisfaction. Assessing student satisfaction is critical since it pertains to students' short-term attitude because of their appraisal of educational experience, services, and facilities (Weerasinghe, Lalitha & Fernando, 2017). Thus, it is important to explore students' satisfaction towards the PRB system in determining its role in the relationship between self-regulated learning strategies and employability skills. This research adapts the Learners' Satisfaction (Mtebe & Raphael, 2018) as part of the instrument in collecting data. Further description of the instrument was reported in 'Measurement and Instrument' section.

The PRB system is seen as a good platform to encourage students to participate in both formal and non-formal learning settings. However, since it is not embedded in the curriculum, students need to rely on their self-regulated strategies to utilize the system. Zimmerman (2000) defined self-regulated learning as self-generated thoughts, feelings and actions that are planned and cyclically adapted to attain personal goals. Students should be prepared with self-regulated learning strategies to effectively involve in and exploit the benefit from PRB. Cheng and Chau (2013) supported the need for self-regulated learning strategies among students so they can benefit from ePortfolios activities (similar approach to PRB system). In another study on the use of ePorfolios, Ebil et al. (2020) confirmed that students' ability to self-regulated contributed to the development of employability skills.

The self-regulated learning strategies included in this study were goal setting, help-seeking and self-monitoring. These strategies were adapted from Zimmerman and Moylan's Cyclical Phase Self-regulated Learning Model (2009) and Pintrich's Self-regulated Learning Model (2000). Commonly used to measure academic performance and online learning satisfaction ((Anthonysamy et al., 2020; Lim et al., 2020; Zalli et al., 2019; Ejubović and Puška, 2019), this research intended to explore the influence of self-regulated learning strategies on employability skills in the context of

both academic and non-academic learning. Hence, necessary changes were made to the existing instrument, Motivated Strategies for Learning Questionnaire (MSLQ) designed by Pintrich et al. (1991). Further description of the instrument was reported in 'Measurement and Instrument' section.

This study sought to explore whether goal setting, help-seeking and self-monitoring strategies have any influence on employability skills. Furthermore, this study intended to investigate whether students' satisfaction towards PRB has any role in mediating the relationship between self-regulated learning strategies and employability skills. For dependent variable, eight employability skills frameworks were reviewed into constructing the employability skills construct. For independent variables, three strategies were adapted from the MSLQ instrument as constructs and finally for mediating variable, the construct of students' satisfaction was adapted from Learners' Satisfaction survey. The conceptual framework surrounding this study was illustrated in Figure 1.1 below.

Fig.1 Conceptual Framework

With limited knowledge and absence of study correlating the relationship between self-regulated learning strategies, satisfaction towards PRB and employability skills, this study aims to fill in the gap by constructing the following research objectives:

1. To determine the relationship between goal setting, help-seeking and self-monitoring and employability skills.
2. To examine the mediating effect of satisfaction towards PRB in the relationship between goal setting, help-seeking and self-monitoring on employability skills.

As this was exploratory research, the following hypotheses were proposed in search for pattern in the data:
H1: Goal setting influences employability skills
H2: Help-seeking influences employability skills
H3: Self-monitoring influences employability skills
H4: Satisfaction towards PRB mediates the effect of goal setting on employability skills.
H5: Satisfaction towards PRB mediates the effect of help-seeking on employability skills.
H6: Satisfaction towards PRB mediates the effect of self-monitoring on employability skills.

2.   Employability Skills

The changes brought by the Fourth Industrial Revolution are inevitable. Students need to adapt and make necessary adjustments to their learning style to keep up with the era of digitilization and emergence of new skills. The focus on TVET was further strengthened in the Eleventh Malaysia Plan to tackle the issue of employability and to develop initiative to guarantee employment. Although the primary focus of TVET is to nurture students with excellent technical skills, the need for non-

technical skills is certain. As pointed by Prianto et al. (2021), academic knowledge was not the only deciding factor for employment among vocational graduates, but soft skills too. This is supported by Sheh et al. (2020) and Haron et al. (2019) where soft skills were found to be a required factor in employment. Communication skills, critical thinking and problem-solving skills, teamwork, ethics, and professional moral as well as leadership skills are the missing 'skills' identified in a survey of On-job training (Abdul Musid, 2018).

Further studies affirm the lack of employability skills among students. In their study on employers' perception, Ghazalan et al. (2019) found that students' leadership skills, communication skills and entrepreneurial skills were lacking. A study on engineering students' employability skills by Husain et al. (2017) also shared similar concerns that students' skills must be enhanced, particularly the communication, entrepreneurship, leadership, critical thinking, and problem-solving skills. Although this study limits its employability skills to TVET, the employability skills construct formed could also be applied across various disciplines. The inventory created by the researcher fits the broader view of employability as stated by Bridgstock (2009) where work is no longer tied to discipline-specific skills.

Government-funded initiatives like 1Malaysia Training Scheme (SL1M), Graduate Employability Management Scheme (GEMS) and Graduate Career Accelerated Programme (GCAP) were introduced by the Malaysian government to help control unemployment rate and retrain graduates with the contemporary employability skills. However, these initiatives were found to be cost ineffective (Azmi et al., 2018). Hence, employability skills shall be groomed within their university years by enhancing the students' learning experience and the developing an integrated cumulative grade point average (iCGPA) to evaluate their attributes. (Malaysian Education Blueprint, 2015-2025). Responding to the MEB 2015-2025, the TVET university in study introduced a similar tool to iCGPA, namely the PRB system. However, no study has been done to assess the contribution of the PRB system towards the development of employability skills. Hence, initial effort is called to examine the effectiveness of the PRB system towards employability skills.

Satisfaction towards Personal Record Building

To provide students the awareness and opportunities to upskill and reskill, PRB system was strategically designed by a TVET university in Malaysia. It echoes the likes of ePortfolio systems, which are commonly found in universities in the UK. Kember et al. (2017) stressed the importance of capturing students' participation and achievement in both areas. Hence, one of the functions of PRB and ePortfolios are to capture and recognize students' involvement in academic and co-curricular activities.

While academic performance can be acknowledged through transcripts, non-academic achievement like employability skills that could have been developed through formal and informal learning environment were barely noticed by students and future employers (Longley & Kensington-Meller (2019). It is important to provide evidence in supporting the employability skills students claimed to have in their resume. Longley and Kensington-Miller (2019) concurred those generic skills (known as employability skills in this study) must be made visible to employers and learners. Although ePortfolio system in general and the PRB system in specific can document these skills, students' awareness towards the importance of the system is increasing at slower pace (Campbell-Casey & MacCallum, 2018). They added that students were slowly starting to be mindful of the significance of skills development. Aside from that, limited studies were conducted to assess the effectiveness of the PRB system or any other ePortfolio systems mentioned above.

This study responds to Mitchell's et al. (2021) recommendation for future research to explore students' perspectives towards the use of PRB (described as ePortfolios in their study). Wang (2003) highlighted that exploring user satisfaction towards a system is an indicator for the success of a system. Therefore, this study includes students' satisfaction towards the PRB system as a mediating variable in determining its effect in the relationship between Self-regulated learning and employability skills. Adapting Mtebe and Raphael's Learners satisfaction survey, criteria like system quality, service quality, perceived usefulness and overall satisfaction were included in the construct of students' satisfaction. It is necessary to assess whether the presence of students' satisfaction towards PRB as a mediator influences the affects of self-regulated learning strategies on employability skills.

Through bootstrapping analysis, this study attempts to examine whether satisfaction towards PRB increases the significance of the relationship between self-regulated learning strategies and employability skills.

Self-regulated learning strategies (goal setting, help-seeking, self-monitoring)

Zimmerman (2013) highlighted the potential of self-regulated learning (SRL) in assisting students to attain mastery quickly and sustain their motivation to learn. The theory of SRL refers to the ability to manage own learning process to achieve personal goals (Zimmerman & Schunk, 2011). Since SRL has great potential in enhancing learning potential, Bloom (2013) encouraged educators to help students develop the SRL strategies. However, the absence of theoretical understanding and study regarding SRL and employability skills mediated by students' satisfaction towards PRB calls for this study. Van der Gulden et al. (2020) showed limited evidence of SRL strategies in ePortfolio. They added that staff at university has lack of knowledge and skills regarding SRL. Moreover, the studies relating to SRL strategies usually concern online learning environment and students' academic achievement. Hence, this study expands the research of SRL in a new context, which are students' activities and employability skills.

Three SRL strategies were included in this study; goal setting, help-seeking and self-monitoring. Drawing from Pintrich's Self-regulated Learning Model (2000), goal setting refers to learners' justification of learning (Pintrich, 2000). Students who set intrinsic goals aim for knowledge acquisition, ability, and competence while those with extrinsic goals look for rewards, grades, and recognition. (Pintrich, 2000). This study conceptualised goal setting as the intrinsic and extrinsic goals that cause the students to engage in academic and non-academic learning experiences through various students' activities. Kizilcec et al. (2017) confirmed that goal setting is a beneficial SRL strategy as students were found spending more time on learning when they set and reflect their learning goals. In addition, Anthonysamy et al. (2020) found that goal setting significantly influenced students' participation and interaction in blended learning environment. In another, Orzenchonska and Polok (2009) reported that goal setting strategy was a positive predictor for language learning, which resulted in better students' performance in English language.

Help-seeking refers to the people with whom a student studies and interacts outside of school (Zimmerman, 1998). This study defined help-seeking as students' capacity to ask for help, know where to look, know how to formulate queries, and evaluate the help's validity. While Dinh and Nguyen (2022) and Mikum et al. (2018) supported the positive influence of help-seeking in improving learning performance and students' satisfaction, Kizilcec et al. (2017) found that help-seeking strategy had no influence on students' personal goal. The opposing findings also call for this study to take place in measuring the impact of goal setting, help-seeking and self-monitoring towards employability skills.

Self-monitoring was defined as a cognitive process by Zimmerman (1998). This process involves students being aware and trying to facilitate their learning experience. This study conceptualised self-monitoring as students' ability to monitor their thoughts and actions while doing a task. Self-monitoring was found to be an effective strategy to promote academic performance (Guo, 2022). In addition, Hsu (2021) found that students who monitored their performance while completing tasks have better chances of developing oral presentation skill.

3. Methods

3.1 Research Design

The aim of this study is to examine the relationships among self-regulated learning strategies (goal setting, help-seeking and self-monitoring), satisfaction towards PRB and employability skills. To form a structural equation model (SEM henceforth), employability skills were used as an exogenous variable while goal setting, help-seeking, self-monitoring, and satisfaction towards PRB were endogenous variables. Data cleaning and exploratory factor analysis were conducted using SPSS v26 before further analysis was made to test the hypotheses. Through SmartPLS software, this study conducted path analysis to examine the relationship between exogenous and endogenous variables.

Then, a bootstrapping test was performed to determine the mediating effect of students' satisfaction towards PRB in the relationship between goal setting, help-seeking and self-monitoring, and employability skills. Many PLS path models include mediation effects, but they are hardly explicitly tested (Hair et al., 2022). They added that it is only possible to understand the nature of the cause–effect relationship if the possibility of mediation is both theorised and empirically tested. Hence, this study attempted to explore, theorise and test the role of students' satisfaction towards PRB system as a mediator in the relationship between self-regulated learning strategies and employability skills.

3.2 Sample and Population

This study was conducted in a private technical university located in Perak, Malaysia. The private technical university was selected due to the availability of access during the Movement Control Order enforced by the Malaysian government. In addition, the PRB system was introduced by the university. The target population consisted of final year students (N=264) from the 2019 cohort. Final year students were selected as the population and samples because of their experience using the PRB system. The longer students attend university, the greater their familiarity with its services, regulations, and processes (Nasser et al., 2008). Furthermore, they were included in this research since they have basic working experience. Due to their programme structure, these final year students were already undergoing or had completed their industrial training as part of their practicum requirement.

The minimum sample size applied in this study was guided by Krejcie and Morgan Table (1970). The table suggested 159 as the minimum sample size for this study. The final year students were from four different programmes. Hence, to ensure the sample size taken from each programme is proportionate, the stratified random sampling method was used. Equal representative from the varied population can be generated using stratified sampling (Singh & Masuku, 2014) Table 1 shows the summary of the proportionate sample size for each programme. An initial total of 188 samples were collected as raw data using Google Form. After data cleaning procedure, 159 samples were retained for further analysis using SmartPLS. Hair et al. (2021) suggested that a small sample size is adequate to conduct PLS-SEM analysis. Using the gamma-exponential method, the minimum required samples for PLS-SEM is 146 (Kock & Hadaya, 2018). Furthermore, since this was an exploratory research, PLS-SEM is a suitable tool as it fits the search for pattern in the data when there is little prior knowledge on how the variables were related (Hair et al., 2021).

Table 1. Summary of the proportionate sample size

Programmes	Number of graduates	Sample size
Maritime Operations (MO)	97	59
Naval Architecture and Shipbuilding Engineering Technology (NASB)	59	35
Marine Engineering Technology (ME)	71	43
Electric and Electrical Engineering Technology (EE)	37	22

3.3 Measurement and Instrumentation

This study employed a survey questionnaire to collect quantitative data. The questionnaire used in this study was adapted from existing frameworks and instruments. The first section (Demographic Information) was developed by the researcher. The second section (Employability skills) was developed through a thorough review of multiple employability skills frameworks. The employability frameworks involved were Secretary Commission on Achieving Necessary Skills (SCANS), Qualification and Curriculum Authority (QCA) Key Skills, The National Quality Council Employability Skills Framework, Ministry of Higher Education Soft Skills, Accreditation Board for Engineering and Technology (ABET), Engineering Council United Kingdom (ECUK), Engineers Australia (EA) and Board of Engineers Malaysia (BEM).

On the other hand, the third section (Self-regulated learning) was constructed based on Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich et al. (1991). The self-report

instrument was initially designed to evaluate college students' motivational orientations and use of various learning strategies for a college course. The MSLQ instrument was adapted because it is one of the most widely used instruments for assessing students' motivation and use of learning strategies in various contexts and subjects (Duncan & McKeachie, 2005).

The final section (Satisfaction) adapted the Learners' satisfaction survey by Mtebe and Raphael (2018). Initially developed to measure students' satisfaction towards e-learning system, modification was made to fit the context of this study. These instruments have been used and tested for their reliability and validity. A pilot test was conducted using the questionnaire designed, and results for reliability and validity are good. The I-CVI scores for all items are above 0.80 and S-CVI score is 0.94 while the Cronbach Alpha values for 127 items (without demographic questions) is 0.946. After conducting an exploratory factor analysis, 34 items below the minimum significant loading of 0.5 were removed. As a result, 93 items were retained for further analysis. These items showed satisfactory Cronbach Alpha values of greater than 0.7 (Hair et al., 2016)

4.   Result

4.1   Measurement model

Before examining the structural model to test the hypotheses, it is a must to assess the measurement model. Firstly, outer loadings were identified and items with minimum factor loading below 0.60 were removed from the dataset as suggested by Hair et al. (2017). As a result, six items were removed. Then, the measurement model proceeded to test the composite reliability, convergent validity and discriminant validity of the model. Table 2 presents the results of composite reliability, convergent validity, and discriminant validity of each construct.

Table 2. Results of composite reliability, convergent validity, and discriminant validity

	CR	AVE	ES	GS	HS	ST	SM
Employability Skill (ES)	0.907	0.621	0.788				
Goal Setting (GS)	0.876	0.503	0.660	0.709			
Help Seeking (HS)	0.919	0.589	0.735	0.628	0.767		
Satisfaction (ST)	0.938	0.790	0.623	0.464	0.606	0.889	
Self-Monitoring (SM)	0.914	0.603	0.737	0.603	0.642	0.453	0.777

The result shows that all constructs achieved good composite reliability (CR) value of over 0.70. Therefore, based on the recommendation from Hair, et al., 2017, it was concluded that the CR is accepted. The convergent validity was measured by Average Variance Extracted (AVE). As seen in Table 2, the AVE values were above 0.50. Hair et al. (2017) suggested that the average squared loading values of all construct-related items should be above 0.50. Hence, it was concluded that the model attained good convergent validity. Furthermore, the results from Fornell-Larcker analysis show that the square roots of the AVEs had larger values than the correlation of their respective constructs. Therefore, the results established good discriminant validity of the constructs.

4.2   Structural model

The structural model was employed to examine and describe the direct influence of goal setting, help-seeking and self-monitoring on employability skills. Figure 2 shows the structural model for this study. The result of goodness of fit for the model was tested. Henseler (2017) suggested that the Standard Root Mean Square Residual (SRMR) index must be lower than 0.08. Based on the structural model presented in Figure 1, the SRMR index in the present model is 0.07. Hence, the present model attained good fit. Consequently, path coefficient analysis could be examined using the present structural model.
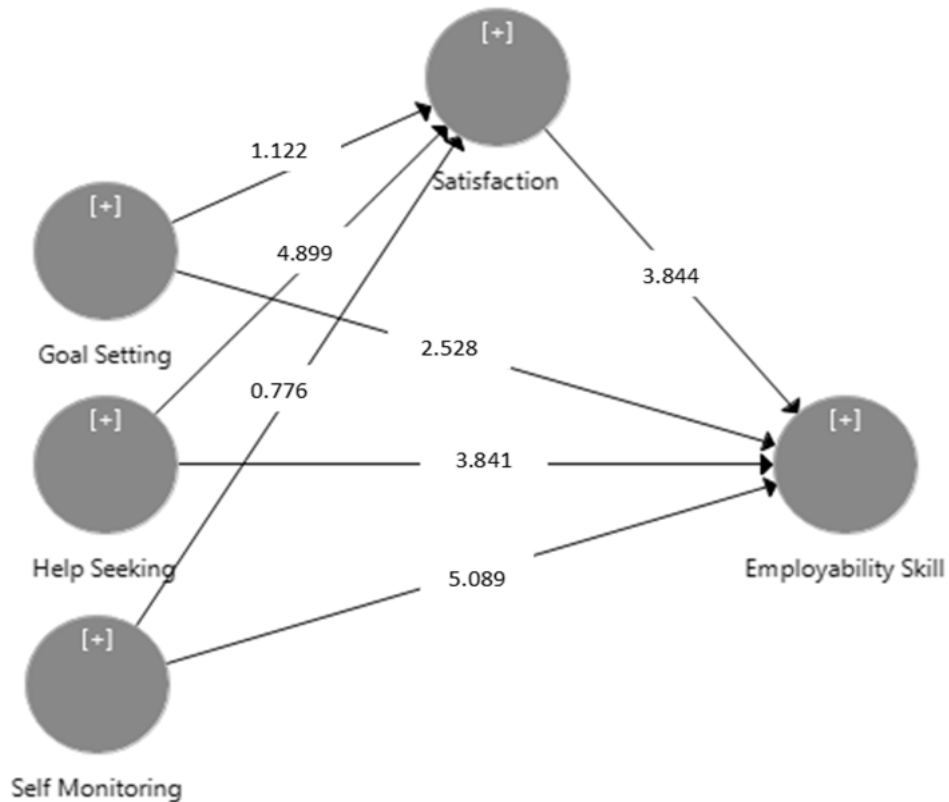
Fig. 2 Structural Model of the Study

Table 3. Results of Hypothesised Direct Effect

Hypothesised Relationship	β	STDEV	T Statistics	P Values
H1: Goal Setting → Employability Skills	0.177	0.070	2.528	0.006
H2: Help Seeking → Employability Skills	0.255	0.066	3.841	0.000
H3: Self-Monitoring → Employability Skills	0.367	0.360	5.089	0.000

The results in Table 3 indicated that all the self-regulated learning strategies, namely, goal setting, help-seeking and self-monitoring have positive influence on employability skills. H1 was supported by significant statistical effect of (β= 0.177; STDEV= 0.070; T value= 2.528; P value =0.006). The result shows that students' ability to set goal positively influence the development of their employability skills. Meanwhile, H2 was also supported by significant statistical effect of (β= 0.255; STDEV= 0.066; T value= 3.841; P value =0.000). The result illustrated that students' ability to pursue help from peers or staff at university positively influence the development of their employability skills. Finally, H3 was supported by the highest significant statistical effect of (β= 0.367; STDEV= 0.360; T value= 5.089; P value =0.000). Students' ability to monitor their thinking and actions is reported to have the most significant contribution on employability skills.

Table 4. Results of Bootstrapping for Mediating Effect of Satisfaction

Hypothesised Relationship	β	STDEV	T Statistics	P Values
H4: Goal Setting → Satisfaction → Employability Skills	0.025	0.024	1.040	0.149
H5: Help Seeking → Satisfaction → Employability Skills	0.107	0.039	2.759	0.003
H6: Self-Monitoring → Satisfaction → Employability Skills	0.016	0.023	0.682	0.247

A bootstrapping analysis was conducted to test the mediating effects of Satisfaction towards PRB on the relationship between goal settings, help-seeking, self-monitoring, and employability skills. The bootstrapping analysis in PLS-SEM provides accurate and precise results (Sarstedt et al., 2020; Zhao et al., 2010). To test whether the mediating variable (satisfaction towards PRB system) governs the relationship between goal settings, help-seeking and self-monitoring, the indirect effect value must be identified. Indirect value refers to structural model paths that involve a sequence of relationships with at least one intervening construct involved (Hair et al., 2021). Hence, to analyse the mediating effect of students' satisfaction towards PRB, this study employed the guideline proposed by Ramayah et al. (2018). When the t-value and the p-value of the indirect effect are >1.96 and <0.05 respectively, it indicates that the mediating variable has mediating effect.

As presented in Table 4, only H5 was supported. In the relationship between help-seeking and employability skills, the mediating effect of Satisfaction is evident with indirect effect value of (β= 0.107; STDEV= 0.039; T value= 2.759; P value =0.003). The analysis showed that the impact of help-seeking on employability skills without the presence of Satisfaction is significant with total effect value of (β= 0.362; STDEV= 0.069; T value= 5.268; P value =0.000). With the presence of Satisfaction, the relationship between help-seeking and employability skills is also significant with direct effect value of (β= 0.255; STDEV= 0.066; T value= 3.841; P value =0.000). According to Zhao et al. (2010), when the values of indirect effect, total effect and direct effect are significant, the type of mediation that Satisfaction contributes to this model is complementary-partial mediation.

On the other hand, the mediating effect of Satisfaction on the relationship between goal setting (H4), self-monitoring (H6) and employability skills were not supported. Table 4 shows the indirect effect of H4 and H5 were (β= 0.025; STDEV= 0.024; T value= 1.040; P value =0.149) and (β= 0.016; STDEV= 0.023; T value= 0.682; P value =0.247) respectively. There is no necessity to investigate the total effect and direct effect of these relationships as the mediating effects of Satisfaction were non-significant.

5.   Discussion

This study found that the total effect and direct effect of goal setting, help-seeking and self-monitoring on employability skills are significant. These results implied that with or without the presence of Satisfaction towards Personal Record Building (PRB) as a mediating variable, students' ability to set goal, seek help and monitor their thinking as well as behaviour, contributes to the development of their employability skills. Hence, hypotheses 1, 2 and 3 were accepted.

H1: Goal setting and employability skills

The positive correlation between goal setting strategy and employability skills as reported in the previous section further supported the beneficial of goal setting strategy as highlighted in previous literature. As one of the criteria in employability skills, the results show that communication skills can be developed through goal setting. This revelation concurs to the findings by Orzenchonska and Polok (2009) where they reported that goal setting strategy motivated students to learn language, hence resulted in an increased of language competence. TVET students who were able to utilise their involvement in students' activities at university could possibly enhance their employability skills. This result affirms that Through strategic goal setting, students will be motivated to participate in learning experiences and spend more time reflecting their goals as pointed by Anthononysamy et al. (2020) and Kizilcec et al. (2017) respectively.

H2: Help-seeking and employability skills

The positive correlation between help-seeking strategy and employability skills as reported in the previous section concurs to the findings by Dinh and Nguyen (2022) and Mikum et al. (2018) concerning the contribution of help-seeking strategy to improve learning performance and students' satisfaction. Although the previous studies were not in a similar context as this study, help-seeking strategy is seen as a factor to improve employability skills because students must be able to seek help from others when they are facing difficulties. Seeking help is closely related to employability skills

like communication skills, critical thinking and problem-solving skills and teamwork. These are among the skills highlighted in previous literature (Ghazalan et al., 2019; Abdul Musid, 2018). When performing tasks in students' activities, a self-regulated student must be able to identify who and where to seek help from, how to ask for help and ultimately assess whether the help was effective. Ability to perform such strategic moves implied the positive influence help-seeking strategy has on employability skills.

H3: Self-monitoring and employability skills

The positive correlation between self-monitoring strategy and employability skills as reported in the previous section further supported the beneficial of self-monitoring strategy as highlighted in previous literature. The findings concur with Hsu (2020) where it was reported that self-monitoring strategy has significant influence on students' oral presentation skills. Students who were able to monitor their progress were able to enhance their oral skills more efficiently. In the context of students' involvement in students' activities, they were more open to authentic interaction among with others. This finding contributes to one of the employability skills variables as communication skills is one of the sought after skills that employers seek for in employees (Ghazalan et al., 2019; Abdul Musid, 2018). Furthermore, the positive influence of self-monitoring strategy on employability skills confirms the review presented by Zimmerman (2001) that self-monitoring can improve students' problem-solving ability.

H4, H5 and H6: Satisfaction towards PRB mediates the effect of goal setting, help-seeking and self-monitoring on employability skills.

The impact of students' self-regulated learning (SRL) strategies had on employability skills was not solely influenced by their satisfaction towards PRB. While goal setting and self-monitoring relationships towards employability skills are not mediated by students' satisfaction towards PRB, only help-seeking was found to be partially mediated by the variable. The result suggests that when students are satisfied with the PRB system, their help-seeking strategy has greater influence on employability skills. On the other hand, the unsuccessful intervention of students' satisfaction towards PRB as a mediator shows that students were not affected by satisfaction towards the PRB system. They can still theoretically develop employability skills if they practice self-regulated learning strategies like goal setting and self-monitoring.

The lack of contribution of Satisfaction towards PRB as a mediating effect on the relationship between goal setting, self-monitoring and employability skills may be caused by students' limited knowledge on the PRB system. As MacCallum and Campbell-Casey (2017) reported, students' awareness towards the significance of ePortfolio system is developing at a slower pace. Similarly, the PRB system introduced by the TVET university in this study is relatively new. Further exploration and investigation are needed to assess its effectiveness towards encouraging the development of employability skills.

6.   Conclusion

This study concludes that developing employability skills can be done through enhancing students' SRL abilities. On top of that, the mediating role played by satisfaction towards PRB on the relationship between help-seeking strategy and employability skills has brought into attention the necessity for personnel at universities to further develop and improvise the PRB system. System developers and educators should explore how to strengthen and incorporate students' SRL strategies into utilizing the PRB system to increase employability skills. The findings affirm the proposed structural model in developing TVET students' employability skills. Since the TVET curriculum is compact (Khandu, 2014), the acquisition of employability skills is best practiced in non-curriculum environment. With the implementation of PRB system, involvement of students in formal and informal students' activities can enhance employability skills. Hence, universities are advised to provide excellent support to raise students' satisfaction towards PRB and train students' self-regulated learning strategies so they could develop their employability skills efficiently. Future study could

include more respondents from different TVET institutions to test the proposed model. More studies should be conducted to evaluate the effectiveness of PRB system from the perspectives of employers in the industry.

7.   Co-author contributions

The authors affirmed that there is no conflict of interest in this article. Author 1 wrote the introduction, research methodology, conclusion and carried out the fieldwork. Author 2 overlooked the literature review, data collection, analysis and write-up of the whole article. Author 3 overlooked the data analysis and interpretations.

8.   Acknowledgement

9.   References

Abdul Karim, Z. I., & Maat, S. M. (2019). Employability Skills Model for Engineering Technology Students. *Journal of Technical Education and Training*, *11*(2), 79-87. https://doi.org/10.30880/jtet.2019.11.02.008

Abdul Musid, N., Mohd Affandi, H., & Abas N., H. (2019). The Soft Skill Elements in an On-Job Training (OJT) (Organisation) Assessment Rubric for Construction Technology Students in Malaysian Vocational Colleges. *Journal of Technical Education and Training*, *11*(3). https://doi.org/10.30880/jtet.2019.11.03.011

Ang, M. C. H. (2015). Graduate Employability Awareness: A Gendered Perspective. *Procedia - Social and Behavioral Sciences*, 211, 192–198. https://doi.org/10.1016/j.sbspro.2015.11.083

Anthonysamy, L., Koo, A.-C., & Hew, S.-H. (2020). Self-regulated learning strategies and non-academic outcomes in higher education blended learning environments: A one decade review. *Education and Information Technologies*. *25*, 3677-3704. https://doi.org/10.1007/s10639-020-10134-2

Beckett, D., & Hager, P. (2005). *Life, Work and Learning*. Routledge.

Bloom, M. (2013). Self-regulated learning: Goal setting and self-monitoring. *The Language Teacher*, *37*(4), 46. https://doi.org/10.37546/jalttlt37.4-6

Bridgstock, R. (2009). The graduate attributes we've overlooked: enhancing graduate employability through career management skills. *Higher Education Research & Development*, *28*(1), 31–44. https://doi.org/10.1080/07294360802444347

Campbell Casey, S., MacCallum, J., Robertson, L., & Strachan, L. (2018). Researching skills development: students as partners in this process. *New Directions in the Teaching of Physical Sciences*, *13*. https://doi.org/10.29311/ndtps.v0i13.2881

Cheng, G., & Chau, J. (2013). Exploring the relationship between students' self-regulated learning ability and their ePortfolio achievement. *The Internet and Higher Education*, *17*, 9–15. https://doi.org/10.1016/j.iheduc.2012.09.005

Dass, A. (2018, August 6) Young and jobless in Malaysia | *The Star Online.* www.thestar.com.my. https://www.thestar.com.my/business/business-news/2018/08/06/young-and-jobless-in-malaysia/

Dinh, T. C., & Nguyen, P. B. N. (2022). Impact of Internet Self-Efficacy and Self-Regulated Learning on Satisfaction and Academic Achievement in Online Learning: A Case Study in Vietnam. *International Journal of Emerging Technologies in Learning*, *17*(16), 269–288. https://doi.org/10.3991/ijet.v17i16.33819

Duncan, T. G., & McKeachie, W. J. (2005). The Making of the Motivated Strategies for Learning Questionnaire. *Educational Psychologist*, *40*(2), 117–128. https://doi.org/10.1207/s15326985ep4002_6

D'Silva, V. (2020, February 2). More and More Graduates are Facing Unemployment in Malaysia. New Straits Times.

Ejubović, A., & Puška, A. (2019). Impact of self-regulated learning on academic performance and satisfaction of students in the online environment. *Knowledge Management & E-Learning: An International Journal*, 345–363. https://doi.org/10.34105/j.kmel.2019.11.018

Ghazalan, M. S., Ab Halim, F., Hamidon, N. I., Ahmad Hariri, T. I. A., Sallehuddin, S. A., Bahrol, K., Zakaria, N., & Roddin, R. (2019). Engineering Students' Generic Skills after Industrial Training: Employers' Perception. *Journal of Technical Education and Training*, *11*(2). https://doi.org/10.30880/jtet.2019.11.02.006

Guo, L. (2022). The effects of self-monitoring on strategy use and academic performance: A meta-analysis. *International Journal of Educational Research*, *112*, 101939. https://doi.org/10.1016/j.ijer.2022.101939

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. In *Classroom Companion: Business*. Springer International Publishing. https://doi.org/10.1007/978-3-030-80519-7

Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced Issues in Partial Least Squares Structural Equation Modeling*. SAGE Publications.

Hair, J., Hult, T. G. M., Ringle, C. M., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Second ed.). SAGE Publications, Inc.

Halik Bassah, N. A. S. (2022). The issues and challenges of TVET in Malaysia: from the perspective of industry experts. *TVET@Asia,* 18, 1-15. http://tvetonline.asia/issue/18/the-issues-and-challenges-of-tvet-in-malaysia-perspective-of-industryexperts/

Hanapi, Z., Kamis, A., Kiong, T. Z., & Hanapi, M. H. (2016). Jurang Integrasi Kemahiran Employabiliti di Malaysia: Satu Kajian Empirikal Graduan Kejuruteraan Kolej Komuniti (Integrated Employability Skills Gaps in Malaysia: An Empirical Study of Community College Graduates). *Geografia: Malaysian Journal of Society and Space, 12*(3), 145-153.

Haron, M. A., Hussain, M. A. M., Zulkifli, R. M., Nashir, I. M., & Ma'arof, N. N. I. (2019). Employability Skills Needed by Vocational College graduates: Feedback from the Industry. *Journal of Technical Education and Training*, *11*(4).

Henseler, J. (2017). Bridging Design and Behavioral Research with Variance-Based Structural Equation Modeling. *Journal of Advertising*, *46*(1), 178–192. https://doi.org/10.1080/00913367.2017.1281780

Hj. Ebil, S., Salleh, S. M., & Shahrill, M. (2020). The use of E-portfolio for self-reflection to promote learning: a case of TVET students. *Education and Information Technologies*, *25*(6), 5797–5814. https://doi.org/10.1007/s10639-020-10248-7

Hsu, P.-Y. (2020). Self-Regulated Learning Strategies in Technology-Enhanced Learning. *Proceedings of the 2020 11th International Conference on E-Education, E-Business, E-Management, and E-Learning*. https://doi.org/10.1145/3377571.3377579

Institute of Labour Market Information and Analysis (ILMIA). (2020). *Critical OccupationsList 2019/2020: Occupation Report*. https://www.talentcorp.com.my/clients/TalentCorp_2016_7A6571AE-D9D0-4175-B35D-99EC514F2D24/contentms/img/TalentCorp_CriticalOccupationsList_TechReport_2019-2020_Final.pdf

Kember, D., Hong, C., Yau, V. W. K., & Ho, S. A. (2016). Mechanisms for promoting the development of cognitive, social and affective graduate attributes. *Higher Education*, *74*(5), 799–814.https://doi.org/10.1007/s10734-016-0077-x

Khandu, Y. (2014). *Technical and Vocational Education and Training (TVET): Training providers', employers', instructors' and trainees' attitudes to generic/employability skills in Bhutan*. TVET@Asia. https://tvet-online.asia/wp-content/uploads/2020/03/khandu_tvet3.pdf

Khazanah Research Institute. (2018). *The School-To-Work Transition of Young Malaysians*. http://www.krinstitute.org/assets/contentMS/img/template/editor/20181205_SWTS_Main%20Book.pdf

Kizilcec, R. F., Pérez-Sanagustín, M., & Maldonado, J. J. (2017). Self-regulated learning strategies predict learner behavior and goal attainment in Massive Open Online Courses. *Computers & Education*, *104*, 18–33. https://doi.org/10.1016/j.compedu.2016.10.001

Kock, N., & Hadaya, P. (2016). Minimum sample size estimation in PLS-SEM: The inverse square

root and gamma-exponential methods. *Information Systems Journal*, *28*(1), 227–261. https://doi.org/10.1111/isj.12131

Krause, K. (2006). ePortfolios for Graduate Students: A Discussion Paper. Melbourne: Centre for the Study of Higher Education, University of Melbourne. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.460.555&rep=rep1&type=pdf

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607–610. https://doi.org/10.1177/001316447003000308

Lim, C. L., Ab Jalil, H., Ma'rof, A. M., & Saad, W. Z. (2020). Self-regulated learning as a mediator in the relationship between peer learning and online learning satisfaction: a study of a private university in Malaysia. *Malaysian Journal of Learning and Instruction (MJLI) Vol. 17*(1), 51-75.

Longley, A., & Kensington-Miller, B. (2019). Visibilising the invisible: three narrative accounts evoking unassessed graduate attributes in dance education. *Research in Dance Education*, *21*(1), 18–33. https://doi.org/10.1080/14647893.2019.1644616

MacCallum, J., & Campbell Casey, S. (2017). Enhancing skills development and reflective practise in students during their programme of study. *New Directions in the Teaching of Physical Sciences*, *12*(12), https://doi.org/10.29311/ndtps.v0i12.2368

Malaysian Qualifications Agency (2017), *Malaysian Qualifications Framework*. 2nd Edition. Petaling Jaya, Malaysia. https://www.mqa.gov.my/pv4/document/mqf/2021/MQF%20Ed%202%2002102019%20updated%20 17022021.pdf

Mikum, S., Suksakulchai, S., Chaisanit, S., & Murphy, E. (2017). Students' participation in peer-to-peer communication supported by social media. *Education and Information Technologies*, *23*(2), 659–679. https://doi.org/10.1007/s10639-017-9628-8

Mitchell, L., Campbell, C., Somerville, M., Cardell, E., & Williams, L. (2021). Enhancing graduate employability through targeting ePortfolios to employer expectations: A systematic scoping review. *Journal of Teaching and Learning for Graduate Employability*, *12*(2), 82–98. https://doi.org/10.21153/jtlge2021vol12no2art1003

Mtebe, J. S., & Raphael, C. (2018). Key factors in learners' satisfaction with the e-learning system at the University of Dar es Salaam, Tanzania. *Australasian Journal of Educational Technology*, *34*(4). https://doi.org/10.14742/ajet.2993

Mustapha, R. B. (2017). Skills Training and Vocational Education in Malaysia. *Education in the Asia-Pacific Region: Issues, Concerns and Prospects*, 137–153. https://doi.org/10.1007/978-981-10-4427-4_9

Nasser, R. N., Khoury, B., & Abouchedid, K. (2008). University students' knowledge of services and programs in relation to satisfaction. *Quality Assurance in Education*, *16*(1), 80–97. https://doi.org/10.1108/09684880810848422

Orzechowska, P., & Polok, K. (2019). Goal setting as a Motivational Factor Helping FL Learners in Gaining Their Levels of FL Proficiency. *OALib*, *06*(03), 1–11. https://doi.org/10.4236/oalib.1105307

Pintrich, P. R. (2000). The Role of Goal Orientation in Self-Regulated Learning. *Handbook of Self-Regulation*, 451–502. https://doi.org/10.1016/b978-012109890-2/50043-3

Pintrich, P. R., National Center For Research To Improve Postsecondary Teaching And Learning, & United States. Office Of Educational Research And Improvement. (1991). *A Manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. University Of Michigan.

Prianto, A., Winardi, W., & Qomariyah, U. N. (2021). The Effect of the Implementation of Teaching Factory and Its Learning Involvement toward Work Readiness of Vocational School Graduates. *International Journal of Instruction*, *14*(1), 283–302. https://doi.org/10.29333/iji.2021.14117

Ramayah, T. & Hwa, Cheah & Chuah, Francis & Ting, Hiram & Memon, Mumtaz. (2018). *Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 3.0: An Updated and Practical Guide to Statistical Analysis*.

Qualifications and Curriculum Authority (QCA) (2004). *The key skills qualification standards and guidance*. (London: QCA). https://dera.ioe.ac.uk/4981/1/8929_qca04_1294.pdf

Sarstedt, M., Hair, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses! *International Journal of Market Research*, *62*(3), 288–299. https://doi.org/10.1177/1470785320915686

Sheh, Y. S., Hanapi, Z., Mustapha, R., & Kiong, T. T. (2020). Soft Skills among Hearing Impaired Graduates for Sustainability and Well-Being in Workplace. *International Journal of Academic Research in Business and Social Sciences, 10*(5). https://doi.org/10.6007/ijarbss/v10-i5/7187

Singh, A. S., & Masuku, M. B. (2014). Sampling Techniques & Determination of Sample Size in Applied Statistics Research: An Overview. *International Journal of Economics, Commerce and Management. 2*(11). https://ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf

van der Gulden, R., Heeneman, S., Kramer, A. W. M., Laan, R. F. J. M., Scherpbier-de Haan, N. D., & Thoonen, B. P. A. (2020). How is self-regulated learning documented in e-portfolios of trainees? A content analysis. *BMC Medical Education*, *20*(1). https://doi.org/10.1186/s12909-020-02114-4

Wang, Y. S. (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. *Information & Management*, *41*(1), 75–86. https://doi.org/10.1016/s0378-7206(03)00028-4

Weerasinghe, I. M. S., & Fernando, R. L. S. (2018). Critical factors affecting students' satisfaction with higher education in Sri Lanka. *Quality Assurance in Education*, *26*(1), 115–130. https://doi.org/10.1108/qae-04-2017-0014

World Economic Forum (2016). *The future of jobs: employment, skills and workforce strategy for the Fourth Industrial Revolution*. World Economic Forum, Geneva. http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

Zalli, M., Nordin, H., & Hashim, R. (2019). The role of self-regulated learning strategies on learners' satisfaction in massive open online courses (MOOCs). *International Journal of Innovative Technology and Exploring Engineering, 8*(10), 2286-2290. 10.35940/ijitee. J1138.0881019

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, *37*(2), 197–206. https://doi.org/10.1086/651257

Zimmerman, B. J. (1998). Academic studing and the development of personal skill: A self-regulatory perspective. *Educational Psychologist*, *33*(2–3), 73–86. https://doi.org/10.1080/00461520.1998.9653292

Zimmerman, B. J. (2000). Attaining Self-Regulation. *Handbook of Self-Regulation*, 13–39. https://doi.org/10.1016/b978-012109890-2/50031-7

Zimmerman, B. J. (2013). From Cognitive Modeling to Self-Regulation: A Social Cognitive Career Path. *Educational Psychologist*, *48*(3), 135–147. https://doi.org/10.1080/00461520.2013.794676

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166–183

Zimmerman, B. J., & Moylan, A. R. (2009). *Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), Handbook of metacognition in education* (pp. 299–315). Routledge/Taylor & Francis Group.

Zimmerman, B. J., & Schunk, D. H. (Eds.). (2011). *Handbook of self-regulation of learning and performance.* Routledge/Taylor & Francis Group.